TECHNIQUE 1

The Bread and Butter Trade—Playing Gaps

The gap trade is the bread and butter trade for many day traders and hedge funds. Many day traders *only* play gaps. They wander into the day trading firm at 9:25 AM, coffee and *New York Post* in hand, settle down, look for the stocks that are gapping up or down, and then fade them. They go the opposite direction: shorting gap ups until they get back to flat with the prior day's close, or going long gap downs. Four times out of five they make money and life is great; they can spend the rest of the day at the movies. But the fifth trade will wipe out all the profits and then some when the gap continues in the direction it started and all the gap-fillers get squeezed in one direction or other.

Research and the systems described in this technique will help the hit rate of the gap filler. The key is to identify those situations where it is more probable than normal that the gap is actually fadable. Making sure in each instance that, through testing and a commitment to research, you know that your edge is real and quantifiable off of all these day-trading wannabes is a key to success in playing gaps.

A gap occurs when a stock opens lower or higher than the previous close. For instance, on October 10, 2001, QLGC closed at 27.98. The stock opened the next day at 29.45 and kept running until it closed at 34.24. In other words, it never "filled the gap," or moved back to the close the day before. Shorting that open would have resulted in a disastrous 17 percent loss that day. (See Figure 1.1)

Note: All example trades are simulated with $100,000 unless otherwise specified.

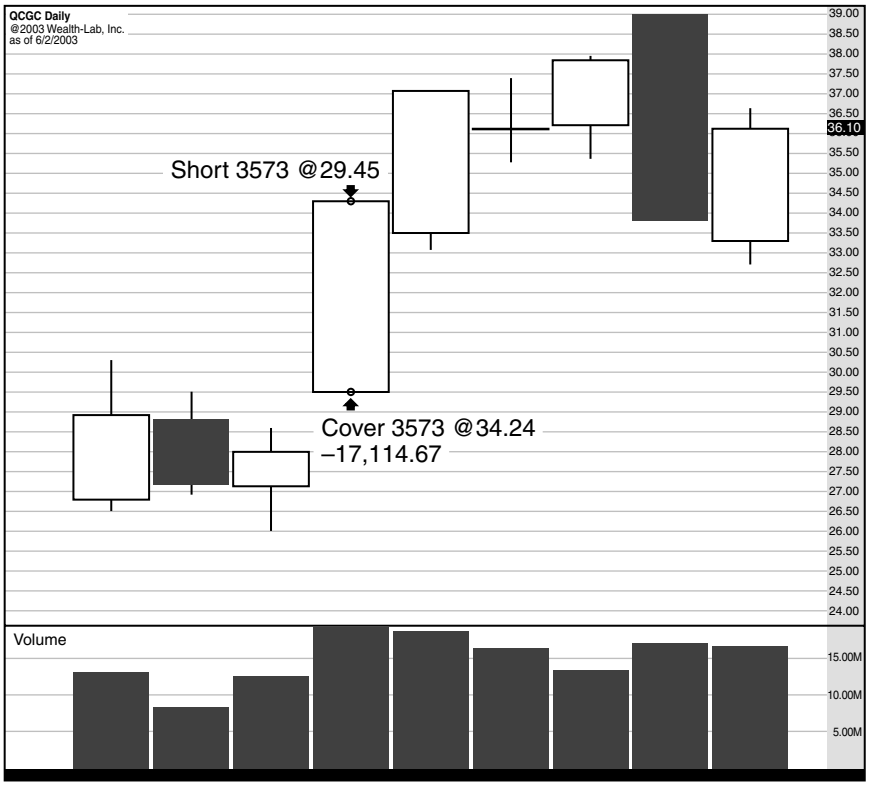

FIGURE 1.1 QLGC on October 10, 2001.

Before deciding to play gaps, first ask the question, "do gaps fill in general?" and then see if one or more trading strategies can develop out of the answer.

SYSTEM #1: FILLING THE GAP

The following is a test of the basic gap-fill approach:

- Buy a stock when it opens more than 2 percent lower than the prior close.
- Sell at yesterday's closing price *or* at the close if yesterday's closing price is never hit.

Test All Nasdaq 100 stocks (including deletions), from January 1, 1999, to June 30, 2003.

Result See Table 1.1. This is not a bad result, but it is not something I would want to play either. While 0.58 percent is a great result per trade if you are dealing with Nasdaq or S&P futures, it is only barely adequate when dealing with individual stocks where commissions and slippage have more of an effect.

This system gets a modest boost if the day before is down, possibly because short-sellers would already be modestly in the money and then the gap gives them an additional profit that they might, at that point, want to take.

TABLE 1.1 Filling the Gap

	All Trades
All Trades	9,821
Average Profit/Loss %	0.58%
Average Bars Held	1
Winning Trades	6,174 (62.87%)
Average Profit %	3.21%
Maximum Consecutive Winning Trades	58
Losing Trades	3,647 (37.13%)
Average Loss %	–3.97%
Maximum Consecutive Losing Trades	20

SYSTEM #2: FILLING THE GAP AFTER DOWN DAY

The rules for System #2 are the same as for System #1 except only buy when not only is there a 2 percent gap down or greater, but also when the day before was a down day for the stock.

