A Case Study In Realizing The American Dream:

Sanders and Advanced Micro Devices: The First Fifteen Years, 1969—1984

A CASE STUDY IN REALIZING THE AMERICAN DREAM:

SANDERS AND ADVANCED MICRO DEVICES:
THE FIRST FIFTEEN YEARS, 1969--1984

BY: THOMAS A. SKORNIA (c) 1984, 2004

PROLOGUE

IT'S A LONG WAY TO A GIGABUCK

The story of Advanced Micro Devices is not the story of a company that started up in someone's garage. Indeed, AMD's portion of 1040 DeGiulio Avenue, Santa Clara, California, lacked even the basic amenities of a garage: a large roll-up door for easy entry and exit, or convenient parking. But the 900 square feet allocated to AMD by the resident carpet cutting company did accommodate eight desks and the required basic drafting equipment. And in the late spring of 1969, it also had the most important element for any aspiring startup company: a small cadre of determined and talented people who had no idea how impossible a task they had chosen for themselves, led by an individual whose specialty turned out to be doing the impossible with minimum resources.

Yet, in retrospect, they had chosen their goals rather modestly: a million dollar estate for each of the founders, and a company that might do 100 million dollars in sales some year in the future. A gigabuck year (1 billion dollars to the uninitiated) was unimaginable. But then, the prototypical Fairchild Semiconductor, from which all the AMD founders came, was doing less than 200 million dollars a year at the time and it had been operating for more than a decade with little impressive competition in its chosen field. Even the venerable Hewlett Packard, which <u>had</u> started in a

garage, still had 700 million dollars to go to reach the gigabuck mark after 30 years of trying. And it was a much more diversified company than either Fairchild or AMD would ever be.

So where did AMD get off coming within hailing distance of a gigabuck in its fiscal year 1985, and only 15 years after it shipped its first product? The fascinating answer to that question comes in the following pages. This is a story that is at once serious and funny, painful and cathartic, but more than anything, awesome in the telling.

Unlike some histories, what unfolds here is still unfolding in the real world. It has continued to do so for much longer than the story told here.

Etched in marble on the portal to the Archives of the United States of America in Washington, D.C. is the inscription: "The Past is Prologue." Indeed it is, and this book is prologue to what has become not only one of America's, but one of the world's, great industrial corporations.

The story of how it happened could have happened - only in America.

PALO ALTO, CALIFORNIA September 12, 1984.

I.

IN THE BEGINNING

FEBRUARY 21, 1969:

The intercom buzzed.

"There's a guy on the phone who says he was referred by Bob Noyce. Needs a business lawyer. Want to talk to him?"

"Sure, Bev, thanks."

"Hello."

"Tom Skornia?"

"Yes."

"This is Jerry Sanders. A group of us are starting a company and we're looking for a lawyer who knows something about how to do that to help us with it. Are you interested?"

"Absolutely. When would you like to come in and talk about it?"

"Three of us, John Carey, Ed Turney and I, are coming up to the City on Monday to interview some candidates for our attorney. When do you have time?"

"How about lunch, and then we can come back to the office to continue, if we need to?"

"OK. Noon?"

"I'll make a reservation for four at the Stagecoach."

"See you then."

* * *

THE THREE MUSKETEERS

It wasn't clear at the time that this was any more than a routine new business contact which a struggling young sole practitioner is nevertheless happy to get. Nor was it clear on Monday when three brassy guys showed up at San Francisco's pre-Quake Mills Building and spent two and a half hours at lunch and in the newly opened lawyer's office in rapid fire questions on the critical topics involved in a high tech startup company. And it still wasn't clear after a reading of the rather too long, but certainly complete, business plan for a proposed new second source bipolar semiconductor company on the San Francisco Peninsula. (Peninsula, because it would be more than two years before the term "Silicon Valley" even came into the language.) Nor was it yet clear when, the next day the voice on the other end again said: "This is Jerry Sanders," and added: "We've decided we'd like to work with you and want to know when we can get started."

Manna from Heaven.

"How about tomorrow?"

* * *

PILLSBURY, BROBECK AND WHO?

But it was becoming clear by August, 1972, long after it had come out that there were five more founders, for a total of eight (a rather largish founder group), and that the competition for company attorney had included Pillsbury, Madison & Sutro, even then 120 lawyers and San Francisco's most prestigious firm, and Brobeck, Phleger & Harrison, 80 lawyers and already well reputed for working with high tech companies. And of course by then the company had incorporated, had been financed with two rounds of venture capital, had turned in its first profitable quarter, and had just filed with

the Securities and Exchange Commission a registration statement for an initial public offering.

Then it became clear.

* * *

"..AND *** [HE] COULD TALK AS FAST AS ED TURNEY"

It was a prototypical Sanders' celebratory dinner at Redwood City's Country French restaurant, L'Auberge. Sharing the head of the long table near the fireplace on this August evening were the prematurely graying Sanders and the patrician-featured and balding Jack Laeri of Donaldson, Lufkin and Jenrette, the lead underwriter. This was one of the very few times that the protocol-minded Sanders would share a head of table with anyone. On Laeri's left was the successful candidate for company counsel. Elsewhere at the table were the other founders and Directors of AMD, and underwriter's counsel, the very proper Jonathan Clark of New York's Davis, Polk & Wardwell.

This setting was completed by the mid-dinner departure of the hyperactive Ed Turney for the immediately adjacent bar to buy a drink for a recently arrived comely young lady, who as the evening wore on, showed more than a little bit of interest in Ed's predictions of a $40 per share stock value for AMD in the foreseeable future. This essay, coming audibly in a semi-public place in the middle of the customary "quiet period" between the filing of a registration statement and its becoming effective, had a predictable effect on counselor Clark, who, finding no ready escape route, grasped for anonymity by bringing his napkin up from his lap and draping it over his head and face for the duration of the Turney monologue.

Undaunted, Jack Laeri managed bravely to maintain polite conversation at the other end of the table. In doing so, he asked the question which made the non-routine nature of February 21, 1969 clearer:

"How did you and Tom get together?"

Sanders responded with an account like that already reported, and then added the key missing pieces:

"In seeking referrals for lawyers, I had asked Noyce (Dr. Robert N. Noyce, a founder of Fairchild and then of Intel, for the latter of whom Pillsbury, Madison and Sutro were counsel), Riley (James Riley, then President of Signetics for whom Brobeck, Phleger & Harrison were counsel) and McNeilly (Michael A. McNeilly, founder of Applied Materials, for whom Skornia was counsel). Riley recommended John Larson of Brobeck, McNeilly recommended Skornia, and Noyce named both Bruce Mann of Pillsbury and Skornia. Tom was practicing by himself, but since he had been named by two of the three, we put him on the list."

"In the morning of our day in San Francisco interviewing lawyers, we saw Bruce Mann and one of his junior associates. In the afternoon, we saw John Larson and one of his junior associates. At lunch we saw Skornia, and there, what you saw is what you got."

"When we got home that evening, Carey, Turney and I compared notes on several criteria that were important to us in choosing a lawyer. Number one, we felt we wanted to deal with a principal, and it was clear to us that at Pillsbury or Brobeck we would spend a lot of time with the junior associate. Having no junior associate, Tom qualified on that one. We also thought we would like someone who looked a little hungry, and on that one Tom had no competition. Third, we agreed that of those we had talked to, Tom seemed to

know more than the others about artfully structuring a lot of cheap stock for the founders. And finally, we agreed that Skornia was the first person we had ever met who could talk as fast as Ed Turney (known from that day to this as "Fast Eddie").

II.

BEFORE THE BEGINNING

HOGAN'S HEROES

In the summer of 1968, Sherman Fairchild took stock of his namesake company and found it wanting. After a decade, and without impressive competition in its chosen field, the company still had a poor reputation for on time delivery and product reliability. Its strong suits were marketing and sales and technological innovation. Jerry Sanders' hard-charging sales guys had contributed greatly to a massive broadening of the applications for transistors. Fairchild scientists had created the seminal planar process. Founder Bob Noyce had invented the integrated circuit itself. The honor of this latter breakthrough, however, ultimately had to be shared with Texas Instruments' Jack Kilby to settle a lawsuit brought by TI over the question of credit for that invention.

Fairchild opted for a group he identified as more manufacturing managers than engineers to address the delivery and reliability problems. Still, the seven top managers he brought in from Motorola were themselves engineers. And their leader, C. Lester Hogan, was a fairly prominent semiconductor technologist in his own right. Interestingly, two of these "Hogan's Heroes" later became high level managers at AMD. They joined in 1974, roughly concomitant with a palace coup by another Hero, Wilfred J. Corrigan, who succeeded in displacing Hogan himself as President and C.E.O. of Fairchild.

The "Hogan's Heroes" label was actually adopted by a group of Fairchild sales guys for themselves upon their hearing of the intended Hogan takeover while they were attending the Fairchild annual sales conference in Hawaii in

July. But historically the label stuck instead, and somewhat sardonically, to the top Motorola people Hogan brought in with him.

This 1968 decapitation of Motorola's executive suite resulted in a protracted litigation by Motorola against Fairchild, in which Fairchild ultimately won. In his opinion in the case, the presiding Federal District Judge described Motorola's complaint as "a latter day attempt to resurrect and apply the Fugitive Slave Law." If it was, that law had never before been applied to such highly paid slaves.

* * *

THE INTEL TROIKA:

Sherman Fairchild's mid-game management substitution set off an expectable reaction. Bob Noyce, Gordon Moore and Andy Grove (the top two technologists and the top manufacturing guy) left Fairchild to form Intel Corporation in August 1968. They were joined over succeeding months by many other Fairchild supporting stars. This was neither the first nor the last important Fairchild semiconductor spinoff. But it was a watershed in that process in eviscerating Fairchild's technology staff and forever dooming its efforts to enter the MOS business as an effective competitor. (An earlier spin off to National Semiconductor of Charlie Sporck, followed by Fred Bialek, Pierre Lamond, Ed Pausa and Don Valentine, similarly set back Fairchild's ability to manufacture effectively at low cost.) Take away technology and low cost manufacture, then chase out the marketing and sales aces as Hogan soon did, and it is not surprising that a decade and a half later AMD, which began as a Fairchild second source, would surpass its progenitor in all important respects: sales, earnings, technology and breadth of product line. No other spinoff succeeded in all four categories.

With the unparalleled troika of Noyce, Moore and Grove, Intel got off to an incredibly fast start, from the raising of its money to the delivery of its first product. And for the MOS side of AMD, Intel became a useful role model for Sanders in exhorting his colleagues to ever greater efforts.

* * *

BAY: "YOU'RE ON THIN ICE"

With the arrival of Hogan's Heroes, it was apparent to then General Manager Tom Bay that a lot of peoples' days at Fairchild were numbered, including his own. The departure of Noyce, Moore and Grove confirmed that view. And Hogan's later and surprising recruitment of marketing and sales guy, Joe Van Poppelen, meant that Worldwide Marketing Director Jerry Sanders' days were numbered as well. When Sanders questioned that conclusion, Bay very directly told him that it looked to Bay like Sanders was "on thin ice". Turney knew precisely how thin the ice was, having seen Hogan's offer letter to Van Poppelen on Hogan's desk. The frozen matter gave way in December, 1968 with the announcement that Van Poppelen had been named a Group Director with Sanders reporting to him. Upon hearing the news, Sanders, who less than three years earlier, at the age of 29, had been brought in from the field in Los Angeles to head up the Mountain View Mother Church's worldwide marketing and sales effort, walked out of the office and the plant and never returned. As he would describe it later, Sanders' dreams of one day taking over as head of all Fairchild lay shattered on the ground through no fault of his own. The unfairness in that would prove to be a major driving force behind AMD's push, first to equal, and then vastly to surpass Fairchild in all important areas of its continuing business, save test equipment.

* * *

MALIBU

For the now somewhat depressing 1968 winter holidays, Sanders withdrew to one of his favorite spots in the world. In Malibu, in Southern California, he settled in to contemplate his situation and his future. The setting: a beach house with a $600 monthly rental tab, a princely sum for an unemployed sales type. Crucial momentum had been lost, and now at age 32, with three different jobs already behind him (McDonnell Douglas, Motorola and Fairchild) he needed a nimble and promising option just to stay even, much less to advance by this adversity. It was to be a recurrent formula for Sanders from that time on.

How better than to become president of a company? The somewhat annoying problem was that no presidency of an attractive company was open. But what shortly appeared to be open was the pathway to forming an entirely new company, whose presidency Sanders could occupy from the beginning.

The pattern in the semiconductor industry was both familiar and promising. First, Shockley Semiconductor (from which Fairchild founders came), then Fairchild (from which most other semiconductor company founders came), and later a brace of other semiconductor startups, occurred in what was to become known as Silicon Valley. So, offsetting the natural and pervasive anxieties of starting a new business, were the comforts of a lot of successful models, along with the inevitable unsettling failures. Or so it seemed as the surf rolled gently in on the Malibu beach where Sanders contemplated his future in the waning days of 1968.

* * *

ENTER THE KING AND COURT

Two others, who went over the side at Fairchild shortly after Sanders, were an English production type named John Carey, and an old Sanders sales sidekick, Ed Turney. A phone call from Malibu to Lake Arrowhead, where Turney was formulating a plan to enter the real estate business, opened a dialogue on the subject of starting a company. Together, Sanders, Turney and Carey proposed to recruit a technologist to round out a strong digital bipolar semiconductor team. Their first choice, Clive Ghest, turned them down. Their second choice, a Danish-national technologist still at Fairchild, Sven Simonsen, agreed only after the application of a large measure of the Sanders' charm and persuasion. (Somewhat paradoxically, after Simonsen's departure from AMD in October, 1982, Ghest, who had himself joined AMD in 1971, left and then rejoined in 1975, took over Sven's title as Vice President and Technical Director.)

These four, it turned out, would be "a little more equal" than the other four founders, and would emerge as much more influential in the development of the company, its technology and its fundamental philosophies. In the realm of AMD it was thus not inappropriate to refer to this half of the founding team as "the King (Sanders) and Court." In fact, for years after the founding of AMD, Sanders would keep on the wall over his customary place at the round table in his office where he presided over his weekly staff meetings, an enlarged and framed New Yorker cartoon depicting a whimsical King Arthur and Knights of the Round Table in which Arthur is saying: "The round table symbolizes our equality, while the funny crown and the high backed chair are reminders that some of us are more equal than others." Sanders had to make do with only a crown of graying hair and a

chair like all the others, but the point was not lost on attendees at the executive staff meetings or on other visitors to Sanders' office. The "King" title was in fact more or less officially conferred well after the founding of AMD by its long time Communications Director, Elliot Sopkin, who fashioned and made stick equally appropriate (and provocative) sobriquets for the other founders and several other key people at AMD.

* * *

GIFFORD, STENGER, GILES & BOTTE

About the same time that the King and Court came together, there came "off the shelf" another four person team from Fairchild. This group, headed by the diminutive Jack Gifford, had more than a year earlier tried to start up a linear, or analog, semiconductor operation but failed to raise the required financing. Together, these groups, the second one completed by the presence of Larry Stenger, Jim Giles and Frank Botte, all of whom, including Gifford were still at Fairchild, offered the prospect of forming a truly broad-line new semiconductor startup. A tentative plan to add a third, hybrid, group was scrapped in the interest of time and efficiency.

As the strains of Auld Lang Syne heralded the departure of the old year and the advent of the new, it all began.

* * *

A GENEROUS SETTLEMENT

The assembling of the AMD founding team was actually the second critical component of what would make AMD possible. Fairchild's benign severance policy had given Sanders a full years' pay at his most recent rate, so he had $45,000 in cold cash to carry him while speculating on the creation of a new company. It was not, of course, enough to begin to finance the new

business, but it made Sanders temporarily independent of the pressure to find alternative work. It was a little hard in 1984 to appreciate the significance of that $45,000, when it by then represented little more than two weeks of Sanders' non-equity compensation at AMD. Nevertheless, that severance constituted factor number one in making AMD feasible. The assembly of the team was number two. Again, it was neither the first nor last time that benign Fairchild policies, including liberal technology licensing practices, would lead to eventually crushing competition for Fairchild. Fortunately, they initially would also produce a crushing U.S. competitive superiority over all foreign competition through the proliferation of technological advances and managerial innovations effected by a chain of Fairchild spinoffs.

* * *

DRUCKER TO THE MAX

The third critical component of AMD's initial plausibility was a key element of Sanders' lifelong self-education. Among the AMD founding group there existed all of the basic disciplines for starting and running a business, save two: general and administrative, and financial. It fell to Sanders as designated CEO to provide these skills. Since eight founders were already a lot by then-contemporary standards, and because Sanders felt as CEO that he had to have at least a rudimentary competence in these missing skills, he set out to acquire them through study rather than through recruitment of yet another, or two or more, founders. Only three months later, responding to his own hand-lettered sign over his second-hand desk at 1040 DeGiulio Avenue which read, "GET A FINANCE GUY," Sanders would woo and win as his Chief Financial Officer, Richard Previte, then Assistant

Controller at Sierra Electronics Division of Ford Aerospace. For now, he chose to rely on the comprehensive writings of management savant Peter Drucker, of whom he had learned through personal research.

By his own admission, in January, 1969, Sanders could not competently analyze, much less evaluate, a set of fairly simple financial statements. After some weeks of total absorption in the teachings of Drucker, he had constructed a serviceable CEO's first line of defense against what a semiconductor industry commentator would later refer to as "the tyranny of the bean counters." He had also evolved the beginnings of a management style and system which would serve him well both as a successful entrepreneur and through the painful and seldom successful transition to major company Chief Executive.

In the meantime, the preparation of the business plan, now informed with sundry Druckerisms, continued. Its control center for better than three months would be Elliott Sopkin's apartment, in which Ed Turney would also take up residence in a sleeping bag, on the floor, for the duration.

* * *

APRIL 4, 1969

The octagonal sealing of the fates of the founders of AMD took place in the living room of Sanders' hilltop home on Hillpark Lane, Los Altos Hills, California, late on the afternoon of Friday, April 4, 1969. In attendance, in addition to the eight AMD founders, was the lately anointed founders' and company counsel, who circulated a form of pre-incorporation subscription agreement for consideration and execution by the assembled entrepreneurs.

As Sanders' wife, Linda, and their two daughters, Tracy and Lara, quietly entered the brightly sunlit house and disappeared into the kitchen

with a fresh load of groceries, the discussion began. At its conclusion, it was decided that on Monday next the five founders who were still employed at Fairchild would give their notice en masse, and in testament to that pledge, all eight affixed their signatures to the documents which would be their equivalent of their nation's Declaration of Independence. As entrepreneurs since time immemorial have done, they in effect pledged "their lives, their fortunes and their sacred honor" (and their wives, their children and their profane pleasures) to creating a new corporate commonweal where none had theretofore existed. From that moment, there was no turning back. Unemployed as all eight at that moment were, failure had to be impossible. Yet also at that moment, as they were all to learn at some pain, success was far from assured, even as to the elemental matter of raising the $1.75 million required to launch the company. Three and a half months later, as the key founders celebrated the closing of that minimum financing over dinner at the Luau Restaurant on Rodeo Drive in Beverly Hills, California, it in retrospect did not seem to have been so impossible. In between, it periodically appeared quite out of reach.

* * *

III.

THE SOUTH SIDE

SEPTEMBER 12, 1936

In 1936, Chicago remained largely as Carl Sandburg had described it: "Hog butcher to the world," friendly, undisciplined, raucous and even rowdy. Yet its historic joie de vivre had lost a lot of its edge with the advent of the Depression six years earlier, to be replaced by a large measure of anxiety and deprivation. The portrait contained in the hit movie, "The Sting," was not inapt: with a still indomitable spirit, albeit a little bit dulled by a pervasive pessimism, this was a city of people working overtime "to figure out the angles" of how to stay alive or, even get ahead, in very tough times.

Still America's second city, Chicago would have its economic recovery, and for the second time in 25 years claim the mantle of industrial heartland to the world's arsenal of democracy. From that Second World War, it would emerge stronger than ever. Yet, in fewer than 30 more years it would become the perceived capital of America's "Rust Bowl," from which Jerry Sanders, and too many others with talent, dreams and ambitions like his, would have long departed.

Saturday, September 12, 1936 was when it all began for Sanders. Seven weeks before the election that would affirm the total realignment of American politics for the next half century, Jerry Sanders arrived in a family which would bear little resemblance to the then sterotypical American nuclear household.

* * *

MY GRANDFATHER/MYSELF

To the extent that there ever was a Sanders' standard nuclear family, it underwent, at age four for Jerry Sanders, a case of sudden fission when his parents divorced and left him to live with his grandparents. Grandfather filled the substitute father figure role at least to the extent of providing education, homilies and bromides which Sanders continued to refer to in times of challenge and stress in both his business and personal life.

* * *

CHAMPAIGN (BUT NO CAVIAR - YET)

Sanders early came to the conclusion that if there was a way to reshuffle the hand which life had dealt him, it was through education. Helping to support himself from age 12 by various pick up jobs, he concentrated on his studies in a way that only Sanders can concentrate on things, and finished high school as class valedictorian.

