Memo to: Oaktree Clients

From: Howard Marks

Re: Pigweed

At Citibank back in the '70s, Chief Investment Officer Peter Vermilye placed a lot of emphasis on building team spirit. His tools included skits at our annual staff outings, and he never hesitated to participate in costume. My favorite was his portrayal of Johnny Carson's savant, "Carnac the Magnificent." He would hold a sealed envelope to his forehead and intone "Schlum-bair-zhjay," as the French pronounce the oil service company's name. Upon opening the envelope, he would read, "What they call it at $75." Holding up the next envelope, he'd say "Slum-burger." The explanation inside: "What they call it at $15."

In other words, investors love things as long as they're riding high but lose all respect when they're brought low. It doesn't take long to become discredited in the investment world. And so it is for Amaranth Advisors, which now might be relabeled "pigweed" – another word for the plant that gave the fund its name.

For those who've been incommunicado over the last few months, Amaranth is a hedge fund that was formed in 2000. In the beginning it stressed relatively safe strategies like convertible arbitrage. But more recently it ventured into other things and in 2004 hired a young man named Brian Hunter to engage in energy trading, leading to the recent events. On September 18, it announced that it had lost 40% of its $9.5 billion of total capital on natural gas trading, a percentage that was revised upward to 65% over the next few days. The fund sold off its energy trading book, Brian Hunter departed, and Amaranth threw in the towel and is liquidating.

Now that Amaranth's collapse has earned it a place on the list of investment disasters, we should consider the lessons that can be learned from it. I'll try to provide some useful insights regarding Amaranth, as usual without claiming to be an expert on the subject.

You Bet!

As I read about Amaranth, one thing stood out: the repeated use of the words "trade" and, especially, "bet." Nothing about "invest" or "own." And certainly no reference to "value." The pattern really is striking.

Of course, part of this change in attitude could be attributable to the defrocking described above. Six months ago, the articles might have described Amaranth as an astute energy investor, rather than the reckless gambler it's considered today. But certainly the new nomenclature is everywhere, and I find it appropriate.

What's the distinction? Investors want to own things for the long run, under the belief they'll grow and strengthen over time (or that today's values will come to be better appreciated).

Traders buy and sell, usually in short order, to take advantage of momentary phenomena. I usually think of them as betting on the direction of the next price move. Certainly we can say their timeframe is hours or days, or maybe weeks, but rarely months and never years.

And what is a "bet"? That's one of those words we all know the meaning of but would be hard-pressed to define without using the synonym "wager" or the word "bet" itself. I consulted The Random House Dictionary of the English Language and found a very useful definition: a bet is "a pledge of a forfeit risked on some uncertain outcome." In other words, you attempt to profit from an uncertain event, and if it doesn't go as you hope, you forfeit something of value. Well then, Amaranth certainly was a bettor.

One question: If it's so obvious today that Amaranth was "betting," were people equally aware of that fact a few months ago? I don't think so. **Gains are often presumed to be the result of carefully considered investments, while it's usually losing ventures that are described as having been bets.**

What Was Their Game?

Amaranth's energy trading operation was in business to bet (there I go!) on short-term movements in energy prices. But it didn't base its activities on saying "we want to own natural gas" or "we want to be short." That would be risky.

Instead, it said things like this: "The price of natural gas is always higher in the winter than in the summer, as is proper, because cold weather causes the demand for gas to increase. But right now, we think the price discrepancy is wider than it should be: January gas is too high relative to July gas. So we'll short January gas and buy an equal amount of July gas." Under this approach, there's no net exposure to the overall direction of gas prices, just a bet (if you will) on the wideness of the spread. The fund won't gain if the price of gas rises or lose if it falls. Instead, it'll gain if the spread narrows in a reversion to the mean, or it'll lose if the spread anomalously widens further.

