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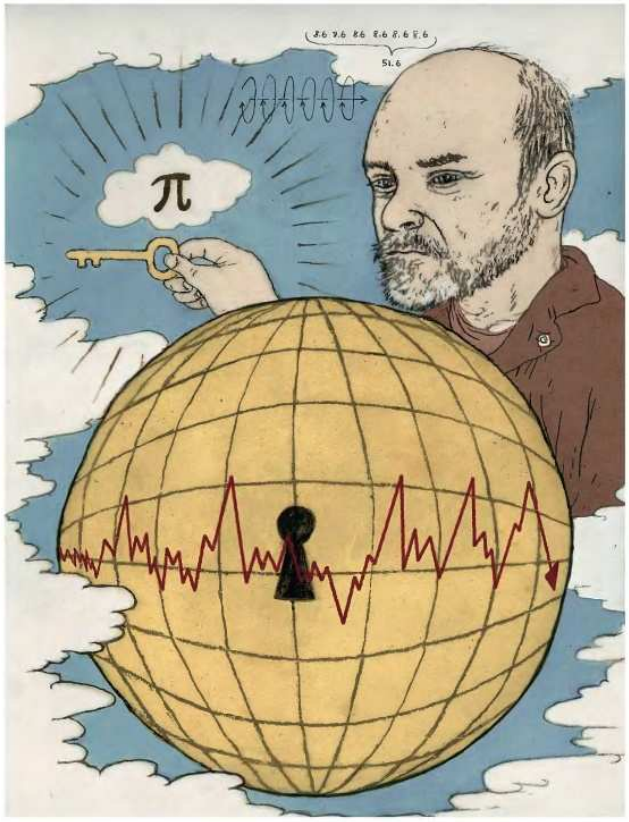
THE SECRET CYCLE

Is the financier Martin Armstrong a con man, a crank, or a genius?

BY NICK PAUMGARTEN



Some see mysterious links between pi and the dates of turning points in the markets.

JONATHON ROSEN

The education of Martin Armstrong, according to Martin Armstrong, commenced in 1964, when he was fourteen. He got a weekend job working for a bullion dealer, in Pennsauken, New Jersey, who initiated him into the idiosyncrasies of the trade in coins and gold. The next year, he bought several bags of rare Canadian pennies, which turned out to be even rarer than he thought. Within a year, they shot up in value: a roll of fifty was worth a thousand American dollars. Since he had roughly a thousand rolls, he became, for a brief spell, a teenage millionaire. Expecting, as people do, that the pennies' price would keep rising, he held on to them, but the high price precipitated the discovery of a greater supply, their value plunged, and he was once again a regular South Jersey kid working weekends in a coin shop.

Armstrong's father, a lawyer and polymath whose grandfather had lost a fortune in the 1929 crash, disapproved of speculation, and he persuaded his son to put his diminished fortune in a fashionable but conservative investment vehicle called a mutual fund. Not long afterward, mutual funds, along with the broader stock market, abruptly crashed.

Armstrong began to observe that many things worked like this—that occasionally a contagion, of indeterminate origin, passed through the system, hitting one asset class after another. One summer, his father took him to Europe, and the web of foreign currencies gave him a tactile sense of interconnectivity and the oscillations that might come of it. The following year, Armstrong's high-school history teacher showed his class the 1937 film "The Toast of New York," about the Black Friday panic of 1869 and the gold speculator and con man Jim Fisk, with a young Cary Grant as Fisk's accomplice. At one point in the film, Fisk quotes gold at a hundred and sixty-two dollars and fifty cents an ounce. Armstrong, aware that the price, in 1966, was just thirty-five dollars, assumed that the line was Hollywood nonsense. Prices could not possibly have fallen so far over the span of a century. He went to the library, however, and found, on microfilm, a contemporaneous reference in the *Times* to a gold price of a hundred and sixty-two dollars. It further demolished his youthful assumption that assets gradually appreciated over time—that markets were linear.

One day, in a newspaper, he came across a list of financial panics that occurred between 1683 and 1907. On a lark, he divided the span (two hundred and twenty-four years) by the number of panics (twenty-six) and found that, on average, there had been a panic every 8.6 years. As he read more, he began to suspect that 8.6 was a highly significant number. He discerned a recurrence of major turning points in the economy and in world affairs that followed a distinct and unwavering 8.6-year rhythm. Six cycles of 8.6 years added up to a long-wave cycle of 51.6 years, which separated such phenomena as Black Friday and the commodity panic of 1920, and the Second and Third Punic Wars.

Armstrong was, for the most part, self-taught. His father had him reading Aristotle at the age of nine, which, along with movies like "Cleopatra," inspired him to delve deeply into ancient history: the arcana of Mesopotamian commodities, the decline of the Roman denarius. After high school, Armstrong attended the RCA Institutes, now called the Technical Career Institutes, and he audited a few courses at Princeton, but he never earned a college degree. School bored him.