Although showing more interest in the forensic arts than in science, Sanders was persuaded by his grandfather that a sound grounding in engineering would be a good investment for whatever else he might later want to do. As a route to stardom, which has consistently driven Sanders, engineering would have looked pretty indirect and even implausible in 1954, only seven years after the invention of the transistor by Shockley, Bardeen and Brattain at Bell Labs in Sanders' natal city, three years before the founding of Fairchild Semiconductor and eight before the invention of the integrated circuit. Yet, even then, California, which had to be Sanders' ultimate goal and destination, was fostering the conditions which would lead to the assembling of the most important collection of electrical engineers and solid state physicists anywhere on the planet.

But even without that knowledge, Sanders matriculated at the University of Illinois' School of Engineering at Champaign - Urbana, Illinois. It was not Dom Perignon, which was later to become a Sanders favorite champagne, but this Champaign would provide a more permanent high to Sanders' career. It would also supply some lows, as in the outcome of an altercation with some upper classmen who did not relate well to Sanders' personal style. The incident left its indelible imprint in the broken nose which still punctuated the Sanders visage three decades later.

Champaign there was, but no caviar - yet. Through various means of financial assistance and just plain hard work, both in and out of the classroom and lab, Sanders was able to get through to his BSEE degree with an outstanding record but no staggering debt. In a pattern which would recur later in Sanders' business life, he stepped out in the summer of 1958 for a brand new initiative into the teeth of the most severe U.S. economic contraction since he had been born. It would happen again at the founding of AMD, at its redirection to become a proprietary products company and at the onset of its stretch drive to become one of America's top producers of integrated circuits.

But all of that lay well in the future. For now, it was to become a temporary sojourn in the aerospace business with McDonnell Douglas, redesigning the air conditioning system on the DC-8, before moving permanently into the electronics components business.

* * *

MR. MOTO

The sojourn in aerospace at McDonnell Douglas did not last long. Redesigning an aircraft air conditioning system was clearly not anything

Sanders had in mind in acquiring his EE degree. Indeed, the only design which turned out to interest him on a long term basis was the ''Grand Design'' of building a large company and consequent wealth and fame. And the key to doing that was sales and marketing, which would fully utilize Sanders' natural persuasive skills.

His initiation came almost haphazardly through an impressive lunch provided by an electronics components salesmen to McDonnell Douglas who showed to Sanders the benefits of expense account living and accompanying amenities such as a company provided car. AMD would later provide the best of both to its industry pace-setting marketing and sales force and to its Chief Executive Officer.

Not one to agonize very openly over his major career decisions, Sanders shortly shifted from McDonnell Douglas and aerospace to Motorola and semiconductors, but more importantly, from designing air conditioning systems to designing winning sales strategies. At Motorola he became so good so quickly that four year old Fairchild took note and lost no time in extricating him from Moto and including him among the far flung centurions from the "Rusty Ranch," as Fairchild came to be known. He would now be with the same company for seven years before making the last change of his career - to entrepreneur and on to big company chief executive.

His rise at Fairchild was meteoric, even by semiconductor industry standards. From District Sales Manager in Los Angeles in 1961, Sanders became, at age 29, World Wide Marketing Director in Mountain View in 1966. The flameout and fall, though none of his fault, exceeded the rise in its rapidity. From king of the Fairchild marketing mountain at its 1968 sales conference in Hawaii, Sanders went to sitting on the beach in Malibu only a

few months later contemplating his future. If there is an individual and a company in Silicon Valley whose mottoes might be "success through adversity," they would be Sanders and AMD. This greatest disappointment of Sanders' professional and business life would be the occasion and opportunity for opening the way to literally everything to which Sanders aspired, and would ultimately add to Fortune's roster of top companies, one whose management style and systems would be a model for its industry.

* * *

HOLLYWOOD NOW - AND LATER

From his earliest aspirations to celebrity, Sanders had a focus on California in general and Southern California in particular. The job which really got him on the roll to what would become AMD, Fairchild's Los Angeles sales slot, was hard-by Hollywood. During that period he would have an ownership interest in Sunset Boulevard's famous Whiskey-A-Go-Go. Sanders would meet his future first wife, Linda, on a Southern California beach and find that Southern California in general, and Beverly Hills - Hollywood in particular, were the only places she would ever feel really at home. It was a taste he, too, easily acquired.

Indeed, when Fairchild brought him north to Mountain View, Sanders made a blood oath to Linda that they would be back in Southern California in not more than five years. Almost 15 years later, they finally acquired a permanent residence in Bel Air, having bought a weekend beach house in Malibu five years before.

That return to Southern California would also end up reversing out the Sanders' marriage. But even after the divorce, both would continue to treat

Bel Air - Beverly Hills as home even though for Sanders, corporate headquarters and mid-week residence were both in Northern California.

* * *

IV.

MAY DAY

THE INCORPORATION OF ADVANCED MICRO DEVICES

On advice of counsel, nothing was done about incorporating the new company while the remaining five founders continued to work for Fairchild, although the business plan was long since completed and the search for financing well advanced by the time the founders signed on to the pre-incorporation subscription agreement on April 4. Even as April wore on, nothing was done until Sanders called counsel during the final week of the month and said, "I think it's time we incorporate."

Because of the greater flexibility of its general corporate and securities laws and the greater feeling of comfort by investors in its general legal climate, Delaware got the nod as the corporate legal domicile. The simplest of structures was initially created, with a minimum authorization of a single class of common stock to be issued to the founders at ten cents a share. It was then intended that a strong class of convertible preferred stock, yet to be designed and authorized, be issued to outside investors at $2 a share for approximately one-half the total initial equity of the company. After many more weeks of negotiation and documentation, the deal came down pretty much in accord with those parameters.

More by luck than by design, the Delaware Secretary of State filed the AMD incorporation papers on Thursday, May 1, and the "AMD" acronym, which 10-1/2 years later would become the company's ticker symbol on the New York Stock Exchange, was born. Sanders was 32. The gray beard of the company, Turney, was 39. Except for Carey, all the other founders were younger than

Sanders. Back in Smokestack America, this average age for a founding group would have been almost unheard of. In California, in the age of Aquarius, it was not unusual.

* * *

AMD - CHOICE NUMBER 17

Early on, founders and counsel undertook what is usually one of the more pleasurable and easy chores of founding a company, selecting a name. In AMD's case, it turned out to be neither. The King's natural choice, Sanders Associates, was already in use by a New Hampshire-based electronics company. With his usual thoroughness, Sanders presented counsel with a list of almost two dozen alternative names to be checked with the California and Delaware Secretaries of State and the trademark directory. Each near the top of the list was blocked by an allegedly confusingly similar name either in California or in Delaware or in both, or was in use as a trademark by some other concern. The first acceptable name to clear these preliminary checks was Advanced Micro Devices, number 17 on Sanders' list. One of its main advantages turned out to be alphabetical, since, after the disappearance of the name Advanced Memory Systems with its 1976 merger with Intersil, AMD was consistently first in all national and international lists of significant semiconductor manufacturers.

Another standout characteristic of the name turned out to be its wide appeal to later participants in the micro components business. After 1972, there was nary a year went by without one or more new companies somewhere popping up with some version or other of "Advanced Micro" to challenge AMD's tenacity and legal skills. Advanced Micro Technology, Advanced Micro Computers, Advanced Micro, Advanced Micro Development and even another

Advanced Micro Devices appeared, but ultimately changed their names after AMD showed its determination to resist all comers. A couple of them got as far as court, but were ultimately settled out with some formula for the offender to phase out its use at minimal cost by allowing consumption of stocks of letterhead and other name indicia while it completed the changeover to a new and different name.

Less expected but in some ways more amusing was the 1972 dispute with an Ohio company which intervened to oppose AMD's registration of the AMD trademark with the Patent Office. The Ohio company, Micro Devices, had been around for a dozen years and claimed that AMD's use of Advanced Micro Devices was inherently disparaging of the former's name, implying that it made and sold retarded micro devices. That one was settled to no one's complete satisfaction with AMD withdrawing its trademark registration and both parties being free to use their respective names.

Also somewhat unexpected was the popularity of the AMD logo, described as "an upwardly right pointing stylized 'A'". It had been carefully chosen, and its design closely supervised, by Sanders. The stylized "A" came, of course, from the first letter of the new company's name. The upward right tilt expressed the determined and positive thrust of the company's conception and business plans. And the counterpoised arrows, as Sanders would later explain, stood for ever increasing complexity (upward right) at ever decreasing cost (downward left), a suitable generic symbol for the whole of the microelectronics industry, whose device complexity increases fourfold about every four years and whose cost per function declines approximately 30% per year.

Not long after this choice of logo, it came to the company's attention that the New York conglomerate, City Investing, had a very similar corporate symbol, but counsel advised that because of the greatly different lines of business of the two companies, no real case could be made for probable public confusion. Additionally, and unlike the situation with most of the fledgling companies using manifestations of Advanced Micro, there was no prospect of intimidating this user into a change by legal muscle-flexing.

* * *

"WE'RE *** GOING TO GET THE MONEY''

Next to inexperienced outside investors holding restricted stock in a private company whose performance is below plan, (which thankfully did not apply to AMD), there are few more nervous types than newly unemployed founders whose intended enterprise does not yet have financing committed, much less in the bank. The natural anxieties of the newly unemployed AMD founders were of course aggravated by the fact that unlike Sanders, they had no severance cushion to rely on. To compound the rent and groceries problem, each of the founders also had to come up with several thousand dollars cash for their part of the founders' stock. To solve the latter problem, some inter-founder loans were arranged, and to address the former, Sanders now proceeded to lean on Los Angeles' Capital Group Companies, two of whose principals, Mike Shanahan and Stu MacLaren, were coordinating the prospective investor side of the AMD financing effort. In the limit, to use a favorite Sanders' phrase, Jonathan Lovelace, the septuagenarian founder of Capital Group, personally advanced the newly incorporated AMD $30,000 to help defray the minimum equipment and rental costs associated with the company's tenancy

at 1040 DeGuilo Avenue, Santa Clara, and to provide minimum salaries to the more needy of the founders.

The Lovelace infusion forestalled any jumping of the ship, but did not totally eliminate sleepless nights for some of the founders. Reassurances from Sanders were recurring features of the business day, one of the most vivid occurrences taking place again in his living room in Los Altos Hills with all the founders assembled, at which the beast of anxiety again got loose, with several founders demanding to know when the financing would close. Unable to provide precise details, Sanders slipped into his familiar authority mode with the bottom line declaration: "We're absolutely going to get the money."

"The money" meant the $1.75 million shown as required and adequate by the AMD business plan. In 1984 dollars, this would be about $5.5 million, a moderately sized offering by the contemporary venture capital standards, but an impossibly small amount in 1984 with which to start a semiconductor company. Indeed, even in 1969, $1.75 million was the smallest amount with which an intended broad line semiconductor company was started. By way of comparison, a year earlier Intel had started up with $5.5 million (about 17 million in 1984 dollars), a much more plausible number.

Yet, with the unexpected difficulty and delay in raising the $1.75 million, some of the founders questioned whether they were going for too much money. When asked his opinion, counsel, who had been involved in other recent start-ups, averred that if anything, the target was too low, as indeed it turned out to be. Nevertheless, drawing on his best salesmen's bravado, Sanders gave his ironclad assurances to his fellow founders that they were "going to get the money," when in fact he had no real idea how or whether the

financing was ultimately going to come together. In fact, serious doubt remained literally until five minutes before the drop dead time for the minimum closing in late July, of which more later.

Sanders' personal doubts had in fact been growing as he found to his unpleasant surprise, as many founders ultimately do, that his designated liaison with the lead investor proved to be little more than a doorman in obtaining access to other prospective investors. While one should not minimize the value of access and introductions for an aspiring founder who was an unknown on Wall Street, La Salle Street, Montgomery Street and Spring Street, it was shockingly less than Sanders had somewhat blithely expected when MacLaren and Capital Group agreed to lead the financing effort. Before it was over, Sanders would say that he personally had to do all the selling and close all the prospects. To which the more seasoned, and cynical, observer would say: "It has always been so."

* * *

HOW TO MAKE A MILLION AND TAKE IT WITH YOU

Fear's twin, and constant companion, is greed. Without it, few if any risky new enterprises would ever be launched, since fear would ultimately prevail. Fortunately for America in general and Silicon Valley in particular, there are enough on-going and stunning founder success stories to make tolerable and to feed the natural greed that lurks in even the lowliest engineer. The Stanford Business School in the '70s produced a marvelous definition of your typical Silicon Valley engineer: a bespectacled guy in white socks, dark pants and short sleeved shirt with pencil-lined pocket who paces around the plant all day mumbling "ten to the sixth, ten to the sixth."

The reference of course is to his hoped for first million dollars. The description fit a couple of the AMD founders to a "T".

Frequently in the same founders' meeting, these Siamese twins, fear and greed, had to be dealt with serially. No sooner were the anxieties about ever getting any money with which to start the company quieted, and the discussion would turn to how to get liquid on the million dollars in AMD stock value which was the goal of each founder. The liquidity problem was complicated in several ways.

First, in order to comfort the outside investors, the founders had to sign up on a deal in which for all practical purposes they fully owned no stock on day one of the new company, and in fact would only own all of the shares after four full years of staying alive, making back breaking efforts and not getting fired. There were some safeguards against completely arbitrary firings, but they appeared to some of the founders to be cold comfort indeed. But again, in the limit, six of the eight AMD founders would stay around more than long enough to make their million dollars (and more) and take it with them. One would be fired for underperformance and another for an attempted palace coup, but even they were richly rewarded (many thought too richly) for the time they served AMD.

A second complication with making the full million dollars was the insistence by the outside investor group on escrowing a third of the original founders' shares with an option for the outside investors to acquire them at original cost if certain performance tests were not met. Chief among these tests was what in retrospect looked especially bizarre, that the company incur no bank debt during the three year period of the escrow ending June 15, 1972. Fortunately for the company and the founders, the then contemporary

proliferation of equipment lease financing made it possible to almost completely circumvent this constraint. The result, however, was that until mid-1972 the company owned virtually no assets and had no bank line. On June 16, 1972, both conditions changed abruptly.

A further problem had to do with some antique and irrational securities rules and regulations left over from early New Deal days. Until the founders' shares were registered with the Securities and Exchange Commission, which rarely could be done in any volume in an initial public offering because of underwriter and market constraints, these shares remained so-called "restricted stock." This was not at all readily saleable, even after the company's own shares had a public trading market through an initial company offering. At most, founders might be allowed to sell a small percent of their shares in a thin secondary offering at the time of the IPO. As to the rest, sales could be made generally only after a three year holding period, and then only with a not easily to obtainable opinion of counsel. Again, fortunately, the SEC vastly simplified this procedure roughly concomitant with the AMD IPO in 1972 through its now well known Rule 144. But in 1969, the cold comfort of counsel's essay on when the founders might be able to comply with all the requisite "facts and circumstances" to get an opinion allowing sales was not very pleasant music to the founders' ears.

The nadir of the founders' spirit thus occurred in June, 1969 after all had been unemployed for more than two months, a date had not yet been set for closing initial financing, and little comfort could be provided as to when, if ever, they could enjoy the real benefits of their hard won million dollars.

* * *

"YOU MEAN THEY'RE REALLY GONNA TRY TO MAKE THE STUFF?"

The advent of AMD as an intended broad line semiconductor manufacturing company was greeted in some quarters, to put it mildly, with large portions of skepticism. Even to knowledgeable industry observers, the profile of the new company left a lot of doubts. The highest visibility founders were marketers/ salesmen: Sanders and Turney. The others were not widely known, although most were both well qualified and promising. Nevertheless, with the sales types dominating, and given the extraordinary difficulty of designing and manufacturing the product, the more experienced members of the industry were not believers.

In fact, Bob Noyce, right then experiencing his own difficulties in getting Intel off the ground and flying, even with the most clearly superior founding team of all time, asked incredulously after reading the business plan, "You mean they're really gonna try to make the stuff?" He had assumed upon first hearing about AMD that the new company was intended to be a distributor of product made by other, established semiconductor manufacturers. Sitting behind his metal desk in Intel's first facility, an old Fairchild plant on Middlefield Road in Mountain View, his leg in a cast nursing a spiral fracture from a recent skiing trip to Aspen, Noyce's look of disbelief as he discussed AMD's prospects as a manufacturer was almost total. Indeed, only on that very day, more than six months after having started, did the Intel plantwide bell sound, heralding the completion and successful testing of Intel's first good wafer run.

Yet, the entrepreneur in Noyce ultimately prevailed over the skeptic, and his name would show up on the original AMD preferred shareholder list for a few thousand shares. Half a decade later he would say with genuine

admiration: "Sanders has done a very good job with AMD." And the ''stuff'' AMD would make would include a lot of Intel-invented parts.

* * *

V.

A WALK ON THE MOON

ONE SMALL STEP FOR THE SEMICONDUCTOR INDUSTRY: ONE GIANT STEP FOR A MAN

On July 20, 1969, Neil Armstrong spoke to his countrymen a quarter of a million miles away as he became the first human being to set foot on the earth's only natural satellite. His declaration, "There's one small step for a man; one giant step for all mankind," capped a decade long effort which officially began with President John F. Kennedy's commitment in 1961 "by the end of this decade to put a man on the moon and return him safely to earth." Few people think it could have been done without the microminiaturization effects of the integrated circuit. Yet, when JFK spoke in 1961, the invention of the integrated circuit was still a year away. Nevertheless, the moon landing happened on schedule, even though with little more than five months to spare. Two days later in Los Angeles, California, with even less margin for error, minimum financing came in for a yet-to-become-operational semiconductor company whose products would be extensively used in later lunar landing moon rovers before the Apollo program wound down to a stop in the mid-1970's.

The first lunar landing was not the only time that important space developments and AMD milestones would coincide. More than three years later, on the 15th anniversary of the launching of Sputnik, AMD would receive the proceeds of its first public offering, and five more years later, on the 20th anniversary, would initial a memorandum of understanding for the financing which would make it financially bulletproof. But two days after Neil Armstrong's epic performance, there would take place in Southern California one small step for the semiconductor industry (the financing of AMD), but one giant step for a man (the ratification of Sanders' leadership of a now viably

financed company).

* * *

JULY 22, 1969: "AT THE END OF THE PUSHUPS, MY HEART WAS SLOWER THAN AT THE BEGINNING"

To the AMD founders, the coming together of the company's financing had seemed to take an eternity. There had been near rebellion in June, descending into despair in early July. Finally, in mid-month, Sanders prevailed upon the key investors to commit to a closing before month's end. It was set for the fourth Tuesday.

July 22 began hot and sunny in Southern California. But there was nothing hot or sunny about Wall Street that day. The stock market roared open on what was then considered high volume and in steep decline. It was to be the first day since the climactic 1966 selloff that the Dow was off more than 20 points on volume. Hearing the early stock market reports in his motel room in Burbank, Sanders'natural anxieties on this benchmark day were greatly exacerbated. As their car swung onto the Golden State Freeway for the drive downtown after Sanders met his counsel at Hollywood-Burbank Airport, Sanders related to Skornia that his customary morning calisthenics had been unusual in that, "at the end of the pushups, my heart was slower than at the beginning."

This sort of phenomenon would also repeat on later, similar occasions. In early October, 1977 after an essentially sleepless night on the eve of initialling the $22.5 million financing agreement with Siemens, Sanders refused coffee at breakfast at the St. Regis Hotel in New York, commenting to Donaldson, Lufkin & Jenrette's Joe Roby, "I'm saving it for later, when I'll need it to keep going." He was right, although that day, like July 22, 1969, ended successfully with Sanders reaching a stock price accord with Freidrich

Baur of Siemens in which the Federal Republic of Germany's second largest industrial concern agreed to pay $45.00 a share for newly issued AMD stock when the over the counter market was that day valuing it at $22.50.

The 1969 closing team assembled in the Capital Group Company's offices mid-morning on the 22nd. In attendance for the company were Sanders, Turney and Skornia, and for Capital Group, Mike Shanahan and Stu MacLaren. The proceedings began by tallying the checks and wire transfers of funds on hand in hopes of a pre-noon closing. The results of the tally showed there was no hope of that. A significant shortfall existed from the $1.5 million which the financing agreement mandated as the minimum required for closing. If that figure were not reached by day's end, the closing would abort, and with it, the hopes and dreams of eight anxious founders.

The telephoning began: locally in Los Angeles, to Northern California, to Pennsylvania, and most importantly to New York, from which a quarter of a million dollar player, DLJ's venture capital affiliate, Sprout Group, had not yet forwarded funds. In the limit, it was not until a second, special closing in September that Sprout Group finally came in. Without that key player, it was destined to be a long day, piecing together the small checks required to get past the $1.5 million mark. Lunchtime came and went, and afternoon coffee time came and went, as the figures slowly mounted toward the magic number. As the hands on the clock in Capital Group's conference room passed 4:30, even the usually well controlled Sanders became visibly nervous and irritated, with the count standing at $1,405,000.

* * *

FIVE TO SPARE - "GOOD OLD HENRY"

More telephone calls, more hurried messages, more last minute contingency plans took place as the fateful hour of 5:00 and the close of the business day, before the arrival of which the closing had to happen, approached. Then, as if by providence, at 4:55, a messenger arrived with an urgent missive for Sanders. Within, was a check for $100,000 from Henry Harris of Montgomery County, Pennsylvania, sent by special courier to L.A. Sanders stared at the draft, and with totally regained composure exclaimed, "Good Old Henry," and placed the check on the top of the stack which now totalled $1,505,000. A million five-oh-five at five-of-five! A numerologist could probably divine a lot of significance out of all those 5's, but all that mattered now to the closing group was that they could adjourn to one of Sanders' favorite restaurants, the Luau, on Rodeo Drive in Beverly Hills for the first of what would become an unremitting series of celebratory dinners marking important and hard won milestones in the development of AMD.