This is a true hedged position: an arbitrage. I define arbitrage as **taking largely offsetting positions in the same or closely related assets exhibiting a price discrepancy, with the goal of profiting, with very little risk, when the mispricing corrects**. Its aim is to profit from the movement of asset prices relative to each other (the relationship between which usually can be counted on to stay within a normal range), not from the movement of the price of a single asset (which can behave any way at all in the short run). This is a very valid approach for a hedge fund to take. It epitomizes hedging, something that most hedge funds now seem to engage in infrequently or not at all.

So where did Amaranth's risk – and the possibility of catastrophic loss – come in? The answer's simple: **Positions that are low in risk can be rendered quite risky with the help of leverage.**

Back in ancient history (1998), a fixed income hedge fund called Long-Term Capital Management pursued arbitrage transactions like Amaranth's (on a much more diversified basis but with more leverage) and experienced a similar meltdown. I noted that earlier, when things

were going well, one of Long-Term's principals had said, **"We're going around the world scooping up nickels and dimes."** There's great appeal to his notion of profiting from a large number of small mispricings that others aren't smart enough to seize upon. But he had left off a few key words from the end of his sentence: **". . . in front of a steamroller."** The steamroller enters the picture when so much leverage is employed that a fund can't survive a moment of aberrant market behavior.

In a memo on hedge funds in October 2004, I mentioned that when there's a big increase in the number of little fish attempting to live off each big fish's leavings (or in the number of hedge funds relative to mainstream investors), the pickings become slimmer. Given the increased efforts to exploit inefficiencies today and the fact that strong cash inflows and resultant high prices have depressed prospective returns in many markets, managers are often resorting to increased leverage in order to reach their return targets. **But it's essential to remember that leverage is the ultimate two-edged sword: it doesn't alter the probability of being right or wrong; it just magnifies the consequences of both.**

The Perils of Diversification

The Amaranth saga demonstrates that the riskiness of a portfolio is not just a function of the fundamental nature of its holdings, but also of things like concentration and leverage. I often say there is no investment so good that it can't be ruined by too-high an entry price. **There's also no investment so safe that can't be rendered risky by buying too much of it with borrowed money**.

Diversification has long been considered a pillar of conservative investing. It's a simple concept: "Don't put all your eggs in one basket." Spreading your capital among a number of assets or strategies reduces the likelihood of a disaster.

In the 1960s, Bill Sharpe pointed out that adding in a risky but uncorrelated asset can reduce a portfolio's overall riskiness. It has become accepted wisdom that overall risk can be reduced (and return increased) by adding alternative investments to a portfolio of stocks and bonds.

But people don't always take note of a dangerous outgrowth of these dicta: **that diversifying into uncorrelated assets with borrowed money can increase, not reduce, the risk of the portfolio.**

Let's say you have $100 invested in U.S. stocks. You realize how undiversified your portfolio is, and that a market crash can bring a substantial loss. So you sell off $75 worth of stocks and put $25 each into emerging market stocks, high yield bonds and natural gas futures. Now your portfolio is invested equally in four asset classes rather than one and thus probably safer.

But what if, instead, you hold onto your $100 worth of U.S. stocks and borrow another $300, investing $100 in each of those three new asset classes. You're again invested equally in four asset classes. **Equally diversified but much less safe**. That's because leverage has magnified the sensitivity of your portfolio to market movements.

A crash that wipes out one of the four asset classes in the diversified $100 portfolio will reduce your net worth by 25%. But that same crash, when experienced in the leveraged and equally diversified $400 portfolio, will eliminate your entire net worth. So investors should always consider the combined effect of diversification and leverage. Amaranth was much safer when it was all in convertible arbitrage than after it increased its leverage in order to diversify into energy trading. **Diversification is a good thing, but a lot depends on how you finance it.**

"Multi-strategy" is one of today's hot buzz words. But as Orin Kramer puts it (see page 12 for who he is), "Amaranth is a reminder that a multi-strategy structure is not a proxy for risk diversification." That is, I think, multi-strategy + risk control = protective diversification, while **multi-strategy + leverage = more ways to lose.**

Generating Alpha

I want to say up front that I have absolutely no idea how one dependably achieves above average profits from trading or investing in commodities, precious metals or currencies. That's not to say it can't be done. There are people who've gotten very rich that way, managing both their own money and that of others.

