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An Engineer's Guide To Mergers & Acquisitions In The Semiconductor Business

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Once upon a time in a land far, far away in the heyday of the semiconductor industry it was an exciting and lucrative place. The older people will be nodding their heads with fond memories of being highly valued with inspirational and passionate management focused on advancing technology, serving customers and beating the competition. But companies like Bell labs, Motorola Semiconductor, Fairchild, RCA, GE Semiconductor, Harris Semiconductor and others no longer exist because they were strip mined by the industries' equivalent of financial hedge fund traders over the last decade or so.

The younger generation may react like I'm talking about the Spanish American war or something equally ancient –I'm sorry you missed it. Get into IT security, software or doing whatever social media companies do—fast, before it's too late. From inception to about 1995, semiconductors were an amazing, fun and healthy marketplace and workplace. But then came dot-com era, which led to an infusion of finance and operations people (with their internally focused metrics) into the industry.

This shift in management left the U.S. semiconductor industry resembling the steel or textile industry for the people who do actual work that customers might notice. Meanwhile, it created opportunities for the fortunate few in upper management to get "fast money now and move on." According to a report by Research and Markets, merger and acquisition (M&A) mania in the semiconductor business reached a record level in 2015, exceeding \$120 billion U.S.^[1] And in just the first six months of last year, the value of semiconductor M&As was almost six times the yearly average of the past five years, says IC Insights.^[2] This unprecedented level of consolidation sends a clear signal that Wall Street views the silicon semiconductor industry as a commodity business.

Why is this analysis of interest to the working engineer? First, if you are looking for a job, it will provide guidance—what you are getting into. Or if you're already working in the industry, it may help to clarify why companies do what they do. Moreover, if you design products containing semiconductors, you should understand the semiconductor landscape and how everything fits together. This includes who you are buying from and what drives their strategy.

In this article, I am focusing specifically on the *silicon* semiconductor marketplace. Wide bandgap alternatives to silicon, which push semiconductor performance further, are exempt for the time being from the industry trends being discussed here. The companies making these gallium nitride, silicon carbide and other advanced semiconductor devices do not necessarily fit within the company categories I am about to define.

The New Corporate Identities

In this merger-oriented environment, companies find themselves in different positions as potential buyers or acquisition targets based on their size, product and technology offerings, and management philosophies. Based on my observation of the semiconductor marketplace, I see five distinct categories of semiconductor companies:

1. Acquirers or hunters
2. Acquirees or targets
3. Zombies
4. Apple dumplings
5. Super-specialized technologists.



The acquirers or hunters are large companies with the resources and clout to selectively pursue good deals. They can choose the time, price and place to make a deal that enhances their war chest and makes them more attractive to customers to increase revenues. Time is on their side. They can patiently circle like the hawk looking for the right time and opportunity to dive in for the kill. Among the acquirers are Chinese companies on a tear to buy all things American semiconductor-related.

In addition to buying other companies, hunters can offload things that don't interest them or which don't meet Wall Street's margin goals. For example, at this writing, NXP is trying to cull their low-margin standard products group. They will sell it to a zombie (see definition below) or to a Chinese holding company.

The acquirees or targets are wounded animals, busy convincing Wall Street how awesome they are by cutting employees through layoffs and sparing no outsourcing expense to save money. They have become irrelevant or non competitive in certain areas or they simply no longer compete with the hunters in technology or business value proposition in the market place. They have no choice but to sell.

In many cases, their senior management think about nothing other than getting acquired by a hunter so they can land the huge golden-parachute payout and never have to work again—retire to their private island in the Caribbean while the workers are left to fend for themselves when the merger takes place. They unsuccessfully pitch themselves to Wall Street as a category 5-technology company (super-specialized technologists, see definition below) when they are not. Their only hope is to be acquired.

Truth be told, this was upper management's goal all along. These companies are still relevant enough to avoid zombie status. Yet time is not on their side. They've "optimized" so much that they lose market share, customer's notice poor customer service and technology offerings take a nose dive due to lack of investment and unrelenting cost cutting. Their irrelevance time bomb is ticking.

A giveaway is to look at the press releases. Instead of product announcements, you will see "Bob Burford – CFO to present at the Melvin Snurdmeyer Financial conference and summit in Aspen, CO..." Very little about what they make will be said—it will be all about trying to attract a hunter for mating through financial raz-ma-taz and shell games.



If products are announced they will usually be unconvincing because upper management cut R&D and the good technical talent to save money. A target company can descend into zombie status if they are not bought in time and management keeps cost cutting and sparing no expense to save money.