Result See Table 1.2. The improvement is decent. The average return per trade goes from 0.58 percent to 0.75 percent. While across 5,000 trades an increase in the average return per trade generates a significant return, it is still not enough per trade if you take into account commissions and slippage, which could be as high as 0.40 percent per trade or more.

A 2 percent gap down does not give us as much to work with as a 5 percent gap down, so let us try a third approach.

TABLE 1.2 Filling Gap after Down Day

	All Trades
All Trades	4,938
Average Profit/Loss %	0.75%
Average Bars Held	1
Winning Trades	3,157 (63.93%)
Average Profit %	3.40%
Average Bars Held	1
Maximum Consecutive Winning Trades	44
Losing Trades	1,781 (36.07%)
Average Loss %	–4.04%
Average Bars Held	0.98
Maximum Consecutive Losing Trades	15

SYSTEM #3: THE 5 PERCENT GAP

- Buy a stock if the stock was down the day before and if the stock is opening 5 percent lower than the close the day before.
- Sell either if the stock hits the close the day before or the stock closes without hitting the profit target.

Result See Table 1.3.

We are finally getting to the point where we might have a system to play. We need to make one more tweak before we arrive at a significantly

TABLE 1.3 5% Gap

	All Trades
All Trades	993
Average Profit/Loss %	1.97%
Average Bars Held	1
Winning Trades	605 (60.93%)
Average Profit %	6.02%
Average Bars Held	1
Maximum Consecutive Winning Trades	18
Losing Trades	388 (39.07%)
Average Loss %	–4.47%
Average Bars Held	0.97
Maximum Consecutive Losing Trades	10

profitable trading system. So far, gaps get filled more often than not on average, and the results are slightly better when things are even worse (the day before is down and the gap is 5 percent instead of 2 percent). What happens when the market as a whole is gapping down?

SYSTEM #4: THE 5 PERCENT GAP WITH MARKET GAP

- Buy a stock if the stock was down the day before, if the stock is opening 5 percent lower than the close the day before, and if QQQ is also gapping down at least one-half percent.
- Sell if the gap is filled or at the end of the day.

Example: RFMD, 6/26/02

On June 26, 2002, the market had a double-header. Intel had warned on earnings the night before of and on the morning of June 26, consumer confidence numbers came in well below expectations. Basically June 26 was in the middle of a death spiral that culminated in a major low for the market on July 24, 2002. That said, the market backlashed at least for the day on June 26 and buying gap downs produced great profits to the buyers as shown in Figure 1.2. The June 26 bar is in the center of the daily chart in Figure 1.2. After a down June 25, which closed at 25.46, June 26 opened 24.43, almost 4 percent down from the close the day before.

RFMD (in Figure 1.3) closed on June 25 at 6.44 and opened the next morning at 5.70—a disastrous result for those longs who might have felt

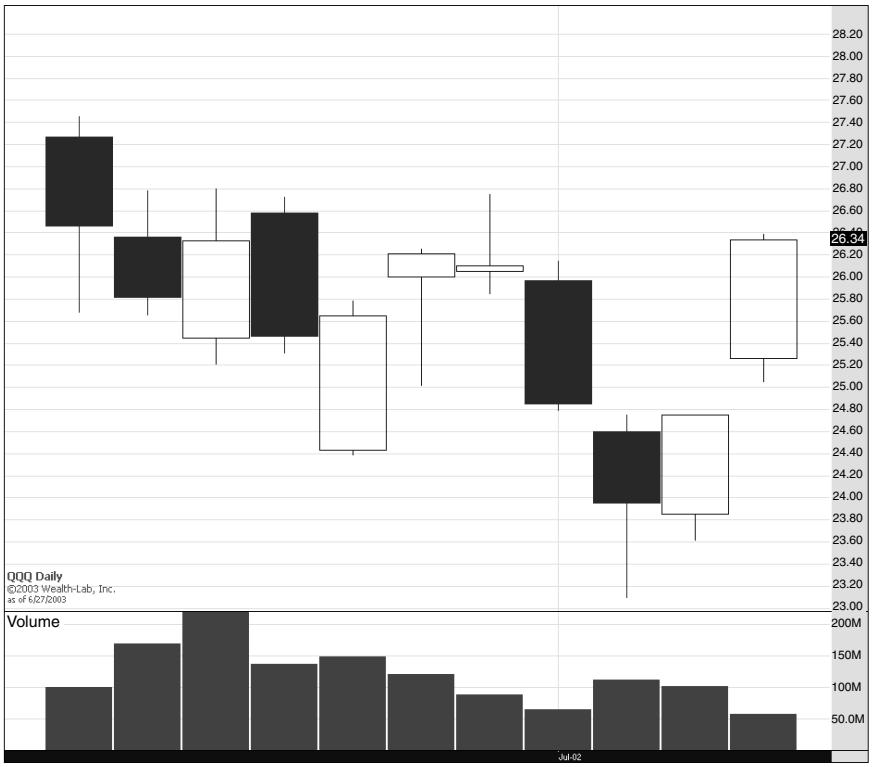

FIGURE 1.2 QQQ on June 26, 2002.