Of course, the efficient market crowd would say someone will get rich doing everything – even playing the lottery or flipping coins – simply because the tails of a probability distribution usually aren't entirely unpopulated. **But who it is that gets rich that way may be purely random. If that's the case, the mere existence of a few winners doesn't in itself prove that something is an "alpha" activity in which hard work and skill will produce consistent performance, or that large numbers of people can pull it off.**

I believe firmly that the markets for commodities and currencies are generally efficient. That means a lot of highly motivated people participate; many are intelligent and computer-literate; they all have access to similar information; and they're willing to take either side of most propositions. These people cause all of the available information to instantly be incorporated in the market price of each asset, such that the market price always reflects the consensus view of the significance of the available information. As a further consequence, few people if any can dependably identify and profit from instances when the market price is wrong. **That, in turn, makes it difficult to consistently achieve high absolute returns or perform better than others. That difficulty constitutes the ultimate proof that a market's efficient.**

Take currencies for example. Exchange rates exist so that currencies will be valued fairly relative to each other in view of countries' differing growth rates, interest rates, inflation prospects and fiscal and trade deficits, etc. Further, exchange rates change as the outlook for these things changes. Their current status is widely known, and predicting changes is something few people can do right more often than others. Thus it seems unlikely that some people will be able to regularly generate higher returns than others.

If it's so hard to value currencies, commodities and precious metals, why do I think we can invest intelligently in equities, corporate debt and whole companies? It's because these things generate income, and an expected stream of future income can be translated into a current value.

But how do you determine the intrinsic value of a Euro, a bar of gold or a barrel of oil? You can talk about the positives and the negatives associated with these goods. But how do you convert those things into a price?

For example, the factors that argue for high oil prices are obvious. "The supply is finite." "We're using it up at an accelerating rate." "Environmental issues in the U.S. will constrain the domestic supply." "Much of the foreign supply is in the hands of hostile or unpredictable governments: Iran's a worry, Venezuela is turning anti-American, and Saudi Arabia is subject to instability." Sure they make oil a valuable good, but how valuable? How do we know the current price doesn't adequately reflect these things already? What's the right price for it?

We had a particularly instructive lesson in July. The price of oil had been strong, and the outlook was for more of the same. With the price at $77 per barrel, it was reported that the Alaskan pipeline had to be shut down to repair damage. With domestic shipments restricted, the price had to rise; oil had to be a buy. But the $77 price at which oil traded on the day of the announcement hasn't been seen since. Within just four months, the price of oil fell to $55 (down 28%) – and the factors listed above were just as true at $55 as they were at $77. Without the ability to reliably convert fundamentals into prices, I don't see how one can achieve consistently superior risk-adjusted gains.

Above average investment performance (in any market) has to be the result of either unusual insight into values or the intersection of risk taking and luck. It's hard to tell the difference between the two in the short run, but the truth always becomes clear in time, because luck rarely holds up for long.

The Short-Term Performance Trap

That leads me to Amaranth's experience in natural gas, and to the key lesson to be learned from it. Is anyone capable of regularly generating skilled-based (as opposed to luck-based) returns at an ultra-high level by trading natural gas? I don't know for sure, but I would think not.

I'm not saying no money can be made that way. But while the capital markets might permit one to steadily earn 5-8% a year (or maybe even 8-10%) by committing capital to this activity, returns in the teens should be infrequent, and **returns above 20% probably should be considered the result of extreme good fortune (and thus as having been just as likely to go the other way).** There are exceptions, but a good statistician can live with a few exceptions without feeling they disprove the main point.

I think it's essential to realize that Amaranth's troubles in natural gas didn't start this year, with the positions that didn't work. They started with the $1 billion in profits that Hunter generated in 2005, which permitted Amaranth to report a return roughly double that of the average hedge fund.