Still, he adopted the habit of a learned man. In the early seventies, he became a trader and dealer in gold, and began com-

piling forecasts about commodities and currencies, which he sent out, via Telex, to clients around the world. Over time, the forecasting became his business. Much of it was rooted in cycles research. He travelled to London to the British Museum Newspaper Library and put together historical data on prices and exchange rates, down to the day. He constructed what he called an Economic Confidence Model, which he relied on to predict an upturn in the price of commodities in the early days of 1977. It worked, and he was amazed.

He opened a forecasting firm called Princeton Economics International, based in Princeton, New Jersey. His model singled out, in advance, the day of the October, 1987, crash. "Never did I expect this to work on such a precise time level," he wrote later, in an essay called "Understanding the Real Economy." "It made no sense. I personally assumed it was just a fluke. This took place on the minor halfway point up the first leg of the 8.6-year cycle, at 2.15 years." Afterward, he was messing around with numbers and realized that 8.6 years was exactly three thousand one hundred and forty-one days: 3,141, the number pi times a thousand. The cycle mystery had deepened. If pi was essential to the physical world, perhaps it somehow governed the markets, or the fluctuations in human behavior and mood that manifested themselves in the markets. It was, after all, the magic number associated with the swing of a pendulum, Heisenberg's uncertainty principle, and the Great Pyramid at Giza. Why not the vast monuments of data known as the financial markets? "Suddenly I saw it in my mind's eye," he wrote. "There was a Geometry of Time itself."

Armstrong didn't tell anyone about pi. He kept it a secret for twelve years, and he continued to sell his services as a consultant at up to ten thousand dollars an hour. (The *Wall Street Journal* wrote, "People who think talk is cheap haven't talked to Martin A. Armstrong.") He had clients and offices overseas, and cultivated connections with central bankers, and with Margaret Thatcher. It was more sensible to suggest that his models, among them one called a Panic Cycle Model, which spotted big reversal days, were rooted in certain fundamentals and complex computer calculations, rather than in a simple mystical number.

Pi suggested some future turning points, which Armstrong watched carefully as they approached. Among them was December, 1989, which marked the Nikkei's peak before it crashed. This call earned him the magazine *Equity's* award as the top North American economist, and a big following in Japan, where the idea of cycles, a tenet of Eastern belief, did not seem so far-fetched. He presided over conferences in the ballroom of the Imperial Hotel in Tokyo and began investing billions of dollars on behalf of Japanese clients. He boasted that the Japanese called him Mr. Yen. Another big pi date was July 20, 1998, which turned out to mark the high point in the S. & P. just before a Russian default broke the giant hedge fund Long Term Capital Management and nearly wrecked the financial system. Armstrong by now was running a couple of hedge funds, and the Magnum Hedge Fund Reporter named him Fund Manager of the Year.

Not long afterward, he claims, the C.I.A. telephoned his firm, eager to get a closer look at his model. Agents had been watching him and were curious about how he had managed to call the collapse of the ruble. They asked if he would come to Washington, he said, and build his model for them. He declined. Finally, in 1999, he published a report—his last at Princeton Economics—explaining the part that pi had played in his calculations.

The model wasn't perfect. It failed, among other things, to foresee its developer's demise. In September, 1999, Armstrong was charged with defrauding Japanese investors of nearly a billion dollars. It was a strange and convoluted case, and his view of it, unsurprisingly, does not square with the government's. The upshot, though, is that he has now spent more than nine years in jail—a pi cycle and then some.

He no longer talks to central bankers, or has access to his computer models—and, apparently, no one else does, either. ("The methodology has to remain a secret until I am free at last," he wrote recently.) But the cycles spin on.

"Here's the thing that gets me—what makes the hair on the back of my neck stand up," a former employee of Armstrong's, who now manages a hedge fund, half-whispered to me over the phone not long ago. "So December '89 is the high of the Nikkei, which he called.

"I had to talk to her about birth control—you talk to her about drugs."

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Go back 8.6 years. May 10, 1981." He ticked off some milestones—Mitterrand, Volcker—and then went back another 8.6, and then another. "There's a high-to-high-to-high rhythm here." He said that he had counted forward from July 20, 1998, to the next major date: "February 23, 2007. I thought, This could be important."

February 23, 2007, quietly came and went, and the Armstrong skeptics sneered. But it turned out that that day had seen some of the tightest credit spreads ever (that is, the easiest credit); home prices, meanwhile, had begun a sharp decline. It was the peak of the easy-money bubble—the edge of the precipice, the lip of the recession. That this became clear only in retrospect says as much about the perils of prediction as it does about a propensity to see, as the past recedes, patterns and narratives that flatter our particular angle on the world.

Still: "Something turned and you could feel it," the hedge-fund manager said. "But you couldn't find much of anything about it in the papers."