As Neil Armstrong and his two fellow astronauts continued to contend with the effects of sustained weightlessness, the AMD closing group, now augmented by spouses and additional founders, began to enjoy their own zero gravity experience with the potent combination of Polynesian rum drinks and $1,505,000 in AMD's bank account, personally deposited by Turney well after regular bank closing hours. Counsel, who had begun the day with less than $5.00 in his own law office account, could now look forward to paying the August rent and having a continuing new semiconductor company client. "Not a bad day's work," said Turney, as the main courses arrived.

For his part, Henry Harris, who had put it over the top, would never regret having done so. Almost a decade later, after having sold under

Rule 144 enough of his original 50,000 shares to get his initial $100,000 investment back, he still held shares, following several splits of the company's stock, which left him with an aggregate AMD portfolio value approaching $1 million. That costly courier's fee turned out to be a smart expenditure indeed.

By the morning of the 23rd of July, Sanders felt like he had spent a full day with Neil Armstrong hopping about the arid and pock-marked lunar surface without finding a real oasis. It was good, finally, to be back on the blue-green earth.

* * *

BUSINESS WEEK: "THE LAST QUARTER TO GET INTO THE BUSINESS"

In its September 29, 1969 edition, Business Week published a piece reviewing the semiconductor business in general and the almost two year long wave of new semiconductor startups in particular. Its conclusion: "The third calendar quarter of 1969 was probably the last quarter to get into the business as a proposed broad line semiconductor company." They were frighteningly accurate. The prior two years had seen an historic number of semiconductor startups, all of which would survive and thrive as independents, for a minimum of seven years, and some for a good deal longer: Zeev Drori's Monolithic Memories; Bob Lloyd's Advanced Memory Systems; Jean Hoerni's Intersil; L. J. Sevin's Mostek; Bob Noyce's Intel. And during the same timeframe occurred the recovery and turnaround of National Semiconductor under Charlie Sporck's new management team and American Microsystems under Howard Bobb's cadre. All remained in existence in 1984, although two of them as one, after an intra-industry merger: Advanced Memory Systems and Intersil; two others after takeover by larger companies and other businesses; Mostek into

United Technologies and AMI into Gould; and another two with strong minority ownership positions by larger companies; AMD by Siemens and Intel by IBM.

Those that came later tended to be either more narrow gauged, or big-company sponsored, or both, rather than venture financed: Zilog's MOS microprocessor operation financed by Exxon, and Synertek by a corporate group led by Honeywell. At the turn of the next decade, another, even more prolific wave of semiconductor startups would occur, but this time largely as specialty or niche suppliers: LSI Logic in the gate arrays business; Integrated Device Technology in CMOS Static RAMS; Xicor, Seeq and Exel in EEPROMs; Zytrex, Supertex, Citel, Trilogy, Wafer Scale Technology and others with their own special, and more narrow gauge stories.

* * *

VI.

INTO THE TEETH OF THE RECESSION

MARCH, 1970.

March, 1970 was what the Dow Jones Industrials of July 22, 1969 were forecasting. In the winter of 1969, the Conference Board would certify the previous autumn as the beginning of the fifth post-war recession. By March of 1970 it was really rolling. Ed Turney would report to the AMD Board the following month that "things are really tough out there." Tough though they were, AMD shipped its first product in March, and the AMD Board of Directors thereupon upvalued the AMD common stock, for purposes of option grants, from its original ten cents per share where it had remained for almost a year, to twenty-five cents per share, in recognition of the milestone of first product shipment. It was on the order of $4,000 worth of second source parts, shipped across the street to Tom Bay's newly formed Central Data Systems (later Tenet), but it was a start, nevertheless. Unlike some of its then recently started brethren, AMD thus had actual sales and revenues, albeit it small, in its first fiscal year. It was one of those small but significant differentiations from its competitors which would set AMD apart throughout its corporate history.

All the same, by Sanders' and Previte's own calculations, the company was less than a year away from running out of money, and plans had to be started for addressing that first of what would be a string of financial cliffhangers through which the company would struggle until its ultimate financial bulletproofing by Siemens almost eight years later. Yet, the AMD corporate financings were a model of orderliness compared to the chaotic securities offering histories of some of its competitors. As of 1984, AMD had

only gone to the financial well six times in 15 years. For an initially deeply undercapitalized company in an increasingly capital intensive industry, this is an astounding record of outstanding husbanding and deployment of assets. But in March of 1970 it looked tough. To make it even tougher, Sanders was about to present to his Board a proposed acquisition of a startup systems company which would require its own infusion of AMD's precious and dwindling financial resources.

* * *

THE ANDROMEDA STRAIN

Steve Zelencik, in 1984 AMD's Senior Vice President of Marketing and Sales, was in 1970 a rangy redhead not so long out of Gary, Indiana's steel mills, where he had worked while in school. Like Sanders, a fugitive from Smokestack America and an alumnus of Fairchild, "Z", as he styled himself after the Greek acronym for "he lives," was in 1970 one of four founders of a proposed computer terminal manufacturer startup to be called Andromeda Data Systems.

1970 was not only a tough year for selling semiconductors. It was an almost impossible year, to be outdone in that respect only by 1975, in which to raise venture capital for startup companies. With the Tax Reform Act of 1969, capital gains tax rates were on their way to the stratosphere and the stock market on its way into the tank. After having unsuccessfully made the rounds of the customary venture capitalist sources, Z and his fellow founders approached Sanders on the basis that Andromeda could be both a good investment and a growing customer for AMD's products.

To an AMD Board of Directors made up of individuals with some experience in such matters, it was an early invitation to disaster. Mike Shanahan and

Stu McLaren of the Capital Group Companies, Gene Brown, Vice President of Corporate Development at Syntex, and Skornia, all were acutely aware that one of the first rules of successful startup companies is to steadfastly resist diversion of a fledgling company's two most critical assets: management focus and scarce financial resources, particularly on marginally related or totally unrelated businesses. Even for mature companies, such diversions could be greatly damaging. For startups they could be, and frequently were, fatal. How to deal with what obviously looked like a favored pet project of their hard-driving CEO? The answer: gingerly, but firmly.

Brown opened the critique in his customarily low keyed style. The discussion moved around the table to Shanahan, who spoke skeptically through billows of cigarette smoke which became his trademark response to difficult situations. McLaren, as was his wont, contributed little. By the time the discussion reached Skornia, it was clear that, (a) the Board consensus was against the deal, but (b) the Board was unlikely to vote against, or Sanders to withdraw, the proposal without a lot firmer opposition than had so far appeared.

Lawyers are frequently hired to be bad guys. But clients who put lawyers on their Boards never desire, and rarely expect them to play such a role in response to management's agendas. Accustomed to such a role elsewhere, however, Skornia now proceeded to barge into it as the last remaining outside director to speak. At the conclusion of his critique, Sanders withdrew the Andromeda proposal, casting a glare at his lawyer which meant, to put it mildly, that Skornia's continuation as counsel and Board member was at that moment in very serious doubt. Sober second thoughts, a leading Sanders' trait, avoided a confrontation, but relations between him and

his lawyer were at least strained for a short period. He would later indicate by attitude, but never verbally, that withdrawal of the proposal was the wiser course.

It would be one of only two occasions in the first fifteen year history of AMD when Sanders would have to withdraw from the Board a proposal on which he had made a forceful recommendation. The other one, a proposal to do a quick public offering in late 1973, was withdrawn after the usually mild mannered Gene Brown described it as "an intolerable way to proceed."

Sanders' extraordinarily sensitive handling of his Board is indicated by this two item list of proposal withdrawals, together with the fact that he had never had a management proposal rejected outright by the Board. Sanders' detractors might call this "wiring the Board." More objective observers of management science would point to it as a recommended management practice of broad consultation with decision-makers before and during the process of proposal formulation.

But this lesson was never lost on Sanders or AMD. Alone among the significant semiconductor manufacturers, AMD avoided the siren songs of watches, calculators and games, each of which in turn deeply scarred its better financed competitors, among them TI, National, Intel and Intersil. (Almost three decades later, Intel Chairman Emeritus Gordon Moore still wore an Intel/Micromo digital watch as a reminder, he said, ''of what not to do.'') The one diversion which AMD did allow itself, the venture into the board level systems business, first in conjunction with Siemens and then alone, finally got terminated in late 1984 after years without satisfactory profit performance. But it was a minor loser in an industry where such losses can be staggering.

In retrospect, Andromeda seemed an appropriate name. Like the phenomenon in the later hit film, "The Andromeda Strain," in which the victims' blood turned to sand, this Andromeda was also a strain for the AMD Board of Directors, whose blood ran cold at the very thought of it.

* * *

THE SHORTEST DISTANCE BETWEEN TWO POINTS...

It is a hoary geometrical theorem that the shortest distance between two points is a straight line. Following it in business, however, sometimes means you can't get there from here. Laying the foundation stone for AMD's national sales distribution network turned out to be a case in point.

From his days as Worldwide Marketing Director at Fairchild, Sanders had maintained a close personal and business relationship with Tony Hamilton. It was based on that relationship that Sanders went to Hamilton in early 1970 to get Hamilton Electro-Sales, America's premier electronic components distributor, of which Tony Hamilton was founder and President, to take the AMD franchise. Hamilton turned out to be super uncomfortable with the proposal.

Relying on his instincts and applying his best Socratic techniques, Sanders got Hamilton to as much as admit that Hamilton's refusal to take the AMD line through Hamilton Electro-Sales was based upon Fairchild's adamant opposition and implicit threat to withdraw its own line if Hamilton took AMD. In response to Sanders' proforma question, his counsel advised that this was the clearest possible violation of the anti-trust laws on Fairchild's part, but getting solid proof and then litigating the matter would represent a serious strain on AMD's limited resources.

It was not the first, and certainly would not be the last time, that Hamilton and other distributors were leaned on by big manufacturers to turn

down competitors' lines. It was no mystery a decade later, for example, that the Japanese were finding it impossible to break into the U.S. distribution network.

In the 1970 timeframe, however, Hamilton had frequently been able to work out a compromise arrangement where the troubled line was taken through Hamilton Electro-Sales' conglomerate parent, Avnet. In Sanders' view several tiers below Hamilton Electro-Sales in standing and effectiveness, Avnet as a distributor was not something he was going to have. In the final phone call on the subject, which Sanders taped in a telephone booth for possible later use against Fairchild ("I hate this", he would say as he played the tape for his counsel), Hamilton pleaded with Sanders to take the Avnet alternative as a personal favor, and then pointedly said, and repeated, "in 60 to 90 days time you will have no regrets for having done so; I can't tell you why now, but in two or three months you will know, and will be satisfied that you trusted me." Based on their longtime mutual trust, Sanders receded and accepted Avnet.

In a mid-1970 edition of Electronic News, the front page headline announced, "Hamilton-Avnet results from merger of Hamilton Electro-Sales and Avnet," and the kicker declared, "Combined organization succeeds to all lines of both." "And there wasn't a goddamn thing Fairchild could do about it," crowed Sanders.

* * *

THE SECOND ROUND/FAB II - FEBRUARY, 1971

Sanders' finance department's forecasts of the year before were right on target. As 1971 opened, AMD was running out of money. Unfortunately, the crocuses would not be out of the ground in a literal or figurative venture capital sense by the time the company needed a fresh round of financing.

Indeed, the venture capital groundhog must have poked his head out on the 2nd of February, took one look around at the economic climate, and scurried back into his hole for even more than his usual six-week hibernation. What to do?

With characteristic Sanders' creativity, a proposal was fashioned for what was basically a "rights offering" to existing AMD shareholders. This would raise $650,000 at $3.50 per convertible preferred share, with which to build a second wafer fab facility and enter the MOS business. The latter, being a significant new line of business for AMD, was the fig leaf on a financing proposal which was not supposed to happen if external conditions had not forced the company off its original business projections. And of course borrowing was out of the question, because of the jeopardy to the one-third of the founders' shares held in escrow subject to forfeiture in the event of company borrowing prior to June 15, 1972.

But again on this occasion, Sanders proved his marketing mettle by getting the offering fully subscribed at almost twice the price per convertible share that AMD had obtained in its cliffhanging initial financing. This time there was no need for breathtaking last minute rescues, however, since with Sanders fully in charge, a carefully crafted script was played out with no one blowing any lines.

As a Movie-Tone news commentator in 1944 described Patton's Third Army after Bradley gave him back his gasoline, "Resupplied now and rolling like a juggernaut," AMD would make its resupplied treasury last until it received the then astronomical sum of $7 million as the proceeds of AMD's public offering at its closing on October 4, 1972, the 15th anniversary of the launching of Sputnik.

* * *

"IF YOU STRIKE AT A KING..."

Shakespeare trenchantly admonished that "If you strike at a King, you must kill him." What he meant of course, was that an attacker who merely wounded royalty was himself an assured dead man very soon. Jack Gifford learned this lesson personally in mid-1971. Having been the CEO-designate of that half of AMD which had tried to start up as an independent linear company in 1967 and 1968 but had failed to get financing, Gifford never really accepted the idea of anyone else being CEO of "his" company. Periodic rumblings edged toward a threatened seismic shift as the company observed its second anniversary. Sanders' personal G-2 deep into the company proved flawless. Based on the real time data which Sanders was getting about "Captain Jack's" plotted palace coup, he described it to counsel as Jack "sneaking around on television." Turney, who had become a dedicated adversary of Gifford's and would remain so when they were together again later at Intersil in the late 1970's, was delighted to assist Sanders both in information gathering and fashioning counter strategy. Sanders carefully played out the rope, and ultimately Captain Jack was found figuratively hanging from the AMD yardarm, from which the Board cut him down and cut him off. It was the first and last time that anyone would challenge Sanders for the helm at AMD, either openly or covertly.

Yet, Gifford was handsomely rewarded for his two plus years of service at AMD, and he proceeded to make the most of the half of his founders' shares which he took with him. By 1974, after shrewdly playing the silver futures market with proceeds of his now public AMD shares, Jack had run his nominal net worth up to a number in excess of any of the other AMD founders who had

stayed behind to slug it out with the fates and earn out the rest of their founders' shares.

* * *

AND THEN THERE WERE SIX

Although it was the more dramatic and instructive, Captain Jack's was not the only founder departure from AMD in 1971. From early in 1971, Sanders' assessment of the performance of Frank Botte showed real and irremediable deficiencies. This was going to be a difficult termination in several ways, because the "for cause" termination provisions in the Founders' Restricted Stock Agreements were very tightly drawn to prevent forfeiture of founders' shares absent very good cause indeed for a forced termination. Characteristically, Sanders went meticulously about building his case. When he was ready, he conferred with counsel and had all his ducks in line before he called Frank into his office late one afternoon to give him the bad news.

Botte apparently could not believe what he was hearing as Sanders began to explain the situation and his intended course of action. "You mean, leave AMD??", Botte exclaimed. Sanders confirmed the bottom line. The termination stuck, but in the ensuing litigation, Botte obtained a significantly larger share of his founders' shares than his contract should have entitled him to by an astute plea of ignorance about the meaning of the contract he had signed less than two years earlier after it was painstakingly explained to him.

* * *

"AND ALL OF A SUDDEN I COULD MAKE 108'S"

The most immediately beneficial result of Botte's termination and his replacement by a nonfounder was the sudden ability of AMD to make and deliver a then state of the art part known as the LM108, which was in great demand and

fetching premium prices. As Turney would shortly describe it, "Botte went away and all of a sudden I could make 108's."

It was only the first instance of Sanders' personal predilection to give underperforming engineers every last chance to remedy their deficiencies. In every subsequent incident of termination of a key engineer, Sanders tended to overstay the professional's tenure out of a sound policy of loyalty to professional employees. Outright insubordination or breach of important company policy would of course result in peremptory dismissal, but underperformance met with a patience at AMD that was importantly different from other semiconductor companies. It was repaid at AMD by exceptional employee loyalty and unusually low turnover, both of which have brought the company benefits far in excess of the cost of overstaying a few underperformers.

* * *

A LOT TO BE MODEST ABOUT

AMD began, and until the recession of 1974-75 pretty much remained, a second source house, initially in bipolar and then in MOS as well. What that meant was manufacturing and selling parts originally developed by others, while providing performance parameters which exceeded those of the original. In a business which is highly price competitive and whose big volume is dominated by so-called "commodity" parts, this was not an easy way to succeed or even to distinguish oneself. Apropos of that early strategy, Sanders later recounted in a panel discussion at a trade association meeting in Monterey, California, a dialogue with an industry analyst to whom Sanders averred that AMD had attempted to be modest in its early product claims. The analyst had responded: "Well, you've got a lot to be modest about." It was a truth which

would drive Sanders and his team to ever greater efforts in lifting AMD from second source status to a situation where its proprietary (AMD conceived) products would predominate. AMD in 1984 had little to be modest about, having led its industry for five straight years in all performance categories save one, and capping the performance with the announcement of a near miss of its first gigabuck year. It is the first "pure play" semiconductor company to do it.

* * *

MIL. STD. 883 FOR FREE

Even while struggling with its role as a second source supplier, AMD under Sanders' leadership developed certain marketing strategies based on product differentiation which would allow it to succeed even as a capital starved company wracked by recurring recessions. Early on, AMD ads appeared offering "Mil. Std. 883 for Free," a reference to the fact that the company had adopted the policy of processing all of its products to a military-promulgated standard with which other companies complied only on military business. In retrospect, it was the opening shot in the quality wars which the Japanese would elevate to worldwide proportions a decade later. Firing this first shot gave AMD a special claim to quality credibility when it later was the first major producer to lay a trump on the Japanese quality trick. In the meantime, it gave the exceptional and hard driving AMD field sales force a significant selling point with already quality-conscious customers. Yet, the field sales force got it only over the adamant opposition of John Carey and his manufacturing operation which greatly feared the yield loss and hence costs of producing to that standard. It would not be the last time that AMD field sales prevailed in a showdown with the factory.

Combined with other marketing innovations, such as special 100 lot pricing on mixed batches of parts, the AMD sales force was well able to hold its own against better financed, better known and more technologically advanced competitors. An interesting longtime speculation centers on the question, what would the semiconductor world have been like if Intel had had the AMD sales force or AMD had had Intel's technologists. It is reasonable to think that TI would have been long surpassed as the largest IC manufacturer by such a combination. Part of the proof was the trend in 1984 when AMD, through its ten year technology exchange agreement with Intel, got access to important Intel technology on a six month delay basis. Having lost ground in the early years, AMD began gaining on Intel in both revenues and profits, and set as its goal, passing Intel (and all other U.S. based competitors) in dollar volume of IC manufacture and sales by the end of that decade. But then in this race, as Sanders put it, "Intel hops along on one leg (MOS) while AMD runs flat out on two" (the second being bipolar).

* * *

A COMMITMENT TO EXCELLENCE

Much more broad cutting than Mil Std. 883 or even the later Int. Std. 1-2-3 and Excelsior programs, was the company's early adoption of one of its permanent mottoes: "A commitment to excellence." The phrase obviously focused heavily on product, but was by no means so limited. It meant excellence in financial performance and return to investors, employment conditions and employee relations, community relations and corporate citizenship, domestic and international competition and technology development. No company's performance across all these categories is flawless, and AMD's was not. But AMD's financial performance in its third five years clearly warranted the term

"excellence." Its being included among the best 100 companies in America to work for in the book by that title, warrants it. And its general reputation in the other areas listed validates the meaning of the commitment as well.

* * *

VII.

GOING PUBLIC

A MARRIAGE OF MAVERICKS - AMD & DLJ

In the typical American politico-economic cycle, the first half of the quadrennial election year and the last half of the preceding year exhibit strong financial markets. The United States' fiscal 1972 was no exception. Preparatory to it, AMD had put its second round venture financing in place in February, 1971 concomitant with the commencement of a recovery in semiconductor demand. In August, the Nixon Administration snapped on wage and price controls to assure that the Federal Reserve Board would not abort the nation's recovery with inflation-checking tight money before the Fall, 1972 elections. The stock market thereupon took off, and something of an initial public offering market began to appear for the first time in more than three years. Because of the increasingly confiscatory capital gains tax rates, it was not as robust as the 1967-68 IPO market, but it turned out to be good enough to take out AMD and a significant number of other high technology companies which were becoming market-ready.

Again, under Sanders' guiding hand, AMD had been showing steady progress. Anticipating AMD's breaking into the black during its fiscal 1972, Sanders had already begun to think about a public offering as a means of supporting its now rapid growth, whose projections showed AMD again running out of cash in the fall of 1972. As soon as fiscal 1972 results were available in mid-April, the search for an underwriter began in earnest.

As with all things, Sanders here, too, aspired to the best, although he knew instinctively that a Merrill Lynch or Morgan Stanley was clearly out of

fledgling AMD's still limited reach. A quick review of regional underwriters showed nothing that really interested Sanders. San Francisco's Hambrecht & Quist, which a decade later might have been a candidate, had only recently started up itself and was not yet regarded as a top tier high tech underwriter. More inviting to Sanders was Dean Witter, West Coast based but national in stature and available for dialogue, at least, through some Shanahan connections. Discussions commenced in early May and then dragged on while the market window began to narrow as the elections approached. Counsel's view was that the Witter initiative was a futile diversion because of the white shoe reputation which that house still had in 1972 before it started offering stocks next to Yard Man lawnmowers a decade later, but more importantly because neither it nor any of its affiliates had any real stake or interest in AMD. In the limit, and when pressed, Witter finally said no.