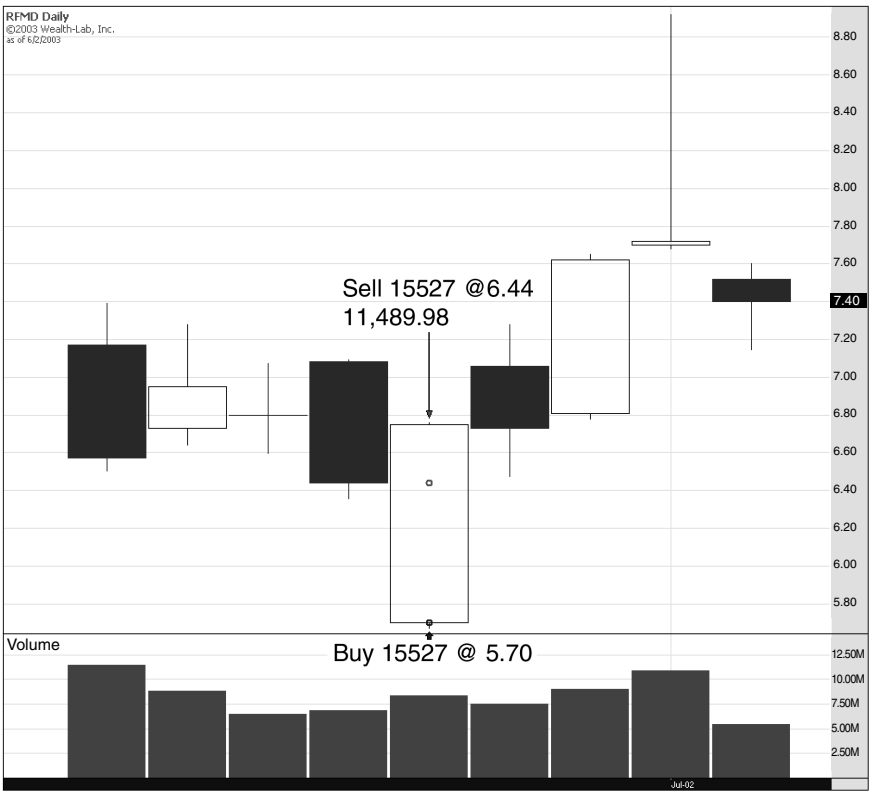

FIGURE 1.3 RFMD on June 26, 2002.

that the world was ending and the worst was yet to come. However, buying that open and selling when RFMD hits the price it had closed at the day before (i.e., it fills the gap), 6.44 would have resulted in a 12.98 percent profit.

Example: YHOO, 7/11/02

On July 11, 2002, the QQQs opened at 23.76 (see Figure 1.4). Having closed the afternoon before at 23.90, which was a gap down of slightly more than half a percent. YHOO opened at 11.15, down from 12.19 the night before. After the close on July 10, Yahoo beat earnings but did not guide up. The market was clearly disappointed in this, hoping for the second-half recovery in 2002, which did not look like it was going to happen.

As demonstrated in Figure 1.5, buying the open and closing out at the open the next day at 12.79 resulted in a profit of 14.71 percent. This was still in the middle of a steep market slide that lasted until July 24, but profits on the long side were still available to those looking for the right opportunity.

Simulation of 5% Gap

Starting with $1,000,000 and using 10 percent of equity per trade from March 10, 1999 (the inception of QQQ) to January 1, 2003, we get the result as shown in Table 1.4 (on all Nasdaq 100 stocks including deletions). As we can see from the equity curve of the simulation (Figure 1.6), there were very few trades generated in 1999. The interesting thing is that as the market had its most extreme falls (note the buy and hold line in Figure 1.6, the equity curve spikes upwards despite the fact that this is a long only strategy. The myth of a bear market is that only going short works. This strategy demonstrates the complete falsehood of that myth.

Figure 1.7 illustrates the annual return.

Average annual return of 28.32 percent with a Sharpe ratio of 1.29.

Many fund of funds take the view that the way to smooth out volatility of returns during both bull and bear markets is to have a long/short strategy. This way, during bull markets the longs will hopefully outperform the shorts and the market (the presumed alpha of the strategy), and during the bear market the shorts will greatly outperform the long positions. However, this strategy demonstrates it is possible to have a long/long strategy during both bull and bear markets by diversifying the method of going long. As an example, we can take the reverse approach of shorting gaps down and try shorting gap ups, as described in System #5.