In the investment business, clients love high returns and hate low returns. That makes sense. And when the market's up 10% and their manager is up 20%, clients are really happy. But that's my pet peeve. Rarely does anyone say, "Whoa. That return's too high. How did it happen?

How much risk did my manager take in order to generate that?" **No, in the investment world few people find high returns worrisome.**

Everyone talks about beta, (which I'm tempted to pronounce "bee-tah" now that I've spent six weeks in London), but few people dwell on it when returns are soaring. Credulous investors think the manager who generated 20% in an up-10% market contributed alpha of 10%. But maybe he had zero alpha and a beta of 2 instead . . . or maybe negative alpha of 20% and a beta of 4. Regardless, I almost never hear people talk about returns being so high that they're suspect.

According to Hillary Till of Premia Capital Management (in her report on Amaranth published by France's EDHEC Business School), "Since May, investors knew [Amaranth's] energy portfolio had typical up or down months of about 11%. . . . Therefore, it would not have been unusual for the fund's energy trades to lose 24% in a single month. . . ." But nobody seemed to care, since the energy book gained $2 billion in just the first four months of 2006. In other words, Amaranth had enjoyed the up months. That certainly didn't imply that down months weren't lurking. In fact, just the opposite.

Here's the most important thing: My wife Nancy often quotes a few lines from Rudyard Kipling's poem, "If":

> If you can meet with Triumph and Disaster
> And treat those two Impostors just the same; . . .
> Yours is the Earth and everything that's in it,
> And – which is more – you'll be a Man, my son!

Likewise, short-term gains and short-term losses are potential impostors, as neither is necessarily indicative of real investment ability (or the lack thereof).

Surprisingly good returns are often just the flip side of surprisingly bad returns. One year with a great return can overstate the manager's skill and obscure the risk he took. Yet people are surprised when that great year is followed by a terrible year. Investors invariably lose track of the fact that they both can be impostors, and of the importance of digging deep to understand what underlies them.

One gets the impression that no one at Amaranth asked the right question when Brian Hunter shot the lights out in 2005: "How'd you do that?" Or if they asked, they were satisfied with what turned out to be the wrong answer: skill, rather than leveraged aggression combined with luck. They let him move to Calgary, and they gave him a large enough capital and/or risk budget to enable him to bring down the firm.

But The Wall Street Journal of September 19 laid out how this came about. ". . . late last year, the double-whammy of Hurricanes Katrina and Rita made Mr. Hunter a hero at Amaranth and a minor legend on Wall Street, as he made $1 billion for Amaranth." Hunter liked to buy deep-out-of-the-money options. While these things expire worthless most of the time, a major, unexpected price move in the underlying asset can produce huge profits.

But does betting on a long shot and profiting from a freak occurrence make someone a skilled investor, or just the "lucky idiot" that Nassim Nicholas Taleb describes in "Fooled by Randomness"? Should that kind of performance inspire reverence or concern? Well, Amaranth's 2005 gas profits produced awe, but anyone looking behind them should have been worried. **What would have happened, investors might have asked, if events had unfolded differently?** Taleb's "alternative histories" are always worthy of consideration (see below).

The events in the gas market that decimated Amaranth in 2006 may have been unforeseeable and unprecedented. But those adjectives might apply just as well to the elements that made it successful in 2005, and no one – especially not the fund's managers – seems to have mentioned that fact at the time. When people profit from such things, it's considered all right and good, but then when they reverse into losses, it comes as a shock. **They're two sides of the same coin, but investors have a really tough time keeping that in mind.**

What's Real?

To be able to attach the proper significance to short-run performance, it's essential that one understand the idea of "alternative histories." I came across it in Taleb's book, which I consider the bible on such topics.