It was now June and lost time had to be made up. Preliminary discussions had already taken place with DLJ, almost as much of an upstart on Wall Street as AMD was in Silicon Valley. Bill Donaldson, Danny Lufkin and Dick Jenrette, all with classy Ivy League credentials, set out in the early 60's to change some of the ways things were done on Wall Street. Sprout Group, DLJ's venture arm which had an equity position in AMD, was one part of the plan. Another was DLJ's effrontery to the high collar princes of the New York Stock Exchange in incorporating and making a public offering of its shares, the first member company to do so in the face of a long standing Exchange ban on such an undertaking. In the limit, the Exchange loosened its wing collar, eliminated the ban and thereby unleashed a flood tide of incorporations and public offerings by other member firms, prominently including Merrill Lynch itself, in 1971.

Ultimately, this development had to be a mixed blessing for investors, who experienced great volatility in these stocks, related to rollercoaster changes in market direction and volume. But DLJ had set the precedent and made the Exchange back down from a long standing rule, just as AMD would raise the hackles of some of its myopic competitors in its upfront responses to Japanese quality competition and in its innovative marketing ploys.

In that most active of seasons for nuptials, AMD and DLJ went to the altar in June, 1972 and have been in love ever since, to the point where in 1981 Jenrette was elected to the AMD Board and Sanders to the DLJ Board. Indeed, at the August, 1972 L'Auberge dinner a hand lettered sign hung behind Sanders and Laeri and read: "DLJ & AMD, Une A'ffarre D'Amour Pour Remembre."

* * *

THE BOOK - A STATE OF THE ART PROSPECTUS

The ink was barely dry on the figurative wedding certificate when Jack Laeri, a senior in DLJ corporate finance, and Joe Roby, a junior in corp fin from Kentucky via the Ivy League, appeared in Sunnyvale to fashion a letter of intent for a firm underwriting, and to begin planning for the preparation and filing of a registration statement with the Securities and Exchange Commission. In Sanders' planning of the prospectus portion of the registration statement, it soon became clear that just as AMD's prospective semiconductor customers were offered Mil. Std. 883 for free, so its prospective public investors were going to be offered a K-12 education in semiconductor technology, manufacturing and marketing for free. The "book" was going to be a state of the art prospectus, AMD's first broadly accepted proprietary product of many that would follow.

The laborious and often tedious process of prospectus preparation began

with a preliminary meeting of company principals and counsel in a large poolside room at Rickey's Palo Alto Hyatt House Hotel on a summer Sunday afternoon. The purpose of the meeting was twofold: counsel would educate the AMD principals about the required content of a registration statement, and the AMD principals would educate counsel about the technology, manufacture and marketing of semiconductors. Given the mix of volatile personalities, strong opinions and the amounts of dollars at stake, it periodically seemed more like Babel than Palo Alto, and more like the Roman Coliseum than Rickey's Hyatt House Hotel. The ensuing racket shortly caused the participants' spouses, who were sunning themselves poolside a short distance away, to disclaim any knowledge of or association with what was going on in that room.

AMD's law firm, which had in three years expanded from Skornia's sole practice to a ten-lawyer operation with a masthead reading Skornia, Rosenblum and Gyemant, was represented by Skornia and Gyemant.

Skornia had pondered long and hard on which of his two lead partners best qualified in securities law to put in charge of the AMD offering, and with significant residual anxieties had chosen Rob Gyemant. Gyemant had excelled at all levels of public education while publicly claiming to have had exclusively private schooling. Just highlights (or lowlights) of an essentially fictitious biography which Gyemant ma___tured for public consumption.

Unlike Rosenblum, who was merely professionally excellent and understated, Rob, a 28-year old wunderkind, brought to the task a bravado, street smarts and just plain chutzpah as well as outstanding professional competence in both law and accounting. In Skornia's mind, he was the only possible match and counterpoise for the overwhelming power and prestige of New

York's silk stocking Davis, Polk & Wardwell, who were DLJ's counsel. If Skornia, Rosenblum & Gyemant were to emerge from the public offering with AMD still its client, and not Davis, Polk & Wardwell's, it would (and did) take everything that Gyemant could give it.

Too short by any reasonable standards for the sport, Gyemant had excelled at U.C.L.A. football as an undergraduate. Upon entering Boalt Hall of Law at Cal. Berkeley, he took and kept a fulltime audit job with the Oakland office of Ernst & Ernst. After three years of this schedule, he still finished near the top of his class in Law School and simultaneously won the Forbes Medal for best results in the statewide CPA exams. Emerging from law school at age 24 into the hottest securities market in four decades, Gyemant joined San Francisco's Orrick, Herrington in June 1968, where he was immediately put to work on initial public offerings of securities. One of these, the underwriters' side of the Hambrecht & Quist/Spectra Physics offering, he did virtually alone, evidencing the kind of chutzpah for which Skornia had now chosen him four years later.

When the dust began to settle on the IPO market in mid-1969, Gyemant's supervising partner, Donald L. ("Duke") Slichter, concluded that Gyemant had arrogated so much power to himself through the extraordinary market circumstances of the previous year that he was now virtually uncontrollable within the firm. He therefore suggested that after only a year with Orrick, Rob look elsewhere for his career development.

At just that moment, Skornia, whose law operation masthead then read Skornia & Lowen, was looking to add yet a third and fourth attorney to the firm, one in litigation and one with either general corporate or securities law experience. He thus proceeded simultaneously to run three blind box ads

in the *San Francisco Recorder*, the leading local legal newspaper. To the reader, these ads looked like they came from different law firms. In one Monday's mail in the late summer of 1969, came three different resumes of the same person - Rob Gyemant - responding to the three ads. Tailored to the litigation position was a resume emphasizing Gyemant's fairly extensive pro bono court work representing juvenile delinquents. Aimed at the other two positions were less radically differentiated resumes variously stressing the general corporate or securities law experience of the subject. This was a candidate Skornia had to see! When he did, it was apparent that Gyemant had what it would take for the growing law firm to credibly break into the securities law business in the tight legal community of San Francisco. For the litigation slot, Skornia went to Ed Shiver, an alumnus of San Francisco's Feldman, Waldman & Kline.

Gyemant's and Sanders' personal styles grandly appealed to and complemented one another. For the forthcoming public offering, it was an unbeatable combination. That once in a lifetime experience formed a personal bond which survived intact even the unanimous expulsion of Gyemant from the by-then 15 member law firm in December, 1974 for reasons virtually identical to, although rather more aggravated than, those on which Duke Slichter had told Gyemant to take a hike from Orrick, Herrington five and one-half years before. But in the meantime, Gyemant had kept DLJ fascinated and amused and its counsel at bay.

* * *

THE THREE DOLLAR MISUNDERSTANDING

The one significant confrontation on which Gyemant was unable to prevail over Donaldson, Lufkin & Jenrette's counsel, had to do with the pricing of

some AMD Director and key employee stock options which had been granted concomitant with the release of the founders' escrow shares to them on June 15, 1972, and hard-by the execution of the AMD/DLJ letter of intent for a firm underwriting. The AMD Board had methodically revised upward its valuation of the AMD common stock for option granting purposes from its initial ten cents per share to twenty-five cents at first product shipment, fifty cents at break even, $1.00 at first profitability, $2.00 at 1972 fiscal results and $3.00 at the release of the founders' escrow shares. Meticulously drafted minutes, prepared with a weather eye on the IRS, whose statute and regulations required the striking price of options to equal fair market value of the underlying shares on the date of option grant, covered each pricing uptick. It was the AMD's Board's and counsel's good faith finding and opinion that the fair market value of the AMD common stock on June 15, 1972 was not more than $3.00 per share. Almost three months later, Davis, Polk's securities lawyers, who wanted as easy a time as possible with the various state securities administrators, or blue sky personnel, who would pass on AMD's offering in their states, brought in a Davis, Polk tax lawyer to pronounce the $3.00 valuation bogus.

As Previte would later describe it, this little man appeared at times to be standing on his chair in the Davis, Polk oak panelled conference room, shouting at the top of his lungs in order to get his way. This was one on which Sanders and Gyemant had to give way, even though Sanders personally had a large slug of those $3.00 options, and even though Skornia produced a supporting memorandum which was pristine in both its reasoning and authority in support of the $3.00 price.

So, on an unhappy Sunday afternoon, the AMD Board convened at the law

firm's Palo Alto offices to raise the striking price on the June 15, 1972 options to $6.00 per share from $3.00. This outrage by underwriter's counsel would have devastating after-effects when two and one-half years later, with the AMD common trading at $1.75 per share, the key holders of these options took the company's offer of reduction to the then trading price, a one-year postponement of vesting, and a step down from their tax-favored qualified status to non-qualified. This last aspect cost the holders dearly when, after the stock recovered smartly in 1976, the tax due was 50% of the difference between $1.75 per share and the $20 per share value at exercise. This compared to capital gains rates on an equivalent difference, with the tax not even due until sale of the stock, had the options remained qualified ones at the $6.00 striking price.

* * *

DARTING THROUGH A SLAMMING WINDOW - SEPTEMBER 27, 1972/AMDV

The cost of the month long minuet with Dean Witter in May was very high to AMD. As soon as DLJ had signed up, the AMD/DLJ team had "gone like the hammers of hell" in preparing and filing the registration statement. But so did many other companies, with the result that the AMD state of the art prospectus arrived at the SEC with a deluge of other offerings, behind many of which it had to stand in line. Here the power and prestige of Davis, Polk & Wardwell had a beneficial effect. With constant nudging from the Davis, Polk lawyers, the SEC staff moved the process along, and as September began, the race between the visible weakening of the IPO market and effectiveness of the registration statement began. Finally, on Wednesday, September 27, 1972 with almost no margin to spare, the AMD offering darted cleanly through the rapidly slamming IPO window at $15.50 per share. Only a week later, on the day the

AMD offering closed, and the company got its money, an offering by another of Skornia's high tech clients, Applied Materials, had to be cut back 15% and also have the share price reduced by a like amount. Unlike July 22, 1969, September 27, 1972 was not a case of five minutes of five with $5,000 to spare, but it was probably four forty-five with a couple of million dollars in the balance.

But all is well that ends well, and on the morning of Wednesday, October 4, 1972 high in Bank of America's World Headquarters in San Francisco, the company received a check for $7 million and the selling shareholders got checks totalling another $2.2 million. AMD had been to the well (and to the wall) financially three times in three years, but it would now be more than five years before it had to go again, although another six months of the 1974-75 recession and the company might not have been around to do so. The stock, which came out at $15.50 a share, so fully priced that it did not trade at a premium for some time after the offering, touched a high of $24.00 on the eve of the Arab oil embargo 13 months later before going into a long decline, bottoming at $1.50 per share in December, 1974, less than 10% of the original offering price and fifty cents less than the very first private placement of preferred stock five and one-half years before.

But for now, glory was available to be savored. The AMDV symbol shortly appeared on NASDAQ and within two years on a personalized license plate on the first of several Sanders' Rolls Royces. Later events might confirm the warning which the Roman slave whispered in the ear of the returning conqueror, above whose head he held the golden crown that, "all glory is fleeting." But fleeting or not, it was thoroughly enjoyed by all as 1972 approached its end.

* * *

SIXTH IN 1975 - "WHO WILL WE KICK OUT?"

On September 11, 1973, the signboard at Rickey's Palo Alto Hyatt House Hotel, where AMD's fourth annual meeting was being held, read, "Welcome AMD - Sixth in 1975." The reference was to Sanders' then recently announced goal of AMD being the sixth largest IC manufacturer in the U.S. by 1975. He reckoned without the Arabs. But then so did Noyce, who yet again expressed incredulity at a published AMD goal. "Who are we going to kick out so you can be sixth in the industry?," he asked Sanders upon hearing it. It was not an unreasonable question, considering that at that moment AMD was not even in the top ten and would have to materially close the growth gap between itself and those ahead of it in order to get there. Nevertheless, without the imminent oil embargo and the impending Watergate trauma, the objective was not unimaginable and, as with many other things, if it was not unimaginable, Sanders would imagine it.

Not dissimilar was the 1984 announcement that AMD intended to be the largest U.S.-based manufacturer of IC's by the end of the decade. On that occasion, neither Noyce nor anyone else asked who was going to be kicked out for AMD to get there.

The lack of such questions says a lot about the change of profile and perceptions of AMD. For a vulnerable, thinly capitalized second source company without real MOS capability to reach in 1973 for sixth position two years later, was a lot different from an imminently billion dollar, highly proprietary, well financed, broadline company to aspire in 1984 to be on top of the industry for its fiscal 1990. Nevertheless, it would not happen.

* * *

A MAN'S REACH SHOULD EXCEED HIS GRASP

These periodic announcements of seemingly unattainable goals were

characteristic of the Sanders' style and philosophy, epitomized by one of his most frequently quoted aphorisms: "A man's reach should exceed his grasp." Cut from the same cloth as, but of a very different style than, the Turner "Dare to be Great" school, this method of operation at a minimum motivates people to exceed themselves and produce exceptional results even on those occasions when the specific goal may not be achieved. It is an interesting speculation whether, without the driving goal to be sixth, AMD would even have survived to the end of 1975, to which no company more financially disadvantaged than it was, did survive. AMD's history seems to say at least that a man's reach should sometimes exceed his grasp. Too many too ambitious goals can be counterproductive. Sanders seemed to have found the right balance in driving AMD to ever greater achievements. Yes, in 1969 they really were going to try to make the stuff. And in 1970 they did. No, they did not make sixth in 1975 nor become biggest in 1990.

* * *

VIII.

A RECESSION WITH FANGS

NET NEGATIVE BOOKINGS

In August, 1974, AMD experienced a rarely recurring phenomenon which is the nightmare of any semiconductor CEO: net negative bookings. What it means is that more product came back that month from various customers (especially distributors) than there were orders taken for products from all customers. "They're mailing it to us," Sanders would say to his Board about the August product returns. The occurrence of this phenomenon was in part attributable to a quaint industry accounting practice eschewed only by Intel among the significant manufacturers, of booking sales to distributors upon shipment of product to them and before (if ever) final sales took place. What made this practice so perilous in recessionary times was that while the distributors nominally owned the product shipped to them, which was the fig leaf by which the auditors allowed the booking of the shipments in the first place, the distributors enjoyed complete price protection and return privileges on the product. This meant that they could reverse the sale (or part of it based upon price reductions) at will. The potential cost of booking these "sales" numbers in advance of final sales was never better illustrated than in the severe 1974-75 recession, the results of which finally ended the practice for the entire industry.

Recognizing their vulnerability to price and volume downturns, the IC manufacturers had historically taken reserves against product in the field on distributors' shelves which had not yet reached a final buyer. The auditors also blessed these reserves annually, and their total inadequacy in 1974

caused these very auditors to press the industry to drop the whole practice of booking shipments to distributors as sales, absent a completed final sale.

What happened to the semiconductor manufacturers in 1974 because of this practice can be compared to what would happen to the money center banks and their loan loss reserves if suddenly all of the lesser developed countries repudiated their debts to those banks and made the repudiation stick. Fortunately, the semiconductor manufacturers were and are not as imprudent as the money center bankers who in 1974 had far greater exposure to LDC loans in their portfolios as a percent of those banks' equity than the semiconductor makers had exposure to distributor sales as a percentage of their equity in 1974.

* * *

"THE STOCK MIGHT TOUCH SIX"

In the late spring of 1974, in partial but understated anticipation of what was coming, Sanders averred to his counsel at a breakfast meeting that things could get tough enough that "the stock might touch six" ($6.00 per share). It did, but barely, as it crashed through to much lower levels. By September, at the annual meeting, it was $3.00, and in December it bottomed at $1.50. The market was not assigning a very high probability of success to AMD. But then it wasn't valuing the future performance of the U.S. economy in general very highly, either. A heavily energy dependent economy had just seen the cost of its basic energy resource, oil, go from $2.75 a barrel to $11.00 per barrel for the benchmark Saudi light.

Meanwhile, the national administration, which should have been looked to for some measures to deal with the crisis, had been paralyzed for more

than a year with Watergate. For the first time in the country's history, a Vice President had resigned in disgrace. The Justice Department had been decapitated at the October, 1973 "Saturday Night Massacre." And finally in August, 1974, Nixon himself was forced to resign in the face of an impending impeachment. Newly installed Gerald Ford could, with some validity on the political front declare that, "our long national nightmare is over."

But on the economic and financial fronts, it had some way to go. A Dow Jones Industrial Average which had topped out above 1,000 in January, 1973, continued to drop, until 23 months later, in December, 1974, it bottomed at approximately one-half its previous high. With the prime rate at 12%, and little money available even at that price, economic activity was slowing to a crawl. Uncharacteristically, as the nadir approached, Sanders, with the insensitive urging of his then acting general counsel, Rob Gyemant, seized the moment to establish something of an industry breakthrough.

* * *

CROSSING THE $100,000 THRESHOLD

In a case of somewhat inadvertent, but nevertheless unfortunate timing, Sanders' five-year employment agreement with AMD was due to expire concomitant with the 1974 annual meeting on September 10, 1974. His claim to making up lost ground on his compensation was clear. He had gone entirely without salary during the early months of AMD. And when the pay finally started, it was at a one-third reduction from what he had been getting at Fairchild in 1968. He then soon found himself frozen into this hardship pay by the unexpected advent of the Nixon wage-price controls in August, 1971. These continued through the AMD public offering, which clearly rendered the

company financially capable of paying market level salaries to its key executives, including Sanders.

Difficult though it would be to get a hardship exception from the draconian Nixon program, AMD counsel undertook an application to do so in December, 1972. On the eve of its intended filing, however, in mid-January, 1973, the administration suddenly announced the dismantling of the wage-price administrative apparatus and declared that henceforth the program would rely on private sector self administration. The AMD Board of Directors promptly convened and adopted the executive compensation increases at the levels requested in the proposed application to the now-disbanded Pay Board. Still, these increases had been tailored to a regulatory framework which still failed to allow real parity with the marketplace for the AMD executives. So a better and more complete solution had yet to be found. This was the context of the proposed realignment of Sanders' compensation as the expiration of his employment agreement approached in the summer of 1974.

Mistakenly thinking that the worst was over with the Nixon resignation in August, 1974, Sanders and Gyemant went to work on a state of the art long-term employment agreement. The first draft contained especially rigid constraints on the AMD Board's ability to terminate the arrangement during its term, and had what could only be called rich salary and fringe benefits provisions. Skornia, still a Board member but on leave as general counsel while he had mounted an unsuccessful campaign for Congress, reacted with alarm to this first draft, and prevailed upon Sanders' better lights to soften it before going before the Board. But there was no receding from the targetted $100,000 base salary figure.

The AMD Board convened immediately following the 1974 annual meeting to consider the proposed Sanders employment agreement in an atmosphere laden with the information that the AMD common stock had dropped by one-third that day alone to a new low of $3.00 per share, caused in part by the spreading knowledge of the company's net negative bookings the prior month.

There was lively discussion about the timeliness of a precedent-setting measure in executive compensation, as the Sanders' contract clearly was. No CEO of a remotely comparable semiconductor company had a $100,000 base salary. Industry layoffs had begun and more were imminent. Deferral of definitive action was proposed, but Sanders persisted. There was no question of Sanders' value to the company far exceeding $100,000 per year. The question was whether the Board could safely give public recognition to that fact at that particular time. Over grave doubts, it did. It was the closest Sanders had come to losing on a showdown Board vote.

The grief which followed exceeded in some ways even that which the Board had feared, including the actual publication of the contract itself by the industry's muckraking Microelectronics News in one of its December, 1974 issues. And for all of that cost, some of the most lasting beneficial effects of his contract went more to others than to Sanders. With the $100,000 threshold crossed, the next round of industry compensation adjustments saw many industry CEO's crossing over to join Sanders on the far side. And they never held a dinner in his honor to thank him.

* * *

A DOWN YEAR: "IF I HAD A DOG, IT WOULD'VE DIED"

As AMD's fiscal 1975 unfolded, no industry analyst or observer would have given the company any chance of staying even with its revenue record of the prior year, $26.4 million. In doing so, they as usual reckoned without Sanders' bulldog tenacity. No matter how adverse the circumstances, Sanders would not give up without a helluva fight. In the limit, he missed exceeding fiscal 1974 sales in fiscal 1975 by less than $1 million, nothing short of a miracle, given the conditions under which he had to operate. The really tough part was the bottom line loss, which effectively wiped out all the profits which AMD had made in its corporate history up to that point. In that sense, the OTC market of December, 1974 had reckoned right. And with no crystal ball available at that winter solstice to foretell when things might get better, the very survival of AMD was, for the financial markets, very much in doubt.

Sanders later described the impact of the winter of 1974, as only Sanders could. At an industry panel discussion at Rickey's Palo Alto Hyatt House Hotel in early 1975, about as the worst was in fact passing, he said that in 1974, "if I had a dog, it would've died." As it turned out there was no dog to die, and AMD itself lived, without the need of any artful life sustaining systems.