TABLE 1.4 Simulation of 5% Gap with Market Gap System

	All Trades
Starting Capital	$1,000,000.00
Ending Capital	$2,593,543.00
Net Profit	$1,593,543.00
Net Profit %	159.35%
Exposure %	5.22%
Risk-Adjusted Return	3053.37%
All Trades	525
Average Profit/Loss	$3,035.32
Average Profit/Loss %	2.07%
Average Bars Held	1
Winning Trades	321 (61.14%)
Gross Profit	$2,875,406.00
Average Profit	$8,957.65
Average Profit %	5.89%
Average Bars Held	1
Maximum Consecutive Winning Trades	13
Losing Trades	204 (38.86%)
Gross Loss	($1,281,862.38)
Average Loss	($6,283.64)
Average Loss %	–4.07%
Average Bars Held	0.97
Maximum Consecutive Losing Trades	14
Maximum Drawdown	–8.26%
Maximum Drawdown $	($168,763.75)
Maximum Drawdown Date	9/6/2001
Recovery Factor	9.44
Profit Factor	2.24
Payoff Ratio	1.44
Risk Reward Ratio	3.37
Sharpe Ratio of Trades	6.59

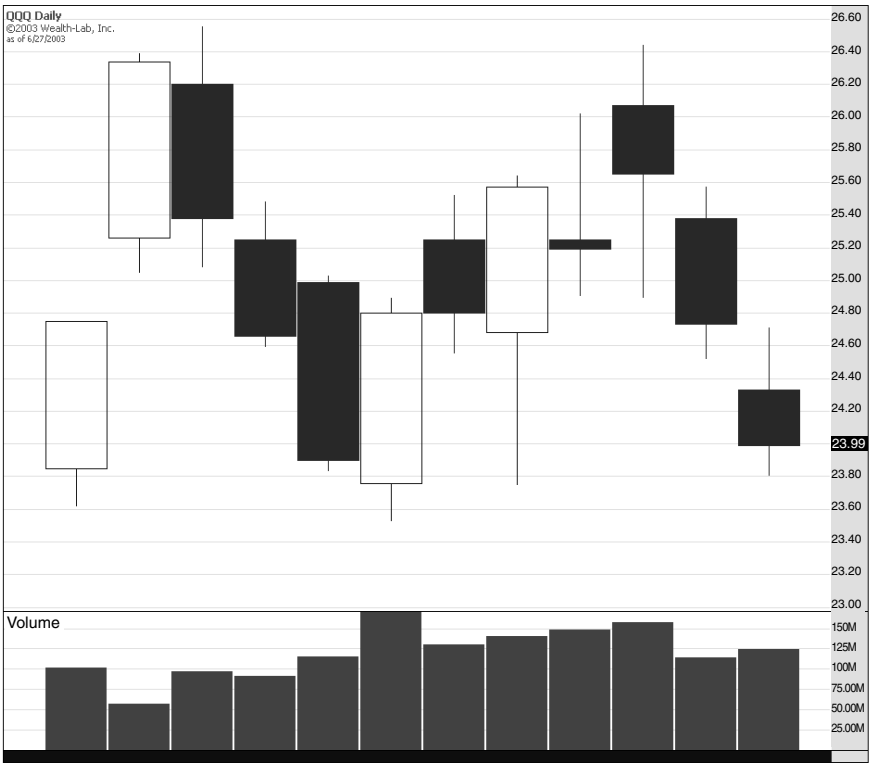

FIGURE 1.4 QQQs on July 11, 2002.

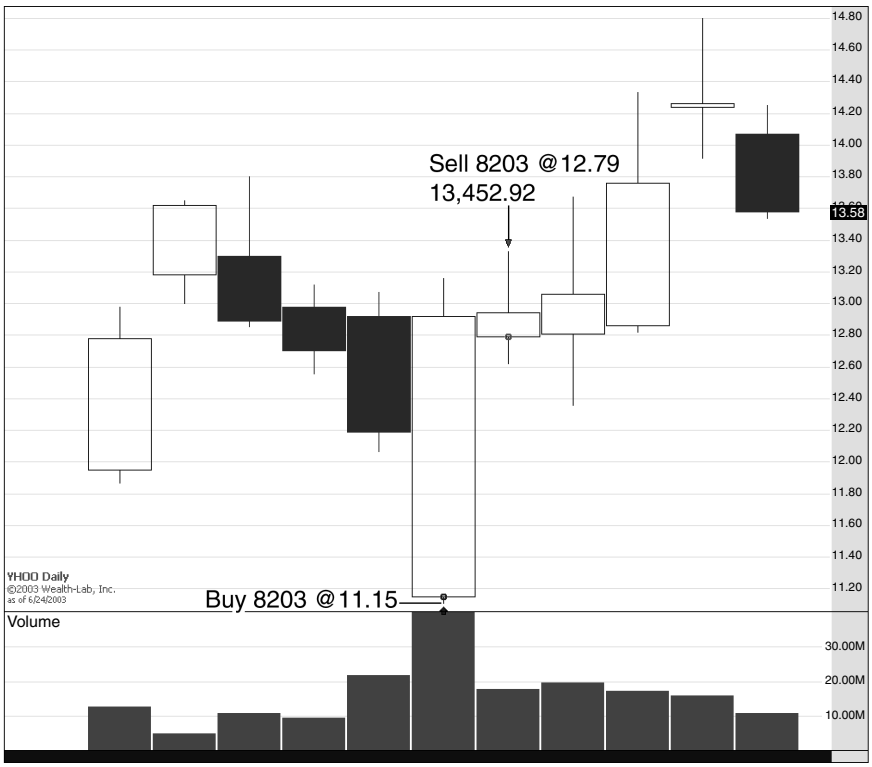

FIGURE 1.5 YHOO on July 11, 2002.