There are two modes of financial-market analysis. The first is fundamental analysis—you evaluate, say, a company or a security, and draw conclusions about its prospects, and assign it the value and the price you think suit it best. Pants, Inc., looks good because it has great earnings and cash on hand, or because it has a charismatic C.E.O. in good health, or because Europeans love buying pants and the euro is strong. This is what most civilians think that market professionals do; it's what the pros talk about in the papers and on TV.

The other is technical analysis. It ignores all this noise; it disregards earnings, and exchange rates, and debt to equity. In its strictest form, it doesn't even care what product a company sells. Technicians don't believe that a stock has any intrinsic value. They focus instead on the market itself—on the action, the trading behavior of a security or an index. They study the charts for patterns of past performance that hint at future results. There are hundreds of templates, ranging from the basic ("head and shoulders," a peak flanked by two smaller peaks) to the runic (Bollinger bands, an elastic method of determining a trading range) and the silly (the Alligator. From a trading Web site: "When the Jaw, the Teeth and the Lips are closed or intertwined, it means the Alligator is going to sleep or is asleep already. As it sleeps, it gets hungrier and hungrier—the longer it will sleep, the hungrier it will wake up." When the Alligator eats, you should, too, or something). There are falling wedges, flags and pennants, scallops and saucers. One of the original technicians was Charles Dow, a co-founder of Dow Jones and the *Wall Street Journal*. Adherents later elaborated on his views to create Dow Theory, which categorizes trends based on a variety of time periods. These days, many professional investors and traders rely at least a little bit on the technicals. Some hardly look at the fundamentals at all.

Cycle theory is a kind of Gnostic offshoot of technical analysis. The notion that things, generally, happen in cycles goes back thousands of years—Joseph's seven-year fat-lean cycle—but in the West the formal inquiry into economic cyclicality took hold in the mid-nineteenth century. The British economist William Stanley Jevons correlated economic cycles to the sun, proposing that fluctuations in sunspot activity might affect crop outputs. Around the same time, a Frenchman named Clément Juglar identified an economic cycle of seven to eleven years. In the nineteen-twenties, Nikolai Kondratiev, a Soviet economist, concluded that capitalism was inclined to half-century cycles of boom and bust and boom again, rather than, as Marx believed, a single inexorable march toward collapse. Wrong answer. Stalin had him imprisoned and executed. It was the Austrian economist Joseph Schumpeter, he of "creative destruction," who called these cycles Kondratiev waves and popularized them in the West. In the Kondratiev waves and other commonly cited cycles—the Kitchin (three to five years), the Kuznets (fifteen to twenty-five years)—the time span is flexible. They are suggestions, not rules. Hardcore cyclists, on the other hand, often seek and find instances of periodicity as rigid and fixed as the laws of physics, which is why hardcore cyclists are often dismissed as mystics or freaks.

It is easy to scoff at cycle theory. Its whiff of predestination chafes the scientific mind. Our culture's fundamental belief in causation and consequence, to say nothing of free will, does not easily accept the suggestion of helplessness, or of some kind of as yet unidentified exogenous force. God may decide the outcome of football games and debilitating illnesses, but he does

not intervene in matters of investing and finance.

And yet patterns exist, and we slowly discover them. Seasons, migrations, moons: the template is there. Consciously or unconsciously, most people accept certain components of cycle theory. We seek and see patterns in things. It is the way our minds work, presumably for the purpose of survival.

Few would deny that there is a business cycle, a fluctuation in the economic fortunes of a nation, or even a political cycle, an ebb and flow between mass conservative and liberal sentiment that reverberates in the markets. And it's common for us to think that some things are overdue—a change in the weather, a Masters championship, a comeuppance, or a lucky break. But most of us balk at the notion that any of these may be governed by some kind of deeper universal math.

Armstrong, in his essay "Understanding the Real Economy," said, "I have spent a lot of time trying to comprehend how such a model can even work on a specific level to a precise day, years and decades in advance. The only explanation is the subject matter is so intensely complex that there is indeed a hidden order within what would appear to be random chaos."

Bill Erman, a market-timing analyst in Nashville, and the proponent of a system called Ermanometry, told me, "We believe the market is perfect to the second." (He concedes that we don't have the data to prove it.) He noted that termites build their perfect mounds, and bees their perfect hives, and spiders their perfect webs, all around the world, without, presumably, being conscious of why or what they are doing. "Mankind is unconsciously constructing a geometrically perfect market," Erman said. We can't help building our own beehives in the air. The charts are our termite mounds.

I was told, time and again, that some of the biggest investors out there view even the wackier cycle theories with respect, and factor cycles into their allocations. This may say less about the viability of cycle theory than it does about the chimerical folly of market divination—which may be why such investors are loath to discuss it. "You don't talk to people about it, because they don't understand it," one trader told me. "It's not something you can share openly with colleagues. It's not accepted."

"I've studied cycles for years," Dimitri Chalvatsiotis, a London-based trader at a global hedge fund, told me. "It's part of the methodology. It's an overlay that defines the way I look at the world. These cycles govern the planet. That's where you start. Some people believe news drives markets. I don't."