* * *

YOU COULD HAVE BOUGHT THE WHOLE COMPANY FOR SEVEN MILLION DOLLARS

Consider, however, the impact of the judgment of the financial markets in December, 1974. With approximately 5 million shares, fully diluted, outstanding, you could have bought the whole company for $7 million, but

there were no takers. Less than three years later, Siemens would agree to pay $22.5 million for less than 20% of the company, but few could foresee that in December, 1974. One who foresaw a potentially serious danger in the $1.50 stock price was returning general counsel Skornia who proposed in an early 1975 AMD Board meeting that anti-takeover measures be designed and put in place at an early date. The Board demurred on what it correctly assessed to be a premature concern. Yet, such measures in fact became a feature of the AMD corporate financing arrangement with Siemens three years later. It was these, reinforced by some unilateral AMD shark repellents a year later still, that proved to be AMD's insurance policy against the rash of takeovers which swept the industry in 1978-79. These left Fairchild owned by French oil services conglomerate Schlumberger, Mostek owned by United Technologies, and AMI owned by Gould. With AMI, Gould was finally successful in its quest. It had been the raider which brought on "white knights" Schlumberger and United Technologies, and had in fact begun a move on AMD, only to back off when it discovered that it would have to do battle with AMD's already mounted and armed "white knight," the financially much stronger Siemens.

* * *

"I GOT BACK AND THE ORDERS WERE HERE"

During the first week in February, 1975, Sanders made a trip to New York as part of which he visited with some industry analysts and investment bankers who conveyed an encouraging prediction indeed: an industry order upturn was imminent. Sanders' regard for analysts and investment bankers was never higher than the very next week when, as he reported to his Board at its February meeting, "I got back and the orders were here."

And none too soon. The AMD financial parameters were again about to go critical. Previte's finance department was forecasting financial flameout within six months if conditions worsened or even continued as they were. Indeed, it is virtually certain that if the upturn had been delayed another six months, this story could never have been written.

But the upturn came in time, and with it a resolve on Sanders' part to reprofile the company to make it as invulnerable as possible to another so near a miss. It would take two and one-half years to achieve that goal, but even in the meantime, and indeed through its fiscal 1985, AMD had no more down years in sales nor an unprofitable fiscal year or fiscal quarter. In an industry as volatile as semiconductors, that was indeed no small achievement.

* * *

"...DOORS WERE CONSTANTLY SLAMMING JUST BEHIND US"

After the worst of the 1974-75 recession was over, Sanders in 1976 would reprise the whole history of the company for his Board with the statement that, "even with management running as fast it could all the time, doors were constantly slamming just behind us." His history was impeccable: the door slammed at Capital Group Companies on July 22, 1969 five minutes after the closing group left with its minimum financing in hand; the industry door slammed to other intended broadline semiconductor startups in the third calendar quarter of 1969, a week after AMD did its second closing with Sprout Group and commenced operations in earnest; the public offering window (or maybe it, too, was a door) slammed not long after AMD completed its IPO in the fall of 1972; the door to survival slammed just after the St. Valentine's Day order upturn of 1975; and AMD's management would slam a takeover defense

door behind it in early 1978 just before the tender offer binge in the semiconductor industry began. Fortunately, none of these doors ever slammed in front of management, and thereafter AMD has gotten through further portals with much more margin of safety.

Perhaps better than any other company in the industry, AMD through painful experience learned that the only constant is change, and designed effective programs to get through future doorways so early that when the slamming later takes place, AMD is too far distant to even hear it.

* * *

ALL LIFE IS A STRUGGLE

Sanders in his lifetime and his grandfather before him, learned well that all life is a struggle. It is a frequent figure of speech for Sanders, and his white mane shows the effects of this truth. Showing it vividly in snapshot form, was the Sanders visage presented to the world in the AMD 1973 annual report, the year before that in which his dog would have died had he had one.

An obviously tense Sanders, his hair now totally white as compared with the remaining traces of pepper grey in the 1972 photo, looks out almost entreatingly at his shareholders from beneath a furrowed brow. His hands are clasped tightly together in a gesture of both the tenacity and the desperation which were required to get AMD even to the point of being able to publish future reports.

Anyone who doubts the metamorphoses of AMD from 1973 to 1984 needs only to compare the 1984 annual report Sanders with his 1973 counterpart. Nine years later the white hair is radiant, the brow unfurrowed, the hands free.

The smiling Sanders' visage expands on turning a page to reveal a red, white and blue stars and stripes western booted foot perched on a desk for the cameraman. In the pre-gigabuck year annual report, Sanders forecasts the gigabuck 1985 and concludes: "That will make us happy - for now." In the event, it would have to wait a bit.

* * *

IX.

BUILDING THE BASE

"I HAVE A PLAN"

After a year of full-time firefighting, it was clear to Sanders in early 1975, when the worst was in fact over, that some serious rethinking and restructuring had to be done so that AMD would never again come so near the brink of disaster. Of that process, he pointedly declared on a relaxing Saturday evening at Guido's Restaurant in San Francisco's North Beach, "I have a plan." An inveterate planner by temperament, Sanders' statement could only mean that he had a grand plan for AMD which would take it out of the last of its "me too" origins and into the leading ranks of world IC makers. If the proof is in the pudding, it was a gratifying dish indeed which was served up during the next prolonged macro-economic downturn from late 1979 through late 1982, a much longer, and in some ways more severe slump than 1974-75. AMD revenues increased throughout, and no fiscal period showed a loss. In fact, unit sales increased dramatically throughout the three year period.

The centerpiece of the plan, of course, was moving AMD strongly into proprietary products. These would set important parts of AMD's business apart from the typically fierce semiconductor industry competition and accompanying brutal price declines in commodity products. It would also help AMD even with its remaining alternate source parts, or the so-called "drag business," by making it possible for AMD's creative sales force to package out the competition even on the more widely available products. It was a clearly winning strategy.

* * *

THE LEADING FOLLOWER: GETTING LUCKY WITH THE 8080

The "plan" was based in part upon a strategy already being implemented at AMD in its offering of a redesigned Intel 8080, the industry's standard 8-bit fixed instruction set microprocessor. In AMD's version, the part offered better performance parameters in both higher speed and smaller size. On the face of it, this was not a departure from AMD's alternate source mode. But in its focus on an Intel technology, it became a guidepost to a greatly revised version of alternate sourcing: concentration on industry standard proprietary products, the alternate sourcing of which itself produced greatly enhanced margins.

The AM 9080 was more than just a "knockoff," or reverse-engineered copy of the original. In its improved AMD version, its performance parameters gave it a certain proprietary aspect even to AMD. That was unlike National's later 8080 which typically for National was a mere "knockoff," resulting in a lawsuit instituted by Intel's short-fused Vice President and General Counsel, Roger Borovoy, for unfair competition and copyright infringement. Because of the then longstanding history of the industry practice of "knocking off" competitors' designs, and the then dubious validity Borovoy's claim of copyright protection for IC chip topography, the suit was settled with National taking a license for a very small payment to Intel. It was, however, the opening shot in the Borovoy-fashioned war on "chip pirates" which in 1984 culminated in a congressionally approved Chip Protection Act which allows reverse-engineering for research purposes, but protects the basic design both from copying and from production of the copied part. The

Japanese were neither pleased nor amused by the legislation.

The 8085, Intel's own improved microcontroller version of the 8080, was alternate sourced by AMD with Intel's imprimatur through a technology exchange agreement including also parts peripheral to the MPU. This agreement was yet another Sanders' high wire performance. Through his industry G-2, Sanders had heard that, incredibly, Intel was considering licensing knock-off artist National Semiconductor on the 8085. In fact, discussions were already well advanced. Sanders immediately called Intel's Andy Grove and in a week of intense negotiation deftly intercepted this game winning forward pass and ran it back over National's own goal line. The next week Sanders announced the Intel-AMD 8085 agreement in principle at his regular executive staff meeting. As he finished, his staff spontaneously rose as one and applauded at length. He was genuinely moved by the outpouring.

With the success of the carefully thought out and meticulously executed design and production of the AM 9080, a broader strategy followed. In it, Sanders came to characterize AMD as "the leading follower" of Intel, the industry's acknowledged technology leader. It was a good choice of mentors. The prime Intel founder, Dr. Robert Noyce, was the inventor of the integrated circuit and a contributor, with Intel's Ted Hoff, to the invention of the microprocessor. Intel's record of innovation continues unabated today. In 1981, after half a decade as the leading follower, AMD would become more of a spouse or partner, through a formal ten year technology exchange agreement between the two companies. But the unfolding of that story had to await other events, including a major false start by Sanders in next generation,

16-bit microprocessors.

In light of his careful development of the winning 8080 strategy, it rankled Sanders greatly at a 1977 executive strategic planning meeting to hear John Carey characterize its beginnings as "getting lucky with the 8080." The point which the congenitally skeptical Carey sought to make was that the execution of later phases of "the plan" might not come as rapidly or as failure-free as had the 8080 phase. He need only have pointed to the AM 9130/9140, 4K SRAM as an example. Of which, more later.

In the meantime, however, AMD became, and for some time remained, the largest volume producer and seller of 8080's next to Intel itself. More generally, AMD became the alternate Intel source to which the largest and most valuable customers would look for a safety supplier.

* * *

HENRY FORD DIDN'T INVENT THE MOTORCAR, EITHER

"The plan," insofar as it sought to capitalize on and marginally improve the important inventions of others, fit perfectly with AMD's long suit: sales and marketing. For want of it, the commercial exploitation of the transistor languished in the hands of inventor Shockley. But it was thoroughly carried out by Fairchild sales and marketing under Sanders fifteen years after its invention and ten after the founding of Shockley Semiconductor. History is replete with similar examples. The one which came to Skornia's mind at the 1976 strategic planning meeting was that of Henry Ford. He, the leading commercial exploiter, didn't invent the motorcar, either, although because of his development of mass production techniques, many people think he did.

Indeed, in that sense, as in some others to be dealt with later, AMD looked a lot like a Japanese company. To this day, the Japanese have proved themselves outstanding at the efficient and quality manufacture and commercial exploitation of select technologies and products first developed elsewhere, mostly in the United States. So it should not have been surprising that Sanders, with a similar proclivity, was one of the first to recognize, and the earliest to respond effectively to, the Japanese quality campaigns of the 1980's.

But he did even better in his consistent exploitation of microprocessor technology, a feat which for long largely eluded the Japanese, who tended to concentrate on the easier to emulate large scale memory. In response to that Japanese memory thrust, Sanders characteristically dodged rather than engaged, reducing AMD's concentration on memory to the minimum consistent with the need to prove and develop successive generations of process technology through high volume memory production.

* * *

2901 NIGHTS

Roughly concomitant with the leading follower strategy in MOS microprocessor developments, AMD embarked as part of "the plan" on the development of a true proprietary product family in 4-bit bipolar microprocessor slice products. AMD's marketplace studies showed a potentially significant demand for this much-faster-than-MOS microprocessor, which no one was satisfying. The AMD engineers were set to work on what would be the company's first prominent proprietary product line, the 2900 family, led originally by the 2901 CPU and followed by a host of peripheral

products.

The quick and ready acceptance of the 2901 by the market tended to validate the AMD market studies, although the sales of the family never reached the volume AMD had hoped for. An equally or more important consequence of the development and introduction of the 2900 series, however, was a series of second source agreements, including Motorola and France's Thompson-CSF, in which the latter companies agreed to licenses to manufacture and sell this acknowledged proprietary product family. Others, including National, would second source without a license. The result was a broad acknowledgement of AMD's developing technical leadership and the placement of the company on the map to be watched for future technological innovations. From that beginning, AMD had less and less to be modest about as the years have passed.

The 1984 leaders in the 2900 family, the 29116 and peripherals, helped to establish AMD as a noted and reliable supplier of sophisticated and innovative products.

* * *

"WE WERE GOING TO SECOND SOURCE INTEL, BUT WE COULDN'T WAIT"

With typical AMD bravado, the ad announcing its newly developed 4K SRAM (static random access memory), the 9130/9140 headlined: "We were going to second source Intel, but we couldn't wait." Developments were to prove that in this case they should have. What began as the industry's leading (because its only) available 4K SRAM became, after the later Intel and TI 4K SRAM announcements, the industry's largest and slowest 4K SRAM, a deeply unhappy situation not easily remedied because of the AMD parts' particular design

characteristics. Even in the face of these developments, however, being first had, as it frequently has, significant residual value for what turns out to be an inferior product. It happens because of the dynamics of component design-in by OEM's. AMD had judged rightly that there was an urgent demand in the marketplace for a reliable 4K SRAM, particularly in military applications, where sophisticated aircraft operation and control systems such as the F-14, required the 4,096-bit configuration. Accordingly, before Intel and TI could get to market with what turned out to be superior parts, Hughes Aircraft Company and some other key military contractors designed-in the 9130/9140. When the Intel and TI parts appeared later, they could not compete for those sockets because of the costly delays involved in redesigns of the systems to accommodate them. Thus, on these projects, AMD retained a monopoly position, with consequent high margins, which enabled the company to get back its product development costs even on a part which never achieved significant volume because the rest of the market voted almost unanimously for its competitors.

When Sanders has said that AMD has made no major mistakes, he must have this design mistake in mind as one example. Without the military design-ins to save it, the 9130/9140 could have been a significant and costly, if not a "major" mistake. But the very fact of it being as early as it was, saved it. Such a mistake elsewhere in the execution of "the plan" could have been more consequential, which is the sort of thing Carey had in mind in his canard about the 8080 and his other cautionary remarks at Carmel. Supporting Sanders' corollary, that where AMD has made mistakes it is quick to correct them, was the nimble alternate sourcing in the commercial market of the Intel

4K SRAM not long after it appeared. AMD has never been too proud to make money on someone else's good decisions.

* * *

NO WATCHES, CALCULATORS OR GAMES, THANK YOU

Three major mistakes which AMD did not make, were watches, calculators and games. All of its significant competitors made at least one (Intel's and Intersil's watches) and some made all three (TI, National and Fairchild). Each paid dearly for its mistakes. High margin watches and calculators required a special marketing expertise of which the "gas house gang" semiconductor manufacturers hadn't a clue. And the low margin variety were a contest which inevitably would be won by offshore knockoff artists with twenty cent per hour labor costs. Games were games, as to which, enough said.

Not making any of these mistakes required all the tenacity which the highly tenacious Sanders could muster. There was plenty of sentiment within AMD to get into each or all of these lines, and plenty of initial competitor success to make them seductive. But Sanders was having none of being a leading follower in a march off a cliff, and these lemming songs never played on the AMD musak.

Games AMD would not make, but PROM's for Pac Man were another story. Sanders initially resisted this one as well, but the Atari boom ultimately proved too much to resist. It was not easy, because that business at first blush did not fit into the never-deviated from AMD original mandate of components for computation, communication and control. As it turned out, all that was required was an internal AMD redefinition of Atari's business from

video games to video computers. With that, the PROM volume took off to the point that, at its high, Atari accounted for 10% of AMD's business. This would have been a scarey development had Sanders not had his escape prepared in advance, sensing the inevitable debacle. Indeed, with a grimace not to be forgotten, Shanahan had expressed himself in no uncertain negative terms at a 1981 Board meeting at which Sanders had unveiled his plans for big bucks business with Atari. But this was, as the lawyers would say, "harmless error," with the correctives already planned when it was made.

And while it lasted, it was great. The acceleration of Atari's business was so explosive that it was desperate for PROM's for a long period, which enabled maintenance of high pricing and wide margins on the parts while the boom continued. When it stopped, AMD was the first one out the fire exit. Synertek, the other principal Atari supplier, figuratively burned to the ground, its ashes scattered by parent Honeywell late in 1984.

* * *

THE NEXT GIANT

With the key elements of "the plan" in place, it was time again for AMD to extend its reach beyond its readily perceivable grasp. The articulation came in AMD's announced goal of becoming "the next giant," which meant to Sanders and his listeners, a $100 million year. Given life's uncertainties, as illustrated by 1974-75 developments, the timing of this achievement, unlike the "sixth in 1975" goal, was left a little vague.

It happened in fiscal 1979 with a $120 million reported sales year, but AMD was already running at a $100 million annual rate by the close of fiscal 1978. As the numbers began to appear within reach, Sanders stepped directly

up to the challenge with one of his famous production/sales campaigns, complete with prizes and awards. It was the "Run to the Sun," tying the annual revenuel goal to the 93 million mile distance between the Earth and the Sun. The AMD space vehicle penetrated the helix on schedule.

To some, "the next giant" might more appropriately have referred to a $1 billion year, and indeed, in Sanders' inner mind, it probably did. But the articulation of that specific in 1978 was a little much even for the King, and when it became time, the "announcement" of the goal came in the form of a facsimile currency in gigabuck denominations with Sanders' portrait in the center of the bill.

As a now acknowledged giant by any standards, AMD calls to mind the hoary dictum that, "mighty oaks from small acorns grow." A million five-oh-five at five-of-five to nearly a billion in fiscal '85 seems an apt illustration of the oak-acorn comparison. Yet there is much more to come. AMD in that sense had become much more the California Redwood than the Illinois Oaks it had left behind.

* * *

X.

BUILDING LOYALTY

"THE STOCK OBVIOUSLY ISN'T WORTH ANYTHING - THEY'RE GIVING IT AWAY"

From the beginning, it was a Sanders' strategy to give every AMD employee a feeling of owning a stake in AMD. Each AMD founder had a significant equity share in the form of restricted stock. Each subsequent key professional employee had either restricted stock or options, or both. But what about the working stiffs?

A universally applicable profit sharing plan was premature, because the company had no profits. In 1972, when there were profits, such a plan would be added to AMD's incentive programs. ESOP's, a Louis Kelso innovation for a San Francisco Peninsula newspaper a decade and a half before, had not yet been fully legitimized in the Internal Revenue Code. And selling company stock, even small amounts at low prices, to unsophisticated non-exempt employees ran great risk under the securities laws. The answer: give it away.

So, in its very first year, AMD's management and counsel fashioned and adopted an employee stock bonus plan under which every employee would receive 100 shares of common stock at the start of employment and another 50 shares at six months, 12 months and 18 months, during which period the original shares would also vest fully. This plan continued to place stock among employees until they numbered 300 in total and the company became profitable and adopted a Profit Sharing Plan to replace it.

In the meantime, there was some small evidence that the plan was

neither universally understood nor properly valued. Standing unnoticed in the company cafeteria line one day, Sanders overheard a couple of fab operators ahead of him discussing the stock bonus plan in which one asked the other the probable value of the stock they were receiving under the plan. The other responded: "The stock obviously isn't worth anything, they're giving it away." Whatever its value then, had the original 250 shares together with subsequent stock splits been retained into 1984, it would have been worth more than $37,000 or more than $2,000 for each of the 18 months it took to earn it. Not bad for $500 a month fab operators in 1970.

* * *

AMERICA'S HOTTEST CAR FROM AMERICA'S HOTTEST COMPANY

Even with universally applicable incentive programs in effect, special dramatic events were arranged periodically to keep the employees' attention. One of these was a combined contest and drawing in which, if the company made a certain sales goal for a period in 1977, a new Chevrolet Corvette would be given away in a drawing. "America's hottest car from America's hottest company" read the announcement in Advanced Insights, the company newspaper.

The goal was achieved, and one summer afternoon a candy apple red Corvette stood in front of company headquarters at 915 DeGuigne Drive, Sunnyvale, as Sanders appeared on the front steps to draw the winner, an hourly employee on the second shift.

The car turned out to be even hotter than the company, which was still struggling with the after effects of the 1974-75 debacle, reporting what seemed like an unending string of flat earnings quarters, only to be broken by the 1977 second fiscal quarter earnings which were actually down. But the

specific goal of the contest had been met by a spirited and attentive workforce.

* * *

$1,000 A MONTH FOR TWENTY YEARS

A later contest was much more audacious. Sanders was a staunch adherent of the view that universal home ownership is the great American dream. By the end of the 1970's, with galloping inflation and skyrocketing interest rates, that dream was turning into a nightmare for many of America's workers.

Sanders set out to fix that for at least one worker and his or her family. Again, if certain company goals were met, one lucky AMD employee would win $240,000, to be paid at $1,000 a month for 20 years to finance the purchase and maintenance of a home. A Cadillac second prize and home entertainment center third prize rounded out the contest. But the focus was on the quarter of a million bucks.

On the appointed day, Sanders, observed by three randomly selected hourly employees and a few of his staff, reached into a large bowl in his office and drew the winning employee name and number. As he unfolded the slip of paper, Sanders silently prayed that the winner would not be a high-salaried employee. God heard him, and smiled.

From an employment relations point of view, the profile of the winner could hardly have been better. Josie Lleno was a 21-year old recent Pilipino immigrant who worked for less than $4.00 an hour on the graveyard shift, and with her beginner's wages, contributed to an extended family which was at that moment unsuccessful in its desperate search for affordable

housing in Sunnyvale. With the winner's arrival at work a full eight hours away, it was decided to keep her identity confidential among the observers of the drawing until the next morning when Sanders, accompanied by a video crew, would visit the Lleno home shortly after the winner's return home from work, and announce the results. It was another AMD step along the path to its being named in 1984 one of America's best 100 companies to work for.

* * *

CHRISTMAS IN MAY

Subscribing to the theory that people who work hard should play hard, Sanders caused AMD from the beginning to hold exciting Christmas parties. The first, in 1969, was held as a sitdown dinner for all 30 AMD employees and spouses in Governor's House, a medium sized conference room at San Jose Hyatt House. For years after that, they were held at Rickey's Hyatt House Hotel in Palo Alto, to which was added a second facility at the nearby Cabana Hotel, and finally a second party. By 1979, however, the logistics were becoming impossible, and because of economic conditions, it was decided by the executive staff to rely on the summer picnic as the party that year and skip Christmas, when it was planned to shut down the plant for ten days anyway. It was the year that the Grinch stole Christmas, and it wouldn't happen again.