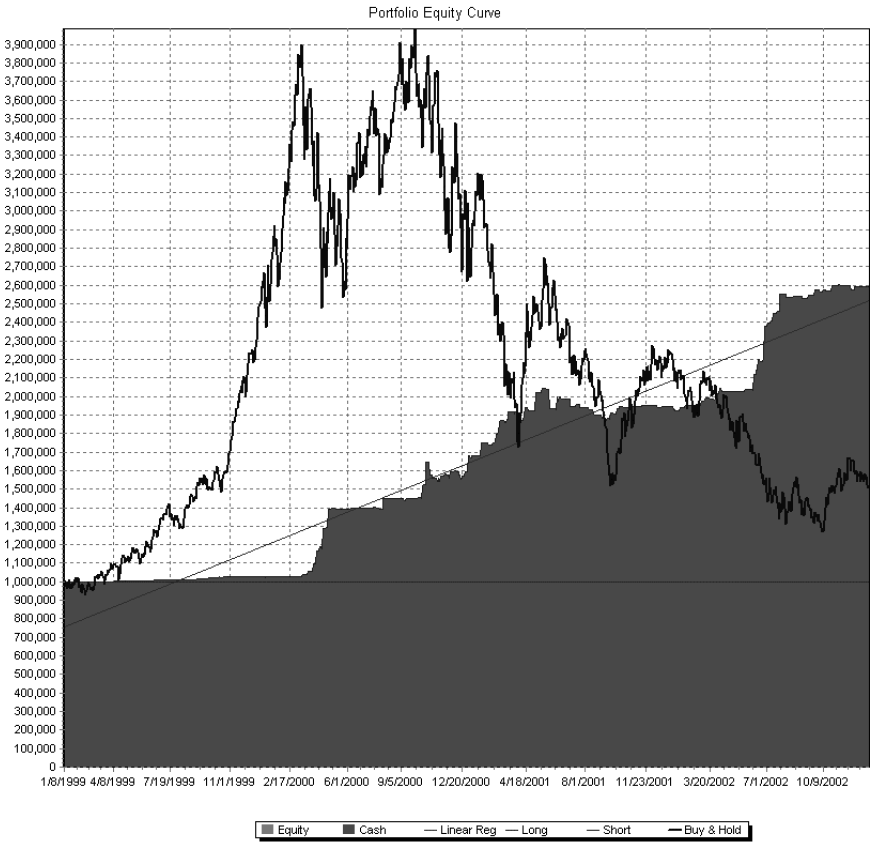

FIGURE 1.6 Portfolio equity curve.

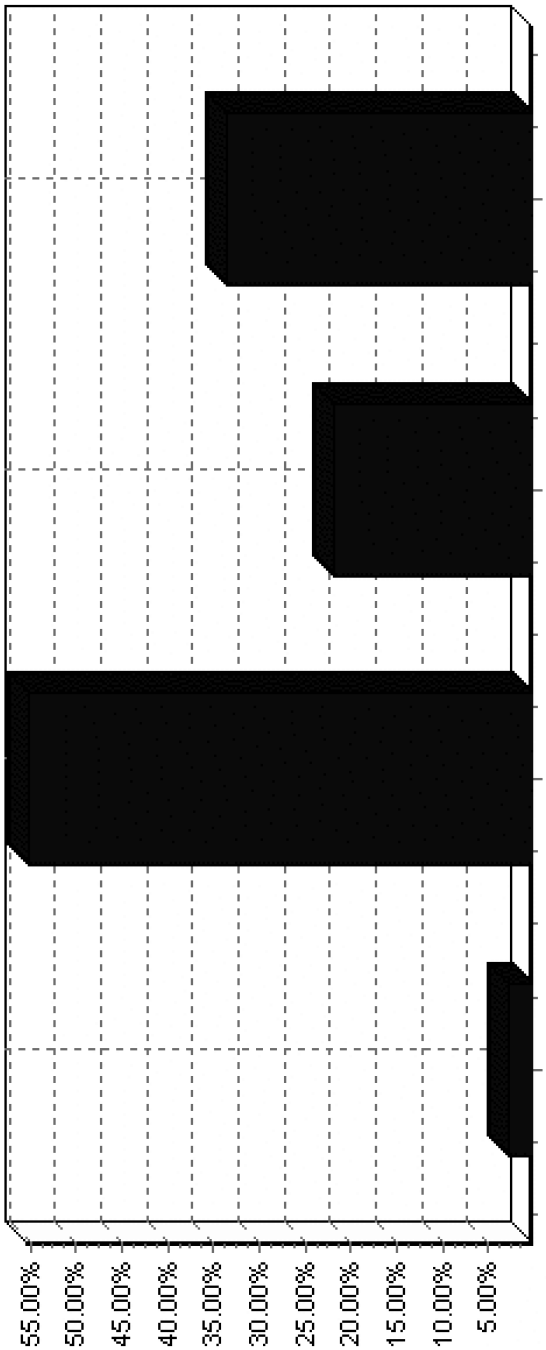

FIGURE 1.7 Annual returns.

