Perpetual E-Motion: Steorn, *The Economist* & "Irrational Exuberance"

Dr. John Freeman
University of Detroit Mercy
Detroit, Michigan
United States of America

I'm forever blowing bubbles,
Pretty bubbles in the air.
They fly so high,
Nearly reach the sky,
Then like my dreams,
They fade and die.[1]

An Irish technology company's claim to have developed a free energy device is perhaps less surprising than the venue in which the announcement occurred. After all, the "invention" of overunity or perpetual motion devices has a long, inglorious history, going back as far as the Indian inventor Bhaskara (c. 1159). He proposed a wheel with containers of mercury around it; as the wheel turned, the shifting weight of the mercury would ensure that the containers on one side of the axle would always be heavier than those on the other, thus keeping it in constant motion. The contraption never saw the light of day. Cataloguing the checkered history of "perpetual motionists" in his *Perpetual Motion: The History of an Obsession*, Arthur Ord-Hume mentions a few respectable scientists who failed at this project and sums up the rest in these terms: "Of the others, more or less nondescript, one was reputed to have gone mad, others committed suicide and many underwent changes of character as a result of their unfulfilled dreams" (215). This is a cast of characters one might expect to find hawking their wares in such zany, unfiltered internet venues as Free Energy Truth. What could have led *The Economist* to open its pages to such a speculative and, as it inevitably turned out failed, venture?

Founded in 1843 and currently boasting 1.4 million readers worldwide, *The Economist* might not at first blush seem a likely venue for Steorn's bold claim in the magazine's issue of August 17, 2006. In a full-page ad, Steorn announced it had "developed a technology that produces free and constant energy." Appearing on the first page of an issue otherwise devoted to such gritty, real-world issues as monetary policy and strife in the Middle East, Steorn's announcement had all the markings of utopian fantasy, the wildest of speculative ventures. "Imagine," Steorn asks, "Never having to recharge your phone" and "Never having to refuel your car." Imagine, indeed. Steorn's CEO, Sean McCarthy, claimed scientists from several universities already had independently validated Steorn's technology, but "always behind closed doors, always off the record, and always proven to work."[2] Beyond announcing the advent of the technology, later designated the Orbo, the ad called for volunteer scientists and engineers to comprise a jury that would do its own testing of the technology and then publicly announce its findings. While the outcome of Steorn's own exploit yet hangs, precariously, in the balance, the atmosphere of "irrational exuberance" that brought these two very different players together offers a cautionary tale worthy of our further inquiry.

1. ***…a severe contest between intelligence…and ignorance****…*

I can measure the motions of bodies,
but I cannot measure human folly.
—Sir Isaac Newton

In the most practical terms, at least one of *The Economist*'s motives for publishing such a claim is fairly transparent: the asking price for such a full-page advertisement rang up at no less than £75,000. If not good physics' sense, the ad did make good business sense. On the ideological front, *The Economist*'s own editorial policy may have caused it to be hoisted on its own petard. Indeed, as it turned out, the Orbo would later be listed Number 10 in *Wired Magazine*'s "Top Ten Vaporware Products for 2007." In its statement of editorial principles, the newsmagazine claims it "is not a chronicle of economics.

" Rather, it aims "to take part in a severe contest between intelligence, which presses forward, and an unworthy, timid ignorance obstructing our progress." Such guiding principles might very well have been written by Steorn itself. Was not its own intelligent enterprise being undermined by the "unworthy, timid ignorance" of the scientific establishment holding back a company pressing forward to develop Fire 2.0? Rejected by the scientific community, unfairly by Steorn's account, what better venue to advertise its wares to the public? Apart from cashing in on *The Economist*'s editorial principles, Steorn could count on the magazine's long-running reputation to lend at least some credence to a claim that, posted elsewhere, would probably not fare well at all. The cost of the advertisement itself worked to Steorn's advantage: surely no hoaxer would lay out such a sum for the sake of a laugh (at its own expense). Of course, by switching venues from the scientific to the economic domain, Steorn stood to gain by attracting investment capital, even though it claimed it would not seek such investment until after validation.