The impact of cancelling Christmas was such that the staff relented and scheduled a special spring party at the San Jose Convention Center, instead, again over two weekends because of the facility not being large enough to accommodate all AMD employees and spouses on one weekend. In a sort of triple irony, this came to be known as "Christmas in May," although because

of scheduling problems after the announcement, it was actually held in April. Maybe it was all a plot of the Mormons, who will tell you that Christ was actually born in April anyway, and it was accommodation to the long standing Roman celebration of Saturnalia which put that Church holiday into December.

In any event, the Grinch never again stole Christmas or moved it to April. Indeed, the AMD Christmas parties subsequently became media events, with costs approaching $1 million apiece, as first San Francisco's Brooks Hall, then the Galleria, and finally Moscone Center, became their home. For AMD, these again set the company totally apart from its competitors or from any other employers, for that matter, and added to the growing affinity of the AMD workforce for its employer.

* * *

NO LAYOFFS

Christmas parties and picnics may excite and entertain, but guaranteeing someone his or her job is likely to earn a loyalty which nothing else can. As the pervasive stagflation of 1979 persisted, anxieties rose among workers in the highly volatile semiconductor industry, which had a history of large periodic layoffs. These short term expedients had had some decidedly negative longer term effects. They tended to demoralize even the remaining employees just when a company needed their best efforts, and left the company scrambling in the ensuing upturn to replace now hard to get talent which it had so recently let go. Layoffs also were a strong talking point for organized labor, which periodically made runs at organizing the Silicon Valley work force.

Again, taking a leaf from the Japanese, and in this case going them one

better, Sanders announced that "no one at AMD who is doing his or her job up to standards, will be laid off." There was some sarcastic competitor sniping at this "no layoff" policy in the form of predictions about what the job "standards" might come to look like if things really got tough. But it was not tested in that way and AMD indeed did not lay off. The most immediate payoff came with the surging upturn of 1983-84 when AMD, its skilled, experienced and loyal work force fully intact, powered up and over all its competitors in growth rates for two successive years, putting together back to back 60%-plus growth years for the first time in history that any semiconductor manufacturer had done so.

And throughout, as he had done with Int. Std. 1-2-3, Sanders had improved on the Japanese model. "Lifetime employment," Japanese style, is neither universal across the work force, or "lifetime," unless one figures that life is over at age 55. That is the age at which many Japanese beneficiaries of lifetime employment are shown out the door to forage for themselves among industrial also-rans with very little social insurance to protect them in their declining years. Moreover, it is basically only the professional and skilled classes of employees who enjoy this protection. At AMD in 1984 it wasn't "lifetime employment" for a privileged few, but it was "no layoffs" for everyone, salaried or hourly, over or under age 55. It bought an employee loyalty which no other semiconductor company and few other companies of any kind enjoy. From it came extraordinary performance in 1983-84. And there was no audible grumbling in 1982 when, for a short time, AMD went to a 44 hour work week with no increase in pay, to cope with the high unit volume, but price and margin-pressured environment of early 1982.

When Sanders announced in late March 1982 that "the recession is over at Advanced Micro Devices," he had a loyal work force behind him, ready to roll. And roll they did, straight to a gigabuck.

* * *

XI.

FINANCIALLY BULLET PROOF

WE'RE NOT FOR SALE, BUT WE COULD BE LEASED

Once out of Fairchild and at the helm of his own company, it was clear that Sanders would never again want to work for someone else. This would be true no matter how hard things might get running an undercapitalized company in a volatile industry through recurrent macro-economic cycles. And the "working for someone else" would clearly include a situation where some larger company might acquire AMD. For that and other reasons, AMD was plainly not for sale.

Yet Sanders had two continuing problems which suggested at least a flirtation with a larger company: (1) continuing undercapitalization, in an atmosphere of post-1972 financial markets which made it unattractive in the extreme to raise equity money through normal channels, and (2) a need to get some technical collaboration if AMD were to make a try for a presence in the systems business, as every other large IC house was doing.

So, as early as 1976, Sanders had held tentative discussions with Siemens Aktsiengeselschaft of Munich, the Federal Republic of Germany's second largest industrial company, with an eye to addressing these issues. Siemens, founded almost 130 years before, and having survived two devastating world wars and the consequent invalidation of its considerable U.S. patent portfolio both times, had snapped back and was the clearly dominant electrical equipment manufacturer in West Germany. It was also a conglomerate, with several other significant industrial product lines. And in the mid-1970's it was searching for a way to strengthen its fledgling

integrated circuit business which was about the same size as AMD overall, but still represented less than 10% of Siemens' total annual revenues.

But Siemens had grander designs than some limited liaison with what they perceived still to be a basically second source house. The Germans had long been Intel's biggest Central European distributors, especially for the 8080 family, making them a sort of "leading follower" in Europe. Being 50 times as large as Intel, it looked to Siemens' top management like an acquisition of the U.S. technology leader would represent a quick fix for Siemens' struggle into the IC business and would put them way ahead in their growing computer business by giving them guaranteed access to state of the art components. They were shortly disabused of this notion when the Intel founders made clear their total antipathy toward a takeover by anybody. Knowing that if the founders left, so would much of Intel's value, Siemens looked elsewhere - to Carrollton, Texas.

Mostek, a leading manufacturer of large scale memory, was already more than 20% owned by Sprague Electric through a bloc of stock originating with Mostek's venture financing. The bloc was tied up in a voting trust under conditions where it turned out Siemens was unable to break it loose. Clearly Siemens did not want to own just under 80% of anything, and again turned away.

With nothing else currently on the table, Siemens' Components Group management decided to pick up the dormant discussions with AMD, initiated earlier by Sanders. As he would later describe it, the message Sanders sought to convey from the outset was: "We're not for sale, but we could be leased."

* * *

"IF WE'D KNOWN THEY'D TAKE 20%, INTEL WOULD'VE DONE IT"

The "lease" part of the Sanders comment, of course, referred to the fact that AMD was prepared to tolerate a minority shareholder with a significant bloc as long as there were carefully designed controls on the bloc and what the buyer might do with it. A precedent in this respect was being set in early 1977 with the acquisition of a 20% interest in American Microsystems by a consortium consisting of Bosch and Borg Warner in which the buyers agreed to certain significant constraints on their normal rights as shareholders.

The result was an apt illustration of the thesis that necessity is the mother of invention. AMD was prepared to undergo the strain of negotiations and documentation of a carefully controlled minority placement only because it very much needed both a capital infusion and assistance into the systems business. Intel needed neither: they were amply capitalized from the beginning, and by 1977 already nearly half their business was in systems, which would shortly even exceed in size the components side of the house.

Once again Sanders refused to let his ego get in the way of a deal in which AMD was Siemens' third choice. On the contrary, he fashioned a deal that both AMD management and shareholders could live with in making AMD financially bullet proof and facilitating its entry into the systems business. When the announcement moved on Business Wire that Siemens had agreed in principle to acquire a 20% equity interest in AMD at twice the then market price for the shares, Intel's Noyce exclaimed, "If we'd known they'd take 20%, Intel would've done it." Six years later when Intel found out IBM

would take just 25%, they did do it.

* * *

THE PRUSSIAN AND THE BAVARIANS

Siemens was started in 1847 in Berlin, and in its early days tended to be Prussian dominated. But as it became a truly national company after the unification of the German state in 1870, and then became multinational, its center of gravity expanded. With the division of Germany following World War II, that center of gravity became more and more Munich and Bavaria, although Siemens maintained a significant presence in the divided former German capital.

With the geographic shift came a management shift. When the Siemens-AMD discussions began, the top management of Components Group, save for the manufacturing directorate, was Bavarian in origin. The German part of Sanders' background was Prussian. It would make for an interesting negotiation.

Again Sanders' mastery of selling stock equalled his mastery of selling semiconductors. But first he had to sell AMD as something other than a mere second source house, since what Siemens wanted for its money was access to IC technology which would get it ahead of its European competitors. More than Sanders would ever admit, or Siemens would for some time realize, AMD in mid-1977 still had a lot to be modest about, since "the plan" was still really in only its second year of execution. It had indeed "gotten lucky" with the 8080, and that, together with the 2900 family, gave AMD the technological plausibility it needed to do a deal with Siemens at twice the public market value of the AMD shares.

In fact, the AMD development of the next generation MOS Dynamic RAM, the 16K, was woefully behind schedule, very little ahead of Siemens' own frustrating efforts on the part. Intel, Texas Instruments and Mostek were already sampling the part, and it would be well into 1979 before AMD appeared with volume production on it. But Siemens, fresh from a double rebuff in gaining access to U.S. IC technology, either did not complete, or ignored the results of, its due diligence. The Sanders' sales ability prevailed, and the Prussian had the appearance of the better of the Bavarians. But it was more appearance than reality. As AMD's counsel had responded to Siemens' early objections to AMD's initial $100 asking price on its shares: "No one with patience has ever lost money on AMD stock, even though they paid a rich price for it at issuance." Indeed, those who paid $2.00 a share in July, 1969, cashed some at $15.50 in September, 1972; those who paid $15.50 then, could cash in at $24.00 a year later. And Siemens, which paid $45.00 a share in 1977, would see the price go to more than $200 per share after all splits, in 1984.

* * *

"JUST REMEMBER: WE DON'T NEED THE MONEY

The sun was just setting behind the Jersey horizon as the AMD negotiating team of Skornia, Simonsen, Leo Dwork (a former Hogan's Hero) and Donaldson, Lufkin & Jenrette's Joe Roby assembled in Roby's office on the 32nd floor of 140 Broadway to consult by telephone with AMD's globe-girdling CEO on some remaining open issues.

The telephone rang as Sanders sat before the glass doors of his suite in Hong Kong's Peninsula Hotel watching the sun come up just as it was

setting beyond the Hudson.

"Sanders."

"Jerry? Joe Roby, with your representatives to the Siemens' negotiations here in New York. How are you doing?"

"Just sitting here watching the sun come up."

"We have a few open issues here on which we need your guidance, not the least of which is the stock price. They're stuck at $42.00 and we at $48.00, with both of us claiming lack of authority to settle on the other's number."

"Well, you're certainly right about your side."

(Laughter)

The discussion continued on to other points, on which negotiating strategies and fallback positions were developed, and then came back to the stock price. Sensing that this one was probably going to require his personal intervention with Friedrich Baur, head of Siemens Components Group, Sanders sought to make sure that his seconds did not give it away in advance:

"Just remember, we don't need the money," he said sternly as he signed off with the sun now ascending smartly over the bay before him.

Sanders rose and stretched and saw Linda stir in bed as the sun's rays streamed through the balcony doors.

"Well?"

"As we get down to the short strokes on this one, Linda, just make sure I remember that we must have the money."

* * *

A TRIPARTITE UNDERSTANDING/TWENTIETH ANNIVERSARY OF SPUTNIK - 130TH FOR SIEMENS

Upon Sanders' return from the Far East, he stopped home just long enough, as he liked to say, "to change underwear and change planes" and go on to New York to settle the stock price with Friedrich Baur who arrived from Munich on Sunday, October 2 to prepare for what would be the first of several closings on a tripartite understanding. First, Siemens would purchase 500,000 new issue shares of AMD stock at substantially above the market, and then go through its brokers to buy additional shares at the market to bring Siemens' total AMD holdings to just under 20%. Second, the two companies would form a joint venture with facilities both in the Federal Republic of Germany and in California to develop, manufacture and sell microcomputers. Third, the two IC manufacturers would establish a framework for an exchange of technical and marketing expertise.

As has been reported earlier, Sanders chose to forego his morning coffee at New York's St. Regis Hotel on Monday, October 3rd and save it for his meeting later that morning with Baur on the subject of stock price. After their morning meeting as Sanders and Baur arrived downtown virtually arm in arm for a late lunch with other AMD and Siemens people, Baur announced that "Jerry and I have worked out a 'win-win' deal, as Jerry calls it, and have settled on a share price of $45." After lunch the scramble began to finalize the Memorandum of Intent on all three facets of the tripartite understanding, and to fashion a press release to move before the market opening on the next day, Tuesday, the 4th, the 20th anniversary of Sputnik and approximately the 130th for Siemens.

In anticipation of the market's reaction to the imminent press release, Sanders now rushed to issue stock options to several key AMD people involved with the Siemens deal, including himself and Sven Simonsen, so as to catch the pre-announcement price of $22.50 a share. A late afternoon AMD telephone Board meeting was initiated from Siemens Capital's New York offices and the options were quickly approved. As it turned out, they needn't have hurried.

* * *

A WALL STREET YAWN

Although October 4, 1977 was no July 22, 1969, it was no barn burner either. Nevertheless, as expected, the AMD market makers, having read the AMD-Siemens press release before the bell, opened AMDV at 29, up 6-1/2 from the prior days' close. Early cheers among the AMD'ers gave way to perplexity as the day wore on and AMDV drifted back to close at 26. By the end of a week, it had given up almost all the opening gain.

As the full impact of the announcement sunk in, the Street concluded that (1) the deal was still months away from final documentation and transfer of $22.5 million from Siemens to AMD, and (2) the apparent controls which would be imposed on the Siemens block meant no imminent takeover by Siemens and indeed a diminished likelihood that anyone else could or would bid to take over AMD. Indeed, this anti-takeover insurance effect of the Siemens arrangement turned out unintentionally to be one of its greatest benefits to AMD. In the meantime, however, there appeared to be a major Wall Street yawn, and at the final bell on October 4, 1977 the Street went back to sleep on the subject of AMDV.

* * *

KIND ENCOUNTERS OF THE THIRD CLOSE

Wall Street was right about how much distance there was between the Memorandum of Intent of October 4 and the finalization of the tripartite deal. The delay, however, was minimal, considering the complexity and size of the deal. The basic profile of all three pieces of the deal was worked out between September 7 and October 3, a stunningly short three and one-half weeks, especially considering the quite different U.S. and European ways of doing business. What AMD discovered, however, was that Siemens was atypical of large European conglomerates in that it had retained a remarkable element of its then more than a century old entrepreneurial origins through the continual formation and operation of joint ventures all around the world with much smaller and more entrepreneurial companies. And the joint ventures themselves, as in the case of the microcomputer operations of Siemens and AMD, were frequently highly entrepreneurial. It also happened that the Germans really wanted to do the deal.

Less anxious to do the deal were Siemens' New York lawyers, Messrs. Shearman and Sterling; then the world's largest single partnership law firm at some 300 lawyers, even in 1977. After the signing of the letter of intent, Siemens brought in its in-house counsel to work with both the AMD and Siemens' operating personnel and AMD's counsel to fashion the definitive documents. This was proceeding nicely to what would have been a simple and expeditious close on a single slim volume of paper, when Shearman & Sterling got wind of it, intervened, and extended the process by two months and the paperwork to two large bound volumes. America's reputation for being overlawyered has rarely been so vividly illustrated.

Nevertheless, in something more than two months after the announcement of the Memorandum of Intent, definitive documents were signed in New York on December 16, 1977, with an intended final or third closing on the joint venture scheduled for late January or early February, 1978. It turned out to be mid- February, in an atmosphere so congenial that AMD's counsel referred to it as "kind encounters of the third close," a paraphrase of Stephen Spielberg's then hit movie about an earthly visit by some gentle extraterrestrials.

That third and final closing was the more remarkable considering the intervening strains. Little more than a week after the signing of the Memorandum of Intent, AMD reported its first down quarter since the end of the 1974-75 recession, with a predictable negative impact on the stock price. Sanders and his staff gritted their teeth waiting for the expected Siemens' reaction to this unwelcome piece of news so soon after the Memorandum of Intent and while definitive documents were in process, and waited - and waited - and waited. Weeks later, when AMD's counsel was next in New York, he deftly inquired of Siemens Capital's people what their reaction had been to the AMD earnings announcement, and was somewhat wryly reminded that Siemens had been in business for 130 years, through two World Wars, and had had a few down quarters itself, so it was no big deal.

A rather bigger deal was arranging some special motivation for Sanders in his now added role of CEO of the new microcomputer joint venture. This was an entrepreneurial undertaking which Sanders referred to from his earlier AMD entrepreneurial experience as involving "going to prison for three years." An exception was fashioned to the 20% cap on Siemens' equity

interest in AMD so as to allow Siemens to buy additional shares on which an option would be granted to Sanders at slightly above Siemens' open market purchase price. On the day it was done, the market price was 26, and Sanders' option price $28. From these meager beginnings, Sanders realized six years later a gain of $17 million on these options when he sold them to DLJ. Quite a number of people might volunteer to go to prison for three years for that kind of a deal.

* * *

"ICH BIN EIN BAYERN"

The kind encounters of the third close carried over pretty much intact through the years to 1984, notwithstanding such abrasions as the dissolution of the joint venture after little more a year of operation, and periodically some fairly significant misunderstandings of other types not uncommon in business. But none of that had occurred when a Siemens' hosted celebratory dinner was held in a large private room at Munich's elegant Bayerischerhof Hotel. Present were AMD executive staff and Directors and spouses, and their Siemens counterparts. As the felicitations and toasts began, Skornia, who was seated on Baur's left, rose to make his own toast.

He began by recollecting John F. Kennedy's crowd-thrilling line 15 years before at the Berlin Wall. The President, in referring to the quality of personal dedication to freedom through great adversity, had said, "Ich bin ein Berliner!" Skornia concluded: "And so I now say to you that with the warmth of the welcome we have received here and the rewards of working with you, I can say with conviction that I feel that, 'Ich bin ein Bayern'."

* * *

XII.

ADVANCED MICRO COMPUTERS COULD BE BIGGER THAN AMD

Besides the $45 Siemens paid for each share of AMD, other indicia of how much it wanted to do the deal included its acquiescence in Sanders' designation as CEO of the microcomputer joint venture and in the name Advanced Micro Computers, with the fig leaf tag line, "an affiliate of Siemens."

To Sanders, these emoluments were clearly worth fighting for. Both joint venturers saw the possibility of growing the microcomputer business into an operation possibly larger even than AMD or Siemens Components Group or, for that matter, both combined. The microcomputer market as it developed in the succeeding seven years showed how right they were, even if they ultimately failed to come up with a viable entity.

The conceptualization of AMC was a good bit easier than its implementation. The one area to which Siemens' historical entrepreneurial psychology did not extend was equity incentive programs for key employees. The German system of quasi-lifetime employment and focus on pensions and other later life security measures left little room or interest for equity programs. Moreover, the joint venture structure consisted of a partnership entity on the California end and a quasi-partnership vehicle in the Federal Republic, making the structuring of an equity incentive program difficult at best.

Knowing what his California recruitment problems would be like without some equity incentives to offer, however, Sanders persisted. With some

ingenious, if hard to follow, formulae developed by Leo Dwork, a quasi-equity incentive program was fashioned which would tie very attractive cash bonuses to joint venture performance in a manner akin to a qualified stock option program.

Equally difficult was effective management of a business with two equal entities and operations 8,000 miles apart. Complicating even that were a detailed set of rules requiring agreement by both joint venturers before basic business decisions could be made and implemented. These rules were adopted for AMD's protection. As a 40% owner, it could otherwise have been continuously overruled on basic decisions even with Sanders in the CEO slot. The result, however, tended to be a greater caution on the part of operating personnel than would normally be seen in an aggressive startup high tech company.

But rendering life at AMC even more difficult was the designated AMC Chief Financial Officer, one Dr. Bertram Elsaesser. He in turn was backed up by Central Siemens Finance Department which had its own draconian set of operating rules. A Teutonic personality of the clearest kind, Dr. Elsaesser would have an impossible time adjusting to any and every aspect of the California environment. A defensiveness even within Siemens, born of Elsaesser's Austrian origins, would become near paranoia when set down in California.

A quick and determined study, Elsaesser had gone from zero competency to reasonable fluency in English in eight intense weeks in the Siemens language school. He went about almost every other task with equal ferociousness, including the tight financial administration of an inherently

loose organization, the startup AMC.

The Elsaesser personality and its resulting intra-management abrasions were considerable. The AMC Chief Operating Officer, on the other hand, Tony Holbrook of AMD, steadfastly refused to learn any German at all. This simply continued his previous refusal to do so when he was stationed in Germany with the U.S. Armed Forces years before, and this slight to the Federal Republic end of AMC operations did not make the going any easier.

Had not all of these problems been enough to bring an early end to the joint venture, a dispute over 16-bit microprocessors was.

* * *

STURM UND DRANG AT THE CPU

Even as AMC was getting off to its rocky start in the early spring of 1978, Sanders was casting about for a 16-bit microprocessor, the then state of the art CPU, to fill a gaping hole in his product line at AMD. Having "gotten lucky" with the 8080, 8-bit version, AMD had done nothing about designing its own 16-bit machine. By early 1978 there was real danger that AMD might be locked out of this market, and with it a lot of the "drag business." That could not be allowed to happen, and Sanders now began his search in earnest.

Notwithstanding AMD's role as leading follower on the redesigned 8080 and the technology exchange agreement with Intel on the 8085, Intel showed no signs of cooperating on the 8086. And a redesign or even an AMD knockoff was simply too expensive in both time and money to provide a viable alternative.