This concept is related to Orin Kramer's description of past performance as "the interaction of particular historical and market conditions and the judgments and beliefs of managers during that period." **In other words, investment performance is what happens to a portfolio when events unfold.** People pay great heed to the resulting performance, but the questions they should ask are, "Were the events that unfolded (and the other possibilities that didn't unfold) truly within the ken of the portfolio manager? **And what would the performance have been if other events had occurred instead?" Those other events are Taleb's "alternative histories."** How about an example of the right way to view outcomes? Well, with the college football bowl season upon us, I'd like to discuss last year's championship game, something I've been musing about for almost a year.

The University of Southern California football team was undefeated in the 2005 regular season. It boasted two successive years' Heisman Trophy winners and many other great players. It won its games in spectacular fashion and was widely touted as one of the best college football teams of all time. In fact, in the week leading up to the championship game against the University of Texas, ESPN ran daily segments that compared USC against a top team from the past, each time stating that USC was better, and why.

When it came down to game time, however, Texas played very well and USC couldn't contain their talented quarterback, Vince Young. With two minutes to go in the game, holding a slim five-point lead, USC's coach, Pete Carroll, chose to "go for it" on fourth down, rather than punt the ball downfield – undoubtedly out of concern that if Texas got the ball with two minutes left on the clock, his team would be unable to keep them from scoring. USC failed to make a first down, and Texas got the ball with good field position, scored a touchdown and won the game.

If USC had made the two yards they needed on that fourth down play, it's extremely likely they would have won the game. And if they'd won the game, they doubtless would be described today as the best college football team in history. But it didn't happen that way, and no one talks anymore about their being the best, or even the second best. Now they're considered just another great team. **What this shows is how tenuous the connection can be between outcomes (which most people take for reality) and the real, underlying reality.** What do I mean by that distinction?

Consider this: What's the probability that if USC had made the needed two yards – and today was considered the best team ever – they really would **be** the best team ever? Certainly not 100%. And just as interestingly (or to me maybe more so), what's the probability that, even though they **didn't** make the two yards, they **actually are** the best team that ever played? Certainly not zero. But since USC lost that game, most people would find nonsensical a suggestion that they're the best team in history. To contemplate that possibility, they would have to consider an alternative history in which USC made those two yards.

Can the result of one play really decide the issue? That's the one thing we all can probably agree shouldn't be the case. "Everyone knows" that the score of a game doesn't necessarily tell you which is the better team. So then outcomes aren't necessarily indicative of reality, meaning that alternative histories **should** be given significant weight. (I guess the ultimate step would be to suggest that USC actually won the game, the score notwithstanding. That would be going too far . . . although we often hear a losing team's fans say, "We won that game.")

While we're looking deeply into things, let's spend a minute on Pete Carroll's decision to go for it on fourth down. Was he right or wrong? He has gone for it on fourth down many times in his coaching career, and most of the time it worked. In fact, USC twice had run on fourth down earlier in the championship game, making the needed yardage once and scoring a touchdown. But on that final attempt they were unsuccessful. Does that mean Pete made a wrong decision? Or was it a right decision that just happened not to work on that occasion? One of the first things I learned at Wharton in 1963 was that **you can't judge the correctness of a decision from the outcome**. This is another concept that many people find nonsensical. But good decisions fail to work all the time – just as bad ones lead to success – simply because it's so hard to predict which history will materialize.

It seems ridiculous for something as momentous as the label "best team ever" – and the measure of a team's real worth over an entire season – to hinge on the outcome of one play that took four seconds. Clearly that's a distortion, but no less of a distortion than many people's response to short-term investment performance, both good and bad.

<u>King for a Day</u>

In the current environment, there can be little ability to restrain a hot manager. According to Amaranth's head of Human Resources until 2004, the CEO of the fund ". . . sought to centralize oversight of traders and keep big discretionary trading authority on the fund's Greenwich trading floor. After big gains in 2005, Mr. Hunter was allowed to trade from Calgary. 'To have a

relative newcomer . . . receive so much discretion is just shocking to me.' " (The Wall Street Journal, September 20)

But today, if a hedge fund CEO tells a trader who's been generating great performance that he can't have more capital, or take risky positions, or pursue the maximum imaginable incentive fee, or move to Calgary, he'll lose him. There's always another employer who'll meet a hot trader's demands. No, this isn't a time when discipline and risk control come easy.