In the larger scheme of things, both Steorn and *The Economist* may have found themselves caught up in a reoccurring element of the natural cycles governing both economic and physical systems alike. Had not the prevailing mood of "irrational exuberance" perhaps pushed both magazine and company into an unholy alliance in which business sense and scientific protocol had been compromised? Robert Shiller warns against what he labels "New Era thinking": "The sense that we are all suddenly learning important facts and have arrived at a new enlightenment about investment has appeared so many times in history that it may be regarded as a predictable component of irrational exuberance" (203). Had not Alan Greenspan famously warned against such exuberance and its accompaniment of "unduly escalated asset values"? In *A Short History of Financial Euphoria*, hadn't John Kenneth Galbraith described and charted the "recurrent speculative insanity" (viii) that has roiled financial markets over and over again—markets whose memory span has been clocked at a mere twenty years max? With its promise of unlimited, free, and non-polluting energy, was not the Orbo the very symbol of unchecked exuberance?

The telltale signs of the cycle starting up again were evident here. Referring to such historical instances of "speculative dementia" as Tulipomania, the South Sea Bubble, and the unbridled speculation of the Roaring Twenties, Galbraith notes: "Uniformly in all such events there is the thought that there is something new in the world" (18). This novelty heats up emotions as investors become intoxicated with the idea of getting in on the ground floor of some wealth-creating enterprise. More pertinent to the Steorn/*Economist* collaboration is Galbraith's observation that "The world of finance hails the invention of the wheel over and over again, often in a slightly more unstable version" (19). With an energy gain claimed to be achieved through the stop/go interaction of magnets in a diode array, the Orbo evidenced a similar instability and quirkiness. Marketed with a certain amount of flair and panache, its exuberant promise overbalanced its irrational claim perhaps longer than most would have predicted. The spin had begun.

Not only is that "new" wheel perpetually reinvented but so also is the whole scenario surrounding it. Thus, we can dial Greenspan back a few centuries and find Robert Walpole—another Cassandra, this time in spats—warning his peers against such "stock-jobbing" ventures as that proposed by the South-Sea Company:

> It would hold out a dangerous lure to decoy the unwary to their ruin, by making them part with the earnings of their labour for a prospect of imaginary wealth. The great principle of the project was an evil of first-rate magnitude; it was to raise artificially the value of the stock, by exciting and keeping up a general infatuation, and by promising dividends out of funds which could never be adequate to the purpose. (42)

The idea of output multiplying input has always been a dangerous lure.

In retrospect, the engineers and officers of Steorn seem to have been caught up in their own moment of "irrational exuberance." Suddenly, the laws of Newtonian physics seemed no longer to impose any speed limits just as, in the markets, a new era seemed to abrogate all the old-fashioned constraints on economic nature. Wasn't Newton's Second Law of Thermodynamics so very *déclassée*, after all? The revaluing and devaluing of commodities appear now as a devaluing of a whole paradigm. Without exception, perpetual motion devices have been "overvalued" by their claimants. One could gain excess profit or overunity by manipulating magnets in diode arrays, Steorn seemed to be claiming, just as easily as one could manipulate currencies and valuations in the economic order. Dividends in the form of excess energy derived from some mysterious source could be garnered and paid out. Something could be gotten for nothing. Endless surplus value.

"Speculation," Galbraith warns us, "comes when popular imagination settles on something seemingly new in the field of commerce or finance" (28). Technology, always capable of "exciting and keeping up a general infatuation" would help raise the ante. If the 1920's seemed "a time when massive technological progress was unusually apparent to even the most casual observer" then surely the Internet Age held forth similar possibilities. John Moody, of Moody Investments, showed the hypnotic effects of the technological age: "We are only now beginning to realize, perhaps, that this modern, mechanistic civilization in which we live is now in the process of perfecting itself."[3] What greater declamation of perfection than an engine nearing perfection?