The coup de grace was Intel's signing on Mostek as an authorized 8086 second source. One irony in that was the fact that Mostek had been an

authorized second source on the Zilog Z 80. This was a competitor of the 8080 of some annoyance to Intel because of the fact that the Zilog founders had spun out of Intel and developed the Z 80 as a part offering significantly superior performance parameters to the 8080 which the Zilog founders had themselves helped to design while they were still at Intel.

What to do? If Mostek was switching from Zilog to Intel, Zilog would have to be looking for an alternate source on its 16-bit machine, the Z 8000, which incidentally also had significantly superior performance parameters to the 8086. Other factors also militated toward an opportunistic AMD run at the Zilog part. Done right, AMD's sourcing of the Z 8000 could in fact make AMD the principal supplier. Zilog, wholly owned by the benighted Exxon Enterprises, had never been profitable, and had a sales and marketing staff which the AMD sales and marketing force would not recognize as one.

Serious AMD-Zilog negotiations opened in August, 1978. A final agreement was signed in early September, giving AMD full access to the design and process data on the Z 8000 and key peripheral circuits, and called for AMD to develop and provide to Zilog, design and process data on other peripheral circuits for the 16-bit CPU.

In the meantime, Siemens as a matter of course had committed itself to sourcing the 8086 in Europe. Intel apparently had much less problem with Siemens being the leading follower in Europe than it did with AMD filling that role in the U.S. Moreover, Gernot Oswald, Siemens Components Group Marketing Director, was not about to complicate his life by going with some lesser known manufacturer and having to switch his fat, dumb and happy salesmen and customers to a new CPU configuration in the bargain.

This was the environment in which the AMD Board of Directors convened in Munich in late September, 1978 during Oktoberfest. At that meeting, Sanders unveiled the AMD 16-bit strategy and sought to persuade Baur to follow it with Siemens Components Group. Kurt Garbrecht, Components Group Manufacturing Director, and Sanders' fellow Prussian, liked the idea and stepped up to support it. Oswald, Baur's fellow Bavarian, adamantly opposed it. The succeeding sturm und drang at the CPU left the two joint venturers with radically different solutions to their 16-bit problems. It was the deathknell for AMC, which could not possibly utilize both 16-bit CPU's in its machines. But the funeral took some time to arrange.

* * *

"THE AMZ 8000 IS BETTER"

In the meantime, Sanders went to work popularizing the Zilog part, under the AMD designation AMZ 8000, as only Sanders could. As soon as the AMD factory mastered the part, an ad series began which featured two sales types on soapboxes hawking rival 16-bit microprocessors. On one side was an obvious Intel salesman offering 8086's. In the first ads he had a huge crowd around him and his counterpart selling the Zilog-invented part had only a stray dog for an audience. The ad's headline nevertheless boldly announced, "The AMZ 8000 is Better," the reference being substantiated through the ad series by detailed product specifications. As the series progressed, the headline remained the same, but the crowd slowly moved over from the Intel to the AMD side, until in the last of the series, the Intel salesman had not even a stray dog for an audience. Only a maintenance man lingered, sweeping up after the crowd. As with the earlier AM 9130/9140 campaign, this effort

of AMD to separate its fortunes from those of Intel would end in failure, although again in less than a disaster.

* * *

"DON'T KILL MY BABY"

By early 1979 it was apparent that a decent burial was going to have to be arranged for the joint venture before the cadaver started drawing unwanted attention. It was practically a case of crib death, the joint venture being just a year old. Linda Sanders nevertheless appealed to Baur at the conclusion of a dinner at the Sanders home in February, 1979, imploring him, "don't kill my baby." Unfortunately, the infant had already died in its sleep. The next month in New York the legal morticians redid the not inconsiderable paperwork on the tripartite arrangement to excise the microcomputer joint venture. The Munich end of the operation went to Siemens and the Sunnyvale end to AMD, which promptly incorporated it as a wholly owned subsidiary with an authentic equity incentive program tied to AMC performance and married to the AMD stock.

So, by the end of AMD's fiscal 1979, the joint venture was ended. Siemens was a slightly less than 20% shareholder in AMD, minor cooperation was taking place on technology and marketing matters, but AMD remained as a result of the year earlier tripartite arrangement, financially bullet proof. One needs to keep one's sights on one's true priorities.

* * *

"I'M MAKIN' THE WRONG PARTS"

By the summer of 1981, less than three years after the signing of the Z 8000 agreement, and a little more than two years after the bust-up of the

joint venture over that issue, Sanders returned from his month-long annual pleasure/business trip to Europe and announced to his counsel: "I'm makin' the wrong parts," by which he meant the AMZ 8000. Notwithstanding the artful AMD ad campaign then concluding, and the best efforts of the AMD sales and marketing force to get the AMZ 8000 designed-in at OEM's, the market had voted for the competition. This had become painfully clear in Europe, where it was hard to find anyone who had heard of the Z 8000, but it was also broadly true in the United States.

Even though inferior in important parameters, the 8086 had obtained dominant market position, although not as dominant as the 8080 had been in the 8-bit contest for customers. The surprise was the Motorola 68000, a late starter which had performance parameters in some respects superior even to the Z 8000. But Motorola's size and reputation brought the 68000 in second only to the 8086 in the marketplace.

It was clearly time to switch rather than to continue to fight. A switch to the 68000 was out of the question since AMD had no real relationship of the right kind with Motorola on which to build. And coming up to speed on the Motorola process would have taken too long to be a viable market alternative anyway. What next took place was a fair illustration of the injunction, "if you can't be good, be lucky."

As luck would have it, Mostek had made virtually nothing of its 8086 arrangement with Intel, and other potentially viable second sources such as the knockoff artist National Semiconductor, were anathema to Intel. But a reliable alternate source was needed, and soon, because of developments taking place in Armonk, New York and Boca Raton, Florida, to which little of

the world was privy. That source would become AMD, and from that development would come the complete termination of AMC.

The harbinger came at the AMD annual meeting on September 8, 1981 in an artful Sanders response to an analyst's question about the prospects and direction of the AMC business. Sanders carefully replied: "The systems business will follow the direction of the 16-bit CPU." Indeed it would. AMC would follow the AMZ 8000 into a state of suspended animation, with AMC being dissolved and what remained of the microcomputer business being pulled into AMD as a minor product directorate. Even as Sanders answered the analyst's question, there was sitting on his desk for review a third draft of a broad-cutting agreement with Intel which would dramatically affect the direction of, and company standings within, the entire semiconductor industry. After struggling on for another profitless three years, the Microcomputer Directorate within AMD, which had formerly been AMC, was fully shut down, without fanfare and without tears. In AMD's counsel's mind, a suitable coda to the AMZ 8000 ad campaign would have been a final ad in which the headline still would have said, "The AMZ 8000 is Better," but a kicker line at the end would have read, "But so were the Tucker and the DeLorean." Needless to say, such an ad was never prepared or run.

* * *

XIII.

AN ALLIANCE OF PEERS

AFTER A LONG COURTSHIP, THE ALTAR AT LAST

As with underperforming AMD engineers, Sanders had by mid-1981 stayed with the Z 8000 as long as he prudently could. After almost three years of toughing it out with the Zilog part, AMD was in almost as perilous a position as though it had no 16-bit machine to offer, precisely the situation which the agreement with Zilog had been designed to avoid. It was time for a dramatic departure.

As good fortune would have it, just as Sanders was concluding that he had chosen a not easily marketable part for his superior alternate sourcing, Intel was concluding that it had selected inadequate alternate sources for its more easily marketable part. The Mostek arrangement was not working out, and anyway Intel really did not want as an alternate source an IC manufacturer which was now part of a large conglomerate, United Technologies. Nor were there other promising alternate sources on the horizon.

It would be at least a minor Intel coup to sign up the protagonist which had been touting the Z 8000 as "better" than Intel's 16-bit solution. And Sanders' digestive system had never rejected a small diet of crow when its nutritional value promised to compensate for the unpleasant taste. A proposal needed to be made, this time for autumn nuptials.

A quick discussion with top Intel management revealed a gratifying mutuality of interest, and late in the summer, the on-again, off-again, AMD-Intel courtship intensified with a serious prospect of consummation. Both companies having been through previously unsatisfactory liaisons, an

antenuptial agreement was clearly in order. Both companies' technologists and lawyers went to work on a solution.

* * *

A TEN YEAR CONTRACTUAL MARRIAGE

Neither party was prepared to take the vow, "'til death do us part," but both wanted a soundly grounded long-term relationship. As discussions progressed, a "clasped hands arrangement," as Sanders would call it, was developed to cover the full panoply of 16-bit, and prospectively 32-bit microprocessor CPU's and peripherals over a ten-year period. Recognizing the comparative strengths and weaknesses of both companies, a complex set of formulae were worked out to facilitate technical exchanges which might be disparate individually, but which would be balanced over time and over multiple exchanges, and in the limit have any residual imbalances adjusted by money payments. Being as tight as he was with company dollars, Sanders would push his engineers relentlessly to develop technology and products to maintain balance in the exchanges so as to avoid the necessity of AMD paying large sums of money to Intel.

By late October, 1981, the magnum opus Intel-AMD ten-year technology exchange agreement was ready for execution and announcement to the world. At the joint signing ceremony and press conference, Sanders would refer to the epochal arrangement as "an alliance of peers," a description from which Andy Grove did not openly dissent, but about which he was plainly not enthusiastic. To a large extent his ambivalence sprang from the "arranged" character of the marriage - it had been strongly fostered by a customer of prime importance to both spouses - IBM.

* * *

BIG BLUE AS BEST MAN

IBM historically had looked to its own resources for its IC requirements. The result was IBM's standing as the world's largest manufacturer of IC's, none of which, however, were sold on the merchant market. It was one of the few mainframe manufacturers in the world which operated that way.

But times and competitive conditions were changing, and Big Blue then still had a reputation for responding effectively to changing environments. One needed only to survey the competitive field, strewn with the bodies of aspiring IBM challengers who entered the game with niche solutions superior to Big Blue's, only to have the Armonk giant adopt, improve upon and turn those solutions against their originators in devastating ways.

The harbinger of changing IBM IC procurement policies had recently appeared, in a significant first-time buy of Intel parts. What was not generally realized was that this was Big Blue's opening foray in preparation for a somewhat tardy entry into the personal computer business, which had been shown by upstart Apple Computer to have a potential far beyond anything that the Armonk marketing sages had foreseen. Following its historic policy of developing its own components for its intended personal computer entry would have meant still further delay in entry and the concession of potentially fatal momentum and market share to Apple.

So, IBM decided to go with the United States technology leader in components, Intel Corporation. IBM was also acutely conscious of the effect that Japanese competition was having, not only on its own mainframe business,

but on U.S. IC manufacturers as well, and determined that it was time to draw the wagons in a circle as all-inclusively as possible to prepare for the next wave of Samurai.

But reliance on Intel, as outstanding a company as it was, would be imprudent without reliable alternate sources for the critical parts which Big Blue would need in great volume if its PC initiative was as successful as it hoped and planned. So standing at the altar in fashionable waistcoat as Intel and AMD approached, was Big Blue, best man par excellence.

* * *

STRAIGHT TO BOCA - "ALL THE 8088'S WE CAN MAKE"

The payoff for AMD in this alliance of peers came big and early. In late 1982, IBM shot into the PC market and shortly passed Apple in market share. Its demand for 8088's exploded just as AMD executed on the 8088 technology package it obtained from Intel. The result was AMD's shipping straight to Boca Raton, IBM's PC manufacturing facility, all the 8088's it could make for a sustained period.

The figures for last calendar quarter 1983 and first calendar quarter 1984 are eye-popping: Intel shipped 1.1 million and 1.2 million 8088's respectively in these quarters, while AMD went from 260,000 to 475,000, or from a less than 20% share to a nearly 30% share of their combined sales of the part to IBM.

More dramatic and mortifying for Intel, were the numbers on the EPROM, which was also conveyed to AMD under the ten-year technology partnership. On this part, Intel lost to AMD its key contractual advantage of delayed transfer of technology by encountering unforeseen difficulties in getting

production rolling at Intel's advanced production plant in Albuquerque, New Mexico, in 1984. As a result, AMD, which got into production swiftly after receiving the transfer, essentially erased Intel's advantage.

The result was about $90 million in combined AMD 8088 and EPROM sales in just its first two fiscal 1985 quarters. Certainly not a bad marriage from AMD's point of view. Intel would need to be a self confident basic provider indeed to live with such a competitively successful working spouse. Ultimately, it couldn't, and Intel initiated a messy divorce.

Far from AMD having to fear any disadvantage under the agreement, as it originally thought it might, Intel now appeared to have to run full tilt just to maintain the advantages it intended to retain in the deal. Sanders attributed AMD's superior execution under the agreement to its special form of team management and bonuses, developed long in advance of the Intel arrangement and without having anything like it in mind. Andy Grove may have written the book on High Output Management, but it was clear that AMD was teaching the course.

* * *

THE 80286 AND THE SECOND HONEYMOON

After its successful entry with the IBM PC, followed by the XT upgrade, Big Blue in mid-1984 walloped the competition with an aggressively priced IBM PC-AT having enormous capacity and outstanding networking features. Its CPU? The Intel 16-bit 80286, which AMD began to ship at the conclusion of its near-gigabuck year.

The gathering consensus is that IBM, with the AT, will take another quantum leap in market share, not only against its "compatible" competitors,

but also against other network producers who had not previously felt the sting of direct IBM competition. As it did, AMD and Intel continued to reside in fat city. Navigating in the IBM wake can be ultrahazardous activity unless one has a stout towline firmly in hand. Intel and AMD did, and the water was just fine, thank you.

* * *

XIV.

THE DIVINE DECADE

"EVERY PLACE HAS ITS TIME; OURS IS NOW"

Sanders greeted the commencement of AMD's fiscal 1980 with characteristic flourish in reprising the history of AMD on its 10th anniversary in a silver covered annual report. Silver is of course associated with 25th anniversaries, and Sanders applied it to AMD's tenth to indicate that AMD had made 25 years progress in ten years time. He also announced to his troops the arrival of what he called "the Divine Decade," or for outside consumption, "our Decade of Innovation." With the execution of "the plan" now well along, and AMD established as a reliable supplier of proprietary products, Sanders could declare that, "every place has its time; ours is now," and convey a lot of conviction.

What would AMD's "time" be? It would be a time, on a sustained basis, to outperform all competitors. It would be a time to enter the Fortune 500 and then the Fortune 100. It would be a time to list AMD's shares on the New York Stock Exchange. It would be a time to complete the eclipse of Mother Fairchild on every performance parameter that counted. It would be a time to reap the harvest which had been sown so assiduously in the prior decade.

* * *

AMD NYSE - A LIFETIME DREAM

With the close of fiscal 1978, AMD had an unbroken string of twelve quarters, or three full years of reported positive results behind it. With those results, it passed all the tests for listing on the New York Stock Exchange, and that institution's marketing people were shortly all over AMD

management to forsake the OTC market makers for the specialists doing business among the Corinthian columns on Wall Street. They found a receptive audience.

But notwithstanding the waves of change which had washed over the Exchange during the prior decade, including AMD's own underwriter incorporating and going public in defiance of the Exchange's rules, that hoary institution still retained a lot of sectarian rules which required an orthodoxy and conformity which was not a leading AMD trait. One of them was a rule that no officer of a listed company could have any compensation arrangements with a subsidiary or other affiliate of the registrant. And only weeks before discussions with the Exchange began, AMD had incorporated the Sunnyvale end of the former Siemens joint venture, AMC, as a wholly-owned subsidiary. In it, Sanders was Chairman, President and Chief Executive Officer and a significant participant in AMC's newly installed key employee equity incentive plan. That plan, with exceptional performance by AMC, could have brought Sanders well in excess of $1 million in equity value. Not an easy situation to deal with.

These complications were aired at an AMD Board meeting in late spring, 1979. The Board also reviewed the various financial pros and cons of being listed on the Exchange, including dependence upon a single Exchange specialist in the AMD stock as compared to having a dozen market makers on the OTC market. On balance, the Board consensus appeared to be mildly opposed to the listing. Near the conclusion of the discussion, Director Gene Brown asked what turned out to be the crucial question:

"Jerry, just how important to you is AMD being listed on the New York

Stock Exchange?"

"Oh, no more important than any other lifetime dream."

* * *

The Board proceeded to adopt a battery of resolutions authorizing listing of AMD common stock on the New York Stock Exchange.

Sanders gave up his $48,000 annual salary from AMC and his participation in the AMC equity incentive program. The AMD Board later made an equivalent adjustment in his AMD salary and authorized the issuance of options on AMD stock thought to be compensatory for Sanders' forfeiture of the AMC equity participation. It needn't have been much, since two years later the value of the AMC program demonstrably went to zero.

After the enabling AMD Board meeting, counsel, who two years earlier had left his law firm and joined AMD fulltime as Vice President-Corporate Services, Secretary and General Counsel, worked feverishly to get all in readiness for a Fall listing on the Exchange. At length, the great event was scheduled to take place upon the AMD Board's return from their regular once-a-year meeting in Munich in October.

Sanders, Previte and Skornia and their spouses arrived at JFK from Paris aboard the Concorde on Sunday, October 14, 1979, ready for ceremony and celebration the next day. At the opening on Monday, October 15, 1979, 1,500 shares of AMD crossed the tape at 31-1/2 as the opening trade, and a lifetime dream was realized. The Concorde experience seemed to pale by comparison. Watching the ascending Mach readings in the passenger cabin the day before was as nothing compared to this. The Concorde would have had to perform at Mach 5 to compete. It never did and it never could.

* * *

CATCH THE WAVE

With execution of "the plan" well underway, major employee incentive and benefit programs in effect, and the $100 million year a reality, it was time for another important symbol to identify with AMD's existing and prospective success. Together with his imaginative Communications Director, Elliot Sopkin, and his high powered Beverly Hills ad agency, Keye/Donna/Pearlstein, Sanders created yet another image for AMD which would carry through its near-gigabuck year and well beyond.

People want to be a part of a successful enterprise. And Sanders has frequently voiced the opinion that everyone wants to be associated with something bigger than himself or herself. What better symbol than that of a wave in a rising tide? From that idea came the long running AMD "Catch the Wave" ad campaign. Begun with an ad featuring a three-piece suited executive riding a surfboard high atop a rolling wave, the campaign had various manifestations, mostly directed at prospective employees, but much more broadly identified AMD with the excitement of onrushing, unstoppable growth and success. The visuals included video-spots, print-ads and billboards. It proved to be a durable and recurrent reminder that AMD is an exciting place to work, a good place to buy semiconductors, and not a bad investment opportunity. Coupled with supporting sub-themes, the "wave" captured broad public attention and vaulted AMD to celebrity status from Wall Street to Main Street.

* * *

PASSING INTERSIL FOR THE THIRD TIME

Part of the "wave" psychology was the idea that if you were in front of it instead of on top of it, you were likely to be inundated; and once behind it, you were in a listless backwater from which recovery would be difficult if not impossible.

That imagery fit with a remark that Sanders made during a concluding speech to one of AMD's Hawaii Sales Conferences as the Divine Decade opened. "We are about to pass Intersil for what, about the third time?" he said. "And Fairchild can't be far off." While containing some hyperbole, the Intersil reference was germane. Unlike AMD, Intersil had intermittently maintained a lead on AMD through acquisitions. Early on, Intersil had pulled in its limited line subsidiary, Intersil Memories, to augment its principal annual revenues. But its biggest jump, when it again leapfrogged AMD in revenues in 1976, occurred with Intersil's merger into Advanced Memory Systems. Yet, within a few years, AMD was exceeding even the combined Intersil organization and hence, the Sanders reference to "passing Intersil for the third time."

There was some special satisfaction in the third passage, because when it occurred, two former AMD founders, Jack Gifford and Ed Turney, occupied important positions at Intersil. The only greater satisfaction would occur when AMD at last passed Mother Fairchild, although by the time that happened, the last of the Hogan's Heroes had left and Fairchild itself had lost its independence to White Knight, Schlumberger. The satisfaction of these passages was also enhanced by the fact that they were occurring against competitors with substantial systems businesses, which were supposed to

assure better growth potential for those companies than should have been true for a "pure play" semiconductor house such as AMD. Again, close adherence to the original AMD business plan through a decade and more of operation was paying off.

* * *

ASPARAGUS AND THE LONG GREEN

Another symbolic product of the fertile Sanders mind which appeared about this time was the great asparagus analogy. Searching for a symbol that would draw attention to AMD's strong shift to proprietary products and technologies from its historic image as an alternate source house, Sanders came upon asparagus. Like proprietary products, asparagus is a multiple year crop, first harvest coming only years after initial planting, thus requiring significant investment and substantial patience before realization of the payoff.

Through "the plan," AMD had been seeding the field for some time. And as the first asparagus ads appeared, the first significant harvest of proprietary products was taking place. Joining the ad campaign, there shortly appeared an asparagus flag on the pole in front of AMD's Sunnyvale headquarters, and at the Hawaii Sales Conference that year, a custom-tailored and rousing rendition of the "Age of Aquarius" blared forth from the loud speakers with a special lyric following the revised title of the "Age of Asparagus."

The asparagus image, like the "next giant," was one of much shorter duration than the "wave" or "a commitment to excellence." The asparagus was designed to draw attention to a major contemporary development at AMD, the

dramatic shift to proprietary products and the resulting "long green," in greatly enhanced profits.

