Gabelli Value Investing Conference held at Princess Gate in London.

Professor Bruce C. Greenwald's Lecture on an Investment Process
On Thursday August 4, 2005 in London England

View Lecture on the Web at: *http://gabelli.savvislive.com/ValueInvestingSeminar/index_player.html*

This lecture is a thorough discussion of an *investment process.* A good supplement to this lecture is the book: *Value Investing: From Graham to Buffett and Beyond* (Hardcover) by Bruce C. N. Greenwald and the book, *Competition Demystified (A great book in the Editor's opinion).*

You can read the *Intelligent Investor* and *Security Analysis* by Ben Graham; you can study the books written by Philip A. Fisher—these authors provide a thorough investment process. What YOU want to attempt is to carve out your own process and areas of expertise.

Update:

From *Buffett: The Making of an American Capitalist* by Roger Lowenstein, 1995. Page 318: Columbia's Graduate Business School program was less one-sided than most. It hired Wall Street pros as part-time lecturers, some of whom used a Graham-and-Dodd approach. But the finance program was, as Buffett maintained, dominated by Efficient Market Theory. A stroll through the business section of the university bookstore suggested that a student could get an M.B.A at Columbia without ever hearing the named Graham and Dodd, and without even a faint exposure to value investing. Eventually, Columbia established a Graham-and-Dodd chair, but oddly assigned it to Bruce Greenwich. Greenwald, an MIT-trained economist had married into money, made a million or two in bond futures, lost a similar sum in oils, and quit at the insistence of his in-laws. "At investing I'm a complete idiot," he noted, rather affably, adding that it was speculating that turned him on. He invited Buffett to give a guest lecture but did not think him imitable. "I'm sympathetic to the Graham-and-Dodd point of view," Greenwald said, "but I'm not really a Graham-and-Dodder."

Introduction

Gabelli Management had its inception in 1977.

Value investing ("VI") is a rational, disciplined approach to help navigate the investment world ruled by speculation, unjust emotions, confusion and momentum. The core value is very basic: that the underlying value of financial security is measurable and stable regardless what the market does to it. The goal is to purchase securities when their market prices differ significantly from their fundamental value. Value investors have been forced to be a little more ingenious in their ways of identifying, measuring and defining value. From *Warren Buffett*, *Walter Schloss* and *Mario Gabelli*--the disciples of value investing are plentiful and to date no other investment method has proved to be more successful as professor *Greenwald* will go into.

Columbia Business School has long been the house of value investing. *Ben Graham* and *David Dodd* taught there followed by *Professor Murray* who was a teacher of our founder, *Mario Gabelli.*

Today the mantel is held by *Prof. Greenwald.* He is considered to be a leading expert on value investing, economics of information and productivity. His recent book, *Value Investing from Graham to Buffett and Beyond*, is considered the third tome on the practice of value investing after 1934 *Security Analysis* and the 1948 *Intelligent Investor*. I highly, highly recommend that you read it.

The more interactive these sessions are the better. Don't wait for the Q&A session to ask questions.

Bruce Greenwald ("BG"): Let me thank *Frederico.* I will be happy for you to ask questions.

VALUE INVESTING AND A WELL-CONCEIVED INVESTMENT PROCESS

BG: I am not here to talk about value investing. **I am here to talk to you about what a professional, well conceived investment process looks like just in general.** Obviously, I will be making the case that the criteria that I am going to be talking about obviously is fulfilled by value investing practices and are fulfilled to a degree that are not covered by other approaches.

But there are other approaches that are characterized by investors who have been strikingly successful—there are not many of them but at least some of them are. If you do pursue those approaches, you ought to have an idea that within the context of those alternatives what an appropriate system for investing looks like. This is prostelizing to improve the overall quality of investment management.

Value Investing

Now value investing (VI) belongs to the genre of fundamental investing. It involves looking at underlying securities. It involves buying securities at a 2/3 or ½ or less of their actual value. VI is simply buying bargains in financial markets. And having bought bargains, holding them for a reasonably long period of time. Having described it that way, of course, the natural question that most of you who would want to ask is: **What non value investing is?** If you are buying the bargains, who are the people who are selling to you? And I think it would be useful to get a sense of that. Ask who is on the other side of your trade? Be humble because one of you is always wrong!

Other Schools of Investing

First, there are a lot of short-term approaches to investing. The most common approach to short-term investing at least in terms of the research disseminated is what might be called **short-term fundamental investing**. What you do is forecast either a quarter out or a year or two years out some appropriate quantity to do with the companies' securities that you will be buying. Most commonly, of course, that is earnings. Then you compare your forecast to the consensus either as it is apparent in surveys or as you can infer it from stock price level of that security or the bond price level of that security. And if you think your forecast is more optimistic than the implied consensus, you buy on the theory that when the news is revealed, you turn out to be right and everyone else turns out to be wrong. The stock is going to go up, and you will make money. If the opposite is true, the more pessimistic estimate becomes apparent that you are right and everybody else is wrong …the stock will go down.

But notice what has got to happen to do this successfully, you must have information that no one else has. The classic investor of this sort is my dentist who is a terrific dentist and a terrible investor. His idea of short term information is the demographics of the US population. I guarantee you he is not an expert in the use of that information. But that is an alternative style of investing.

Then there is a whole large school of **technical investing**. It is a school where all you look at is trading patterns in the market. Momentum is the simplest of those approaches. If prices are going up, then prices will continue going up. Some people look at complicated price patterns and make short term price projections. If they indicate prices will be higher, they buy and vice versa. So there are plenty of alternative approaches to investment. Also, when you look at fundamentals, either you can look at companies or at interest rates and the economy as a whole. The other dominant school of investing for many years was basically efficient market investing. Basically the idea was that you were not going to be able to beat the market with information that was no better than what the consensus had collected.

WHY VALUE INVESTING WORKS

Markets are not Efficient

All you should worry about since you aren't going to be able to outguess the market is minimizing transaction costs, and allocating assets that creates an appropriate risk profile. What I think you ought to know about that is two things. The first is that there is overwhelming statistical evidence that **markets are not efficient**. In all countries and all periods of time since the early 20th century, that there are variables that can be reliably used to outperform the market and that clearly contradicts the premise that nobody can outperform the market. While it is fundamentally not true and not true in ways that I am going to talk about today, you have to understand—and I think this is the most fundamental wisdom in investing. There is a sense in which absolutely and fundamentally markets are efficient and it is this—that when we buy as night follows the day someone else is selling that stock thinking it is going down--and one of you is always wrong. *(Don't play the patsy!)*

Why Are You on the Right Side of the Trade?

Another way of saying that is **not everybody can outperform the market**. The famous humorist called *Garrison Keiller* talks about a fictional town called *Lake Woebegone*. In *Lake Woebegone* all the women are beautiful, all the men are tall and all the children are above average. In this game all the children are average on average which means half of them underperforms the market. So when you start to think about investing, you must be able to answer the question: Why is your manager or you yourself able to be on the right side of the particular trade? **Why are you the one who is right, and the person who is trading with you is wrong? That is the most fundamental aspect of Investing.** *Where and what is your investing edge? What puts you on the right side of the trade?*

Buying Cheaply Works

When we talk about value investing there is a lot of evidence that value investors have been on the right side of the trade. The statistical studies that run against or contradict market efficiency almost all of them show that cheap portfolios—low market-to-book, low price-to-book—outperform the markets by significant amounts in all periods in all countries—that is a statistical, historical basis for believing that this is one of the approaches where people are predominantly on the right side of the trade. And, of course, someone else has to be on the wrong side of the trade.

Those studies were first done in the early 1930s; they were done again in the early 1950s. And the ones done in the 1990s got all the attention because the academics caught on. **There is statistical evidence that the value approaches—buy cheap securities—have historically outperformed the market. Buying Cheap works.**

If you go to the Tweedy Browne web-site you can peruse a plethora of research papers on *What Works in Investing*. Go here: http://www.tweedy.com/research/papers_speeches.php

Institutional Value Investors Out Perform

The problem with that is….Well, they may statistically outperform the market, but do they make money for people? If you look at large institutional value investors who have pursued a value approach like *Tweedy Browne* and *Sequoia Fund*, they have significantly outperformed the market as well. (Go to www.sequoiafund.com and www.tweedybrowne.com). The reason that is important is that 70% of professional investors have underperformed the market. So to see large investors from a particular discipline systematically and a large majority of them outperform the market is again evidence that particular discipline has particular advantages.

Individual Performance Shines

If you look at any of these individual investors like *Warren Buffett, Michael Price, Mario Gabelli*, who have gotten very rich or disproportionately rich they are to an extraordinary degree concentrated amongst value investors. What is embarrassing to me is that *Mario Gabelli* endowed a $50,000 prize to give away every year for contributions to value investing. We would like not to give that to somebody for whom it is a rounding error in their net worth. We would like to give that to someone who is decently poor so it would make a difference. Well we thought we found somebody this year. Unfortunately after we had already awarded the prize and contacted this person, I found out he was worth something between 700 and 800 million dollars. We have a problem for the future.

So in all these terms: statistics, mutual fund performance and perhaps, most strikingly, individual performance. There are strong indications that value investing satisfies these criteria of putting people on the right side of the trade. Just to talk about it and the specific assumptions that you are making as a value investor. First, using Ben Graham's metaphor that the market is like a partner who is manic depressive but every day he comes to you and offers you a price for your share of the business *(Mr. Market)*. If he feels good that day, he pays a high price and if he is depressed that day, it will be remarkably low. *Mr. Market* fluctuates a lot because he is a very strange guy. And there is overwhelming evidence for that.

OPPORTUNITIES IN VALUE INVESTING

Prices and Intrinsic Values Regularly Diverge

If prices are fluctuating a lot and you think fundamental values are stable and the evidence is in favor of that too. Then Prices are going to diverge regularly from fundamental value.

You Can Measure Some Fundamental Values

The second assumption is more problematical: it is that you can identify which stocks are trading above or below their fundamental values. That means fundamental values have to be measurable and that is by no means always the case. To give you a simple example of that, I sit on panels where we advise the managers of charitable trusts who invest money in the United States and invariably it is me and a bunch of people who sell money management services, and they all talk about how good they are at evaluating or estimating the value of stocks like *Microsoft.* And this was back when *Microsoft* was trading at 70 times earnings when it was at $110 a share. This was in the year 2000.

And I thought, thank God I am not that type of Jackass who has to pretend to be able to do that. Because the truth of the matter is that the value of *Microsoft* doesn't depend upon what happens in the next ten years because the dividend return you will get will be at most 15% of the value of the stock. So what you are pretending what you can do is being able to forecast what *MSFT* will look like in the year 2010 and from then on. If you do that, lots of luck. So it is not clear, but we are going to talk about cases where it is true and where you can do it.

Price and Values will Converge

Then another article of faith is ultimately the fundamental values will out. If you hold it long enough, you will get superior returns and the market prices of these stocks will return, and there is some evidence that is the case. When you try to put this into practice, what it means is first of all, because most, not all, will not be strikingly under or overvalued if you are thinking of going short. **You have to look Intelligently for things that you are going to value.** Then when you estimate values, you have to be rigorous about knowing what you know.

Not all values are measurable as in the *Microsoft* case. And much more importantly as *Warren Buffett* has recently proved—though he is the most successful investor in history, but as he has recently proved with respect to silver and the value of the dollar--**not everybody is an expert in everything.** You are not going to be good at valuing everything. You have to concentrate on what your own particular circle of competence is.

Search for Opportunities

The third idea is that you **look Intelligently for opportunities**. You are rigorous about **valuing** those opportunities and then you have to be **patient**. And *Buffett* tells a little story where he says, "Investing is not like baseball where you have to swing at every pitch. You don't have to swing, they can throw as many pitches as you want, and you still don't have to swing. Value investing implies concentration not diversification. Because you can be patient, **you want to wait for your pitch**. That is the good news. The bad news is that any professional investor knows is they run up the score whether you swing or not. Because you (as the money manager) are being compared to indices. Because you have to have some reasonable strategy for what you are going to do when there is no obvious opportunity in these two categories.

THE PROCESS OF INVESTING

Now all of that it seems to me can be described as a **process**. This is where we get back to really much more than just value investing.

Search Strategy

A sensible investor is going to start with a well-formulated search strategy. Some of that will be screening on statistical or other basis--or particular opportunities to devote research resources to.

But some of that is going to be what you decide to do. It is what you are going to specialize in, because in this game, the specialists are much more likely to be on the right side of the trade than the generalists. If you know and are living in Romania and are well-connected there, you are more likely to do much better investing in equities there than someone who flies in from New York and thinks they can judge what is going on. So it is also a matter of developing that circle of competence. Identifying what you are good at. I don't care whether you go to value investors or not or any other investors there ought to be a circle of competence there. And if their circle of competence is every industry, every country, then lots of luck.

A Good Valuation Technology

Second, once you have **identified** opportunities, you need a sound **valuation technology** that uses all the information as effectively as possible. What we are going to talk about today is what those technologies looks like. And it was the one that was pioneered by *Ben Graham*. That valuation technology among other things should identify the critical issues that should affect the future value of your investment and then you want to concentrate on that information and any collateral indicators that will tell you….like what management is doing and so on. What it will tell you about that future value.

Managing Risk

And finally, you have to have a way of **managing risk effectively and systematically**. Now I am going to talk about value investing approaches for all of this. But what I hope you will go away with as a minimum is a notion that whomever or however you invest that **all these steps are being done effectively in some degree.**

Now it used to be that life was easy. That from about 1900, *Jeremy Seigel* has gone back until 2000 which is 100 years. If you ever think of teaching—the thing you have to remember most is—the very best students are only listening to you about 40% of the time. You have to say everything three times. The problem with that, of course, is you are listening to yourself 100% of the time and it gets pretty tired. So if you don't change things a little bit, it is hard to keep yourself awake.