Coming some twenty forgettable years after the 1987 Crash and a few years before the upcoming one in 2008, Steorn's announcement arrived on the crest of a wave of exuberance and optimism. Adding a viral dimension to all of this fanfare was the internet itself. Shiller, whose book takes on Greenspan's phrase as its title, points out that "The history of speculative bubbles begins roughly with the advent of newspapers" (85). Bits and bytes, however, travel much faster than newsprint. As J. R. Okin points out in reference to the dot com bubbles of the 1990's, the internet operates as a "business engine of commerce," revved up even more because of its marvelous ability "to make old ideas new" (139). Steorn took advantage of the electronic medium to spread its message and, subsequently, establish video presentations and a forum site to put its own speculative venture into play. Whether or not Steorn would prevail in getting its Orbo to spin, undeniably the company had succeeded in creating a buzz, a spin of a different order, setting in motion what Shiller describes as a "*sequence of public attentions*" (91). Galbraith's description of this process could be easily applied to the perpetual motion dream itself of a SMOT (Simple Magnetic Overunity Toy): "The speculation building on itself provides its own momentum" (3).[4] If you post it, they will come. And come they did, bringing millions of euros with them.

Of course, viral marketing has its downside. According to Shiller, one has to consider both its *infection rate* (the rate at which the disease spreads from contagious people to susceptible people) and a given *removal rate* (the rate at which infected people become no longer contagious, through recovery or death)" (164). Referring to the real estate housing price boom in 2007, Shiller attributed the phenomenon as partly the result of a *social epidemic of optimism* for real estate" (Brown 5). The failure of the demo, disbanding of various Steorn-sponsored development clubs, and the report of a jury exasperated at getting scant disclosure evidence from Steorn have all taken their toll. "Removal rate" here applies to various fence-sitters, skeptics, trolls, and even some disciples no longer enthralled by Steorn's narrative.[5]

Failure of one's grand design, however, may be less bitter than having to withstand the waves of parody that accompany the crash. In the eighteenth century, such cynicism took the form of South-Sea Trading Cards satirizing both those initiating these ventures and those foolish enough to be caught in their snares. Demonstrating once again how history repeats itself, a viral "unmarketing" campaign has risen in response to the company's inability to prove the existence of its technology. For example, a "Glossary of Revolutionary Energy Advancement Terms" has appeared. Forum member mrsean2k contributed this entry: "**Non-Event Horizon:** The invisible, constantly receding line delimiting the time before and time after a successful demonstration of OU" (Sept. 1, 2009). Poking fun at Steorn engineer Mike Daly and McCarthy, the discoverers of the "Orbo effect, qqqq offers: "**Double-Blind Experiment**: Situation common among OU claimants, in which the second experimenter fails to detect the flaws committed by the first experimenter" (August 31, 2009). Playing to a stereotype, Evolvealready contributes: "**Guinnetic Energy**: Free energy that you can only measure after consuming a lot of beer" (July 22, 2009). Finally, summing up the feelings of many forum members, Knuckles O'Toole offers: "**Skeptic Tank:** A forum consisting only of doubters" (July 29, 2009). A limerick by overconfident summed up a majority of the forum's opinions concerning Steorn:

> The Jury reached a verdict and concluded
> That Sean was perpetually deluded.
> The evidence was nought
> But an anomalous thought
> With all basis in reality excluded.

Here, limericks and other forms of parody reflect the extreme emotional roller-coaster ride Steorn has given those who joined its forum, developers clubs, and other venues. Though many ardent skeptics disputed Steorn's claims, many others were excited about the potential world-altering implications of free energy. Steorn added to this excitement, with claims of setting up perpetual motion pumps in undisclosed African villages so that villagers would have access to clean water.