* * *

LEAVE THE JELLY BEANS TO THE WHITE HOUSE

Commodity products in the semiconductor business have long been referred to as "jelly beans," highly fungible and replaceable low-cost goodies. The traditional sharp price declines and ultimately low margins on such products caused some prominent industry figure during the 1970-71 recession to remark that "the customers are laughing at us," because of the severely low prices at which those customers could obtain valuable functions from the semiconductor manufacturers who were making no money on them.

It was a long-term Sanders goal to diminish the laughter, particularly as it might relate to AMD. By the near-gigabuck year, the laughter had stopped. Even before that it had been pretty well determined to "leave the jelly beans to the White House," whose occupant after 1980 was a well-known devotee of the sugared variety of that commodity. The measure of AMD's success in executing this strategy was the ratio at the end of fiscal 1984 of the ASP (average selling price) on its products to that of the industry. A table in the 1984 annual report showed that ratio to be greater than three-to-one, up from two-to-one only five years earlier and close to unity at the beginning of the company.

What the ASP differential meant was not that AMD charged more than its competitors for the same products, but rather that it produced and sold a mix of products increasingly skewed to the top of the line, leaving the low-priced commodity parts to others.

* * *

OF OUR INVENTION:

The other side of the abandonment of the "jelly beans" was of course the development and sale of AMD-invented products, or at least those leading edge products which, although perhaps not invented at AMD, were substantially improved there in their performance parameters. This was a part of "the plan," and its monotonic effect after 1982 was the key, first to the near-gigabuck year and then to the reach for industry-leading status by the end of the decade.

All of this had its costs. The strategy meant going out of some businesses, as in the case of basic TTL products after 1981. Salesmen never like conveying to customers the bad news that they can no longer offer to those customers products on which they had looked to the seller for reliable supply. "End of life buys," always offered by AMD in such circumstances, were of little solace to some customers who would thus be required to estimate their inventory needs for the indefinite future and then commit limited resources to stocking up on those parts, many of which might not be needed in the actual manufacturing process for some years.

It also occasionally happened that AMD would leave some money on the table in this process. The temporary but large bubble in commodity Schottky pricing and margins in the short-supply conditions of 1983-84 largely bypassed AMD because of its diminished participation in that market, but the commitment of manufacturing capacity to products with more sustainable attractive margins was clearly the right long-term choice.

* * *

THE NEWEST STAR IN THE LONE STAR STATE: IF YOU'RE GONNA PLAY IN TEXAS, YOU GOTTA HAVE A FIDDLE IN THE BAND

Although AMD had, as early as 1972, set up factories overseas, beginning in Penang, Malaysia, it made no forays anywhere in the U.S. outside California until the late 1970's. When it did, it reviewed the alternatives very carefully. Among such possibilities were Portland, Oregon, Colorado Springs, Colorado, Salt Lake City, Utah, Phoenix, Arizona, Albuquerque, New Mexico, and Raleigh-Durham, North Carolina. The candidate which came up positive on all but one of the stringent AMD criteria was Austin, Texas. The one criteria on which it failed was non-stop flights from Silicon Valley. On all of the others, including proximity to a first-class engineering school (University of Texas/Austin), good transportation system, affordable housing, equable climate, general lifestyle, and a trained workforce (other semiconductor manufacturers already present), Austin was a standout.

To announce its arrival in Texas, AMD promptly styled itself "the newest star in the Lone Star State," and at its groundbreaking and again at its plant opening, was given a true Texas sized welcome. The welcome, and the operating results (Austin became the plant with the highest product yields in the company) have caused both an expansion of the Austin plant and the setup of an entirely separate operation in San Antonio. The Sanders and AMD styles have been clearly congruent with the Texas mentality. If it is true as the 1984 country/western hit by the group Alabama had it, that, "if you're gonna play in Texas, you gotta have a fiddle in the band," AMD turned out to have a whole string section of the right kind.

* * *

Two pre-cursors of the 1980's quality wars with Japan put AMD in an especially good position to win those wars. The "commitment to excellence" and "Mil. Std. 883 for free" had established AMD's quality credibility early on. An incident in 1978 added massive validity to AMD's claim that it stood behind its products.

Early in 1978 it had come to the attention of AMD's distributor sales organization that something was amiss at Cramer Electronics, America's second largest distributor of electronic components, and like Hamilton/Avnet, a franchisee of the AMD line. AMD computer runs were showing more Cramer inventory on some AMD parts than AMD had shipped to Cramer, even ignoring sales by Cramer of some of those products. The principal product was the 9102, a by-then commodity 2K EPROM carrying prices of $2.00 or less per unit.

On investigation, it turned out that Cramer had, through its ubiquitous "opportunity desk," made several buys of allegedly AMD 9102's from a couple of unauthorized Los Angeles distributors. Concurrently with this discovery, a significant number of field failures were for the first time taking place in 9102's: they were failing to retain programmed data for more than a few hours after input. It turned out that all of the failing parts had come from Cramer, which had in turn gotten them from Los Angeles.

Further inquiries showed that somehow the L.A. distributors had gotten hold of batches of rejected AMD 9102 die, which were good enough to pass customer incoming inspection because they would take programmed data. The problem was that they would not hold the data, but incoming inspection was not designed to test that. The distributors had taken the faulty die, which

contained the AMD logo, and had packaged them and fraudulently labeled them to appear as good AMD 9102's. They then represented them to be some OEM's excess inventory available on a distress basis at slightly below market prices. Cramer bit, and was in turn bitten.

It was clear that the AMD system of controlling its reject parts had failed somewhere. Either the parts were getting out of the plant surreptitiously, or the precious metal reclaimers to whom they were delivered for reclaiming of residual elements of gold, were losing control of them or fraudulently selling them.

In a risky, but brilliant stroke, AMD announced that although in no way legally bound to do so, it would honor its usual product warranty on the renegade parts. Every customer was made whole, Cramer ultimately went out of business as a direct result of the debacle, and AMD emerged as perhaps the most highly regarded semiconductor manufacturer on the subject of willingness to stand behind product under all circumstances.

Thus the stage was set when, in 1980, Hewlett Packard's CEO, John Young, rocked the semiconductor industry by going public with data showing Japanese quality superiority by an order of magnitude over that of U.S. manufacturers. The Japanese claims of quality superiority had been discounted by the U.S. companies as various claims by competitors always are. But here was a major, high technology, Silicon Valley customer validating the Japanese claims. And of course, HP had done it, not to support the Japanese, but rather to jolt its U.S. suppliers into a realization that they were about to lose the game entirely if something drastic weren't done, and soon. Like bad breath, poor quality is not something the customers readily go public

about. They just go buy from the competitors. HP did a real service to the U.S. semiconductor industry by going public with its data at an early time, although it was not immediately appreciated that way.

Characteristically, AMD was the first one out of the box with an effective response to this shocker. While other U.S. manufacturers either ignored or downplayed the HP data at first, Sanders developed a plan. At AMD's 1980 annual meeting in its new Austin plant, the first such meeting ever held outside Silicon Valley, he announced Int. Std. 1-2-3, a program of defect reduction which, as he said, would make AMD's product quality "second to none."

Some competitors were less than enthusiastic about this response. A week after Sanders' announcement, his counsel was in Washington testifying on tariff matters before the Trade Subcommittee of the House of Representatives Ways and Means Committee when Chairman Vanik asked about the validity of the quality issue. Withdrawing from his jacket pocket a ready-to-hand copy of Sanders' statement of the week before, Skornia read it into the record, and concluded: "In our opinion, Mr. Chairman, any United States company which does not offer an equivalent response will be out of business in three to five years."

Following this bombshell, Skornia retired to the marble hallway outside the hearing room, only to be confronted by a red-faced Pete McCloskey, President of the United States Electronic Industries Association, one of the country's largest electronic trade associations (not the Congressman of the same name), who through clenched teeth menacingly declared: "We don't admit that there is a quality gap between us and the Japanese." With equal

directness, Skornia shot back: "You may not, but if you don't, you, too, are going to be out of business in three to five years, or less."

Before the year was out, virtually all the U.S. semiconductor manufacturers got over what Motorola's John Welty had referred to as "all the denial going on out there," and adopted effective programs to match and even exceed the Japanese quality standards. Int. Std. 1-2-3 was only the beginning, and not the end of the AMD response to the quality issue. The standard steadily tightened and then gave way to an entirely new Excelsior program which put AMD's quality standards ahead of every competitor in the world.

* * *

THERE IS NO TRY - ONLY DO

The stagflation of 1979 to 1982 was not an easy time to be a sales and marketing manager anywhere, least of all in the semiconductor industry, where macro-economic conditions easily led to a profitless prosperity, evidenced by sharply increasing unit sales at sharply decreasing prices, a sure fire prescription for bankruptcy if practiced over a sustained period.

Management exhortations to push harder to sell high margin products and forget the rest were increasingly met during this period with the response, "we're trying, and doing the best we can." Putting an end to this was the dictum that Steve Zelencik had inscribed on a plaque he hung outside his office and copies of which he circulated to all his field sales personnel which read: "There is no try - only do," and not do your best, which might not be good enough - just do.

It was a sort of corollary to "a man's reach should exceed his grasp,"

and "all life is a struggle," and served well to separate the men from the boys (there being no women then in the AMD field sales force) in the difficult period which ended only with the arrival of 1983.

* * *

SAYONARA FAIRCHILD

At last it happened. In 1968, Sanders' aspiration to one day be head of all Fairchild lay shattered on the ground following the Motorola invasion. So how sweet it was when, at length, the AMD sales numbers finally exceeded those of Mother Fairchild. In all other respects AMD had long since succeeded its alma mater: return on equity, return on assets, breadth of product line, general productivity. And finally, revenues. And this against a company now owned by a French oil services conglomerate with resources available to support it far in excess of anything AMD could ever hope to tap.

Without much articulating it, Sanders has followed the dictum, "don't get mad, get even." In this case he did much better than even, and got way ahead.

* * *

XV.

THE LAND OF THE RISING SUN

5% OF THE 4K

In the mid-1970's, the Japanese, unheralded and little noticed, embarked on a program to forever free themselves from dependence on foreign sources for advanced semiconductor products and technology. Beyond that, they intended to develop a position in which foreign customers would become dependent upon them. This program was developed cooperatively by the powerful Ministry of International Trade and Industry (MITI), the Japanese External Trade Organization (JETRO), the Electronics Industry Association of Japan (EIAJ) and the big five Japanese semiconductor and mainframe manufacturers. It ultimately became part of an overall Japanese strategy for the 80's in which Japan's objective was to emerge as the world leader in what it correctly identified as the approaching information age.

The program's centerpiece became a Central VLSI Laboratory. Its handsome funding came from "soft" government loans, repayable out of revenues from products developed in the lab, and was staffed by key engineers, scientists and researchers detached from the big five company participants for the duration of the program. Its results were everything the Japanese had planned.

The Pacific Island Nation had been a late comer to semiconductors, but its rapid exploitation of the technology early on with the ubiquitous transistor radio should have been a warning to the world that they would ultimately be a force to be reckoned with.

Recognizing their own tardiness in entering the field, the Japanese

drew upon resources developed in their effective buildup of the heavy industries, steel and ship building, in the immediate post-war period to buy their way into the technology. In this case, the benign Fairchild technology licensing policies proved to be not only Fairchild's undoing, as it had vis-a-vis Fairchild's domestic competitors, but the near undoing of the whole U.S. semiconductor industry. The Japanese paid dearly in dollars for the planar process and other technology they got from Fairchild, but the payoff they ultimately got from thus buying their way in, more than compensated them for the heavy front end investment.

By the late 1960's, the Japanese all but owned the worldwide transistor radio business, and a few years later would take the lead in hand-held calculators as well. But the big prize was yet to come: domination of the semiconductor business itself. The Central VLSI Lab program was designed to acquire that prize as well. As is frequently the case with the Japanese, they got off to a somewhat slow start, but became fleet competitors as the race developed.

They first entered the large scale memory competition in a significant way by obtaining about a 5% market share in the U.S. on the 4K dynamic RAM, a relatively easily replicable commodity memory part. But it was a test vehicle only. The next generations of memory were the goal, and the Japanese performed very well to plan.

* * *

40% OF THE 16K

From their meager beginnings with the 4K part, the Japanese got rolling with the next generation part, the 16K dynamic RAM. At its height, the U.S.

market for this part yielded a 40% share to the Japanese manufacturers. Making this accomplishment easier than it should have been was the fact that the United States manufacturers, not yet focusing on the Japanese threat, gravely underinvested in facilities expansion during the 1974-75 recession. Not long after the recovery in semiconductor demand in 1976, the Americans found themselves unable to meet market demand for the 16K part in a timely fashion. The Japanese, with their traditionally longer term view of business strategies, had put ample production capacity in place in the mid-1970's, and moved smartly to satisfy the rapidly accelerating 16K demand, so much of which was left unmet by the capacity-constrained U.S. manufacturers.

Once established with U.S. customers, the Japanese are almost impossible to dislodge. When the cycle again turns down, they maintain or even improve their market share by aggressive pricing. And in good times, against U.S. competitors who had finally added sufficient capacity to satisfy growing demand, the Japanese delivered superior quality. The nose came into the tent by timely delivery; the whole camel came in with the quality story.

It was soon apparent to the U.S. manufacturers that the worst was by no means over. And on the next generation product, they were proved frighteningly correct.

* * *

"IT'S ALL OVER FOR THE 64K"

From timely delivery and superior quality as the means to get 40% of the U.S. 16K market, the Japanese now progressed to development and production of the 64K dynamic RAM earlier than any other manufacturer. "Firstest with the mostest" was but one of many U.S. traditions which the

Japanese learned to practice even better than their American teachers. And they were clearly firstest with the mostest in 64K dynamic RAM's. The reward was a 70% U.S. market share.

When it started, there was again a good bit of denial among the U.S. manufacturers of how bad things might get. Sanders was not among them. In late 1981, at a Silicon Valley luncheon meeting with U.S. Government trade representatives arranged by the Semiconductor Industry Association, Sanders sought to disabuse both his industry counterparts and the visiting government bureaucrats of any illusions about the pace and direction of the then still nascent battle for 64K market share. In response to some sanguine sentiments expressed at the lunch by SIA staff, he said, and repeated, "it's all over for the 64K," by which he meant that the Japanese would inevitably own a clear majority of that market. Within a year the figure was 70%. No one was even talking about the 256K, yet, and few even wanted to think about it.

* * *

SIA, SRC & MCC

Unlike their counterparts in Smokestack America, the steel, auto and TV manufacturers, the semiconductor makers awakened early to the threat from across the water. The latter already exhibited some characteristics which would clearly make them less easy targets for the Japanese than the mature industries of mid-America. Most prominent, and important, among those distinguishing features, was the semiconductor manufacturers' level of research and development funding. In Silicon Valley, Phoenix and Dallas, this ran to 10% of sales annually, as compared to a third or less of that figure in steel, autos and TV. Of similar importance was the fact that not a

single significant U.S. semiconductor manufacturer had a labor union to deal with anywhere in its operations. The task was to build on these advantages and offset other clear disadvantages vis-a-vis the Japanese - extraordinarily high cost of capital, and a somewhat adversary relationship with government, as compared to the "Japan, Inc.," environment in which their trans-Pacific competitors operated.

As the warning signs began to appear, Wilf Corrigan, with his successful palace coup at Fairchild now behind him, decided it was time to address the Japanese threat. In his view, some sort of collective industry action was imperative. He had seen temporary semiconductor industry trade groups, the Ad Hoc Committee of California Semiconductor Manufacturers in 1973-74, put together by Skornia, and the Semiconductor Group of WEMA in 1975-76, succeed in their limited objectives and then basically dissolve. A much more permanent solution to the much more permanent Japanese problem now had to be fashioned. Always politically astute, Corrigan now set about recruiting two other industry street fighters, Sanders and Sporck, and the industry's founding father, Noyce, to join in the effort.

On the evening of March 16, 1977, in a private room in Ming's Chinese Restaurant in Palo Alto, California, these four met over dinner, together with Sanders' counsel, to plot strategy and form an organization to respond to the Japanese challenge. Within a week, incorporation papers were filed in Sacramento for the first ever, dedicated semiconductor trade group, the Semiconductor Industry Association. Included among the Directors on the incorporation papers, in addition to Noyce, Corrigan, Sanders and Sporck, was Motorola's John Welty, avidly recruited by Noyce to provide big company

credibility and national scope to what otherwise could have looked like just another Silicon Valley upstart. As a clincher, Welty had been offered, and accepted, the Chairmanship of the new group.

In personally advocating this initiative over dinner that first night, Noyce had urged his colleagues "to act now, while the Japanese have only 5% of the memory market, so they will not get 40%, as they have in color TV's." The warning was right, but within two years the Japanese had 40% of the 16K dynamic RAM market anyway and went on to 70% of the 64K. One shudders to think what those numbers might have been without the SIA initiative and other collateral responses which followed.

From these beginnings, SIA went on by 1984 to encompass more than 50 U.S. manufacturers and to develop and publish periodic international statistical reports on the semiconductor industry which include the Europeans, the Japanese themselves, and even Texas Instruments, which was one of the last holdouts. For a geographically concentrated industry with a relatively small employment base and no labor unions, the SIA established remarkable influence and credibility in Washington. Much of its program of increased research and development credits, resistance to tougher export controls and a form of copyright-like protection on semiconductor chip topography had been implemented, and there was much more to come.

The jury had not even retired to deliberate yet on the question of comparative effectiveness of Japanese versus U.S. semiconductor manufacturers, but it was clear that in this case for the first time, the Japanese were up against a target which was responding in a timely and effective fashion to their challenge.

For the longer term, it was clear that technological as well as political cooperation among U.S. manufacturers would be required. Its beginnings were already present in SIA's research arm, Semiconductor Research Corporation, founded in 1982, and the even more aggressive Microelectronics and Computer Corporation, initiated by Control Data Corporation's hard-charging CEO, Bill Norris. A key player respecting these initiatives was the U.S. antitrust establishment, whose first response under the Carter Administration was hostile. Thankfully, there later evolved a much more cooperative government attitude which was extended to support for 1984 legislation greatly liberalizing the rules for the safe conduct of joint basic research.

* * *

THE CRUDE OIL OF THE '80'S

Sanders' gift for phrasing was never more acute than when, in 1981, he characterized semiconductor technology as "the crude oil of the '80's." What he meant, of course, was that semiconductor technology was to the coming information age what crude oil had been to the later stages of the industrial revolution - a sine qua non. The implication of course was that anyone who could corner the supply, as OPEC had cornered the original crude oil supply in the '70's, would have disproportionate influence, standing and power in world business.

The analogy was trenchant as far as it went, but also scary if carried too far. Without a cartel, it was not the crude oil producers who had made the money and wielded the influence, but rather the refiners and distributors, such as the Rockefellers. In electronics, the analogy would be

the computer manufacturers and other users of semiconductors, who would exploit the real value and the technology. And so it has frequently been. Besides, the U.S. semiconductor manufacturers would be forbidden by law to organize or even participate in a cartel equivalent of OPEC to retain the real value at the producer level. In this respect, it is the vertically integrated Japanese who appeared to have the better opportunity to become the OPEC of semiconductors.

On the other hand, Sanders developed his own solution to the problem by getting out of the commodity part of the business which might be said to be the equivalent of the crude oil part of petrochemicals. In that sense, he too was closer to the situation of the refiner and distributor of petroleum products than to the basic commodity producer.

* * *

AMD at Stage Center

The prelude to the near-gigabuck year - and beyond - took place at AMD's 1984 annual meeting on September 11, 1984 at New York's Pierre Hotel. In his report to shareholders, Sanders narrated the recent history which brought AMD to the threshold of its gigabuck year and promised to carry it well beyond. "The plan" had worked better than anyone, including Sanders, could have hoped.

* * *

EPILOGUE

AMD didn't become sixth in the industry in 1975. It missed its goal of gigabuck year in its fiscal 1985. And it didn't become biggest by the end of that decade. By these measures did AMD's reach exceed its grasp.

But what it has become - a major force in the semiconductor industry - couldn't have been envisioned by the founders -except possibly Sanders, himself, at the beginning in 1969. Its pervasive competition in quality, innovation and pricing has been a major annoyance to Intel and a source of satisfaction to the customers of both. Without that continuing competition, quality would have been less, innovation slower and prices higher.

AMD continues today, after all its founders have left, a major industrial corporation leaving a major mark on its industry and its country and, indeed, the world. It's not hard to identify the sine qua non of these achievements: Walter Jeremiah Sanders III, to whom this book is dedicated.

Inverness, California, September 12, 2004.

ABOUT THE AUTHOR

Tom Skornia served as legal counsel at the initial organization of AMD in 1969. He continued in that capacity until joining the company full time as Vice President and General Counsel from 1977 through 1982. In these roles, he was involved in or privy to every major event at AMD for thirteen of its first fifteen years. For the next two years, he followed its developments closely from outside while he prepared the original of the manuscript for this book.

Skornia is an alumnus of Grinnell College, as was the late Bob Noyce,

who appears frequently in the text, and is a graduate of the Harvard Law School. He practiced law privately in San Francisco and Palo Alto, California, concentrating on high technology clients, from 1963 to 1977 when he joined AMD full time. After his service at AMD, he returned to private practice in San Jose, California, until 2000, when he retired on his winnings from the bubble stock market then just bursting. He currently divides his time between homes in San Francisco and Inverness, California.