In this climate, even an earlier dust-up at Deutsche Bank regarding Brian Hunter's gas trading and bonus wasn't enough to keep him from becoming the linchpin of a $9.5 billion fund, managing half its capital. And it wouldn't have deterred others from hiring him if he quit because Amaranth had tried to restrain him.

A decade ago, if an employee who'd run up big profits in his first year asked for a huge bonus, we'd say, "Come back after you've put together a few good years." But in today's climate, if a hedge fund doesn't come up with an out-sized bonus after one good year, it's unlikely the employee will stick around to give it a second. **Thus Brian Hunter was paid $75 to $100 million in 2005, his first full year at Amaranth, arguably for betting right on the weather.**

It doesn't take much to be venerated today. One or two good years make somebody a "top trader." Three years can enable someone to raise a billion-dollar hedge fund. In fact, even after the fall, The Wall Street Journal described Brian Hunter as an "experienced manager" . . . at 32. Doesn't anyone think that before someone is elevated to the investment peerage, he or she should have a record spanning more than a few years, and have been tested in down markets? I knew the world had been turned on its head when I read on "dailyii.com" about Hedge Funds Investment Management, a London fund of funds that **will invest only with people who've been in the business for 3½ years or less.**

Unlikely Things Happen

The EDHEC report mentioned above makes a number of interesting observations concerning Amaranth's portfolio:

- As of June 2006, energy trades accounted for about half of Amaranth's capital and generated 75% of its profits.
- Amaranth had 6,700 energy positions, leveraged 4.5 to one, including open positions to buy or sell tens of billions of dollars of commodities.
- Amaranth was responsible for a substantial portion of all of the gas trades that took place.
- In the far-out months, in which fewer traders participate, "the fund's positions were indeed massive."
- Many of Amaranth's trades probably had "physical-market participants" on the other side, people who had taken positions to hedge risks intrinsic to their business. Because they would be unlikely to unwind their trades at Amaranth's convenience, exits were problematic.
- In view of all of the above, "the magnitude of Amaranth's energy position-taking was inappropriate relative to its capital base."

Hillary Till describes Amaranth's loss as a 9-standard-deviation event (Long-Term Capital's is estimated at "8-sigma"). By way of reference, 5 standard deviations include the central 99.99994% of a normal probability distribution. A 5-sigma event below that range should happen about three times in every ten million trials (thus a given daily occurrence should happen once every 10,000 years). But **it's amazing how often this kind of event seems to occur when derivatives are combined with leverage.**

Everyone speaks about preparing for "worst-case" outcomes, but invariably things can get even worse. Statistical reassurance should be relied on only to a reasonable extent. Common sense has to come into play as well.

Risk Management and Risk Managers

You know from my memo of February entitled "Risk" that I'm not a big fan of quantitative risk management. It's often said of a man that "he knows the price of everything but the value of nothing" – and it's not meant as a compliment. Likewise, I feel effective assessment of portfolio risk is less likely to come from Ph.D. statisticians who lack intimate knowledge of the assets in the portfolio than through wise judgments made subjectively by investors possessing "alpha."

In the memo on risk, I enumerated several criteria that should be present if modeling is to prove effective. I also observed that most of them are lacking in the investment world. In an article in the Financial Times of October 10, John Kay wrote of the risk that arises because of "uncertainty about whether the model you have developed describes the world accurately." He concluded that **"mathematical modeling of risk can be an aid to sound judgment but never a complete substitute."** My first boss, George Egbert, Jr., Citibank's Director of Research in the 1960s, used to say of economists, "They should be on tap but not on top." Reliance on risk modeling should be similarly limited.