Once again, though, Newton's principles turned out to be valid: for every action there is an opposite and equal reaction. Thus, the forum's initial enthusiasm was quickly transformed into bitterness and sarcasm. Once more, we find an historical precedent. The collapse of the South-Sea Bubble, the ruination of many (including Sir Isaac himself) who should have known better, resulted in the phenomenon of South-Sea playing cards, each one sporting a caricature of one of the bubble companies. Along with an image of gullible investors were gibing verses offering a moral lesson on greed and gullibility. In Harvard's Bleichroeder Collection, for example, one finds a card entitled "Midas, Transmuting all into Gold Paper."[1] Here, a strange figure—with share coupons in his hair and spewing from his mouth—sports around his neck a lock engraved with "Power of Securing Public Credit." An oversized pound symbol is emblazoned on his chest and, hooked to his side, is a key with a caption reading "Key of Public Property." At the figure's right we observe smaller, admonitory figures holding "Midas has Ears" signs. At its left, we find impish figures, one holding a tambourine and all three holding a scroll that reads "Prosperous State of British Finances & the new Plan for diminishing the National Debt with Hints on the Increase of Commerce." At the gigantic figure's base (or anal region) we find securities raining down on frantically circling Lilliputian investors. At the bottom of the depiction is inscribed the following text:

> History of Midas---The great Midas having dedicated himself to Bacchus, obtained from the Deity, the Power of changing all he Touched. Apollo fixed Asses Ears upon his head for his Ignorance—& although he tried to hide his disgrace with a Regal Cap, yet the very Sedges which grew from the Mud of the Pactolus whisper'd out his Infamy whenever they were agitated by the Wind from the opposite Shore—*Vide Ovid's Metamorphosis*.

Jonathan Swift, always on the look-out for an object of satire, found the Bubble-mania of his period easy pickings:

> Subscribers here by Thousands float,
> And justle one another down;
> Each padding in his leaky Boat,
> And here they fish for Gold and drown.

Steorn seems on track to follow the lead of Theglobe.com, a Web portal company that initially wowed Wall Street. Described by Okin, this company saw its stock rise from $9 a share to $97 in the first day of its offering. Unfortunately, "The numbers simply didn't add up. The company burned through millions of dollars of capital" but was never able to achieve its promise of future profitability (140). Like so many dot com businesses, all store-front virtuality, it failed to produce. Its profitability—and prophetability—declined quickly. Steorn can at least pride itself on having outlived the actuarial prognostications for such companies, so many of which died in infancy.

One troubling sign for the company is the recent mass banning—removal—of the more virulent skeptics from the Steorn forum. If there were ever any saving grace to the Steorn enterprise, the company's fairly liberal tolerance of dissenters on its forum would qualify. The mass banning at Steorn suggests that, at least for the company, the "severe struggle between intelligence…and ignorance" is over, the latter being declared the winner. Those who remain in the forum tend to be proponents of free energy, often a bit Pollyannish in their enthusiasm for Steorn's claims. One thread, for example, is entitled "Today Oil, Tomorrow Magnets." As censorship and outright bannings have increased in Steorn's forum, the crustier sort, now banished, have reestablished themselves in the "Not the [Word removed at the request of Steorn] Forum."

2. Spinning Tales: From Hysteresis to Hysteria and Halfway Back

> *Sean Explain the Hysteresis Effect....*
> 'I don't know what the mystery is.
> Our read-outs employ hysteresis.
> Through judicious time lag
> We hide energy drag
> And make claims of voltage increases!'[6]

[1]Etching by James Gillray (1757-1815). [London]: Published by H. Humphrey, March 9, 1797. http://www.library.hbs.edu/hc/collections/kress/kress_img/midas_plate2.htm

Although it will probably turn out that Steorn has not overturned any of Newton's Laws, the company may have very well run afoul of a more common-sense principle articulated by Richard Feynmann: "The first principle is that you must not fool yourself—and you are the easiest person to fool." Thus, while the history of re-inventors of the perpetual motion wheel reveals numerous charlatans and fakes, we also find many inventors genuinely caught up in their own self-generating enthusiasm. Just a tweak here and a readjustment there were all that separated them—so they thought—from immortal renown. Indeed, the enthusiasm that drives such inventors often proves infectious for those susceptible to a well told tale. The megalomania behind most such claims provides its own inexhaustible force.