Returns on the Stock Market

If you look historically, returns on stocks have been 10% to 11% and returns on bonds have been 3% to 5%. Short-term instruments have returned even less. **Buying stocks was a terrific search strategy historically.** Things no longer seem to be that simple. There are basically two ways for US and foreign equity numbers don't look very different from this. That you can calculate future returns. One is you can look at dividend returns plus capital gains. Capital gains are presumably driven by growth in earnings. Growth in earnings is presumably driven in the long run by growth in world GDP. It is about 4.5% to 5%, and you add those two numbers together—buying stock in the US at current valuations (August 2005) looks like it will produce future returns of 6.5% to 7% a year.

A second way to do that is to do a 1 over the price earnings ratio and add expected inflation. This number these days is actually a little higher than that. This is the earnings return you get at low levels of inflation. Because stocks are real assets and inflation gains are free and this number is probably a little lower. So you are looking at 6.5% to 7% returns for the stock market. So historically stocks returned 10% to 11% and now they look to return less than that—6% to 7%. The bad news is that is what high yield corporate bonds yield. So for what looks like comparable risks, just buying stocks is not by itself a successful search strategy.

Search for the Obscure, Cheap, Small, Boring and Become an Expert

What you got to do it seems to me, and this is what the evidence shows, is that you want to start looking at things that are obscure. If you decide to buy *Microsoft* you are competing with about 200 other analysts and about 1000's of investors who are looking at that company too. That competition no matter how smart you are is a tough competition that is true of all the large cap global stocks. Ideally--to be on the right side of the trade most often-- **You would like to be the only one seriously studying a particular security or one of a few people.**

Small-cap, small companies, small markets, particular cases like spin-offs where people get one share for every 10 shares of a big company they own. Because the market capitalization is so small, they tend to dump it on the market.

And boring is your friend. We will talk about why the psychological and institutional evidence shows that is going to continue to be the case. But people like high tech, people like potential lottery tickets. People like speculative situations and exciting industries and that is not where you want to be because it minimizes the chance that you will be on the right side of the trade. And it turns out for psychological and institutional reasons that ugly in the stock market as in the marriage market is your friend. Financial distress and bankruptcy--there were huge bargains there. Low price to book, sales and earnings. Industry problems, company problems or disappointing performance. The reason that seems to be your friend is that those are the things that seem to be able to get investors to sell reflexively. It means that the person on the other side of the trade is just getting rid of those securities.

If you are an expert in that area, as the prices fall unjustified in your opinion, you should be able to be in a position to take advantage of it. Finally, as happens ever so often like when the *RTC (Resolution Trust Corporation)* is dumping a huge amount of real estate on the market. Or the privatizations in eastern Europe where shares were going to be dumped on the market, and there was going to be a big supply and demand imbalance that is likely to create an opportunity for you to be on the right side of the trade.

But ultimately the reason you want a **search strategy** is so when you have done all the analysis and valuation and this looks to you like a bargain, you have to ask the question **why has God been so kind to make this opportunity available only to you?** And the answer is, unless you are a very clean liver which doesn't cover most of the investment managers I know, there is no good reason, so you have to have some sort of rational to answer the question **why are you the only one seeing this opportunity?**

Now, the statistical studies that I talk about support these results. Cheap stocks portfolios outperform the market by about 3% to 5%. **If you do nothing but eliminate the high glamour growth stocks you get another one or two percent.** On the other end, high market to book stocks under perform by 3%. These are glamour stocks which are high growth and trade at high P/Es. And small capitalization stocks these are obscure areas whose stock values have fallen so far that there stock values are small or tiny little companies that money managers can't pay attention to because they can only put five or six million dollars at most into them out perform by 2% to 3%. Statistically, historically, these strategies we are talking about which are the value-based search strategies, do seem to outperform. The question we want to ask ourselves is why we think that is likely to continue in the future. And the answer to that question really takes two forms.

The Psychology of the Institutional Imperative

The first is that most trading is done by institutional money managers. And there are reasons that money managers for institutional reasons are likely to concentrate in certain kinds of stocks which will lead to those stocks to be over bought and over valued. And therefore concentrate away from other types of stocks that will be under bought and undervalued. Once that process starts by the way, there is strong institutional reinforcement *(Momentum?)* You get in trouble by significantly deviating from the performance of other institutional money managers. If you

just or nearly match the performance of other money managers, you are not going to get into trouble. *(Safe in the herd)* What is the way to do that? It is to buy whatever everybody else is buying.

So once a trend whether it is the "Nifty-Fifty" in the early 60's and 70's or tech stocks in the 1990s gets started, there is an institutional imperative (See *Warren Buffett's* explanation of the term *Institutional Imperative*) that makes it go too far. Because money managers don't want to expose themselves to the risk not embracing that institutional trend. That trend, we know in a way what it looks like. There is a phenomenon that is well documented by institutions. It is *window dressing*. In January or just before they report their portfolios regardless of their performance, institutions tend to buy the stocks that have done well and that have gotten good institutional research reports. It is called window dressing. So whatever their performance has been that whenever their clients look at their portfolio they can say that is a good pinstriped, grey portfolio, I am not upset by that.

That again is behavior which leads to concentration in some stocks and away from concentration in others. There are also institutional reasons to concentrate on stocks that have huge potential upside. When you do your marketing, it helps to say we bought *Microsoft* in 1990 or we bought *Cisco* at the IPO in 1992 or whatever are the particular events. Anybody, who has listened to marketing presentations by institutional money managers' they talk about particular successes, knows this. There is also a less respectable reason why they want to invest in that. As a money manager, my compensation is an option. If my portfolio goes way up, I get paid a lot. If it goes way down, it is very hard especially when I am starting out for them to take the money away. So I have an incentive to embrace risk with large upsides and with perhaps steady downsides. So in a good year I do well and in a bad year, I don't lag the herd. Those tend to be the big glamour stocks that have the capacity to triple even if the expected return is only five percent as opposed to the stocks that will, on average, do better but don't have the upside potential. **So there are institutional reasons why we think concentrating in high growth, high P/E glamour stocks are likely to continue.**

Individual Psychological Reasons

There are also individual, psychological reasons. We will offer the experiments tomorrow, but if you offer people the same exact choice, if you couch it in terms of a potential loss, **people will embrace risk to avoid it.** You couch it in terms of potential gain, and they do the natural thing and act as if they are risk adverse. People irrationally avoid those risks; they oversell those stocks. Also we know people buy lottery tickets which is the individual equivalent of blockbusters. Many of my students want to get rich in a year and a half after they leave business school. They are not interested in making 22% to 23% a year for a long period of time. That is an irregularity which has been around for a very long period of time. Lotteries are crappy investments, and no one ever lost money running a lottery, even the government.

A Human Experiment in Psychology

The final point—and this is significant—that you would think people would learn. The statistics I showed you would become embedded in how people behave. These statistical portfolios that outperform by even three percent puts you in the top 2% of money managers. There are also experiments that show that **people suppress uncertainty.** They believe they know what they know with certainty. That, by the way, tends for them to exaggerate both good news and bad news—drives good news stocks too high and bad news stocks too low. *(The market always goes too far or to extremes).*But they never learn, and this is an experiment worth talking about.

It will give you a feel for human nature. They take psychological subjects, and they show them a white square against a black background. And they ask them to estimate how far away the square is. They tell them it is between 1 and 20 feet away. And they ask them to estimate the error brackets; in other words, is it plus or minus a foot. They all give a precise estimate like 7.5 feet and they all give very precise error brackets of plus or minus a foot. What they don't tell them, of course, is the size of the square. And they vary the sizes of the square. It turns out; you can't know physiologically the location of that square without knowing its size. So the true answer is it is

10.5 feet away on average and the error brackets are between 1 and 20 feet. People just don't seem to grasp that reality. Faced with that uncertainty they impose the idea they know where the square is. And what they do is show them the squares of different sizes. And they say look, these squares are of different sizes, and then they run the experiment again.

People are not totally stupid; the error brackets get wider, they go to plus or minus more feet. But people still think they know where the square is. So the fact in hindsight that they do not adjust means that there are these ingrained beliefs that are very difficult to contradict in terms of the evidence. So when you look at these historical irregularities of out performance of value portfolios that were first identified in the 1930s and 1940s. And have continued to be re-identified. It does not look like a big surprise when you look at institutional and individual realities that underlie investing that these portfolios have continued to outperform. *Inherent institutional and individual biases create ongoing opportunities.*

Until that institutional reality or individual behavior changes, things don't look like they are going to change. So a value search strategy looks like it does extremely well. It doesn't mean it is the only search strategy that ought to do well. But you ought to remember that 70% of professional investors under perform the market. And the value search strategies outperform 95% to 97% of other investors.

ADDING VALUE TO YOUR ANALYSIS

But having identified where you are going to look if you are not going to employ my students, just do it with a computer. However, if you are going to someone who will do active research or active selection; among these statistical opportunities they must have a process for valuing what you are looking at to actually add something to the statistical test. And this is the most depressing thing I am going to talk about here.

Sanford Bernstein which is a terrific operation, it is technically very sophisticated, they have 200 analysts, and they monitor their performance. They have outperformed the market for over 25 years now by 3%. They manage, by the way, 400 to 500 billion dollars. That puts them in the absolute top tier of institutional money managers. If they had just done market to book portfolios, they would have outperformed the market by 3.9%. **So for all that work by the most successful money management out there, they add negative 1% to their performance.**

Effective Valuation

So the second thing you always want to look for in a money manager is ability to value things effectively. I am going to talk about what, in general, a reasonable valuation process looks like. And the process, of course, that I am going to talk about is the ***Graham & Dodd*** **value investing process.** The most common type of valuation you will see all over the place are ratio valuations. That an analyst will take a measure of cash flow whether it is accounting earnings or earnings before interest and taxes (EBIT) or EBIT + Amortization added back or EBITDA, and they will apply a multiple to it. A different multiple for each cash flow, but there will be a multiple. And that multiple will usually be based on so called comparable multiples that are what similar companies are trading for in the market--whether it is a private market or a public market.

The problem is the comparable company is not that easy to define. Presumably companies with strong economic positions should have higher multiples. In a cyclical situation, in an industry whose cash flow is cyclically depressed should, if you are interested in long term value, have a higher multiple. Here leverage should lead to higher risks and lower multiples.

Management quality is a tough one. How many people think management quality should lead to a higher multiple? Of course it should, better managers reinvest funds more effectively. How many people think management quality should lead to a lower multiple. Of course it should, management quality is already built into the earnings. They already earn a lot because they have been good managers for a long time. And good

managers have only one direction to go which is downhill. So in that case you don't even know what the sign of the adjustment is. **But mostly it is growth that is the problem.**

The Problems with Using the Discounted Cash Flow Models for Valuation

Companies grow at vastly different levels and rates. Growth obviously adds under certain circumstances to multiples though you will see, but it also reduces multiples. In fact, when you have done all this, ask yourself are these cash flow levels really sustainable? You are looking at errors realistically of plus or minus 100% in these estimates of multiples. In fact, of course, you can do it by computer. You don't need to be an analyst to do them for future valuation. So it doesn't really add anything to valuations. So this is almost an exercise in futility. Thank goodness we teach our MBAs to do something more sophisticated than that.

Now, how many people in this room actually have MBAs? You gotta admit it if you got one, you can't be ashamed by it. What I hope you were all taught to do was to estimate future cash flows up to a certain year and then estimate a terminal cash flow multiple by a factor which is usually the terminal value which is all the cash flows discounted back to the present. That is a discounted cash flow (DCF) model. You discount the cash flows back to the present usually by the cost of capital and the growth rate. Anybody who has seen any serious business research or any serious Wall Street research will have seen that done. It has two advantages: first, since you are used to the ratio analysis, just doing a terminal value means that any serious diseases that this detailed approach has are also diseases that affect the ratio analysis. You can't really do worse than the ratio analysis because you are thinking in a way more carefully about things.

Second, it is theoretically the right thing to do. On the other hand, when you go through it and calculate these cash flows – starting with estimating revenues subtracting required investment then getting the cost of capital, there are a huge number of embedded assumptions. In particular, anybody who has done these models should have a sense that they are very imprecise. Why? It is because almost all the value is always in the terminal value for these models. And the terminal value is usually a cash flow that you may estimate reasonably well times 1/over the difference between the cost of capital—of say 10% and a growth rate of 5% which is just the growth rate of nominal world GDP. 1/ (0.10 – 0.05) or 1/0.05 = 20 x multiple.

On the other hand, suppose this is the growth rate from say 5 years out—not today's growth rate but from 5 years onward. Say you were off by 1% in your estimates in either direction and 1% in the cost of capital in either direction; you could easily have a cost of capital of 9% and a growth rate of 6%. 9% minus 6% is 3%. 1/3% is a multiple of 33. You could equally well have a growth rate of 4% and a cost of capital of 11% and the difference is 7%--1/.07 = 14 multiple. In the critical element of value that is the difference of more than 2 to 1. And I believe the people who have done this have seen that happen. *The range of values is too wide to be of practicable use*

That is not a problem that arises from the terminal value formula. **That is a problem that is fundamental to a discounted cash flow approach to valuation.** And this is the second thing it is important for you to know. Any investment managers who are out there who are doing discounted cash flow measures of value are using a technique that in practice is an incredibly stupid thing to do.

Assumptions Required for Using the DCF Model

There are three (3) reasons for that. One of which will be obvious and two are a little less obvious. The obvious reason is, and it is reflected in the terminal value problem. You take good information which is the near term cash flows, and you take really bad information which is the long-term estimation of cash flows and you add it *together. (Charlie Munger used the metaphor: "When you mix turds with raisins, you get turds.")* When you add bad information to good information what do you almost always get? Well, you always get bad information because the bad information dominates. What you would like to do in a valuation approach is start with the pieces

of value that you know are there and segregate out the bad information. That is the natural thing to do, and this approach doesn't do any of that.

The second problem with discounted cash flow and NPV approach is, think about what you want a valuation approach to do. **It is a rule; it is a machine for translating between the assumptions that you can make reliably about the future and the present day value of the security.** The input you want for that machine are the assumptions which you can reliably make. But think about the assumptions that you make for a discounted cash flow analysis.