SYSTEM #5: SHORTING THE GAP UP

Previously we saw a gap up that did not work out on the short side: QLGC on October 10, 2001. Here are the rules for the shorting the gap up system:

- Short a stock when the stock is up the day before, the QQQs are gapping up at least one-half percent, and the stock is gapping up greater than 5 percent.
- Cover when the stock closes the gap (i.e., cover at the closing price of the day before); otherwise, close the position at the day before.

Result See Table 1.5. The result is not that great, producing an average return per trade of –0.56 percent. Even in a bear market, shorting too much exuberance (sometimes referred to as "irrational") has not paid off for the speculator.

TABLE 1.5 Short Trades

All Trades	752
Average Profit/Loss %	–0.56%
Average Bars Held	1
Winning Trades	371 (49.34%)
Average Profit %	4.15%
Average Bars Held	1
Maximum Consecutive Winning Trades	16
Losing Trades	381 (50.66%)
Average Loss %	–5.20%
Average Bars Held	0.99
Maximum Consecutive Losing Trades	16

SYSTEM #6: SWING TRADING THE GAP

The gap-fill trades do not have to be closed out just because the gap is filled. In fact, it is better to hold on to them and try to press for as much as possible. There are many trade-offs between swing trading and day trading. Holding for multiple days allows you to reduce transaction costs and also allows the trade to take advantage of gap ups overnight. However, the night contains many risks and being in cash allows one to sleep easy.

It can be seen that taking System #4 and adding a simple step that allows us to hold overnight drastically increases the profitability of the system, which becomes System #6 with the following rules:

- Buy a stock when the stock is down the day before, QQQ is gapping down more than half a percent, and the stock is gapping down more than 5 percent.
- Hold the stock at least until the next morning.
- Sell when the stock goes lower than the prior day's close.

Example: CIEN, 4/17/01

CIEN closed at 51.51 on April 16, 2001 (Figure 1.8). The next day it gapped down to 48.11 before reversing and closing at 53.09. The stock then gapped up on April 18 and kept going for two more days before finally stalling on April 20. Since it opened that day lower than the close the day before at 67.30, the trade was stopped out at the open at 67.09 for a 38.22 percent profit.

Simulation

See Table 1.6. While there were not that many trades in 1999, we can see that from 2000 to 2002, the worse the market did, the better the equity curve of the swing trade gap system (Figure 1.9, page 18).

Drawdown Analysis The drawdown (Figure 1.10, page 19) is relatively mild except in April, 2000, the end of 2000 (right before the first rate cut), and the week immediately following September 11, 2001.

Equity High Analysis In every case except two, it took fewer than three months to achieve a new equity high in the system. In the two exceptions, it took a maximum of five months to achieve the new equity high. (See Figure 1.11, page 20.)

Annual Return of Simulation Gaps create enormous anxiety for the average investor. When a stock gaps down because of an earnings warning, for instance, the first reaction often is to panic. Thus, even before the open, investors are trying to sell in a panic, causing the gap even before the news is properly disseminated and analyzed. This type of behavior is more often than not going to be irrational behavior and can be, over the long run, exploited profitably. (See Figure 1.12, page 21.)

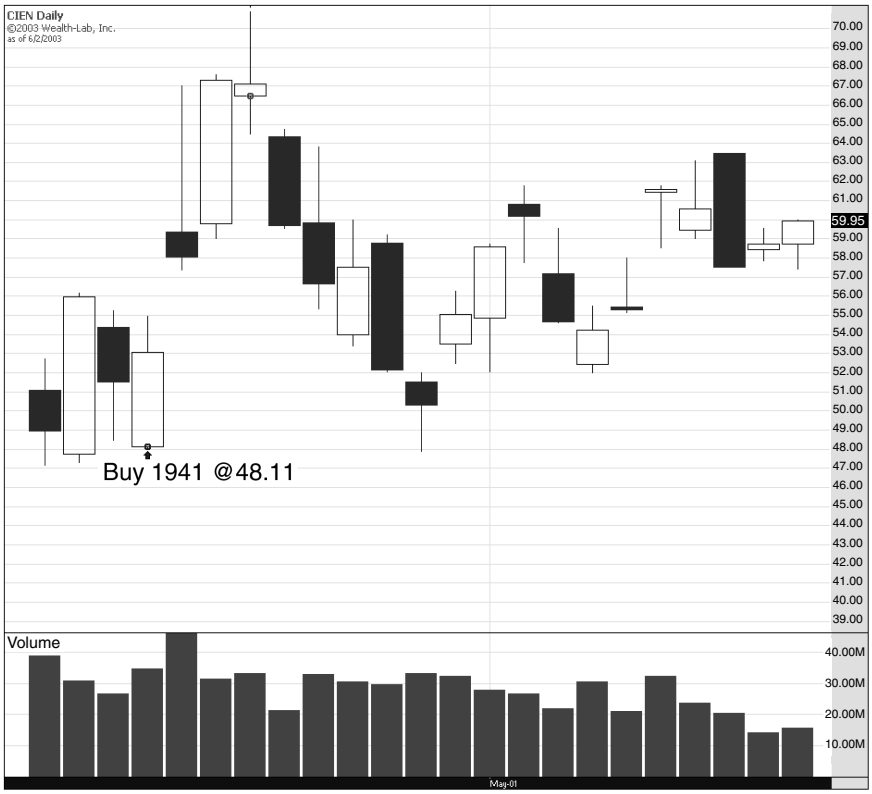

FIGURE 1.8 CIEN on April 17, 2001.