Every speculative venture, Shiller instructs us, depends upon "a good, vivid, tellable story about the event" (167). The South Sea Bubble, for example, was founded upon an alluring tale of fabulous gold supplies in the New World, inexhaustible enough to pay off England's debt and to make endless millionaires of those sharp enough to get in on the ground floor. A well told story can overcome the frictional resistance of more cautious spirits. Indeed, Shiller argues that "People look for a coherent narrative, even if it goes against the facts" (150). Steorn's own account of an engineer's accidental discovery of surplus energy while working on a microgenerator for powering a camera to detect ATM theft certainly falls into the category. Following Steorn's narrative, the Orbo would soon take its place among the pantheon of accidental discoveries ranging from penicillin and the microwave to silly putty, potato chips, and slinkies. Running a deadline, Steorn's CEO barked at the engineer, Mike Daly, to ignore the aberrant readings and focus his attention on the job at hand. Potentially the greatest discovery since fire was delayed by the practical considerations of fulfilling a contract. Against its own instincts, Steorn only reluctantly followed up on a discovery that seemed too good to be true.

Further obstructions arose, thus enriching the story and fanning speculation. Steorn claimed that several universities had validated its technology but fear for their reputations kept them from going public, thus the reason for a jury of less inhibited scientists. The perpetual motion field has always been a fertile ground for conspiracy theories. One inventor, for example, told investigators he had just had to disassemble his device before their arrival because his landlord had complained of its excessive noise. One can always point to mysterious Men-in-Black, nefarious agents of government or industry bent upon upholding the interests of the old order that would be obviously undercut by the offering of an endless supply of free energy. Steorn's narrative, much like the stop/go manipulations powering its Orbo, is constantly renewed with a new promise and a new deadline. The Orbo apparently operates along the lines of a time-variant scheme, what Rupert Goodwins labels a "perpetual promise." Expectancies drive its operations.

Whether in the realms of physics or economics, perpetual motion schemes involve balancing acts. They work according to what physicists might call economics' version of time-variant principles: past investors are paid by the investments of future investors (investors they themselves often recruit). In his *Ponzi's Scheme: The True Story of a Financial Legend*, Mitchell Zuckoff employs language from both disciplines in describing the pyramid scheme's operations: "When Ponzi's first investors came looking for their 50 percent, he would pay them with money from later investors. Those investors might well be enticed to take another spin, bringing friends along with them, to multiply their winnings and keep Ponzi's perpetual motion machine whirring."[7] As long as output seems to outrun input, the machine hums along. The currency of perpetual motionists is paid out in promises and deferred deadlines. "Our machine just needs a little more tweaking here and there." "Full disclosure cannot come because we're worried about patent infringement." "The [next] demo is expected by [fill in the blank]." Little wonder, then, that one exasperated member of Steorn's forum proposed *Waiting for Orbo* as a title for his experience!

Continuing along an absurdist/existential axis, Steorn's own balancing act is poised between being and nothingness or, given the mechanical failure of the Orbo's bearings in Steorn's aborted demo, somewhere between "*Bearings and Nothingness*" as forum member Knuckles O'Toole described it. Granted, Steorn's prospectus did not go as far as that of Puckle's Machine Company. This concern sought investors for an invention capable of "discharging round and square cannon-balls and bullets, and making a total revolution in the art of war" (Mackay 53). On the other hand, Steorn's prospectus was a bit more solid than one offered by another version of the South-Sea Bubbler:

> But the most absurd and preposterous of all, and which showed, more completely than any other, the utter madness of the people, was one started by an unknown adventurer, entitled 'A company for carrying on an undertaking of great advantage, but nobody to know what it is'." Were not the fact stated by scores of credible witnesses, it would be impossible to believe that any person could have been duped by such a project….Crowds of people beset his door, and when he shut up at three o'clock, he found that no less than one thousand shares had been subscribed for, and the deposits paid. He was thus, in five hours, the winner of £2,000. He was philosopher enough to be contented with his venture, and set off the same evening for the Continent. He was never heard of again. (Mackay 46)