Suppose we were doing this for the *Ford Motor Company* or for *Mercedes Benz*, I guess there are no more British examples that I can use, sorry. The DCF models have to use estimates of the future profit rate, estimates of the future cost of capital, estimates of investment intensity, and estimates of growth rates. Can anyone guess twenty (20) years from now what *Ford's* profit margins will be? 10 years from now, 5 years from now? But that is what the DCF model requires. How many think they know what *Ford's* growth rate is going to be? 10 years from now, 5 years from now? Lots of luck! So you are using assumptions that you are not very good at making. You try to do sensitivity analysis; you try all sorts of values. Things don't vary independently. The sensitivity analysis will usually give you any outcome you want. And that is why the investment bankers love them. *(The last person you want to fool is yourself—anonymous).*

You are putting in smoke and what you getting out, of course, is smoke. But let me ask you other questions about *Ford* and the global auto industry? Twenty years from now, will there be a global automobile industry? You can make a judgment about that. Is this industry going to be economically viable or not? Is *Ford* going to have technology that no other auto company has? Or alternatively do the other auto companies have technology that *Ford* does not or can't have?

Finally, does *Ford* have access to customers that other auto companies don't or do they have access to customers that *Ford* doesn't. **Does *Ford* enjoy competitive advantages?** That is a question you can make a judgment about. And you would like that question to be embodied in your valuation approach.

The third thing is you would like your valuation approach not to throw away information. You would like it to use all the information available. And what particular important information is never used in a DCF analysis. The balance sheet information—it just disappears. In favor of earnings which are income statement projections. So what I would like is an approach to valuation. And again, I am going to describe one, today which is the *Ben Graham* approach to valuation but you ought to know that this ought to apply. It ought to organize value components from most to least reliable.

So you can say, I know I have this much value at $8 per share there. I am less certain about the next twelve dollars, and the next $20 is pure speculation. **It should organize valuations by strategic assumptions.** This is the valuation if the industry is non viable, this is the valuation if the industry is viable but no companies enjoy competitive advantages but the industry is viable. This is the value if there are sustainable competitive advantages. *Segment information and values from most reliable to least reliable.*

And third we would like to use **all the information and cross-correlate that information.** Well there is a way to do that. There may be other ways to do it that I am not aware of but one way to do it was the way *Benjamin Graham* did it in 1935/36, and who thought about this problem. And later as it was refined by *Professor David Dodd* at *Columbia University*.

STARTING A VALUATION

Asset Valuation

Where do you always want to start a valuation? You want to start with assets. Why? Because they are tangible. You could technically go out and look at everything that is on the firm's balance sheet. Even the intangibles like the product portfolio you could investigate it today without making any projections or extrapolations. You could even investigate the quality of things like the trained labor force and the quality of their business relationships with their customers *(I think this is very difficult to ascertain).*

Start with that. It is also your most reliable information. It is also all that is going to be there if this is not a viable industry, because if this is not a viable industry, this company is going to get liquidated. And what you are going to see is the valuation in liquidation. And that is very closely tied to the assets. In that case, with that strategic assumption, you are going to go down that balance sheet and see what is recoverable. But suppose the industry is viable, suppose it is not going to die. How do you value the assets then? Well, if the industry is viable then sooner or later the assets are going to be replaced so you have to look at the cost of reproducing those assets as efficiently as possible. So what you are going to do is you are going to look at the reproduction value of the assets in a case where it is a viable industry. And that is where you are going to start. We will go in a second and a little more tomorrow about the mechanics of doing that reproduction asset valuation. But that is value that you know is there.

The second thing you are going to look at because it is the second most reliable information you are going to look at is the current earnings. Just the earnings that you see today or that are reasonably forecastable as the average sustainable earnings represented by the company as it stands there today.

And then we are going to extrapolate. We are going to say suppose there was no growth and no change what would the value of those earnings be? Let's not get into the unreliable elements of growth. Let's look **secondly at the earnings that are there and see what value there is.** And that is the second number you are going to calculate and the likely market value of this company. But it turns out that those two numbers are going to tell you a lot about the strategic reality and the likely market value of this company.

Suppose this is a commodity business like *Allied Chemical* and you have looked at the cost of reproducing the assets. And you think you have done a pretty good job at that—And you could build or add buildings, plants, cash, accounts receivables and inventory that represents this business--customer relationships, a product line--for a billion dollars. This is usually going to be the cost for their most efficient competitors, who are the other chemical companies. So the cost of reproducing this company is a billion dollars. Suppose on the other hand its earnings power is $200 million, and its cost of capital is 10% so the value of it s earnings which mimics its market value is two billion dollars ($200 million/0.10). What is going to happen in that case? Is that two billion $ going to be sustainable? *$2 billion in earnings power value (EPV) is double the asset value (AV) of the company but there are no sustainable competitive advantages. If EPV is > than AV, then sustainability depends upon franchise value ("FV").*

Well, think about what is going on in the executive suites of all these chemical companies. They are going to seed projects where they can invest $1 billion dollars and create two billion dollars of value. What these guys love better than their families are chemical plants. So you know those chemical plants are going to get built if there is not something to prevent that process of entry.

Reversion to the Mean

As the chemical plants get built, what is going to happen to this chemical price? It is going to go down. The margins will decline, the earnings power value and the market value of the company will go down. Suppose it

goes down to a $1.5 billion. Will that stop the process of entry? No, not at all. Because the opportunity will still be there. *(Profits still above the cost of capital)*

In theory, the process of entry should stop when the cost of reproducing those assets equal the market value of those assets. In practice, of course, it is easier to buy a puppy than to drown it later. Once those puppies are bought, you are stuck with it. The process of exit is slower than entry. The same thing applies to chemical plants. Once those chemical plants are built, they are likely to stay there for a long time. Typically, the process may not stop there. It applies equally to differentiated products. Suppose *Ford*, to reproduce their assets of the *Lincoln* division is $5 billion and the earnings power value and the market value is 8 billion. What is going to happen then? *Mercedes*, the Europeans and the Japanese are going to look at that opportunity, and they are going to enter.

Now do prices necessarily fall? No, not in this case, they match *Ford's* price. What will happen to *Ford's* sales? Inevitably they are going to go down because they will lose sales to the entrants. What therefore will happen to their unit fixed costs? The costs will rise. Their variable costs are not going down, so their unit costs are going up. The prices are staying the same, their margins are going down and their per units sold and their sales are going down, so what happens to profits here with a differentiated market and with a differentiated product? Exactly the same thing.

The differentiated products won't save you. And that will go on until the profit opportunity disappears. Unless there is something to interfere with this process of entry, sooner or later the market value of the company will be driven down to the reproduction value of the assets. Especially, in the case of the Internet. You had companies that didn't have any earnings that were $5, $10 or $15 billion dollars whose assets could be reproduced for $10 million or $15 million dollars. **Unless there is something to stop the process of entry, the earnings to support that are not going to materialize.** So what you are looking at is a decline.

EPV in Excess of APV

If you have EPV in excess of reproduction value (AV) of the assets, there had better be something to interfere with the process of entry. That something that goes by the term, barriers to entry, is the same thing as incumbent competitive advantage. So any excess of earnings power value that is sustainable over the reproduction value of the assets, has in fact, to be attributable to excess earnings, and it has to be protected rather by barriers-to-entry which are incumbent competitive advantages--the nature of which we will talk about tomorrow. **Then and only then should you worry about the growth.** As you will notice in those first two cases, we have looked at value from most reliable to next most reliable to least reliable perspectives and also in terms of our assumptions about the nature of the industry which is if there is no competitive advantages, it's the asset value (AV) which should mirror the earnings power value (EPV). If there are competitive advantages, it will show up in excess earnings and you better be sure they are sustainable because that is where the value is coming from is those competitive advantages.

Mechanically Doing a Valuation

Now, I want to talk about what is mechanically involved and I will talk at much greater length about this tomorrow, doing an asset valuation is just a matter of working down the balance sheet. As you go through the balance sheet, you ask yourself what it costs to reproduce the various assets. Then for the intangibles list them like the product portfolio and ask what will be the cost reproducing that product portfolio. For the EPV, you basically have to calculate two things:

- You have to calculate earnings power which is the current earnings that is adjusted in a variety of ways that I will talk about tomorrow.

- You divide the normal earnings by the cost of capital. There is an assumption in an earnings power value and part of it is being careful about what earnings are. This is just a picture of what some of those adjustments look like. You have to adjust for any accounting shenanigans that are going on; you have to adjust for the cyclical situation, for the tax situation that may be short-lived, for excess depreciation over the cost of maintenance capital expense (MCX). And really for anything else that is going on that is causing current earnings to deviate from long run sustainable earnings. **So valuation is calculated by a company's long-run sustainable earnings multiplied by 1/cost of capital.**

What you have got then is two pictures of value:

1. You have got an asset value
2. You have got an earnings power value

And now you are ready to do a serious analysis of value. If the picture looks like case A, what is going on assuming, you have done the right valuation here? **If it is an industry in decline, make sure you haven't done a reproduction value when you should be doing a liquidation value.** What it means is say you have $4 billion in assets here that is producing an equivalent earnings power value of $2 billion. What is going there if that in the situation you see? It has got to be bad management. Management is using those assets in a way that can not generate a comparable level of distributable earnings.

AV is Greater Than EPV

In this case the critical issue—it would be nice if you could buy the company—but typically you pay the reduced EPV and all that AV is sitting there. Then you are going to be spending your time reading the proxies and concentrating on the stability or hopefully the lack of stability of management. Preeminently in that situation, the issue is a management issue. The nice thing about the valuation approach is that it tells you the current cost that management is imposing in terms of lost value. That is not something that is revealed by a DCF analysis. And there are a whole class of value investments like that. One of the great contributions to the theory of this business is *Mario Gabelli's* idea that really what you want to look for in this case is a catalyst that will surface the true asset value. You can wait and sometimes that catalyst may be *Michael Price* or *Mario Gabelli* if they own enough of the company. I would like to encourage those investors who are big enough to make that catalyst you.

AV Equals EPV

The second situation where the AV, the reproduction value of the assets = EPV are essentially the same. That tells a story like any income statement or balance sheet tells a story. It tells a story of an industry that is in balance. It is exactly what you would expect to see if there were no barriers-to-entry. And if you look at this picture and then you analyze the nature of the industry—if you say, for example, this is the rag trade and I know there are no competitive advantages—you now have two good observations on the value of that company. If it ever were to sell at a market price down here, you know that is what you would be getting. You are getting a bargain from two perspectives: both from AV & EPV so buy it.

EPV in Excess of AV

We have ignored the growth, but I will talk about it in a second. The last case is the one we really first talked about. You have got EPV in excess of AV. The critical issue there is, especially if you are buying the EPV—**is that EPV sustainable?** That requires an effective analysis of how to think about competitive advantages in the industry which is our subject for tomorrow.

Growth

So what I am left with then is the growth. And that is what I will talk about next. So I have looked at the **earnings power value (EPV)**, I have looked at the **asset value (AV)**; I have looked at the **critical issues** to which they give rise to, now I am going to look at the growth. Actually at this stage of the game, looking at the growth is surprisingly easy. The standard view of short term analysts is that growth is your friend. **Growth** is always valuable. That is wrong!

Growth is relatively rarely valuable in the long run. And you can see why with some simple arithmetic. I am not going to look at growth from the perspective of sales, I am going to look at it from the perspective of investment required to support the growth. Now the investment required to support the growth is zero then of course it is profitable—that happens almost never *(For Duff & Phelps* or *Moody's perhaps because of low or nonexistence need for growth capex)*. At a minimum you have A/R and other elements of working capital to support growth. Suppose the investment required is $100 million, and I have to pay 10% annually to the investors who supplied that $100 million dollars. The cost of the growth is 10% of $100 million or $10 million dollars.

Suppose I invest that $100 million at a competitive disadvantage. Suppose I am *Wal-Mart* planning to compete against a well-entrenched competitor in Southern Germany, am I going to earn 10% on that investment? Almost never. In that case, I will be lucky to earn anything; perhaps I earn $6 million. But the net contribution of the growth is the $10 million cost of the funds minus the $6 million benefit which is minus $4 million dollars for every $100 million invested. **Growth at a competitive disadvantage has negative value.**

Suppose it is like the automotive industry or like most industries with no barriers to entry, it is a level playing field so the return will be driven to 10% cost by the entry of other competitors. So I am going to pay $10 million, I am going to make $10 million so the growth has zero value.

Profitable Growth Occurs Only Within a Franchise

The only case where growth has value is where the growth occurs behind the protection of an identifiable competitive advantage. Growth only has value where there are sustainable competitive advantages. And in that case, usually, what barriers to entry means is there are barriers to companies stealing market share from each other. There is usually **stable market share** which is symptomatic of that last situation that means in the long run, the company will grow at the industry rate. And in the long run, almost all industries grow at the rate of global GDP.

So in these three situations, the growth only matters in the last one where its profitable (growing within a franchise) is. And the critical issue in valuation is either management or the *G&D* approach will tell you the extent to which that is important or you have a good reliable valuation and there is no value to the growth because there are no barriers to entry. Or it is down here (growth is profitable) and there obviously you want to get the growth for free. You could pay a full earnings power value and get a decent return. *(Buffett with Coke-Cola in 1988).*

Summary

Now to summarize about **growth**, growth at a competitive disadvantage destroys value, growth on a level playing field neither creates nor destroys value, and it is only growth behind the protection of barriers to entry that creates value.

INVESTMENT PROCESS

In terms of a process then what you start with is a **search strategy** that is designed to answer the question, why is this opportunity available only to me? It is designed to focus your resources effectively. You want a **valuation technology** that works well and that uses all the available information that uses in particular the judgments that you make about the nature of the industry, and that organizes value components by reliability class. And I suggested one approach that does that which is the *Graham and Dodd* approach, conceivably there are others out there.

You would also like then a valuation technology to identify key issues. You want any potential decision once it has been thrown up by your search strategy or identified by your search strategy. It has been valued in terms of valuation, it looks like a bargain. You want to review the appropriateness of that decision. Why? You have to remember to be sure that you are on the right side of this trade. The first part of reviewing any valuation assessment is to understand what the key issues are that underlie that purchase decision. **If you are buying earnings power and especially implicitly you want the growth, the crucial issue is the strength of the franchise.** It is not the growth rate.