"What Brian is really good at is taking controlled and measured risk." Thus spoke Nick Maounis, the CEO of Amaranth, less than a month before its collapse. He cited the more than a dozen members of his risk management team who served as a check on his star gas trader, and he said "spreads and options are of their very nature instruments for positions which are designed to allow the user to capture upside with a much clearer understanding with respect to downside exposure" (The Wall Street Journal of September 19 and 20). **But in the end, outsized profit potential without risk turned out to be a pipe dream as usual.**

> Amaranth's systems didn't appear to measure correctly how much risk it faced and what steps would limit losses effectively. The risk models employed by hedge funds employ historic data, but the natural gas markets have been more volatile this year than any year since 2001, making models less useful. They also might not predict how much selling of one's stakes to get out of a position can cause prices to fall.
>
> "It was a total failure of risk control to put your entire business at risk and not seem to know it," says Marc Freed [of Lyster Watson & Co., an advisory firm that

invests in hedge funds]. "They were more leveraged than they realized." (The Wall Street Journal, September 20)

After the fall, the Journal quotes Mr. Maounis as saying Amaranth's traders "were surprised not only by adverse market moves that triggered the losses but also by the lack of ability to exit the losing positions." **That's it, right there: the word "surprise**." It's one thing to make an investment you know is risky and have it come out wrong. It's something entirely different to make an investment that entails risk of which you're unaware.

Mr. Maounis and Amaranth's risk managers shouldn't have been surprised. They should have been alerted by the volatility of the fund's energy results. According to Till, its LPs should have been as well. "Investors would not have needed position-level transparency to realize that Amaranth's energy trading was quite risky." **But the evidence of that potential risk came primarily in the form of outsized gains, and these are rarely recognized as the red flag they are.**

Amaranth's investors relied heavily on its vaunted risk management capability and on the assurance that risk was under control. But the fund failed to survive its seventh year. Quantitative risk managers can only opine on whether a disaster is likely or not. Even if they're right about that, it's up to you to decide whether you're willing to bear the risk of an improbable disaster. They do happen!

Classic Investment Mistakes

Hemlines go up and down. Ties go from wide to narrow and back again. There are only so many ways in which things can vary. Likewise, there are only a few mistakes one can make in investing, and people repeat them over and over. It seems Amaranth made several.

- **Borrowing short to buy long (and illiquid).** This cardinal sin is at the root of most great investment debacles. A fund's capital should be as long-lived as its commitments. And no fund should promise more liquidity than is provided by its underlying assets. You can successfully invest in volatile assets if you're sure of being able to ride out a storm. But if you lack that certainty and face the possibility of withdrawals or margin calls, a little volatility can mean the end. In the case of Amaranth, just as had been true of Long-Term Capital Management and the big junk bond holders that were forced to sell out at the 1990 lows, many of the losses would have turned back into profits if they had just been able to hold on through the crisis. That's why I always caution, "Never forget the six-foot-tall man who drowned crossing the stream that was five feet deep on average." It's not enough to be able to get through on average; you have to be able to survive life's low points.

- **Confusing paper profits with real gains.** The Wall Street Journal of September 20 points out that Hunter was encouraged by the positive marks to market showing up in his statements, so much so that he added further to his positions. But he seems not to have asked whether the gains were real and realizable. The Journal also points out that Hunter was such a big buyer in thin markets that his buying often supported prices and created the very profits he found so encouraging. But if the profits were the product of his buying, and thus

dependent on it for their continued existence, he clearly had no way to realize them. My father used to tell a joke about the guy who insisted that his hamster was worth thousands more than he had paid for it. "Then you should sell it," his friend urged. "Yeah," he responded, "but to whom?"

- **Being seduced by loss limitation.** Hunter is said to have liked buying deep-out-of-the-money options, and everyone knows that one great thing about buying options is that in exchange for a small option premium you receive the right to benefit from price movements on lots of assets. You can only lose 100% of the amount you put up . . . and in deep-out-of-the-money options people do just that all the time.