"The way I think about cycles in general is that they provide a great approach to offsetting human biases," Laceth Isharc, a hedge-fund manager in London and previously a trader at the giant investment firms D. E. Shaw and Citadel, said. "We tend to think that the future will be like the last few years, only more so. Cycles are a good way of reminding oneself that there is mean reversion."

The big hitters who do keep an eye on cycles seem to do so out of a mixture of hard-won agnosticism and the consideration that if enough other people are paying attention to this stuff then so should they. They keep a wary eye on an array of cycles and waves, which achieve actionable significance when they echo or converge on each other, especially in concert with something more tangible, such as information or news.

"The idea that there may be celestial influences on the spontaneous desire to invest or not is an old one, but it's too embarrassing to explore in modern economics," another trader said. "These topics are not fit for polite conversations in most circles."

One day, I mentioned cycles to an acquaintance who used to work for Goldman Sachs, and he excitedly took down from his stacks a book he had purloined years ago from the library of the J. Aron research department (J. Aron being a commodities-trading firm that Goldman bought in 1981, and that supplied Goldman with its current C.E.O., Lloyd Blankfein). It was "Cycles: Selected Writings," an anthology, published in 1970, of the work of Edward R. Dewey, who was the chief economic analyst in the Department of Commerce in the early thirties, under Herbert Hoover. To investigate the causes of the Great Depression, Dewey had talked to one economist after another; each of them seemed to have a different explanation, which suggested to him that no one had a clue. But he lingered over the work of one economist: Chapin Hoskins, who was interested in the "behavioristic" approach. Hoskins, Dewey wrote, discovered "that there was a tendency for certain business behaviors to repeat at fairly regular intervals. The reasons for these regularities were unknown, but the patterns were too regular to be easily the result of chance. They, therefore, had forecast-

"I wasn't texting. I was building this ship in a bottle."

ing value." When F.D.R. took over, Dewey left the Commerce Department and soon found that these cycles were everywhere—"in animal abundance, sunspot numbers, disease, weather, and many other things."

The purloined Dewey book, nearly eight hundred pages long, contains one delightful data set after another: "The 16 2/3-Year Cycle in Arizona Tree Rings, AD 900-1939," "The 4-Year Cycle in the Consumption of Cheese, 1867-1953." Dewey produced sine waves depicting fluctuations in the price of malleable iron pipe fittings and in postal receipts in Milwaukee. But it's the ones that overlap that widen the eyes. For example: Starting in 1735, the Hudson's Bay Company kept track of the number of lynx pelts collected in Canada each year. The number rose and fell, precipitously, in a distinct cycle of 9.6 years. As it happened, this cycle was synchronous not only with the variable abundance of other indigenous fauna, such as snowshoe rabbits and Atlantic salmon, but also with the cycles of seemingly unrelated phenomena, such as heart-disease rates in New England and chinch-bug populations in Illinois. Dewey reasoned that all this had to be either a coincidence or the work, as he put it, of "Something Out There." He favored the latter.

"Something Out There" was the title of a Profile of Dewey, by John Brooks, that ran in this magazine in 1962, almost five lynx-pelt cycles ago. (This data set, meagre as it is, suggests that another story featuring Dewey will appear in these pages in 2056.) In the forties, Dewey formed the Foundation for the Study of Cycles, which endeavored, in a pre-computer era, to collect and process as much cycle data as possible. To Dewey's frustration, most of the foundation's members were more interested in figuring out how to use cycles to outsmart the stock market, but he was mindful that their self-interest funded his efforts to determine what the Something might be. His tentative hypothesis was that it was astronomical—"not the sun, directly, but something beyond the earth—either inside or outside our solar system." Much as his work seemed to summon intimations of the divine, it was squarely, and solely, statistical; if "Cycles" was a sacred text, it was Levitical, banal. As Dewey stated in 1958, "I believe that the future is *completely* knowable—but not, of course, by human beings." He told Brooks, "People try to make a religion of cycle study . . . either a religion or a crackpot fad. Actually, it's neither one. If I'm right, it's an emerging science."

If it was emerging, it did so haltingly, and then retreated into its hole. They say that, like the length of women's dresses and the release of new horror films, tolerance of cycle theory increases in down markets. It blossomed in the thirties, enjoyed a revival in the seventies, and is having a quiet renaissance now. (The interval between each revival is about four pi cycles.) We tend to ascribe rising markets and an expanding economy, as long as they last, to our own ingenuity—to progress, experience, rationality, a generational refinement in the ability of economists and central bankers to manage our affairs. Bull markets are seen to be incarnations of human perfectibility. (Home prices would rise forever, because we had invented a new kind of debt, one that didn't ever have to be repaid.) When things go to pieces, we shirk responsibility and seek other explanations. Fatalism creeps in. It can't be merely that we are, as ever, greedy, short-sighted creatures, prone to self-delusion, incapable of learning from the past. There must be something, or Something, else at work, beyond our understanding or control.