Anybody who has a strategy of buying companies with growth rates above their P/Es is an idiot. Growth only has value if it is a strong franchise. And it is significant that the successful buyers of growth, like *Warren E. Buffett* and to a lesser extent one of my ex-students, *William Von Mueffling*, focus on the strength of the franchise as reflected among other things like returns on capital. If you are going to buy growth, that is going to be the critical issue—its strength and its sustainability and therefore its competitive advantage.

Assets

If you are buying assets, the crucial issue is going to be management. You want to look for Gabelli-type catalysts. Make sure you are not going to be trapped with old management *(A value trap).* You want to then look at collateral evidence, are the insiders buying or selling? It is not determinant, but it is something you want to look at. If you think it is a great opportunity and the insiders are selling with both hands, my advice is to look at it again. Who are the insiders? They are usually management. You want to see who the other investors are. Obviously, it is critical in the management case. You have five activist investors who own 44% of the stock, who are good activists and good value investors that is a good sign. If it is a "Greenmailer" who is going away or who could be bought off, that is a bad sign. Usually if it is in his circle of expertise and WEB is buying it that is also a reassuring sign.

Look at Insiders

You want to look particularly who is buying and selling the stock—insiders, management, and investors. That information is available. The last thing you gotta look at is there are psychological biases are deeply ingrained. And the bad news is they apply to you as much as anybody. **You have to track rigorously your own performance.** If you make a mistake, that is fine, but if you make it again, that is not a good idea.

You have to have a good search strategy, a good valuation technology and careful review of the crucial issues. And finally you have to have a **good strategy for managing risks**. In value investing the fundamental way you manage risks is to know what you are buying. That means there are certain risks you ought not to be exposed to and certain risks that you should be prepared not to worry about. The best example of this that I can think of is a REIT—a security backed by real estate investments. If you look at a building, the build generates income and if you buy the building based on the income it is generating then you ought not to worry much about fluctuations in the value of the building as an investor. On the other hand, if there are fluctuations in the real estate market and the value of that building, you do want to worry about those too, because you may have to generate liquidity. **So you want to worry about AV and EPV of companies you are buying.**

Managing Risk

Suppose the real estate returns are the same, the value of the building and the EPV are the same. But the price of the REIT is fluctuating all over the place; do you care about that last risk? You ought not to. That last risk is purely financial. It is purely the market being irrational. And if you know what you are buying and you get caught by one of those fluctuations, you ought not to care that much. If the franchise is there and it is earning what it was earning, the asset values continue to be there then financial fluctuations in stock price should not be your primary concern. It is understanding the value and the EPV of the buildings that you care about. On the other hand, to protect yourself with the EPV and earn above normal returns, you want a margin of safety. You don't want to buy something 5%, 10% or 15% below its fundamental value. You want to buy it at 30% or 50% or more discount. Those are basic ways to manage risk that you would think people would worry about. **What price am I paying; what am I buying; what discount am I getting and how sure am I of those characteristics.** Those essentially are the key ways value investors manage risk. Beyond that diversification helps. But if you are fully diversified (50 stocks) you are just going to be buying the market. If you are fully diversified, you are not going to be an expert in any particular security.

Diversification

So some diversification certainly, but inevitably if you are looking for above average returns, you are going to be concentrated, and you are going to come back to these things. For asset buys, catalysts are things you want to look for. If it's a bargain and the AV is $100 per share and it is trading at $25 per share for years, you don't want to buy it at $25 per share until you see events like a takeover or a deathly disease in the founder or owner. Activist investors getting involved who are likely to surface that value.

Patience

Finally, you want investors to be patient. **The biggest generator of risk are people who are bored buying things that seemed like a good idea at the time.** Or people under pressure doing things they feel they have to do. So you want somebody with a good default strategy. What is a default strategy? A default strategy is what you are going to do when you don't have any good active ideas. If you are dealing with family money that is very risk adverse, the obvious default strategy is cash. If you are an equity manager, then an obvious default strategy is just to buy the index. It is clearly something like an EMT portfolio allocation. This is the world where you don't have good active ideas. But if you have a good default strategy in place, you will be patient enough not to do stupid things.

In general, therefore, what you are looking for in **investment management** is:

- A good search strategy
- A good valuation technology
- A good review process
- And a sensible risk management strategy

Value investors in theory and in practice have done extraordinarily well in all those areas. But if you find other investors who meet all those criteria, then by all means, embrace them.

Thank you.

Gabelli Value Investing Conference held at Princess Gate in London

on Friday, August 5, 2005.

Professor Bruce C. Greenwald's Lecture on an Investment Process Second Day

Introduction

Joy Gardner, Gabelli Rep in London: Yesterday we went over the principles and merits of value investing and today we will dig deeper into the specifics. I encourage you all to participate in an active dialogue so please don't hold back in any questions as and when they hold up.

Bruce Greenwald "BG": Please ask questions. I can't answer them, if you don't ask them. Today will be a review of yesterday's material, so you will have an opportunity to ask questions.

We talked about a **sensible investment process**, and we will speak some more about the details of that process. And after the break we will speak about **how you assess competitive advantage** and **the quality of businesses.** That is probably the most important review of the decisions you will make.

Search

When you think about search, we talked briefly yesterday about some securities that nobody can value effectively. And when you have a search strategy you can't pretend that you can. I cited the example of *MSFT*. I thought it would be useful just to identify what securities are likely to fit into this category and to go through the sense in which there is just no way you will be able to evaluate *MSFT*.

This was done in 2000 when *MSFT* was trading at 110 or 80 times earnings. At that point *MSFT* was not paying any dividends. But I am going to make the assumption that suppose they started paying dividends between 2000 and 2010 at a rate of 50% of their profits which they still have not done although they have done closer to that than they have done at the time.

The second thing I am going to assume because it is the best assumption we can make is that the growth rate in sales in 2010 will be about 40% a year which was about what it was in 2000. To give you an idea of what that means, it means that by 2010 *MSFT* would be 28 times as big as it was in 2000. Right away that tells you something about the range of possibilities that you have to cope with if you are going to understand the future of *MSFT*. Then I discounted actual payments by 15% because presumably for a risky stock like *MSFT* in 2000 when interest rates were substantially higher than they are now, you would want to get a return of something like 15% on your investment. What you have seen from 2000 and 2010 is dividends, and based on these formulas we can calculate what those dividends are and calculate the NPV of those dividends. Anything else that you are getting depends upon conditions from 2010 forward.

If you discount these 50% dividends that are growing at 40% a year, the discounted value or the NPV of the dividends payments you could expect is about 15% of the price that you are paying for the stock. This means that 85% of what you are paying for the value of the stock is based on whatever it is that will go on out here beyond 2010. And that is a calculation I think worth doing for any stock. Because in an environment that is changing as rapidly as the personal computer market, to think that in 2000 you had a good idea of what would happen in 2010 requires a degree of hubris that suggests you should really be in the *Bill Graham* saving souls business, not in the business of investment. So it is a calculation worth doing—**how much of the return are you going to anticipate and to be able to reasonably anticipate? How much of it will happen in the near-term future and how much in the distant future?**

There is another common investing mistake that is related to this kind of calculation. People say they are going to have two good years, I know that, therefore, I will pay 40 times earnings. Two good years in a stock that is

trading at 20 times earnings is 10% of what you are paying for the stock. That means that 90% of what you are paying for the stock has nothing to do with that short-term earnings forecast. It has to do with a judgment that is implicit—and **implicit judgments** tend—for reasons we talked about yesterday--not to be good judgments in how that company will be valued.

So that when you think about where it is effective to do valuation work effectively, you want to think first about this distribution of payoffs and what your forecast that you think you can make or say about the fractional overall valuation that you are explaining. That is a small point I think worth making and if you are not an investor yourself, but you are choosing investment managers, you would hope that a professional investment manager would be aware of.

The second thing I thought it would be useful to show you is the actual studies that support the statistical numbers that I gave you in summary form. That is that cheap stock outperforms by about 4%, disappointing stocks outperform and so on. This is one of the earliest studies, it was actually published about 1984, and again you will see the data went off in 1982. This has been replicated since then because these studies tend to get done over and over again. What these people did—*Richard Thaler* who is now at the *University of Chicago*—they picked a year like 1933 and they looked between Jan 1, 1933 and Jan 1, 1932 and they asked which stocks have performed best over the past year and which stocks have performed worst over the past year.

They then formed a portfolio of the 10% worst stocks and a portfolio of the 10% best performing stocks, and they looked from 1932 to 1933 and which is in the coming year and they asked which of those portfolios performed best? And the measure they used was the performance of the poorly performing stocks minus the performance of the good stock portfolio. They did it first, for one-year disappointments. This is the curve which shows the future return difference between those two portfolios. And it shows actually something important about the nature of disappointment. What this shows is the monthly data over which the portfolio was formed--over the next twelve months; the good performing stocks outperformed the worst performing, disappointing stocks. So if you consider disappointing to be a one-year horizon, you should stick with the good, non disappointing stocks not the disappointing stocks. This is a phenomenon that shows up in all these studies. *Momentum trumps value in the short term.*

In the short-term, returns are positively serially correlated. Momentum! There is a lot of statistical support for momentum in the short term. The reason that value investors are not concerned about those, of course, is because they are long-term investors for tax and other reasons. And you will notice that in the long term that is from 12 months to 24 months there is no difference between the performance of the good and bad portfolios. Then they redid the study and they looked at stocks over the prior two years, so if they were looking at Jan. 1933 and forming a portfolio, they looked at the stocks that performed worst and best over the past two years from 1931 until 1933. So they looked at two year disappointments, and again they looked at the difference between the well performing and poorly performing portfolios and that is the second curve here (on diagram).

You will notice that in the second case, you start to see significant out-performance by the disappointing stocks. By the end of two years, they have outperformed by almost 6% a year—your portfolio would be ahead by 12% or more after two years. Then they went back and did it again with three-year disappointments. You can see it is least positive with 12 month returns but strongly positive with longer term time periods. The difference in excess returns is 11% to 12% from the disappointing stocks.

There is actually a lesson here for all these studies which is that slightly disappointing is not enough, when we talk about cheap—and we will see that in a second—when we talk about disappointing, when we talk about obscure as the basis for statistical portfolio building, **it has to be very disappointing, it has to be very obscure.** It can't be that this stock was down 30% in the last month, because then the (downward) momentum will take over. It has to be two or three years that this stock has spent in breaking the hearts of investors. When we go

cheap, again it will be the **extremely cheap stocks where you have to hold your nose, and be willing invest in to get these higher statistical returns.**

Are there any other questions about this?

You rebalance the portfolio every two years or three years or one year. That is a good question because it is much more important with the data that I am going to show you next. You don't just hold the 1931 disappointing stocks forever; you hold them for 2 years and then form a new portfolio.

These are stocks that have gone down a lot and they may or may not be in Chapter 11. They were glamour stocks that are no longer trading as glamour stocks like *MSFT* is trading at $27 a share down from $110. These are not necessarily ugly stocks. The best measure of that is a study done my *Gene Fama*, who is the father of efficient markets. This is a typical table from a paper that he has done in the early 1990's. He is still struggling with the results of. What he did was something slightly different. What he did was at the end of every month, he formed portfolios. At the end of the month, he formed portfolios of stocks that were lowest book-to-market (which is the highest market-to-book) and the highest book-to-market which is the lowest market-to-book. Why he did that way, only he knows since most people are used to thinking of it as market to book.

That means that these stocks down here are the glamour stocks and these stocks up here are the cheap stocks. He formed portfolios at the end of each month, and he did it for each deciles of stocks, and he also did it for small cap to large cap stocks. In this case he changed the portfolios at the end of every month there is a lot of trading going on here. Value investors do actually rebalance the portfolios every month. The first thing you want to look at is the difference in returns between the high market-to-book stocks versus the low market-to-book stocks. But you will get the message looking at these numbers—these numbers are monthly percentage returns. Over the period that he looked at, the average monthly return for all stocks was 1.2% of about 15% to 16% a year because of compounding.

The glamour stocks *(high growth and high P/E)* have average monthly returns of 0.64% which is annualized out at 7.5%. he *ugly* stocks have monthly returns of 1.63% that is 1% a month higher per month than glamour stocks and those are the results you see. It is in this case that the nearly bankrupt ugly stocks lie, although if the book value is low enough you could actually get a high market-to-book but usually the ugly, bankrupt stocks will be down here, not just the disappointing stocks. Rebalancing once a month, the difference in the returns is not 6% but 12% a year. It is an enormous difference, but look at the pattern of the differences. But when you go from the extreme, most glamorous to the next deciles, the difference is almost 0.3 per month which is almost 3% a year. At the upper end when you go from the eight deciles to the top deciles again you get another fairly big difference. But look at what goes on in the middle there is not much change in returns.

The action is coming from buying extremely cheap stocks and staying away from glamour, extremely expensive stocks. So what you are going to be doing to get this extra 1% return is predominately **concentrating down here on the really ugly stocks versus up here with the real glamour stocks.** Again, it is just like the last example I showed you. Cheap doesn't get it, to get these excess returns statistically, you must do *really* cheap. Disappointing didn't get it. **It wasn't disappointing for a year that was your friend; it was disappointing for two or three years that was your friend.**

The same thing applies to market capitalization stocks. Small market cap stocks again he picked at the end of every month, and he rebalanced the portfolio monthly. The small caps, by the way, included the companies near or in bankruptcy, because they don't have much value in their equity, returned almost 1.5% a month. The high market cap stocks returned under 1%. But again look at the central range; it is from 1.22 to 1.06. The full difference is much more than that but the difference appears at the extremes. It is extremely small stocks. Ideally, there is a kid that we helped set up a fund *(Paul Sonkin of the Hummingbird Fund)*. He is our lab rat. *Mario Gabelli* and myself put him into business because he wasn't a genius but he was very disciplined, and he had a

strategy of buying companies with market caps of 10, 15 or 20 million dollars or less which means there was no competition from the big investment funds, because they can't put enough money into the stocks to make it worthwhile. And there are a lot of people dumping stock. He has been in business for five years, and he has outperformed the market by 23% a year. His average return is 21% and the market is flat to down.