As Galbraith informs us, "Speculation buys up, in a very practical way, the intelligence of those involved" (5). Whether or not the stop-and-go interaction of magnets in a diode array will ever be found to be the underpinnings of an actual overunity device, such an interaction is certainly descriptive of Steorn's on-again, off-again public relations campaign. Steorn has mediated the two extremes: No demo but cancellation at the eleventh hour with a promise to reschedule. A bonafide jury but not enough evidence for validation or invalidation. The testimony of three engineers but based upon secondary "evidence" with no opportunity to examine and take apart an actual working model. Ironically, Steorn's operating procedure may be itself based upon a faulty theoretical principle. As several forum members have pointed out, Steorn's claims for overunity are invalid because they do not take into account the hysteresis effect in magnetic interactions. This involves the lag time in such interactions that, according to forum member joshs, "throws off measurements including energy calculations…giving bull shit energy calculations showing extra energy at the end. Bad measurements lead out dumb ass energy claims." In somewhat less colorful language, BigOilRep also describes the error of Steorn's ways:

> IIRC [If I recall correctly] they [Steorn] had a stepping motor move their wheel that had a drop weight attached with a thread. They'd move to some angle, stop, and then take residual torque measurements. They put out the really stupid idea that they could measure the friction by doing that in both directions. IIRC Penny [another skeptical forum member] pointed out that what they were calling friction was more likely hysteresis. I couldn't stop laughing at how stupid Sean made himself look trying to argue the point with Pennies [another forum respondent].[8]

McCarthy & Company had succeeded in one point in their experiment: replication. Unfortunately, their mechanism replicated the operations of a perpetual motion device proposed by the early twentieth century inventor Garabed Giragossian, who almost succeeded in winning funding from Congress for his invention. The joint resolution issued by the Congress in 1918 displays many of the earmarks of the South Sea Bubble enterprise, particularly as it reveals an entire government enticed by a "get-rich-scheme" that would solve its deficit problems. Thus, the purposes of the resolution are ones of "promoting efficiency, for the utilization of the resources and industries of the United States, for lessening the expenses of the war, and restoring the loss caused by the war…" (http://www.nuenergy.org/pdf/garabed.pdf). Congress was so enthused over the possibility of the "Garabed" that it made it illegal for the inventor to sell "any interest or title to said discovery or invention."

A complicated mechanism that later turned out to be merely a flywheel capable of storing energy, Giragossian's device was worked up to full speed by the efforts of a strong man and, once going, a small battery. Its power was measured by weights loaded onto it until it stopped. Arthur Ord-Hume points out the fallacy behind the inventor's claim that his mechanism produced energy:

> Unable to differentiate between power and energy, the inventor could not realise that the energy was put into it by the man and the motor over a period of time, and that all Giragossian was doing was stopping the thing suddenly and noting how great a power had been developed by expending in a few seconds the energy which had taken minutes to be stored. (163)

This "stop-and-go" measurement of "energy creation" is very much in line with what Steorn has claimed in its own energy-creating device. Like Steorn, Giragossian veiled his invention in secrecy or, for the most part, would only give partial revelations of its operations. As Ord-Hume points out, the well meaning inventor would have saved himself a lot of trouble by revealing the mechanism's principles, as any knowing patent official would have set him straight as to the real source of his "energy creation."

A strikingly similar manipulation occurred in Ponzi's own scheme. The Italian immigrant/entrepreneur believed he had found a way to manipulate differentials in the currency exchange rate to his own advantage. The scheme involved International Reply Coupons. Zuckoff explains what these were:

> In April 1906, representatives of the United States and sixty-two other countries gathered in Rome with the goal of making it easier to send mail across national borders. All were members of the world's first international governmental organizations: the Universal Postal Union, founded in 1874 to reduce the maze of postal regulations that made mailing a letter overseas a high-cost proposition. A key item on the Rome agenda was to create a way for a person in one country to essentially send a stamped, self-addressed envelope to someone in another." (92)