The array of cyclomaniacs (an old Dewey term), pattern seekers, and market timers are like rival Christian sects, prone to doctrinal disputes, petty jealousies, and exclusive claims on divine revelation. They tend to think that their patented system is best, and trumpet a dozen peerless predictions. They cover a wide spectrum, from the omnivorous technicians to the market astrologists, who look to the stars. Arch Crawford, a well-known forecaster, has made a series of startlingly accurate predictions over the years, on the basis of planetary and astrological alignments. He says that he was up a hundred and six per cent last year. The summer of 2010 will be "devastating," he told me. "We'll have the worst stuff in the sky in the two hundred years we've checked." (Indeed, at the end of July Mars and Saturn will be conjunct and in opposition to Uranus, and all three will be squared to Pluto.) Crawford quoted a line that he attributed to J. P. Morgan—"Millionaires don't have astrologers, but billionaires do"—and told me that at the Morgan Library you can still see, on the ceiling of Morgan's old private library, a

"If it's just the one after dinner I don't mind."

depiction of the zodiac; the entrance is under Aries, Morgan's sign. The astrologers may be the fringe's fringe, but their predictive powers seem no better or worse than those of the secular fundamentalists who scoff at them. They have a following.

Then, there's Fibonacci. It is widely believed, but variably disputed, that such natural phenomena as the spirals in nautilus shells, hurricanes, and galaxies; the branching of tree limbs, leaf veins, skeletal and circulatory systems; and the distribution of flower petals and brain waves conform to something called the golden ratio, or phi—represented by the irrational number 1.618. In a golden spiral, for example, each successive outer curve might be 1.618 times as far away from the one inside it as the last. In the early thirteenth century, as fans of "The Da Vinci Code" and the band Tool know, Leonardo Fibonacci, a Pisan mathematician, unearthed a series of numbers in which each successive number is the sum of the previous two—1, 1, 2, 3, 5, 8, 13, 21, 34, 55, etc. It has many elegant properties. One is that every fifth number, and only every fifth number, is divisible by five. Another is that the ratio between each number and the one before it converges on phi.

Interest in phi, and the Fibonacci sequence, as a financial cipher, goes back many decades. (Dewey wrote a report on Fibonacci, "Non-Symmetrical Cycles," in *Cycles*, the foundation's magazine, in 1966.) The idea is that, say, the S. & P. 500, in an up market, will consist of a five-legged ascent, with three progressively rising peaks and two dips in between, followed by a three-legged descent, interrupted by one lower peak: 5 up, 3 down—you, too, can make billions.

Tom DeMark, a market-timing analyst, has worked with the hedge-fund titans Steven Cohen, John Burbank, and Paul Tudor Jones. He has, over forty years, devised a Fibonacci-based system to monitor and time the exhaustion of trends—that is, to figure out at exactly what point a market, or anything, really (it worked, he says, for the population of geese on Horicon Marsh, in Wisconsin), will reverse directions.

DeMark's initiation into the fellowship of Fibonacci was typically circuitous. The discipline attracts a certain kind. (After enduring a video called "History's Hidden Engine," which featured one pale fellow after another talking about fractals, my wife turned to me and said, "There aren't a lot of women, are there.") In 1971, DeMark, then a gofer at a money-management firm in Milwaukee, was happily perusing an article published by *Bank Credit Analyst* that mentioned research on wave theory and Fibonacci conducted, in the nineteen-forties, by an accountant named Ralph Nelson Elliott. (Elliott was the author of a book called "Nature's Law—The Secret of the Universe.") Fascinated, DeMark called *Bank Credit Analyst's* offices. The article's author, DeMark said, suggested that he call a travelling tax judge in Canada named Jack Frost, who in turn suggested that DeMark call two doctors in Florida, the first of whom agreed to come up to Wisconsin to present some data on Fibonacci and the markets to DeMark and his bosses on a Friday night. DeMark went to the Milwaukee airport to fetch him, and, after wandering around the terminal for a while, came across a man with a long white beard, who pointed at DeMark and said, "You know how I know you're Tom DeMark? You're walking in Fibonacci angles." (The other doctor had told DeMark on the phone, "I've been married five times, I have eight children, and I take a vacation every thirteen days.") At the meeting, the doctor took out a folder with graphs depicting the Dow Jones Industrial Average back to the inception of its precursor, in 1884.

"It embarrassed me," DeMark recalled recently. "I thought I was going to lose my job." He did not. The Fibonacci obsession spooked him, but it infected him all the same, because he began to see the numbers everywhere, too. Over the next decade, DeMark spent thousands of hours poring over old stock charts with a magnifying glass and a calculator, identifying patterns.

