BATTERED & BRUISED

SYSTEMS TRADING SCHOOL OF HARD KNOCKS

Every trader has at one time or another dreamed of having a fully automated trading system that is profitable—effectively a money printing press in the basement. I know I did—and I have the scars to prove it. I barely remember the day I woke up, not realizing I was about to embark on a trip that would lead me into an abyss. But I do remember what the goal was—to create an automated trading system that would print me money and lessen the emotional toll that is common in trading.

Looking back, I cannot believe how naive I was. But I learned hard lessons, and in this article, I share some of them. The aim is to encourage newer system traders to be realistic, be patient and persevere, as well as to offer some insight into clearing a path to success.

JUMPING OFF THE CLIFF

When I started, I knew nothing about trading systems. But I was young(er) and had a background in software development from a prior career. What else did I need? To me, a trading system was a computer program. All I needed was a good development tool, and I would be set. (Yes, I can hear the more experienced readers belly laugh as I write this.)

BY NIGEL BAHADUR

It was easy to find the development tool. Every major trading magazine has a full-page ad for TradeStation's software. I had an account opened, and the software loaded and ready to go within 48 hours of my decision. In hindsight, I could not have picked a better product to start my education. The combination of a full-fledged 4GL-type programming language, integrated data and brokerage made it ridiculously easy to get started. I don't know if I would have gotten as far as I did if I had picked any other product because, even today, nothing else I know of offers that combination. I probably would have given up just dealing with the data management hassles (data management is *not* a trivial exercise in automated systems development!).

Lesson 1: Pick a systems development platform that matches your strength.

If you are a hardcore programmer who loves to get down into the nitty-gritty of pointers and operating system APIs, then choose a platform that allows you to do that. If you just want to get started now without building a lot of infrastructure yourself, pick a platform that caters to that type of audience. The suitability of the platform to your capabilities is just as important as the style of trading is to your psychological makeup. The tools must fit the trader!

CONTINUING ON ...

I'm not going to delve into the details of learning the programming language and software platform. Suffice to say that within a few weeks I had my first strategy that looked great—it backtested well and had a nice 45-degree, upward-sloping equity curve. It was an intraday breakout strategy that worked on a few high-volatility stocks—Qualcomm Inc. (QCOM), Oil Service HOLDRS Trust (OIH) and a few others. It exited at the end of the day, which was great psychologically—no overnight positions—and it even had position sizing. I distinctly remember thinking I was so smart for including that feature.

I started trading it, choosing to run it only on the stock that performed best in back tests: Qualcomm.

Splat!

Being the conservative but greedy sucker that I was, I started using a 50K trading level and sizing my positions

to that level. This meant that I would routinely execute stop market orders to enter positions and sell market orders to exit positions at the end of the day. After the first week, I learned a crucial lesson.

Lesson 2: If you're a beginning trader, the slippage in equities will always be greater than you think.

In the case of QCOM, I was routinely seeing between 5 cents and 25 cents slippage on my market orders. It was especially bad when going short because the uptick rule was still in effect at the time. I definitely did not account for this level of slippage in evaluating the strategy.

BROKEN LIMBS

I continued to trade the QCOM strategy for a while since it was the only viable strategy I had. I modified it a bit as I encountered issues (such as the excess slippage). But after a few months, I was substantially in the red. To my consternation, the other markets I chose *not* to trade seemed to have done quite well *if* I had traded them. Therein, I started learning a new lesson. I use the word "started" because I could not appreciate at the time how potent a lesson this was.

Lesson 3: Always trade a portfolio.

So, I started trading a few more symbols. I thought I was being smart—I left the illiquid symbols out of the mix (such as OIH) and included mostly other tech stocks. Then I learned another lesson as more blood flowed through my capital base.

Lesson 4: Correlation matters. Highly correlated markets should be traded as a single unit.

As it turned out, instead of risking 1 percent to 2 percent of my capital base per trade, I was actually risking as much as 10 percent on the same trade because of correlation. Ouch!

STUBBORN

OK, I was battered and bruised. Still, I thought I had a winner on my hands. So I had the bright idea of what happens if I just do not take the trades on the days when I thought the model was wrong? (Is that laughter I hear again from the pros?) This lesson—hmm—this one I had to relearn multiple times before I finally got it right.

Lesson 5: Don't mess with the system. You'll never get it right. The system is smarter than you. You designed it that way, remember?

I cannot begin to describe how many times I was wrong. I turned off the systems when I thought they were wrong only to have whiplash reversals take a negative day to a positive day without my being along for the ride. Sure, there were many times I was correct to do so, but the gains on the days I was wrong were enough to more than offset the times I was right—and I wasn't along for the ride to collect on those gains. So my models lost more money than they should have.