TABLE 1.6 Simulation of Swing Trading the Gap

	All Trades
Starting Capital	$1,000,000.00
Ending Capital	$4,726,416.00
Net Profit	$3,726,416.00
Net Profit %	372.64%
Exposure %	5.68%
Risk-Adjusted Return	6560.19%
All Trades	498
Average Profit/Loss	$7,482.76
Average Profit/Loss %	3.64%
Average Bars Held	1.24
Winning Trades	300 (60.24%)
Gross Profit	$6,028,952.00
Average Profit	$20,096.51
Average Profit %	9.41%
Average Bars Held	1.37
Maximum Consecutive Winning Trades	24
Losing Trades	198 (39.76%)
Gross Loss	($2,302,538.00)
Average Loss	($11,628.98)
Average Loss %	–5.26%
Average Bars Held	1.02
Maximum Consecutive Losing Trades	14
Maximum Drawdown	–11.89%
Maximum Drawdown $	($289,220.50)
Maximum Drawdown Date	11/13/2000
Recovery Factor	12.88
Profit Factor	2.62
Payoff Ratio	1.79
Standard Error	$452,060.94
Risk Reward Ratio	1.81
Sharpe Ratio of Trades	5

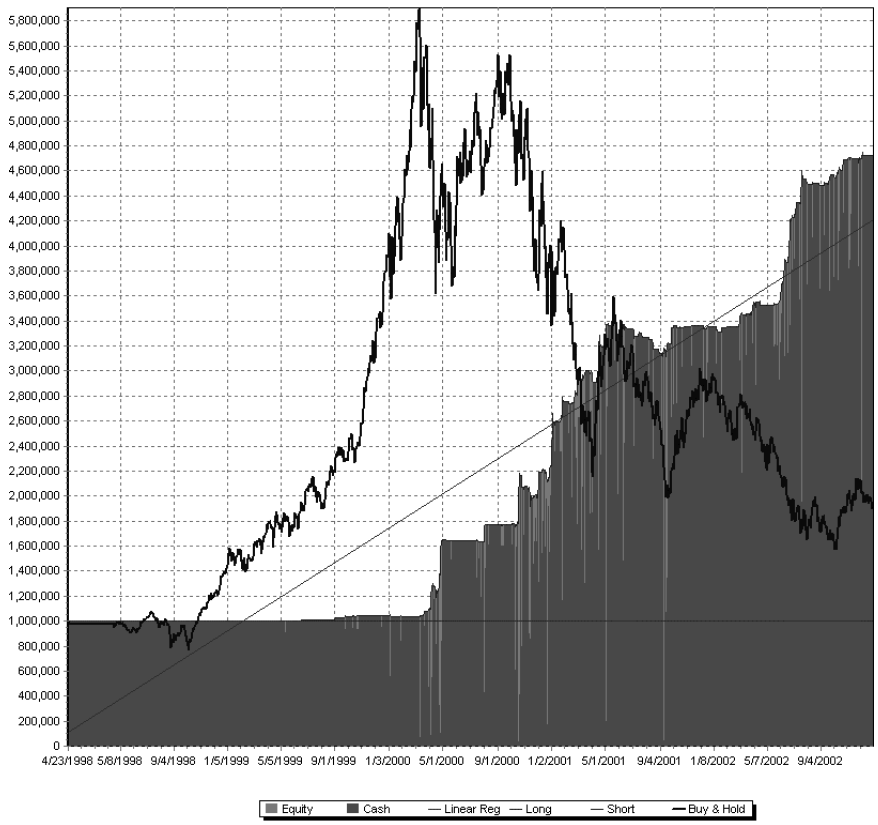

FIGURE 1.9 Portfolio equity curve.

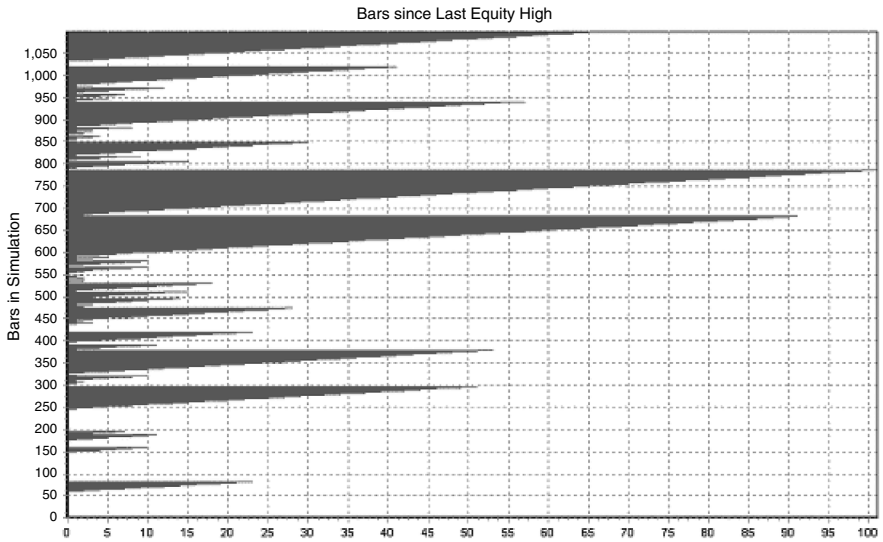

FIGURE 1.10 Drawdown analysis.