Ralph Nelson Elliott had also captured the imagination of a young technical analyst at Merrill Lynch named Robert Prechter. (Merrill in the seventies was a hotbed of technical research.) Prechter found Elliott's original works in the New York Public Library and republished them, turning the Elliott Wave Principle, long forgotten, into a

fashionable conveyance for Fibonacci on Wall Street. Elliott maintained that the arrangements of the market's zigs and zags were repetitious, predictable, and fractal, like the crenellations of ferns and seacoasts—self-similar at any scale, whether they depict three hours of trading or three decades. The hard part is figuring out where you are in which wave. Stare at a chart long enough and it will start to look like whatever you want it to, except easy money. (Prechter doesn't manage money; he sells his analysis to people who do. What many of these guys have in common is an underwhelming net worth and a commensurate declaration that they aren't in it just for the money.) Is it possible, considering the mind's capacity for converting complexity into some kind of manageable order, that we may be imposing these patterns on randomness?

"I think it's a shallow question," Prechter said. "Think of the stars, the zodiac. The ancients didn't say, There's a bear. They needed the stars for the purposes of navigation and so came up with names for recognizable arrangements of them."

In 1987, a documentary called "Trader," about the then little-known fund manager Paul Tudor Jones, appeared on PBS. After it aired, Jones reportedly had it taken out of circulation, buying up any copies that he came across. Over the summer, sections of it turned up on YouTube, and you could see Jones and his baby-faced partner, Peter Borish, applying Elliott wave theory to their comparison of the movements of late 1986 with those of 1928. It helped them call the 1987 crash, and Jones became a billionaire.

Jones won't talk about it now, but Borish, the chief executive these days of a firm called the Computer Trading Corporation, doesn't disavow any of it. We met one weekday morning in Central Park and talked long enough to observe joggers and dog walkers on their way both in and out of the Park, at plottable intervals; the amplitude suggested high unemployment. "If your goal is to do research and try to extract money from the markets, you should look at all ideas," he told me. "Whatever works." He went on, "A lot of these guys are freaks. And I don't mean that in a bad way. They spend their entire lives searching for the Rosetta stone so at the end of their lives maybe they can make money."

The Fibonacci work is not, in conception, anyway, pure numerology. The theory is that, if the markets are distillations of herd psychology, mass confidence, or what Prechter calls "the social mood," and if the markets fluctuate in discernible patterns, then the underlying moods must follow predictable patterns as well. Most economists believe that we react, whether rationally or irrationally, to incidents and information. In Prechter's formulation, which he has called "Socionomics," the mood comes first, and it shifts according to the wave principle. A universal math nudges us into wars, bubbles, and a passion for ABBA, and phi may be the key to it.

What's not the key, Prechter believes, is pi. "It's important to geometry but not to living systems," he declared. Prechter and Martin Armstrong were both on the board of the Foundation for the Study of Cycles, Dewey's old think tank, where Armstrong served for a number of years as chairman. Prechter is mystified by Armstrong's writings. If Prechter is Presbyterian, Armstrong is Pentecostal; he certainly speaks in tongues. Yet there are glossolalians who profess to understand.

"Armstrong's a massive talent, a misunderstood talent," Chalvatsiotis said.

Isharc said, "I don't know Marty, but I have no doubt that he's rescued from darkness some very real phenomena that may have been evident a hundred years ago. He's clearly a genius, although not without flaws. He overstates his case a bit and understandably has a chip on his shoulder. After his pi date in February, 2007, his stuff is everywhere now. Lots of people talk about it."

Armstrong's model is designed to apply to the most stretched markets, with the most excess. It tries to track the path of money sloshing around the world. "Each market has its own cycle, but when capital conglomerates around one it will take on the characteristics of the 8.6," he said. "The 8.6 is the predominant global model." This is his explanation for the way his pi highs and lows move, like the Olympics, from, say, Tokyo to Moscow and then New York.

Pi dictated that Armstrong was an intermittent investor, rather than one

who, like most quantitative managers, trades constantly in order to exploit tiny anomalies. The hedge-fund manager who used to work for Armstrong remembers him coming out of his office in September, 1998, two months after he'd got short in front of the ruble crisis. Monica Lewinsky was on TV. "My oscillators just turned," Armstrong announced. He booked his profits, pulled out of the market, and went to his beach house, on the Jersey Shore. (Pi has its limits. "After my case began, it came out that the number of the street address I had grown up in was 314," Armstrong wrote. "I still regard that one as a coincidence.")

Armstrong, no question, is an imperfect conveyance for the science of cycles, and not just because he's a federal convict. His writing is what you might call nonlinear, unless the line in question is one that tracks the stream of his consciousness. In the nineties, Armstrong wrote a heavily researched but quixotically told two-volume account of the Great Depression called "The Greatest Bull Market in History." That it was self-published, and apparently unedited (the book's first sentence is missing a word), has not deterred its fans from declaring it a seminal work. He says that he has a third volume at home. He is also working on a new book, to be called, naturally, "The Geometry of Time."