- **Misjudging liquidity.** People often ask me whether a given market is liquid or not. My answer is usually, "that depends on which side you're on." Markets are usually liquid in one direction or the other but not necessarily both. When everyone is selling, a buyer's liquidity is great, but a seller will find the going difficult. When sellers' urgency increases, they're likely to have to give on price in order to achieve the "immediacy" they crave (see my memo "Investment Miscellany," November 16, 2000). If their desire for immediacy is extreme, the bids they see might be absurdly low. Thus markets can't be counted on to accommodate a seller's need to realize fair value.

- **Ignoring the impact of others.** In small markets, everyone may know about your trades. That means they can copy them (making buying tough and adding to the crowd that will eventually jam the exits), and they can deny you fair prices if they know you have to sell. Aggressive traders, especially at hedge funds, don't wear kid gloves.

- **Underestimating correlation.** There's another old saying: "In times of crisis, all correlations go to one." It means that assets with no fundamental or economic connection can be caused by market conditions to move in lockstep. If a hedge fund experiences heavy withdrawals during a period of illiquidity, assets of various types may have to be dumped at once, and thus they can all decline together. Further, hidden fault lines in portfolios can produce unexpected co-movement. Let's say you're long sugar and gas, two unrelated commodities. Unusually warm weather can reduce the demand for gas for heating and also cause a record sugar crop (as happened this year). Thus the prices of seemingly unrelated goods can decline together. **Intelligent diversification doesn't mean just owning different things; it means owning things that will respond differently to a given set of environmental factors. Thus it requires a thorough understanding of potential connections.**

The case of Amaranth is highly and painfully instructive, and it bears out another of my favorite expressions: **Experience is what you got when you didn't get what you wanted.**

* * *

Orin Kramer manages the Kramer-Spellman hedge fund and, more famously, chairs the State of New Jersey Investment Council, which oversees the state's $80 billion pension fund. He is

extremely knowledgeable concerning risk and return, herd behavior and the vicissitudes of investing in an institutional setting. In a speech a few weeks ago, he made some excellent points:

> My own view is that we exaggerate the utility of standard performance measures. In general, past performance reflects the interaction of particular historical and market conditions and the judgments and beliefs of managers during that period. In particular, managers may consciously or unconsciously pursue strategies which assume the risk of low-frequency, high-severity outcomes. Strategies which can only be torpedoed by low-frequency events will mostly produce favorable outcomes; identifying the tail risk implicit in such strategies is an extraordinary challenge. **The absence of the severe negative outcome is not, regrettably, proof that it cannot occur**. (Emphasis added)

In other words, (1) short-term investment performance is not a helpful indicator of ability, (2) good results can arise just because a manager chose a high-risk course and was bailed out by events, and (3) that same course could just as easily have led to disaster . . . and certainly could do so next time. However, it's rare for either managers or clients to recognize the unreliability implicit in short-term results, especially when they're good.

Orin also notes that Amaranth "occurred when the skies were blue; the fund unraveled because a small and volatile commodity behaved in an unpredicted fashion." This collapse didn't require an adverse economic environment or a market crash. The combination of arrogance, failure to understand and allow for risk, and a small adverse development can be enough to wreak havoc. **It can happen to anyone who doesn't spend the time and effort required to understand the processes underlying his portfolio.**

December 7, 2006

This memorandum expresses the views of the author as of the date indicated and such views are subject to change without notice. Oaktree has no duty or obligation to update the information contained herein. Further, Oaktree makes no representation, and it should not be assumed, that past investment performance is an indication of future results. Moreover, wherever there is the potential for profit there is also the possibility of loss.

This memorandum is being made available for educational purposes only and should not be used for any other purpose. The information contained herein does not constitute and should not be construed as an offering of advisory services or an offer to sell or solicitation to buy any securities or related financial instruments in any jurisdiction. Certain information contained herein concerning economic trends and performance is based on or derived from information provided by independent third-party sources. Oaktree Capital Management, L.P. ("Oaktree") believes that the sources from which such information has been obtained are reliable; however, it cannot guarantee the accuracy of such information and has not independently verified the accuracy or completeness of such information or the assumptions on which such information is based.