What he is really doing is operating at the extreme, low end here in the Pink Sheet stocks. So again the message is that if you are going to do statistical value, it is going to be extreme statistical value. It is not going to be the bottom half of stocks by P/E ratios which is often the definition used by newspapers. It is going to be the bottom deciles.

Are there any questions about that because that is a fairly important point? It means that to be able to take advantage of those psychological and institutional irregularities that we talked about, you really have to hold your nose and buy the truly crappy stocks.

Question: If you look at the bottom 3 deciles, it *(performance)* is not that different.

BG: You do want to stay away from—absolutely--most glamour stocks.

When people try to get cute and really look at the companies, mostly they do worse than these statistical models because all of a sudden all those instincts against loss aversion come into play. They say, "Well, this stock is really cheap, but it is very ugly, and I don't want to own it." The classic case of this is *Sanford Bernstein* when they do a combination of analysts' work and this kind of model—they have outperformed the market by 3% a year over the last 22 years. That is huge out performance. They calibrate their models and their out performance not just against the markets but they calibrate it against the simple market-to-book models. If they bought on the basis of simple market to book, they would have outperformed by 3.9% a year. So by doing things the way you suggested, a sophisticated operation like *Sanford Bernstein* with 200 analysts loses 1% by using their 200 analysts to "fine-tune" their system. It is very hard to beat these numbers.

Question: What is considered the lowest ratio of price-to-book to use?

BG: These are deciles. This is a period from 1963 to 1990. If you were in 1973 to 1975, I bet you that the lowest market-to-book is 50%. If you are at the end of 1990, the lowest price to book is probably 80%. It just varies over time but consistently you are just buying the ugliest stocks that are available.

People have looked at these strategies and if you have diversified portfolios... If there are 2000 stocks here and you actually track probably the wrong measure of risk but it is the one measure people publish which is the variance of the portfolio, these small stocks and ugly portfolios have much lower variance. *(Have your cake and eat it too!)* than the glamour stocks. It is the glamour stocks that go bad that have the high variance *(high beta or "Torpedo Stocks").* So when people have looked at the issue of risk, provided that you have a portfolio of bad stocks, the bad stocks on average turn around. They turn around because you have asset protection and low expectations unlike the situation when you have a *"Microsoft" (a high glamour stock)* go bad.

The available evidence—and it is what these people found most disturbing is—these high return portfolios are also in terms of the conventional measures the low risk portfolios. This is an example of something that is useful to do. You have noticed that what we talked about is essentially a single indicator statistical construction of these portfolios. That low market-to-book is looked at separately from low market cap, and I have looked at disappointing by itself.

This is a study that looked at glamour stocks versus value stocks in two dimensions. One dimension was cash flow to price. So the glamour stocks had low cash flow to price and the value stocks had high cash flow to price. And here the stocks were not divided into deciles, they were divided into thirds. But a second variable was

used—the growth rate in sales--on the theory that fast growing stocks are attractive stocks that are apt to be overvalued.

Again, so this is the extreme set of glamour stocks that I have circled here. That it has the lowest cash flow to price and the highest growth rate in sales divided by thirds. Those stocks underperformed the sample by about 3.3% a year. Also in this study, they are not doing the monthly rebalancing. So there is not as much trade going on. These stocks are the cheapest—they have the highest cash flow to price and the lowest growth rate to sales. They outperformed the market by 5.4% per year and that is picking the portfolios annually. The difference is 8.7% if you add the two together (4.4% + 3.3%). That is smaller than what you saw in the previous slide—the difference between the extreme value stocks and the glamour stocks. That difference was on the order of 12% to 13% per year. That is a reflection of two things. Part of that about 1% to 2% is because portfolios are formed annually not monthly. If you do it monthly, it turns out you do better by some reasonably, measurable amount. The second thing is that these are now in thirds so the universe of stocks to look at is much more extensive. Because there is some overlap. There is also a wider choice here. You are not forcing yourself to take as extreme a position. But it does take an unfortunate combination of growth and value to really get excess performance.

If you read across this table and you look at the value stocks with high growth rates they don't significantly outperform the market. **It is the ugly and boring stocks that really outperform—it is the two of them together.** If you look at the two of them together and you just look at the expensive stocks that grow slowly, they don't significantly under perform the market. So it is the two indicators that must work together (value and growth) if you are going to do less extreme valuations. *(If you invest in franchise stocks you must understand the franchise, its sustainability and the price you pay for growth).*

So one of the lessons of the statistics is you have to be fairly careful about it, and you have to be prepared to look at extreme alternatives. That, however, is just history. If you are going to invest from now on, you have to believe that history is sustainable. **And what we talked about last time was the institutional and psychological forces that look to be driving these statistical results that seem likely to continue to be true of the investing industry.** I talked about one set of experiments on the individual level.

Loss Aversion

I would like to run an experiment in this room about the issue of *loss aversion*. Read these choices and which of these two choices would you pick? I want the people on my right to raise their hand if they chose the certain $500 rather than the lottery. How many chose the $500 for certainty. 95% of people choose. This is a fair lottery with an expected payoff of $500 and some risk. This is $500 with certainty. So everyone could choose this.

Over here, I want you to raise your hands if you chose the minus $500 with certainty. It is much less. Why is that so striking? These two choices are exactly the same. Here is you win the lottery, you wind up with $2,000 and if you lose the lottery, you wind up with a thousand.

Here if you lose the lottery, you wind up with a $1,000 and if you win, you wind up with $2,000. This choice and that choice are exactly the same. Here you wind up with $1,500 for sure and here you wind up with $2,000 minus $500 which is $1,500. Yet, how that choice is posed, completely changes the answer that investors give. What is going on in the second case is that people are confronted with a certain loss. To avoid losses, people will take unreasonable risks. They will do irrational actions. Classically the way to avoid the process of loss in a stock when you see the process of bankruptcy and you saw the reaction from my friend in the blue shirt here—is not to buy those stocks. Once people are dumping stocks reflectively to avoid the possibility of loss, the prices of those stocks will fall below what is justified.

In terms of what we spoke about the other day, the person on the other side of the trade is not doing a careful calculation. And these results have been sustained since the late 1960s. And there has been no visible change in

results. They have run them with medical students, law students, money managers and others and the loss aversion seems to be a continuing phenomenon. If you doubt it, what you should do is monitor these behaviors as best you can in society and the institutional structure of the money management business which you ought to be familiar with to determine if this phenomenon will persist. I think all the evidence will show that they do. **And it is not a surprise that the very small stock premium have not gone away.** Even though we have funds that invest specifically in bankruptcies that have never been there before; that invest in spin-offs that have never been there before.

It looks like those forces dominate the environment. Now, that is all that I have to say in extension of what we talked about yesterday about **search strategies**. What I would like to do in the time remaining is fill in some of the subjects about **valuation**. This is your last chance to ask questions about these value-based search strategies.

Performance of Money Managers

If you look at the performance of the big money managers who invest with a forward looking perspective with these kinds of things then they have typically produced these kinds of excess returns. Big value based money managers have typically outperformed markets by 3% to 4%. And if you look at the money managers who are really good at valuation like the *Seth Klarmans'* on top of that they typically out perform by 7% to 8% to 10%. But there is a lot of evidence that forward looking investors have been able to earn these returns.

What they have done with the temporal studies is that they have done them at different windows or lengths of time. If you look over the last 15 years from 1990 to today. We looked at it 1984 to 1994. For every 20 year window these results have applied. In the long run, they have been consistent. Glamour stocks outperform during a bubble phase.

USG with asbestos liabilities—they have adjusted for delisting. If stocks are delisted, then they have 100% negative returns. I think the evidence shows that people who hold their noses and buy ugly stocks have shown that they have outperformed people who have tried to get smart. **I think that getting smart means doing valuation well.** When you look at the really good investors, you see that they all have some degree of industry expertise. *Buffett* has done extremely well in 3.5 industries and not so well in shoes, currencies and metals. He has done well in consumer non durables with *Coke* and *Gillette* and with Media companies like *Washington Post*. He has done well with Insurance.

The question regarding *USG* and asbestos liability is not avoiding *USG* because that puts you in a group of people who avoid where the opportunities are. Instead you should be saying, "Can I assess the asbestos liabilities so well that I can assess the companies with asbestos liabilities whose stocks have been beaten down, identify the ones that will do better than the others. To do that you have to know a lot of things about a particular industry. That is what I will talk about next.

Question: "What is satisfying?"

BG: You have to take what the market gives. You live with what you have got. If everyone is getting zero, you can live with 6%. It may not be Sophia Loren, but over the long run it is a lot better than what they are getting. There are not market timers who are successful every year, even Warren Buffett who has made 23% a year. It is the nature of investing that **you have to live with what is out there**. We can't all have affairs with Sophia Loren. She would be really busy.

Valuation

Problems with Using a DCF Model

I want to talk about next is the issue we touched on last time which is valuation. The standard approach to valuation is a ratio valuation. The modern substitute for that is a discounted cash flow model. **The reasons why that complicated DCF model doesn't really make sense because what you are doing is combining bad information with good information and you are not using the assumptions you can make but you are also throwing away information that is on the balance sheet.** What the assumptions look like which are strategic assumptions and we will talk a lot about these after the break.

What the *Ben Graham* solution to this problem is—you start with what is tangible—like the assets. When you value the assets, there is one critical assumption: "Is this industry viable or not?" You view those assets at liquidation. As the depression started out, he valued all these assets at liquidation cost essentially. If the industry is viable, then the assets are going to be replaced and you will value them at reproduction cost.

What I would like to talk about next—what that process looks like. The nice thing about values is you can just go down the balance sheet and value each item separately. We are not worried about this (company) as an operation. If they have $200 million in cash it is easy to value. It is both the reproduction and the liquidation value--$200 million and what it would cost to reproduce. Liquation value is almost $200 million—and this, by the way, is cash and short term securities. It would involve putting $200 million in the bank. That is the reproduction value and the simple *Graham* liquidation value.

Next down from CASH is ACCOUNTS RECEIVABLE. *Graham* was willing to value them at book value, although in liquidation you probably will not recover the full amount. You will recover 90% to 95% of it though.

If it is a viable industry and your competitors wanted to reproduce those A/R; how do you reproduce A/R? You sell product to customers and in that process to produce $200 million in A/R typically you will inevitably incur bad debt. So the reproduction costs of those A/R will be somewhat greater than the book value. At a minimum you can add back an allowance for bad debt which you will see reported in the footnotes of any annual report. But this will not be a big adjustment ever. So that when *Graham* just took book value it was probably a reasonable compromise in the 1930s between liquidation and reproduction values.

What about INVENTORY? If you were liquidating, you would write it down. But on an ongoing basis, if you valued the inventory on a Last-In and Last-Out basis, you would probably be undervaluing the inventory. Because to reproduce inventory, you have to do production. To do the production, you have to do it on a First In and First Out basis. The LIFO reserve you could add back, but again it will be very close to book value. The hard assets to value are the ones below the current assets. No matter how you do it whether liquidation value or reproduction value, you will get values close to book values.

But what about PROPERTY, PLANT & EQUIPMENT (PP&E)? How can you think about valuing that? Well you do have the information if you have the financial information—you do have the original costs. For buildings and land and construction in progress, there replacement costs are almost always higher than original costs. So just using the same costs for those categories of assets is probably conservative. But, on the other hand, if the assets are a big part of the firm like the buildings and the land, what are you going to have to do if this is an important value? By the way, *Graham* assumed $0 value in liquidation. He just said, "Oh well, this is the 1930's—they are not worth anything." But if it is a continuing enterprise, how are you going to think about what the land and buildings are worth? The answer is if that is an important issue here, you will send out an assessor to value the plant and equipment. For US companies, the list of facilities and locations are all listed in the 10-K.

You can find what they are. If there is a lot of plant and equipment and you want to do better than just the statistical approaches, you are going to have to send somebody out there. If it is an ongoing plant, you have to be sophisticated about the valuation. For example, there is a company out there—an aluminum plant—that was spun

off from another company. You can look at the cash flows by forecasting aluminum prices or you can look at the value of the assets that have to be replaced which will tell you something about where aluminum prices have got to be to make this industry viable in the long run. For that, you have to be enough of an industry expert, to go to engineers who will tell you what the cost of new capacity will be. And if you do that by the way, the number that you will get will be $1,500. The current earnings are at the value of $900 to make that stock a bargain.

But nobody is making new aluminum plant capacity. All the potential capacity comes from adding to existing plants. And the cost of capacity there is about $1,000 per ton. You have to know enough about the industry to know the most efficient way of reproducing that kind of capacity. When you come to property, plant and equipment, there you have the original cost. There the difference between original cost and reproduction cost depends on the trends in prices for capital goods. Capital goods prices have been falling at about 5% to 7% per year for the past ten years. So the reproduction costs of those assets will be substantially less that their historical costs. Typically when you take out a wearing out factor plus an obsolescence factor, the new equip is cheaper; it is probably depreciating at close to 7% a year. So you are looking at half or less of the original cost.

If there is any doubt about an area…this is where you have to know a lot about the industry *(specialized expertise)*. Well those are typically the balance sheet items that appear. There are various tax assets and so on. You have to start thinking about the intangibles. he value of product portfolios, unless they have been acquired in takeovers, are not going to appear on the balance sheet. You have to think about what it would cost to produce those product portfolios. Because that cost is what protects the earnings among other things.

How can you think about the cost of a product portfolio? Ask yourself how much R&D costs it would take to reproduce it for an efficient competitor and look at their average R&D spending. It takes about three years to reproduce most consumer product portfolios so if they are spending $150 million a year; it takes about $450 million to reproduce it--a reasonable estimate.

If it is like the auto companies where it takes about six years to produce a product portfolio, you will have six years of R&D spending. Again, you are starting to see the degree in which to get a good reproduction value of the assets, you have to be or have available to you, substantial expertise. You have trained sales people, trained managers and you would ask how much it would cost to reproduce that organization. On the other hand, there is a second observation that you have on these intangibles, and I will give you an example where it is clearest.