MOVING ON

I stopped trading that system at a net loss by the end of the year. It was a spectacular failure. If I had paid closer attention, I probably would have learned more lessons. Instead, those lessons would come later with different "systems."

Through all this heartache with my first live system, I continued experimenting with other systems. I kept trying to create a model that could be used on the equity futures markets, especially the CME S&P E-mini contract (ES). I don't remember if I traded other systems in between, but I do remember eventually turning on my first ES system. It was based on Perry J. Kaufman's work that I learned from Linda Bradford Raschke's teachings—the concepts of swings, ATRs (average true ranges) and waiting for the market to move a certain amount based on volatility to confirm a direction. It was another breakout model, but this time I was going to be smart (there's that word again!). I started trading it on multiple timeframes. I chose the 30-, 60-, 120- and 240-minute charts. The entry was the breakout of the top and bottom of the bar after a change of swing direction was confirmed.

Needless to say, I got nailed by correlation again. It turned out that the tops and bottoms of bars on many of these timeframes all occurred at the same spot or close to the same spot. And so did the breakouts. The model would enter the 60 minute, then the 120, the 240, and

suddenly I would have three or four units of risk all in the same direction. Duh!

So I relearned the correlation lesson. And the portfolio lesson, but I also learned a couple of new rules.

Lesson 6: Risk-reward matters.

Lesson 7: "Percent profitable" is an illusion.

You can't be profitable shooting for four-tick profits and multipoint losses no matter how good the model. Between slippage, system errors and human errors, the best you will do is breakeven. This model was trying to get into and out of trades quickly for small profits. I thought that the high win rate was a good thing. But even though it was profitable on paper, no room existed for error or for the system to deviate from its historical pattern. So every human error I made, every time the Internet connection was lost, every time I got more than one-tick slippage, a theoretically winning trade moved to the losing column of reality. Needless to say, it wasn't long before I tossed this model into the dumpster.

THE ABYSS

By this point, it had been about 18 months to two years, and my self-confidence in this area had been badly bruised. I had backtested every idea I could get my hands on. Every indicator, stop, target and money-management formula I came across had been thrown into the cooking pot, and still I had nothing. Smart was no longer how I felt.

I had learned a lot but still had not learned enough. By now, I knew how to trade systems—I was taking every trade regardless of what I thought of the market. I was more or less immune to drawdowns of 30 percent or less. I also thought I understood what made a good system—I had become intimately familiar with issues such as profit factor, drawdown, testing periods, in- and out-of-sample testing, etc. (see my September 2006 SFO article for more information on those topics).

But still, I did not have a reliable money-printing machine. I was in the abyss.

FIRST RAY OF HOPE

I wasn't about to give up though. I had seen enough, been tantalizingly close to success and read enough about other people's success to know that I could at least be successful trading systems. However, I had modified my expectations—I wasn't looking for my personal printing press—I was simply seeking some semblance of success upon which I could build.

That came with a countertrend, intraday trading model. Amazingly, it still works to this day. When I started using this model, I knew that I did not have any other models to help create a diversified portfolio. So I used ridiculously low leverage. This helped with two things:

1. I didn't have butterflies in my stomach when I started trading the model.
2. It was easy to put the trade on and walk away.

In fact, it was too easy to walk away (I'll come back to that later, though). For now:

Lesson 8: Lower the leverage—it helps maintain discipline (and your mental state).

After trading the model for a few months, I discovered how many things can go wrong. Even though I was taking trades religiously, there were still enough snafus that prevented me from matching the system's theoretical performance.

Lesson 9: You will never match the system's theoretical performance.

Many times when limit orders weren't filled I got more slippage than I anticipated, the machine did not automatically transmit the order, the TradeStation network was down, the exchange was down or my machine was down. There was always something—I don't think there was ever a week when some problem didn't crop up. Eventually though, I put in place enough controls that mitigated most of the issues. For example, I had backup machines, backup lines and backup brokerage links.

Lesson 10: It's not only about the computer program. It's about the processes and procedures, your infrastructure, your own imperfections (getting sick, for example) that can make or break a profitable system.

I wrote an article for SFO about some of the obstacles you can encounter (August 2006 edition); it should shed some insight into this lesson.

BUILDING UPON SUCCESS

So, I had my first system. It was soon after that that I started to develop others that were just as robust. The mental breakthrough was simple: There must be underlying logic about the human emotions that drive the system. In other words, there must be a reason the system works, a reason that is grounded in normal human greed-fear-euphoria-panic behavior. If not, then the system is most likely fitted to the curve or will eventually fail for other reasons. Human behavior seldom changes, so if the reason a system works is grounded in behavioral psychology, the chances are good it will stand the test of time.

The second system was in place one year after the first successful one, and the third and fourth ones were added two and three years later, respectively. Every year, I added a new one. The older models are traded using double the leverage of the newer ones. So, now I have a portfolio of models that trade different timeframes and different styles.