In 2007, inspired by letters he was getting in prison and, he says now, foreseeing disaster, Armstrong began producing research reports again, under the banner of Armstrong Economics. He types them in the prison library on a Brother typewriter (white-out is forbidden), and draws the graphs by hand, or else Xeroxes and pastes in graphics from other sources. Disdainful of domestic news media, he relies mainly on the *Financial Times*.

In his essays and letters, he compares himself to Adam Smith, Abraham Lincoln, Galileo, and Neo, from "The Matrix." (Armstrong has also said that the 1998 Darren Aronofsky film "Pi," in which corporate agents hound a man who discovers that pi may be the secret to the stock market, may have been based on him, even though the film came out before he revealed his pi model. Aronofsky says that he's never heard of Armstrong. "We must have been reading the same source material," he told me.) Armstrong tends to wander seamlessly from a discussion of history and economics to the arcana of his own legal case, the common theme being the oppressiveness of government. The reports are not the same, but they often seem to say the same things, in a different order—a prison-epistle version of the old Twainism that history rhymes. They may be fractal.

Many of the reports feature crude drawings on the front, sometimes of Armstrong himself, standing in a suit and tie before a field of ones and zeros embedded with equations derived from pi. He sends photocopies out to a small number of friends, who then post them on the Internet or pass them around. He is coy about naming these friends, because he worries that they would be harassed if anyone found out who they are.

Amid the global economic convulsion of the past year, his reports have achieved a wave of samizdat popularity on financial blogs like Zero Hedge, which is produced by a former hedge-fund analyst who has adopted the alias Tyler Durden, after the hero of "Fight Club." These blogs, and their readers, tend toward a cynical, even conspirational, view of the financial markets, the presumption being that pretty much everyone in power, in Washington and on Wall Street, is either incompetent or corrupt, and that our dissembling, bubble-abetting ways will lead to further doom. Armstrong's recent musings on a purported Goldman Sachs conspiracy found a sympathetic audience. The discussion threads can veer from political name-calling to knowing, sophisticated commentary, and, in their assessments of the work and sanity of Marty Armstrong, can range far and wide. Some call him a genius, others a crank and a con man.

Getting to the bottom of Martin Armstrong's criminal case is about as difficult as proving, once and for all, that the Fibonacci sequence is God. It can be especially hard to achieve certainty in a complex white-collar case. Prosecutors can be financially unsophisticated, and defendants may lie and obfuscate. Imagine a masked man accused of robbing a bank who maintains, all

"Not to worry—I'm going to put our best-looking people on the job."

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along, that he was merely cashing a check.

In early September, 1999, the F.B.I. raided the offices of Princeton Economics and carted off dozens of boxes of documents. Armstrong was arrested and posted bail. Later that month, the U.S. Attorney handed down a criminal indictment, alleging that Armstrong had been running a Ponzi scheme, and the S.E.C. and the Commodities and Futures Trading Commission filed civil suits charging that Armstrong had defrauded investors of nearly a billion dollars.

According to the government, Armstrong sold interest-bearing notes to Japanese investors and, by mutual agreement, deposited the proceeds in managed accounts that his firm kept at Republic Bank, in New York. He then used the incoming money to cover payments due to other, earlier investors, and also moved money out of their accounts and into accounts that he used to make speculative trades, which generated spectacular losses. To conceal this, he and Republic issued phony account statements to the Japanese investors.

The Japanese note holders were, for the most part, executives at Japanese corporations involved in such industries as electronics, machine tools, chemicals, and yogurt. Their companies' investment portfolios were way below water after the 1989 collapse of the Nikkei, yet they weren't required, by Japanese law, to acknowledge this fact. (Americans jeered at this scenario; now they do their best to emulate it.) Armstrong issued them notes—which he called "the rescue product"—promising to pay them the original, above-water value of their investments, five or ten years hence, and in exchange he took over their wounded portfolios. He liquidated the portfolios, converted the yen into dollars, and put the money to work in the United States.

Armstrong's refutation of the allegations is relentless. He continues to maintain that it didn't matter what the account statements said, because, really, he didn't have to keep accounts for the investors. He also says that he paid investors on schedule, that prosecutors didn't understand the fluctuating nature of the dollar-yen exchange, and that it was Republic, and not him, who fiddled with the accounts.

He says a lot more. In dozens of court filings over the years, he has accused his captors of a conspiracy. He contends that Republic, with the coöperation of the government, scapegoated him for its own shady practices and to derail his investigation into manipulations of the commodities markets. This conspiracy, in Armstrong's telling, widened to include the soon-to-be-killed financier Edmond Safra and the Russian Mob. Armstrong believes that he is in prison because he knows too much about the inner workings of "the Club," as he calls the major banks and their enablers in government; he maintains that he is a political prisoner, not unlike Kondratiev.