Liz Claiborne is big dress and Ladies' fashion company in the United States. It has a market cap including debt of about $4 billion. Obviously, their biggest asset is their brands, but on the other hand, those assets can be created freely. There are no competitive advantages in the rag trade. So you could think about what is the cost of reproducing *Liz Claiborne's* brands. You could go to an expert who does business plans on new brand development all the time. This is typically the expenditure. he brands succeed only 1/3 of the time, so you multiple that expenditure by 3. You have a measure like that.

On the other hand, *Liz* and other clothing companies buy brands all the time. And they pay PMV for those brands that are made presumable on a careful evaluation of make vs. buy decision. You could look at a sample of those brands and see shat they are paying for an acquisition per dollar of sales. The appropriate measure is a private market value for the brands (PMV). You can cross correlate that with what your expert has told you about developing a brand from scratch. The interesting thing is we did that exercise and the numbers come out surprisingly similar.

But what is reassuring is that you looked at all the available data. So the further down you go, the harder it is to value things but you are using all the available information. You need to be more creative to bring to bear all the available information. And PMV is helpful supplementary information. To give our sponsor credit, *Mario Gabelli* was one of the first people to look at that as a way of getting at asset values. But you are going to see the theme

that is important to *Graham* and Dodd investing, **you bring all the information you have to bear.** You can look at deferred liabilities like deferred taxes because you are not going to pay them right away.

And for debt, you can look at market value for equivalent issues. For ACCOUNTS PAYABLE and ACCRUED LIABILITIES and Taxes you are going to value them at book value. When you subtract from these assets, the spontaneous or current liabilities you get the and you add back the value of the debt, you get the capital of the enterprise or enterprise value. You can compare it to the simple *Graham* liquidation value: working capital minus all the liabilities and call that net, net working capital and that might be a useful substitute for a liquidation value.

But when you do this, there are things you must do. This is the difference between the two. You can use *Graham*, use liquidation value, reproduction value or book value. But when you do this there are several things you want to remember. First, the nice thing about asset values is they are a good way to think about management. Good management always adds value to the assets not already embedded in the earnings. Bad management subtracts value form the assets. If you are buying assets and you have got bad management, you have got to think of getting rid of management.

If you are going to PMVs, some of them are unstable; it is not as stable as the reproduction costs directly estimated. So you want to cross correlate with other information, and if you are going to do multiples for PMV as many people do, you have got to remember that those multiples can change very rapidly. If you are valuing Internet subsidiaries, people were valuing them at multiples of sales. If you are going to rely on this kind of information you really want a catalyst in place that will realize those values in the near term future. You don't want to live with that kind of uncertainty.

The most important thing to understand is that **book value** by itself whatever you think of the accounting profession—no matter what you think of the convention—does extremely well in picking cheap stocks.

If the reproduction value and book value are not going to be very different, then go ahead and just use this. Where there will be big differences are when there are a lot of intangibles, real estate or tech trends that have added value for environmental reasons or reduce value from property, plant & equipment, but to do better than book value you have to know a lot about the industry. For non-viable industries, typically you will do a liquidation analysis. Are there any questions about actually doing an asset value? I can't tell you how to do it for particular industries.

At the *Graham & Dodd Center* we decided that we needed to become **industry experts**. We took two industries which are media and retail. We are in the process of learning about those. But in general, how we go about the process of computing reproduction values that weighs more than the information that is already there. It is has been statistically validated over and over again by book value that the company reports.

Compare AV with EPV

Remember the second thing that you are then going to do—if there are no more questions about the asset value—you are going to take a second look at value which is from an earnings perspective where you are going to focus on the company's earnings power as it is reflected in the company today without any growth. **Why do we value growth separately? But growth is where all the uncertainty resides.** And you want to segregate that uncertainty from what you know. How are you going to calculate it? You are going to estimate an earnings power value and you will multiple it by 1/cost of capital. It is less reliable in some sense than asset values because you have to extrapolate it.

The mechanics of calculating it are—you have to take accounting earnings and do adjustments to get earnings power. You have to estimate a cost of capital. Usually when you estimate earnings, you are talking about the earnings of the enterprise. So if you want the earnings power value of the entity, you have the earnings power value of the enterprise minus the debt plus any, by the way, assets like excess cash that are not essential to the

ongoing operation *(financial or non operational cash balances)*. You should not mistake equity value for enterprise value. Here you are making an assumption which is that the current profitability is sustainable. Well what are the adjustments to earnings that you have to make? Usually it is best to start with operating earnings. Obviously, if this is a company whose accounting operating earnings is suspicious you want to correct for that.

What are suspicious earnings?

If, every year, they have recurring, "nonrecurring" charges that they don't put in EBIT, you obviously want to charge them for the average of those. You can't let them pretend that recurring charges are nonrecurring.

Secondly, you have to adjust for the business cycle. In the automobile industry, you could have losses this year, so it does not mean that those companies have negative earnings power. In the business cycle for the capital goods industry, there are good years and bad years, you want to not look at a current year if it is at one of those extremes, you want to look at the average over the cycle for the firm as it looks now.

Taxes sometimes vary. People run out of NOLs. They have special events that cut their taxes, you want to look at an average tax rate, because remember we want to look at sustainable earnings power. The amount on average it could distribute every year, but still be in the same condition it was at the beginning of the year.

True Depreciation

Depreciation numbers today tend to not reflect true depreciation. True depreciation what it would cost to put the company in the same condition at the end of the year as it was at the beginning of the year? Accounting depreciation is based on the historical value of assets. Which of those two numbers today do you think is higher—accounting depreciation or true depreciation? Accounting depreciation is higher these days because capital goods prices are going down. In an *inflationary environment* where reproduction costs are above historical costs, accounting depreciation will understate true depreciation. But in an environment where replacement costs are below historical costs, the accounting depreciation will be below what you could distribute to shareholders and make the company whole, because you can buy cheaper capital goods, and you want to take that adjustment into account.

Then if you have unconsolidated subsidiaries, unfortunately you have to go through the footnotes and do this exercise for them and there may be other adjustments for a particular circumstance. There may be circumstances where you or an industry expert find that these guys are significantly under-pricing their product relative to their competitors. They have started to correct that situation that so I will add the benefit of that correction to my earnings power.

The simplest way, I think, to make cyclical adjustments is just to take historical averages. And here the best advice for doing that is *Value Line*. You start with reported operating earnings—here for seven years--then you add back the one-time charges. So if there are zero one-time charges, the true operating earnings are going to be the reported earnings with one-time adjustments. You have to subtract adjustments before the fact to get an adjusted earnings number.

Calculating Margin on Sales

The next thing you want to do is convert that to a margin on sales. Because these are the numbers, these margins on sales, that typically vary in a business cycle. And go ahead and look back enough years so you can see the down part of the cycle and then just go ahead and average these margins and apply it to current year sales and that should account for cyclical fluctuations. Here you might want to adjust sales upwards if they are particularly depressed. Some industries have big sales fluctuations like telecommunications' equipment does. You have to actually adjust the sales figure also, but autos and most consumer products don't. For a company like this you

look at the history and there is no clear negative trend. You look at the recession years there is not a big drop in earnings. That 11% average is pretty good. If you multiply that by current or forecast sales say of $14.96 billion you get an average level of operating earnings. That corrects both for cyclical fluctuations and the accounting fluctuations. It will also alert you to the extent that there is a positive or negative trend in operating margins. If there is, you really have to sit down and think about whether it is likely to continue and that will depend upon industry conditions.

MCX

How do you the next adjustment? It is usually in depreciation. What you want is maintenance capital expenditures (MCX) or $0 Capex as the true measure of depreciation. Start with actual capital expenditures and subtract an estimate of the last couple of years that has gone to growth. The simplest way to do that is look at the capital intensity of the business—PPE to sales—say it is 20 cents of PPE per $1 of sales multiply it by the dollar increase in sales. Once you have that actual growth capital expense, you can subtract it from the actual capital expense, and it ought to give you an estimate of MCX. Look at that over two or three prior years, you ought to get a pretty good idea of MCX is. If it looks ridiculously high or low, you will have to talk to somebody in the industry or in the company. Then subtract that $0 growth MCX from depreciation and add the difference back. That is a pretax number so to obtain an after-tax number, of course; ultimately it will be fully taxed. For now, it has the tax shield benefit of depreciation. For this part of the earnings you want to apply a tax rate about half because you are moving from 0 tax rate to a full tax rate over time.

Estimate the Cost of Capital

Finally, you have to estimate the cost of capital. How many people learned to do that by estimating the cost of debt? You take a theoretical fraction of debt, a theoretical fraction of equity, and a cost of equity estimated by estimating a cost of beta. OK, if you went to business school, you learned how to do that. In practice that is almost always a complete waste of time at least the equity part of it. Betas are estimated with errors of plus or minus .5. The mean beta is 1 so the actual beta could run from 0.5 to 1.5. The risk premium that you use to multiply the beta by, nobody know what it is. The estimates run from 4% to 10%. So you could have 2% premium for an average firm to 1.5 times 10 which is a 50% premium to give you a cost of equity from 6% to 21%. You can do a lot better than that. First of all, the cost of equity will always be above the cost of the debt. Secondly, the most expensive cost of equity is the type that venture capitalists have to pay. If you read the VC magazines, they will tell you what returns they have to show on their old funds to raise money on their new funds. These days that number is 15%. Without doing any betas, you know the cost of equity is between 7% and 15% which is a lot better than the beta estimates.

Usually for the low risk firm with not a lot of debt, the cost of capital will be about 7% to 8%. For a medium risk firm these days with reasonable debt, it will be about 9% to 10%. For high risk firms, it will be 11% to 13%. You are a lot better doing that than trying to estimate using fancy formulas. So you get a cost of capital. And the nice thing about not including the growth is that errors in the cost of capital are typically not that big. If you are 1% off in the WACC, you are 10% error in the valuation and that is not a killer error in valuation.

Look at actual not theoretical ratios. Look at returns on equity funds. The interesting part about finance is…is, if I asked, you want to know the cost of labor is, nobody here would have a problem—you would go out and go survey the labor market. What would it cost to get someone to come to work for the company? The cost of capital is exactly the same, what is the return required from international and domestic investors need to get them to put money into the business.

I have now a cost of capital; I have an earnings power value, and then I multiple the earnings by 1/cost of capital, and I get earnings power value. Now you are ready to really think about what the critical issues are.
AV > EPV

Is it the asset value above EPV and management is the problem, and in this case growth will have negative value?

AV = EPV

Asset values including intangibles just match the earnings power value. There are no barriers to entry in which case I have a good measure of value.

AV < EPV

Like *Coke* where I am buying EPV. And there--these excess earnings better be protected by barriers to entry.

How do you judge when earnings like this are sustainable? And it makes sense to buy them and to buy the associated value of growth.

Take a break……..

We spoke about a sensible investment process which is a search strategy, a good valuation technology and what that good valuation technology should do is that it ought to identify what are the critical issues in any investment decision. **What the *Graham & Dodd* technology of asset value and earnings power value does is identify those critical issues or whether it is a management issue or whether what you are really buying is current earnings power and the critical issue is that earnings power in excess of the asset value sustainable and therefore is the growth going to have some value.**

What I want to talk about for the rest of the day is how you assess the sustainability of those excess earnings. If you buy the *Buffett* dictum of paying for good companies–how do you know what a good company looks like. And whether it is going to stay a good company. A classic way to do that was to do a forecast of future company earnings.

COMPETITIVE ANALYSIS

What you did was estimate a market size and a target share, operating margins which give you EBIT, taxes which then you subtract necessary investment which gives you cash flow. You apply an estimated cost of capital to that and you got a net present value (NPV). hat was your idea of lookng at the future of the business. It was looking at future earnings. The problems with doing that are things we talked about yesterday. You are making a huge number of assumptions that are buried in the parametric numbers that you put into your model—assumptions like the macro economy, assumptions about the competitive responses, assumptions about technology trends, input costs, growth and financial market conditions.

In the end, you may have assumed yourself into investing in the *Darfur* of the economic world. You would like to step back and see whether where you have headed with the numbers makes broad sense. Whether in broad terms this looks like a good business. And the most common way of doing that is attributable to *Michael Porter*. If you want to look at a good business, you want to look at the five basic forces that effect the operations of the business, you make a list with all sorts of pros and cons under those and you try to arrive at a qualitative conclusion to support your quantitative analysis.

The real problem with these five forces is that it is four forces too many. Without priority you want to focus on what is the dominant force determining whether this is a good business or not. And in fact in this list there is one dominant force and it is this one: it is entrants and expansion. Which is equivalent to entrants by existing firms in the industry. Barriers to entry.

Now, there is some sense where everybody already knows that. If I talk about a commodity business, nobody worries about the competitive dynamics within the industry. Nobody worries about supplier power or customer power. Nobody worries about substitutes. If this is the steel market, there is a price for steel. You have a current cost curve which included some reasonable return on capital. If this is the situation where there are outputs here which the price exceeds the total average cost of producing that output, you will see above normal profits that will be reflected in returns on equity, say 20%. But in that situation what is going to happen in that industry? Well, as night follows the day, people are going to expand. They will build new steel plants to take advantage of those returns. That will be both from existing competitors and entrants and as they expand what will happen to that steel price? It will fall. As the price falls, profitability falls. Entry and expansion will not stop until the economic incentive to do it disappears.

In commodity businesses, if anyone thinks it will be a good business for an extended period is one that people accept. People should know that these are not above average businesses and no one will make above average returns for long periods of time. Forget any other forces. The force of entry here will just eliminate profit opportunities. Well, in business school what do they tell you in the answer to this problem?

Product Differentiation

Answer: **Product differentiation**. You must differentiate your product. As we talked about yesterday, we lied; it is not going to help. Now if I asked you what is the most powerful brand in the world? You would answer *Coca-Cola*. These students will not show up to their future father-in-law with a six pack of *Coke* to impress them. No! So in classic differentiation terms, the strongest brands are the luxury cars in the automotive world. If I am an African Dictator and I want to impress people with the quality of my image, I am not going to spend money on *Coke*; I will run out and buy a *Mercedes* or some equivalent luxury car. Yet, if you look at the profitability of the *Mercedes Star*, it has been meager for many years. There is even a term in the US of saying, "*Cadillac* Products", as saying the product is a premium product. *General Motors* has not made money for years and that is not an accident.