Watching the portfolio build up and break down positions is like watching a conductor at an orchestra. First, one system goes long on a multiday model, but the next day, when the market starts to send that first model into a drawdown phase, another system triggers intraday in the direction of the short-term trend to help counteract the drawdown. Once in a while though, all models will trigger in the same direction. But if they are wrong, they all get stopped out at staggered points. Ultimately, the drawdowns are reduced to a level that I can handle, even though there is occasional correlation.

I should point out that everyone has a different pain threshold, and the higher drawdowns that usually come from system trading may not be comfortable for some. Many robust systems, especially trend-following systems, endure 40-percent drawdowns on a standalone basis. Trading them in a properly constructed portfolio, though, usually reduces those drawdowns. So the term "reduced drawdowns" is relative—instead of 50-percent drawdowns, you can get, say, 25 percent. That is good enough for me.

PAYING THE PRICE

I have a great portfolio of systems that seem to work, but I am constantly worried that one or more models will stop working. I am always looking at various metrics to see if the models are exceeding their historical norms.

I can't fully take a vacation. The two weeks I take off may very well be the two weeks that the systems perform best. I have things set up now where I can log in remotely and start up the systems. But there is always the chance that when I walk away during vacation, that a good trade will not get executed or a stop will not be honored, and I will face an unexpected drawdown. It could be the two weeks that the system produces a windfall that takes the year's returns from average to spectacular.

A great example of that was the 2008 holiday weekend when the overseas markets tanked badly overnight and we had this amazing gap down. One of the models went short the day before the weekend started. That trade took the model from an average year to a great one. However, that would have been a good week to take off on vacation. If I had done that, I would not have been able to take the trade, and I would be kicking myself for being away.

Another example: Recently, I moved from Florida to Chicago and had to find a way to execute the models while the computers were being moved. Every morning I had to get up early in the middle of chaos to log in remotely to turn on temporary computers. Some of the models require precision—they can't start until one minute before the market opens—so I have to be watch-

Pay three times as much attention to your exits.

ing them at the market open to make sure the orders are placed properly.

The models are not printing presses. Systems trading is a full lifestyle change. The stress of discretionary trading did not go away; it morphed into a different type of stress. Still, for my personality, it's better stress.

GOOD ENOUGH AUTOMATION

I'm sure this is a question some readers are asking: Why can't these systems run unattended all the time? It's simple: stuff always goes wrong. No matter how well funded you are as a trader, you can never leave your systems unattended for any length of time. Problems occur, and you need humans to fix them. Can the systems be better automated? Absolutely. But I like my automation tool because it's easy to use, allows me to rapidly prototype and deploy new models with ease, and I get new features and functions with every release of the product—at least once per year.

To do a better job of automation, I would have to write completely custom code that would take substantially more time, would be harder to change, cost 10 times as much, and I would still have to have a human being monitoring the systems. So I don't see the advantages for automating any more than I currently do.

One of the *great* side effects of having to monitor the systems is this: You watch the markets. You get a feel for the markets, and you develop ideas for new systems simply by observing price movements every day. Nothing beats watching price movements in real time. *Nothing*!

CREATING GOOD SYSTEMS

The best lesson I learned in creating systems is this:

Lesson 11: The exits make the system. It's not the entries, but the exits and stops that are the most important aspects of the system.

The systems I use today are breakout systems, countertrend systems, overnight systems and intraday systems. They are similar to every other system out there—seriously, there just aren't that many ways to write entries for a breakout system or a countertrend system. The biggest difference between these models and the ones that someone else uses is most likely how profits are taken and how losses are kept in check. Many good systems use multiple types of exits that combine disaster stops, trailing stops and time-based exits. Some just use time-based exits.

A perfect example is the 20-day highs and lows that were popularized by the Turtles (I think). Today, that model has broken down. But that doesn't mean that the 20-day high and low points don't still have value. Whether used as breakout levels a la Turtle or fading levels a la Raschke's turtle-soup patterns, it's the way you exit the trade that will turn what is now a broken model into a profitable one.

Pay attention to your entries, but pay three times as much attention to your exits. It seems to me that most beginning system traders do the opposite—I know I did.

SLOW DOWN

From start to initial level of success took about two and a half years. Most traders think that systems trading can be mastered sooner. But I haven't met a single individual, successful trader who has told me it takes less than that. Many have said it takes longer. It took four years for me to be truly comfortable.

Lesson 12: Don't be in a hurry. The faster you go, the more mistakes you will make and the higher the ultimate cost will be.

I know that few will head this warning. I was given this same advice when I was starting. I ignored it. And I paid the price. Fortunately (very fortunately), I survived. So I'm passing it along as my final lesson learned. But I really wish it were the first lesson I had learned.

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