In Armstrong's civil trial, the judge, Richard Owen, demanded that, for potential restitution, he surrender about fifteen million dollars in gold bars and coins that it was believed he had, along with a number of antiquities, including a gold crown and a first-century bust of Julius Caesar. He produced some of what he was asked for, but not much, claiming that he no longer owned the rest of it. The Judge ruled that Armstrong was in contempt, and sent him to the Metropolitan Correctional Center, which is where, speaking of cycles, Bernie Madoff was held earlier this year, before his sentencing.

Armstrong wound up spending seven years there, without his criminal case going to trial—the longest federal contempt incarceration in the nation's history. Each year, Judge Owen upheld the contempt order. Armstrong went through a series of court-appointed lawyers and, at times, represented himself. The S.E.C.'s Armstrong case file was lost when the September 11th terrorist attack obliterated its offices, in 7 World Trade Center. In 2001, Republic admitted that a number of its employees had committed fraud, and the Japanese investors were paid roughly six hundred million dollars. Nobody from Republic went to jail. Still, Armstrong's contempt ruling held.

Prison was not kind to him. At one point, a fellow-inmate beat him in his cell. (Armstrong suspects that it may have been an assassination attempt.) In 2006, he was put into solitary confinement, for allegedly damaging a vent. Soon afterward, he decided, in an agreement with the prosecutors, to plea to just one count in

the indictment, conspiracy to commit fraud. The twenty-three other charges were dismissed. He did so in part, he says, because he believed that he might get credit for time served. The criminal-court judge, however, gave him the maximum sentence—five years.

Armstrong was still stuck in the M.C.C., for civil contempt. A U.S. Court of Appeals rejected yet another appeal, although a concurring opinion, written by Sonia Sotomayor, noted that "the district court's finding that Armstrong is motivated solely by greed is not enough to justify disregard for due process." Judge Owen was eventually replaced and the contempt order abandoned. In April, 2007, Armstrong was moved to a low-security federal prison camp at Fort Dix, in southern New Jersey, to begin serving his sentence. On arriving, he was told by other inmates that he looked like a ghost.

The prison camp, situated on the Fort Dix military base, is a white windowless box that brings to mind a giant shipping container. It isn't a country club, but it ain't Alcatraz, either. The prisoners can walk around outside. Armstrong sleeps in a vast dormitory hall that houses two hundred men in bunk beds. Seniority affords him a lower bunk. He works as a clerk, making about eighty dollars a month. He spends several hours a day in the library. He gets visits from his mother and a grownup son and daughter, who live nearby. (His wife left him when their daughter was six months old.) He even has a license to drive a truck around the base.

I met with Armstrong at Fort Dix in late September, in a tidy visiting room decorated with a mural of a tropical beach and a poster about swine flu. Armstrong was squatter than I'd expected, and bald, with a starchy paunch, pocked skin, and a slight underbite. And yet his eyes had an unnerving gleam that contained something like mirth, as though he'd surreptitiously shaken up a can of Pepsi and handed it to me to open. I bought him a cup of French Vanilla coffee out of the vending machine. We sat down across from each other at a red plastic table. A fly settled on the shoulder of his prison greens.

His Jersey intonations were Philly-tinged. "Prison is a microcosm of Adam Smith," he said. "You get a division of labor. There's a guy who knows how to sew, a guy who makes the beds, a guy who does the wash, a guy who's a barber." The coinage is mackerel, or macks; the inmates buy plastic pouches of it from the commissary. The barber, the bedmaker, the tailor: they usually get paid in fish. Armstrong's line was financial and legal advice, and he gave it out free.

In a newsletter I'd got from him in the mail the day before, he'd written, "Pi is not the actual source of cyclical activity. It is merely a proof that TIME is subject to geometry." Did he think there was Something Out There?

He sighed. "At its core, a cycle is the mechanism by which energy is transmitted," he explained. "Think of standing in the water at the beach, as a wave washes in. You can feel the wave, but the water isn't moving. The energy passes through the water. Society is the same way." Sometimes there's a rogue wave—a big event, a major turn, a depression. It was his belief that the rogues were not random but, rather, entirely, if theoretically, preordained, like the concentric reverberations of a stone, or millions of stones, hitting the surface of a pond.

Fair enough. But what creates the energy? What dictates the geometry? "There are going to be people who believe and those who don't," Armstrong said. "If it wasn't that way, you wouldn't have a cycle."

He said that he was working on a paper about Switzerland: the Habsburgs, William Tell, Hitler, secrecy, gold. The upshot was that capital, like water, goes where it encounters the least resistance. "Given a certain set of circumstances, people do the same thing over and over again," he said. "There aren't many options." Soon a guard indicated that our time was up—Armstrong was due back in the dorm for the four-o'clock count.

The next day, Armstrong called from Fort Dix to clarify his basic philosophy: it was the big bang that created the energy waves, setting in motion the cycles that govern the universe. As for pi, he had a theory, which he'd never shared with anyone, that its ubiquity had something to do with dark matter. ♦