Struggling To Be Acquired

Companies in the zombie category do not have the resources to buy anything meaningful or significant. They do not have anything a hunter will find compelling or they simply produce products that are inferior to the ones the hunters already have. Zombies can buy other zombie companies and often do in an attempt to try to look more attractive to the hunter. They desperately want to jump from being a zombie to an acquiree or target.

They spread their feathers like a peacock, lay off people to look more efficient, buy other no-name, insignificant companies and do all manner of things to try to become a target. But it's difficult. They want to optimize and put metrics on everything—sell off and lay off people—strip mine to get their payout and move on. They act like a target wanna-be with cost cutting and metrics implemented all over the place.

These companies often have a few hundred million in the bank. But instead of being an asset, this can be a barrier to being acquired. The zombie company makes more money investing cash in the stock market and leveraging it overseas than in investing in their own business. That's because they can't participate in markets the hunters already dominate without getting their clocks cleaned.



Year-by-year, they are pressed into further insignificance. Zombies could become super-specialized semiconductor companies. However, upper level management would rather that their companies be targets, so they can opt out of the rat race with a pile of cash.

These companies are focused on the illusion of success to achieve the senior management payday. They lay off people with the skillsets to get them into the super-specialized category where they could survive. Experienced, smart engineers are expensive. Who needs them to make dog food? Modern managers focus on buying other zombies or laying off technical talent while trying to convince Wall Street and hunters they are a category 5 company that should be purchased at a premium.

As with the target companies, zombies usually have the CEO present at financial conferences with these activities highlighted in press releases. These announcements are often interspersed with product press releases on technology and parts that hunters had five to eight years prior. Zombies go through CEOs faster than they replace the plants in the lobby. This is a sign of flailing. The board wants it sold to make big money now, so they replace the CEO in hopes of finding a rainmaker who can turn dross into gold in a quarter. Good luck with that.

Apple dumplings are in a stronger position than the targets and zombies, but with a different and still challenging problem. Apple dumplings have a disproportionate amount of their business with one large customer (like a prominent phone maker.) In fact, they are so dependent on that one customer that if the customer hits a speed bump, the apple dumpling is thrown through the windshield. The big company customer knows it and exploits this vulnerability. As a result, the apple dumpling can't think about anything other than pleasing the unpleasable.

This type of company might attempt to become an acquirer, but it would get smacked down by a hunter who has more resources and takes away the targets—sometimes just to make sure the competitor doesn't get them. Apple dumplings want to diversify, but find it difficult because they have to find something a hunter won't ace them out of. Dialog was taught this lesson by Microchip and had to pay a hefty fine.

It's possible an apple dumpling can attempt to buy a zombie to try to diversify, however it's only going to be those already passed over by the hunters. Every once in a while an apple dumpling buys a super-specialized category 5 semiconductor company and does not know what to do with it like the dog chasing the car. Once it catches it, it spits it out because it can't figure out what to do with it. Cirrus Logic and Apex Microtechnology come to mind. Dialog bought iWatt, so let's see how that goes. That was arguably an apple dumpling buying another apple dumpling. Apple dumplings also churn CEOs often. One recently announced their third CEO in 12 months.



Sometimes apple dumpling CEOs go to the financial conferences so they can attempt to diversify, but usually they are too busy to go because the super huge customer wants to slap them around and keep them in their place. The customer may even call a red alert emergency meeting on the day of the conference, so the company can't go. It's just as well because business guys will ask what the apple dumpling is doing to diversify and that's a tough question to answer.

The only reason a super huge OEM needs an apple dumpling semiconductor company is to make the things it's not worth their time to do themselves. The super big OEMs can design their own ARM processor, sophisticated SOCs and go to TSMC or UMC and have them build anything they design. From the perspective of the big OEMs, apple dumplings are only around to work on the things that it's not worth the OEM's time or resources to do.

Last Bastion of Technical Leadership

Finally we come to the last category of super-specialized technology companies. These are usually run by engineers, not finance and operations-business droids who just want a lifetime payout and could care less what the company makes. Super-specialized companies want no part of that silliness. They want technology with defensible niches where IP is valued and the "shareholder value" takes care of itself when the customers start voting with their design wins and dollars.

These firms will invest in the talent to get there including top class FAE staff. Another characteristic is their higher ratio of technical employees-to-bean counters. Category 5 companies have fewer of the “checkers checking the checkers” and more doers.

This is where the last bastion of visionary technical leadership lives in our silicon semiconductor world. They believe in the longterm unlike almost every other category of semiconductor company in the publicly traded world. They pick technology which is so specialized that the category 1 through 4 companies purposefully ignore the market. In some cases, the super-specialized companies could actually buy companies in categories 2 through 4, even possibly a category 1 company, because the market cap of the super-specialized company is higher than the others.