Again, what makes a product differentiated or the consequence of a differentiated product is you have discretion over the price you are going to charge. You can charge more and sell fewer units. In this situation where that is the cost curve for *Mercedes* and there is the demand curve, there are going to be outputs which will determine the price that will be determined by that demand. There will be prices which exceeds those costs. You are going to make economic profit; it will show up as huge return on equity above the cost of capital.

If that is the US and you are *Cadillac*, what happens next? The Europeans come to the US because they see the profit to be made. Prices don't fall, but at the price up here, the amount you are going to sell will fall. As sales fall, your average cost rises because your unit fixed costs remain the same but are covered by fewer units sold. So your average cost rise. So what has happened is that you are selling fewer units because you lost business to the entrant making less money on each unit and that will lower your return and your market value. Is that process going to stop?

The Europeans have come in and it is still profitable. Now the Japanese *(Acura, Infiniti, and Lexus)* come in until that demand curve has moved so far to the right that you are making basically no economic profit again. The product differentiation just offsets the benefits of product differentiation. People pile into the market as long as there is a profit opportunity. And they are just going to eliminate the profit opportunity in a different way. The distinction between commodity and differentiated products is not the critical distinction. **The critical distinction of a good business is not that there are good products but there is something to interfere with this process of entry. And what that something has to be is a competitive advantage that incumbent firms enjoy. Entrant competitive advantages don't do anyone any good.**

Say the entrant brings in the best technology and gets all the customers. Once he has embedded it into his network. He just gets destroyed by the next new technology. You must have incumbent competitive advantages. Fortunately, they are very small in number. One obvious one is that the incumbent has a lower cost structure than the entrants so that when the entrants—even though they face the same demand—are just barely profitability. The incumbent with a lower cost structure makes an economic profit. Entry stops. But the incumbent given that lower cost structure keeps making money. That is a competitive advantage that entrants presumably can't match.

What are the underlying circumstances that correspond to that picture? Well one obvious case is where the incumbent has a **proprietary technology** either protected patents or process patents or because it has moved down the learning curve for a lower cost structure than the later entrants. Proprietary technology is one possibility. The second possibility is that the incumbent has **cheaper resources**; it has cheaper labor than the entrants. There you have to be very careful. Something that is often said is we can destroy the current incumbents because they are unionized, and we are not. That is not a competitive advantage that is sustainable because you are not concerned with your high cost competitors. What you are concerned with is your low cost competitors. And if you get into the market on an un-unionized basis, then others will follow you into the market. You will not be able to maintain your advantage.

Cheapness of Labor

Just because several other competitors are union and you are not unionized does not mean you will have lower labor cost advantage in the future because it is your most efficient competitor you must worry about. Second idea, we are just smarter because we have better people. Is that sustainable for a company? Obviously, Not. People are smart, companies are not. Companies are made up of individuals. If the people are smarter they generally can be hired away. In the absence of slavery relationship, there is nothing you can do about it. You will have to pay them what they are worth, or you will lose them. It is very rare that quality or cheapness of labor is a competitive advantage. Everybody can go to China to make things. Being in China is not a sustainable competitive advantage.

Cheap Capital

There is a second thing we hear about: cheap capital. The guys on the other side of the trade are the guys who want low returns. And we are guys who want high returns so we will make money on the trade. The problem with that is have you ever met an investor who consciously said I am a low-return investor. I am satisfied with doing badly. There are some cases for historical reasons; firms have had cheap capital because they have raised it a long time ago.

But supposed I had 4% debt, what is the real cost of that capital? *(Opportunity costs)* I can invest it at a 10% or 11% return. For me to invest it in an investment with a 4% return is a stupidity not a competitive advantage. So even if historically you have cheap capital, the cost of that capital is the true opportunity cost and that is usually the same for everybody. When people say we have deep pockets like ATT, they start with what they say are deep pockets, they lose all their money and wind up with shallow pockets and get taken over by somebody else. So access to capital is almost never a competitive advantage.

It is very rare that firms have superior access to resources. Even locations like timber can be bought and sold and they have opportunity costs. And they are not sources of competitive advantages.

Competitive advantage: it is the difference in the cost curves not the slope because the incumbent has a total cost curve that is lower than the entrant. You want to think systematically about the separate ranges and the sources of competitive advantage. Basically, you come back to proprietary technology at some point. Actually that is quite rare for a competitive advantage. In competitive or stable industries, the technology diffuses and everybody has the same cost structure. In automobiles there tend to be no proprietary technologies. In clothing manufacturing there tend to be no proprietary technologies. In very rapidly changing industries in high tech industries there also

tends not to be proprietary technology advantages. Because firms tend to be experts in particular technologies. And as those technologies die and are replaced, there are other firms that are experts in newer emergent technologies.

It is in intermediate, complicated bus like chemicals where you usually see these types of advantages. If low cost is one category of competitive advantage…..

Question: Investing in small companies?

Bottom fishing with small companies is usually a situation where price is below the earnings power value. The companies with EPV above AV tend to be very profitable and thus they are big companies. Their growth is profitable.

Customer Captivity of Demand Advantages for the Incumbent

The mirror image of a lower cost structure means my competitors can't compete against me because I have access to demand that they can't match. With small access to customers faced by the entrants while the incumbent has better access to customers (demand) has a higher demand curve so they are making money and higher ROE. What is another way of saying that? Brand image? But as in the *Mercedes* case, other car companies can reproduce the same brand image. What it means to say that I have access to demand that my competitors don't—means I have captive customers. The competitive advantage is not differentiation; it is customer captivity. That is the aspect of its brand that makes *Coke* such a powerfully profitable company, because there is habit formation in drinking Coca-cola by its frequency. Why habits are powerful, people don't understand.

They are extremely powerful in cigarettes, toothpaste, and cola. They are not so powerful in beer. Think about it. When you go to a Japanese restaurant, what type of beer do you order? Probably a Japanese beer. When going to a Mexican beer, do you order *Corona* beer? How many actively seek a Mexican soda. The results are apparent but the causes are not clear. People have a much higher preference for stability in colas than in beer. And it makes them captive to *Coca-Cola*. Changing them from *Coke* is expensive and difficult to do.

The second thing that makes customer captivity is search costs. If you have a good relationship with a doctor or professional service firm. Searching for a cheaper alternative *(a "bad" alternative)* will be very costly. So high value added and high complexity will be subject to substantial customer captivity. And finally, for things like *MSFT*, there are just large switching costs. If you switch and nobody else does, you will have difficulty communicating. You have to learn a whole new system of operating and you have high switching costs.

So the second CA is **customer captivity** and it is due to habits, search costs or switching costs. You can ask if that is characteristic of the company whose exceptional earnings you are paying for. The problem though with both of these sources of competitive advantage: **lower cost structures and customer captivity** is of course to existing technologies and existing customers, as those customers die in the struggle for virgin customers or virgin technologies, there are no competitive advantages almost by definition. The sustainability of these two competitive advantages is not necessarily final.

There is, however, one more source of competitive advantage. By looking at supply exhausted the possibilities. And it is described by my friend from the Class of 1985 which is economies of scale *("EOS")*. EOS has two characteristics: (1) by themselves are not enough to create a competitive advantage. I mean a cost curve declines throughout its whole range or it could be a demand benefit as more people participate like *EBay Auctions*, the greater the value of the product, so the lower the effective cost per unit of value delivered. The third thing about it is if you don't have some small degree of customer captivity or at minimum customer inertia, when two people enter the market, they are going to divide the demand essentially evenly, and the scale of the incumbent will be easily replicable by the entrant.

You can't just talk about economies of scale. It has to be associated with something that prevents the entrant from matching the scale of the incumbent. That is customer captivity that is temporary or permanent. The second thing about scale is that the market can't be too big relative to the necessary fixed costs. That if effective scale is 40% of the market to compete against *IBM*, that is a high barrier to entry. If the market is so big that you can essentially amortized all the fixed costs with only two percent of the market so you get down to the flat part of the cost curve with small market share because it is a big global market, then the economies of scale advantages will also disappear.

Globalization is the Enemy of Profitability

Globalization and large, fast growth is the enemy of competitive advantage and profitability. One of the problems of the Internet firms is they don't have large fixed costs relative to the size of their market so you can have a lot of entrants at small scale. But if you have customer captivity, then you will have EOS advantages. They are wonderful to have because they apply not just to the old technology or the existing customers but they apply to the acquisition of new technologies or new customers. The best example to think about here is *Intel (INTC)*. *INTC* is 10x as big as *AMD* or *Motorola*. *Intel* has substantial customer captivity.

If *Motorola* or *AMD* comes out with a better chip, the customers of *INTC* who are the big manufacturers of computers will typically not all desert *INTC* at once because of the working relationships, because of the *Intel* inside and there belief in *Intel*'s ability to supply large quantities of chips reliably. They will wait for *INTC* usually. That means when *Intel* invests in the next generation of chips and if it succeeds, it can expect to capture 90% of the market. *Motorola*, when it invests in the next generation of chips and if it succeeds, can only expect to capture 10% to 15% of the market. That means *Motorola* can only afford to spend only about a tenth to a sixth as much as *Intel* in pursuing the next generation of chips. And in that race, *Intel* will inevitably win when it is spending six to ten times as much on R&D as *AMD* or *Motorola*. So generation after generation of chips appears every eighteen months. *Intel* has been there or producing either the best chip at least as good as the competitive chips.

A series of short-lived competitive advantages combined with EOS translates into long-term sustainable competitive advantages. The same applies to Coca-Cola in the acquisition of new customers. *Coke* has big EOS in distribution and bottling. *Coke* is heavy, and it is expensive to distribute. *Coke* has big EOS in advertising because advertising on TV is a fixed cost. They can expect to get a disproportionate share of new Cola drinkers. Just like *Intel* in the market for new technology, *Coke* can afford to outspend it rivals, *except for Pepsi*, by a factor of six to ten to one for acquiring new customers. And if that is the case who is going to win the struggle for new customers? The answer is *Coke*.

A demand advantage which otherwise would die as customers die, supported by EOS translates into a demand advantage with succeeding generations of customers. The striking thing therefore is what makes Coca-Cola a powerful brand. It is not a quality image. It turns out that economies of scale and this peculiar characteristic colas have of significant habit formation and customer captivity.

But when you think of **economies of scale,** the critical question to ask is what is on this axis? Is it just big size? I want to talk about an example that not many people in this room are familiar with. In the US, the companies contract with a local health maintenance organization that is an HMO. The HMO signs up Doctors that are part of its network and all the employees of that company have to go to one or the other of those Doctors. It turns out that HMOs have local presences. So if you live in the NY Metro area, 60% of the area employees are signed up with a company called *Oxford*. Since 60% of the employees are signed up, 90% of the local area doctors are signed up as well. That means *Oxford Health* has a lot more bargaining power too so it gets lower prices from doctors. If you are a new company signing up, who are you going to sign up with? You will sign with *Oxford Health*. On the other hand, for the US as a whole, *Oxford* is a tiny company because it is only in NY. Aetna has

10% of local market in Chicago, 20% in LA and 15% in Detroit—who has the greater EoS? The fixed costs of running an HMO are determined by your regional footprint.

The same applies to retailing where there are EoS in distribution and in advertising and in local hiring. They have to do with local not national market share. That is why *Wal-Mart ("WMT")* when has come up against German retailers or Japanese retailers with large local share, *WMT* has done very badly. *WMT* has done well where it has had local dominance. When it has done these wholesale clubs like *Sam's Clubs*—and actually *WMT* is the least concentrated of the three big wholesale clubs—and it has had the worst performance.

Remember it is market size that determines fixed costs. Most services have local, geographical advantages. Your local infrastructure in relation to the size of the market will determine your regional economies of scale. Your advertising costs are tied to geography. In some cases, it is product line. In *WMT*'s case they dominated the south central US and then they metastasized along the edges of that region until they occupied the whole US except for the West Coast where Target had a powerful position and defended it effectively.

The same is true in the product space. If you think back to the PC industry, *Apple* tried to do everything and it didn't worry about the dominant competitors. *MSFT* did only one thing. They concentrated in one product area. They dominated the operating system and they added along the edges of that into application software. *Intel* concentrated solely on CPU chips. So it is the particular product market that often determines economies of scale when R&D is a big problem. Sometimes there are global franchises but they tend to be fairly narrow in product scope.

The bottom line on what constitutes good businesses is a business with competitive advantages. Either with captive customers where you will see high prices and high margins but that tends to shrink over time if that is all there is. Or proprietary technology but that too tends to shrink over time with low costs. The sustainable competitive advantages are one of the first two combined with economies of scale in the relevant market.

The problem with a big global market is the large size allows many more competitors to enter the market on an efficient scale. You can see the profitability going away. You see it with *General Motors* in the US. In the 1970s it profit margins were 40% ROIC and in the 80s they had a 28% ROIC and in the 90s they had 11% ROIC and today they have a 6% ROIC. Big markets are very difficult to dominate.

The companies who have sustainable competitive advantages are the ones like *MSFT* and *INTL* and *WMT* and *CISCO* who focus on narrow segments on geographical space or product space and dominate those particular segments.

Search Strategy

So if you wanted to look for companies like this that were not yet identified, what do you want to look for? You might look for retailers with dominant market positions that are not well covered. And managements that understand this dynamic and expand around their area--or companies with particular product niches. They expand around the edges of those niches and preserve competitive advantage in those constricted markets.

So what is the definition of a good business? If you are going to pay for above average returns on capital and earnings what you are going to look for is basically **sustainable competitive advantages** that look like one of these three. But most importantly they represent economies of scale and replicable, sustainable competitive advantages. There are a small number of other competitive advantages. Sometimes the government is your friend but often inadvertently. There will not be many new entrants into the cigarette business. That means there are B-t-E erected by lawyers and governments and they can do anything they want with prices.