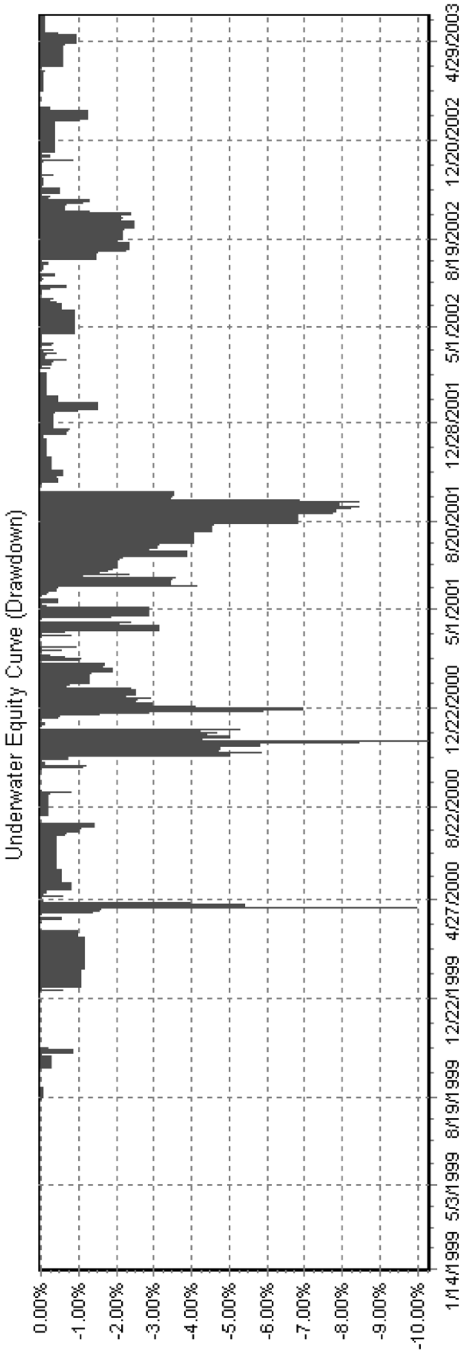

FIGURE 1.11 Underwater equity curve.

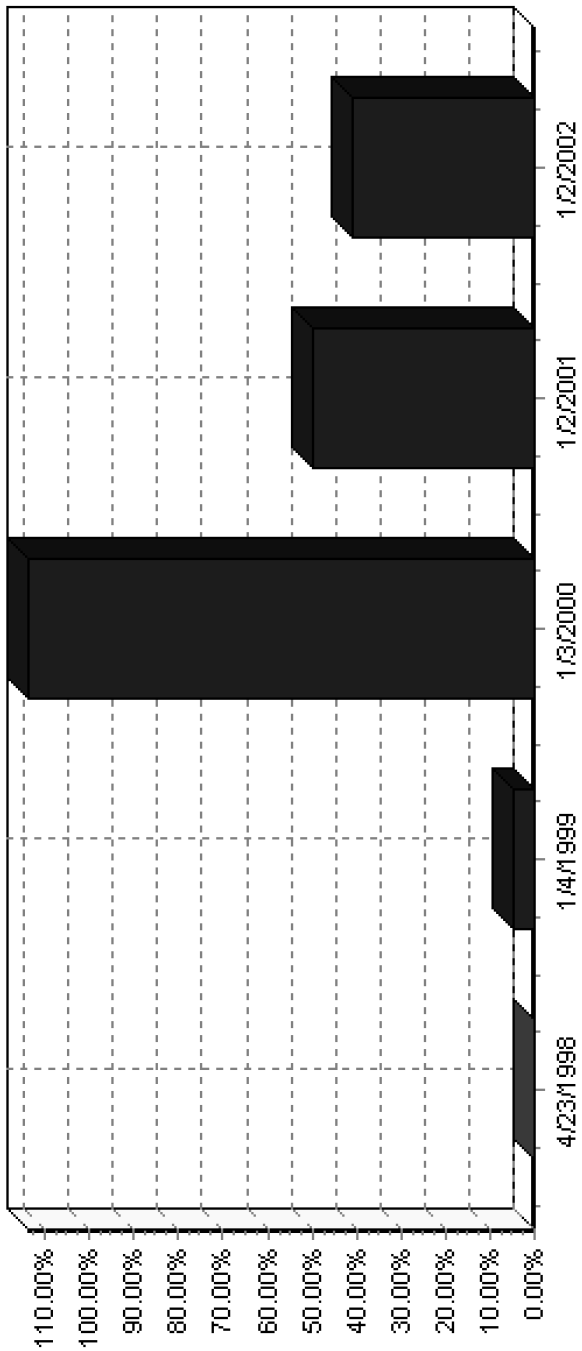

FIGURE 1.12 Annual returns.