Sadly, the people running the acquirees, zombies and apple dumplings simply can't comprehend what it takes in investment over time to be a super-specialized company. Super-specialized technology companies maintain slow and steady technology investment. Of course, this approach isn't appealing to investors. Category 5 companies are infrequently invited to the financial conferences because their engineers want to talk about technology and not basis points, earnings per employee per hour or EBIDA.

At one time the silicon semiconductor industry paced the economy and Silicon Valley actually had semiconductor manufacturing located there. But just like textile and steel manufacturing, those semiconductor fabs have been shipped abroad. Silicon Valley is now notable for being home to the FLAG companies—Facebook, LinkedIn, Apple and Google. At such companies, semiconductors are not the end products and in some cases may be viewed more like raw materials for use in hardware which these companies or their customers use.

Regardless of whether we insiders think semiconductors represent a commodity business, Wall Street thinks it is, therefore it is. Now we see there is more money to be made buying and selling semiconductor companies than in the making and selling of silicon semiconductors.

Today, the money people are not financing start-up silicon semiconductor companies because venture capitalists (VCs) know that if they do, they will lose their money more than 70% of the time. What else is missing compared to 30 years ago? There is an extraordinary shortage of visionary leadership.

Instead, there are plenty of managers working on flipping semiconductor companies like one would flip fixer houses. These managers believe the only way to compete successfully is to merge and take advantage of economies of scale in manufacturing mass production volumes, R&D investments, sales staff, marketing spend, channel efficiencies and so forth.

The Road Ahead

What does the future hold? More mergers and acquisitions will happen. It's an inevitable sign of modern times. Senior management will get huge payouts and the people who do the work will “get an opportunity to excel in a new and exciting environment.” In other words, they're on their own. The only bright spot here is the wide bandgap alternative to silicon semiconductor companies—these might be the next-wave innovation in components even as conventional silicon semiconductors become more and more like resistors or other commodities.

Some companies have one foot in one category and one in another—like a game of Twister—they will eventually have to make a move into one category or another. Some will be acquired while some will circle the drain until the bargain price is right. Some may go away and some may become super specialized by investment or for lack of other alternatives. But to go that route, these companies will have to flush the business people and put engineers in charge again, which rarely happens. In the end, to survive and thrive in the semiconductor business, you either have to have technology someone wants or achieve economies of scale as the lowest-cost producer, which is what a hunter does.

For the working engineer, if you want to go into the semiconductor industry I recommend joining either a super-specialized, category 5 company or one of the category 1 hunter companies. But if you find yourself at one of the other type of companies, watch out for certain danger signs. If your company is focusing on activities

that have nothing to do with advancing technology, better serving customers or beating its competitors, there's a high likelihood that your company is for sale. They just haven't told anyone yet.

The future will be interesting and it's likely a buyer's market for semiconductor components if you don't mind changing the names frequently on your bill of materials while using the same parts! Keeping up with all this will be mind-numbing. As the Chinese curse goes, may you live in interesting times. It seems that we already do.

Reference

1. "[Global Semiconductor Industry M&A Analysis and Future Trends Report 2016.](#)"
2. "[Tsunami of M&A Deals Underway in the Semiconductor Industry in 2015](#)"

About The Author



Kevin Parmenter has over 20 years of experience in the electronics and semiconductor industry. Kevin is currently vice president of applications engineering in the U.S.A. for Excelsys Technologies. Previously, Kevin has served as director of Advanced Technical Marketing for Digital Power Products at Exar, and led global product applications engineering and new product definition for Freescale Semiconductors AMPD - Analog, Mixed Signal and Power Division based in Tempe, Arizona.

Prior to that, he worked for Fairchild Semiconductor in the Americas as senior director of field applications engineering and held various technical and management positions with increasing responsibility at ON Semiconductor and in the Motorola Semiconductor Products Sector. Kevin also led an applications engineering team for the start-up Primarion where he worked on high-speed electro-optical communications and digital power supply semiconductors.

Kevin serves on the board of directors of the [PSMA](#) (Power Sources Manufacturers Association) and was the general chair of APEC 2009 ([the IEEE Applied Power Electronics Conference.](#)) Kevin also has design engineering experience in medical and military electronics. He holds a BSEE and BS in Business Administration, is a member of the IEEE, and holds an Amateur Extra class FCC license (call sign KG5Q) as well as an FCC Commercial Radiotelephone License.