In financial services, who knows what is critically important. *(Informational advantage)*. If I am a bank in NC or Southern Germany and I have good relationships with all the local companies in that area, I have better information than *Citibank* or *Barclay's* or any big market bank that comes in and tries to steal that business. Suppose they make a loan to one of my customers. Suppose the customer is a good one, what will the local bank do? It will match the big city bank's offer. Now suppose the customer is a deadbeat and for this customer the rate is much too low. Citibank will get that customer all the time. That is a fundamental barrier all the time. Although banks still seem to love going into overseas markets and losing money.

If you ever read the geographic footnotes of the big banks, you will see their earnings are about a 1/3 of their domestic core market. That is a reflection of informational advantages which are very often related intrinsically to scale. So there are other competitive advantages but they tend to be quite specialized and rare.
But basically, competitive advantages are:

- Proprietary technology
- Customer captivity combined with economies of scale ("EoS").

If you have a company that is earning excess earnings then you will not pay for those earnings as if they were sustainable.

Now that is the basic theory.
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AN INDUSTRY MAP OF *APPLE COMPUTER*

Now what I would like to do with the rest of my time, I would like to go through a cookbook for how particular industries you go about performing the kind of analysis that this theory of competitive advantage suggests. You will start with a clear picture of what the industry looks like. You will start with an **industry map**.

If you don't do an industry map you will be susceptible to the siren song of synergy. Any respectable investor should put on a condom when hearing that word.

You have to have a clear picture of the industry to **divide it into segments.** You will look at the industry history to see if in those segments barriers to entry existed historically up to the present time. You are going to see if the evidence is consistent with the existence to barrier of entry. A classic case where it wasn't was Enron. They told the market they were going to dominate the markets in trading energy. If you looked at their returns to capital; it was between 4% and 6% which are not consistent with enjoying sustained competitive advantages.

Look at the history of the industry to see if competitive advantages exist. Then you will try to identify the nature of the competitive advantages and you will see what that says about the appropriateness of management's strategy, the sustainability of those advantages and future profitability. Now I am going to do this analysis for the specific case of *Apple*.

Done in 1999. Just three months ago *Apple* has started to realize the force of this analysis. We will start to think about *Apple*. Is it a good business or not? f you look at that industry, start with just a list of potential segments. I could break that down into CPU chips, memory chips, but for the moment keep the segments manageable. You can always expand them later.

Chips: *Intel*, *AMD, Motorola*, ***Apple***
Hardware: *Dell*, HP, Compaq, Gateway, ***Apple*** and *IBM*
The maker of software: *MSFT*, Oracle, ***Apple***, *Google*
Network providers: AOL, Yahoo,

Component suppliers- make screens.

Start with a manageable list of segments. 5 is a comfortable list to manage. Once you have the list of segments, all you have to do is write down the **firms in each segment** starting with the dominant firm.

Get a feel for the nature of the industry. just doing that is extraordinary revealing. What do you notice about these two sets of names? They have almost nothing in common. In particular, the dominant competitor. The same is true of these two segments. You are going to treat therefore each of these independent segments. If the identity of the firms are different, especially the dominant firms, you will analyze each firm separately. You will not worry about synergies here.

If the names were the same, so I had *Coca-Cola* parent and *Coca-Cola* bottling then you could think about combining them. But if they are different, you treat them as separate industries. If in doubt, treat them as separate industries. In terms of *Apple* then, there are three segments we are going to analyze. Hardware, Software and Chips. The point of the Industry Map is to identify different segments that you have to analyze. Then you are going to ask the question, "Have there been competitive advantages historically in these markets.

There are two symptoms of competitive advantages:

One is stable, above average ROIC especially for the dominant competitor. And if you look at these segments—looking at *Intel*'s return after stripping out excess cash, since the mid 1980s they have had mid 20s ROIC. They have had enormous returns on invested capital. If you look at *MSFT* and you look at their reported returns on capital, these days about 20%. Actually *MSFT* has two businesses: a business called software where it makes $17 bil. A year and invests $10 billion so it ROIC is about 100% a year. It has a second business where it has $40 billion in cash and it earns about 2.5%--cash in the bank. If you average the two together, you get the 20% return. But in its core business, *MSFT* has had enormous ROIC. When you look at the hardware companies, their ROIC have fluctuated much more and if you average it for the big companies, their ROIC have been substantially lower and less stable than for *Intel* and *MSFT*.

On the grounds of returns, therefore, it looks like in Chips and Software; you have competitive advantages enjoyed by the dominant firms. In hardware, it is less clear.

There is a second measure you can look at. If there are competitive advantages, sustain high profits there also ought to be B-t-E to sustain that profitability. B-t-E is the same as firms stealing shares from each other, so you can look at share stability. he simplest way to do that is to **ask if the dominant competitor changed**. Since 1985, the dominant CPU Chip maker has been *INTC*; it hasn't changed at all. Since 1982, the dominant competitor in software has been *MSFT*; it hasn't changed at all.

If you look at the Hardware market, who was the dominant competitor in the early 1980s? It was *Apple*. In 1984, it was *IBM*. By 1990, it was Compaq. By 2000, it is *Dell*. There is much less stability in those markets, in the identity of the dominant competitor. The second thing to look at is just the history of entry. Has anybody successfully entered the CPU business since 1985? No. Operating system's business? No. But what about entrants into the Hardware business over the last 10 years? *Dell* scarcely existed back then. There has been lots of entry continually in Hardware.

You can actually do a **calculation of share stability.** Take two years 1990 and 1998, write down the US market shares for the four leading competitors and then convert this share into the share of their total sales. For *Compaq*, it has 28% of the entire market, but 34% of the top four competitor's share. Just normalize them. In 1990, *Dell* has 6% of the market and in 1998, it had 20% share.

Then look at the **change in absolute share.** The average absolute share changing hands is 10.5%. When you look at this for a lot of industries that is a very high number. For Cola, that number is about 1.2% and for beer, that number is 4% to 5%. This is a very big number. Very low share stability and it confirms the ease of entry and change in the dominant competitor.

So if you look at Chips and Software, there is high share stability, there is high profitability and that certainly suggests that you have high barriers to entry. If you look at hardware there is low share stability and low profitability. Though if we come to looking at the future, that may change slightly. There are lower B-t-E in Hardware. So historically in the three segments in which *Apple* operates, there are strong competitive advantages in Chips and Software and less so—if they exist at all—in hardware. That tells you the history. If you want to project into the future, can I identify the source of those competitive advantages? Are they understood by the firms and are they sustainable?

If you think about chips, is there customer captivity? Who are their customers? The computer manufacturers. Do they tend to stick with existing suppliers? Yes, they do. Changing a CPU supplier is a very extensive and risky thing to do. You have substantial switching costs. With the *INTC* inside, there may be some switching costs inside. You may have to redesign your system. So it does look like in Chips, there is customer captivity. Is there proprietary technology? No. If you look at *AMD* and the other small companies, they seem to be able to come up with better chips, but they can't maintain their lead for very long and they can't break into the market. *AMD* might have some patents, but there doesn't seem to be proprietary technology.

What about economies of scale? Are their big economies of scale in chip production? They are enormous. And the scale of the plants and in R&D. The process development costs to get the chip lines running efficiently are treated as manufacturing costs. That is a fixed cost not an R&D cost. You have huge customer captivity and huge economies of scale. Is *INTC* likely to continue to dominate the market for CPU chips? Would you invest in *AMD*'s stock because they temporarily produce a better chip? My advice to you is sell it short and buy *INTC*. The last time that happened was 8 months ago. I had lunch with the technology analyst at Goldman Sachs and he told me that *INTC* was dead and *AMD* was going to kill them.

But in particular in this market is *Apple* operating at a competitive advantage or disadvantage? The answer is a competitive disadvantage. They don't use *INTC* chips. In that market at least, *APPLE* has been operating at a competitive disadvantage. It is likely to continue.

If you look at software, is their customer captivity? Are you captive to *MSFT*? Yes, you are. There is no technological advantage in writing software. What about economies of scale? They are enormous. Operating systems are largely a fixed cost business. And on top of that there are network effects that the more people use *MSFT*, the more other people will have to use *MSFT*. Is that competitive advantage likely to be sustainable at least until somebody makes a computer that can seamlessly operates with software that can mimic *MSFT*'s software but it isn't *MSFT*'s software?

So for the foreseeable future, that competitive advantage will likely stay. Is *Apple* on the right side or the wrong side of the competitive advantage? The wrong side.

On the Hardware side, are you captive to any particular hardware supplier? Typically not. Every time you buy a computer, you ship around. Is there proprietary technology. No. If our prior analysis of the history indicates that competitive advantages are weak, then it is likely that this is a level playing field. So in the three segments that *Apple* operates, it is operating at a competitive disadvantage in two segments and essentially a level playing field on the last one. Well, what is the future for *Apple* no matter how good a swimmer Steve Jobs is? Here he is and he is swimming with two concrete blocks strapped to his hardware business. What is the future of that business? Glug, Glug, Glug.

What have they recently done? They have abandoned finally *Motorola* and *IBM* in Chips. They are going to use *INTC* chips. What else are they going to do? They will offer a Windows environment on the Mac. That won't save them because now they are a commodity like everyone else. So what is the history of *Apple* as a business? It is a terrible business. It is operating historically at big competitive disadvantages.

If we looked at these segments into more detail, you would have seen if we broke software into applications and systems software and in particular, desktop publishing. Where would *Apple* have stood? They would have been dominant. They were also dominant in education. Would that have lasted? No, because if people have to use Windows systems when they get out into the world, they will be educated in *MSFT*.

What about Desktop Publishing? Did they have captive customers; did they have economies of scale? Yes. Did they have proprietary technologies? Some is there. What should have been their future in Desktop publishing? They should have dominated that market forever, but what happened? They tied their Desktop Publishing Software to their personal computers where they were operating at a competitive disadvantage. They had about a 90% share in Desktop Publishing in 1985. Today, it is well below 50%. **So if you have a competitive advantage, you want a management that understands the source of the company's competitive advantage and will protect it and not tie it to competitive disadvantages or negative synergies in other segment the way *Apple* did.**

Well, what about the *IPOD*. Will the *IPOD* save *Apple*? How should you think about that and then I will leave you alone. It is a new market and you don't have history in investing in new markets so what do you have to do? Think about potential competitive advantages. **Think about the sources of competitive advantages.**

Are there captive customers to download music? No, there is a MP3 standard that everybody has.

Are their captive customers for the distribution systems? No, anybody can work off an MP3 Player.

Is there customer captivity? Probably not.

Are there economies of scale? There are fixed costs in the song distribution business.

Are they big relative to the size of the potential market? No, they are tiny. The software costs for the distribution is small. Lots of people can afford to crowd into that market.

Are there proprietary technologies which everybody else doesn't have? The answer is no. In that case, what is the *IPOD* ultimately going to look like? Like every other product in consumer technology. Unless *Apple* can generate significant customer captivity and economies of scale relative to the size of their market.

The same goes for *Google*. *Google* is in a market where the history of search engines displaces other search engines. *IPOD* is not going to create competitive advantages for *Apple*. Ultimately, therefore, you are paying a lot for *Apple*'s current earnings and, in addition, you are paying a high multiple for its rapid growth. My advice to you is lots of luck. I think, however, if you do that, the you will have a good understanding of competitive advantages that make that a good business. So when you invest on an earnings basis, when you buy franchise value, which is the situation where growth has value or you hire investors to do that for you, it seems to me the most important characteristic in growth oriented investors, is a **good understanding of competitive advantage** not a gut feel for the technology. And it is those things that you will look for in investors in that particular area.

Questions?

What about *Apple*'s old customers? They show loyalty.

BG: Yes, but the customer base is not growing so the earnings base is unsustainable—and they haven't been. *Apple* has made pitiful amounts of return on its capital interrupted by bursts of enthusiasm for the stock when the stock goes up. I don't think a smart value investor will invest hoping for bursts of enthusiasm. You invest when the price is well below asset value

Question: How can there be opportunities in value investing if you are sending out so many analysts trained as value investors and analysts?

BG: It is a terrific question. Probably there are now 15% of value investors in the market place. **We find that 1/3 of our trainees remain as value investors.** The balance reverts to old habits of herding and trying to buy lottery tickets.

It is very hard to get people to do what they are supposed to do despite the training. After we looked at the statistical studies, the institutional and individual imperatives that work to create value investing opportunities for others: Herding, loss aversion, hindsight bias, and over confidence work against investors. The powerful forces prevent many people from investing like value investors.

People don't learn no matter how hard you work at it.

End of presentation.
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Appendix:

Loss Aversion: Proof that losing money really is scary

The fear of losing money can be similar to the fear of physical pain, according to a study of brain scan images.

The finding could potentially shed light on why people who make high risk financial decisions, such as stock market players, sometimes develop anxiety disorders, says Mauricio Delgado at Rutgers University in Newark, New Jersey, US.

In the new study, Delgado and colleagues invited 15 student volunteers to play a gambling game on a computer that, unknown to them, always gave a positive win of $59.

They would then be told of either a $6 loss from their $59 sum, or that the amount they currently possessed would stay the same. Different colored screens preceded the message.

In the next part of the experiment, rather than lose $6, the students received a mild electric shock to the wrist. Again, colored screens preceded the outcome. The players soon learned which color represented each outcome.

No pain, some gain

Brain scans conducted on the participants as they watched the screens showed the colors associated with the $6 loss or electric shock elicited a similar amount of activation in a brain region called the striatum. Researchers have previously linked activity in this region to fear of pain.

The researchers also monitored participants' skin conductance, a measure of perspiration that indicates stress. The colors that led the players to anticipate money loss or electric shock caused about the same relative increase in skin conductance.

This new study is interesting because it is the first time activity in the striatum has been linked to fear of a monetary loss, comments Read Montague at Baylor College of Medicine in Houston, Texas, US, who was not involved in the research.

Delgado says that the study provides hard evidence that money can cause a true fearful reaction in the brain. He suggests that the results could help explain why some people who make high-risk decisions about money sometimes develop anxiety problems.

The findings were presented on Tuesday at the Society for Neuroscience annual meeting in Atlanta, US.

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