What the organization decided upon was to establish a fixed value for these coupons from one country to another. This value, Shiller informs us, "did not correspond exactly to the rate implicit in the coupons," particularly after World War I, when many European countries' currencies had been devalued (75). Like Steorn in its own domain, Ponzi proposed to take advantage of this hysteresis or lag in values. Ponzi would buy up coupons in the de-valued currency and re-sell them in a country with a higher valued currency, thus pocketing the currency differential as profit. Gaming the system could reap large rewards in "currency." (What keeps one from gaming the system in physics is the Noether Theorem, which established the time-invariance principle, the notion that in even asymmetrical systems the rule of conservation of energy remains invariant.) Interesting enough, both Steorn and Ponzi seemed to have genuinely believed that this manipulation would work. Unfortunately, neither system could be scaled up. To repay his first round of investors, for example, Ponzi would have had to have purchased fifty-three thousand coupons, an impossible volume given the modest dimensions of the market (Zuckoff 116). While the differential was real, the possibility of scaling up was not.

In Steorn's case, a claim to be able to scale up the "Orbo effect" to 550 HP has been met with a great deal of skepticism, particularly since even a modest gain of energy has never been verified. Indeed, like Ponzi, Steorn may have had to bid up the ante as skepticism over its claims grew. Shiller describes Ponzi schemes as "controlled experiments (controlled by the hoaxer!) that demonstrate characteristics of the feedback that cannot be seen so plainly either in normal markets or in the experimental psychologist's laboratory" (74). Whether or not the Orbo effect was a hoax or a genuine measurement error, the fact it was kept out of science's "normal market" conditions requiring various testing techniques and replication makes Steorn's claim suspect all the same. One can, however, surreptitiously feed energy into the system, a sort of Clever Hans Effect in which investors or interested parties unwittingly supply the feedback that keeps the "system" going. In many respects, perpetual motion schemes constitute physics' version of the Ponzi Scheme: "currency," in this case electrical, generated seemingly out of the air. An oft-times mysterious process is advertised to work wonders for investors caught up in the speculative heat of the moment. What history reveals is a striking pattern of similarity between the business and scientific realms in terms of the characters, mechanisms and principles that set these schemes in motion, drive their operations and, eventually force them to succumb to the laws they had hoped to violate and overturn. The physics police prove to be no less forgiving than the financial investigator in closing down these operations.

Judging by the persistence of claims such as Steorn's over the centuries, what actually drives such enterprises is the perpetual e-motion of dreamers and speculators. What Steorn has discovered in the final analysis may very well add up to free marketing, as one forum member observes. Advertising and publicity have kept the spark alive. As Mackay points out, "The name of the South-Sea Company was thus continually before the public. Though their trade with the South American States produced little or no augmentation of their revenues, they continued to flourish as a monetary corporation" (41). Indeed, what goes up must come down. Again, history offers instances of a repeating pattern, this time in reference to the South-Sea Bubble. As it started to deflate, a correspondence from Mr. Broderick MP pinpoints the flaws in the scheme:

> From the very beginning, I founded my judgement of the whole affair upon the unquestionable maxim, that ten millions (which is more than our running cash) could not circulate two hundred millions, beyond which our paper credit extended. That, therefore, whenever that should become doubtful, be the cause what it would, our noble state machine must inevitably fall to the ground." (Mackay 57)

In Steorn's model, the hysteresis or lag effect could not be employed forever to manipulate measurements to one's advantage.

The risk of doing so is the "avalanche effect." Forum member Alsetalokin (a palindrome for the inventor Nikola Tesla) employs rather blunt language in describing the consequences of procedures such as Steorn's own:

> If you pile enough crap high enough, at a steep enough angle (the "critical angle", which is surprisingly constant across material type and texture) ... you had better stand well back, because the system *will* relax into a lower-energy state, with sometimes catastrophic results.
> Steorn are approaching the critical angle for their particular material—bulllshit.

At the height of his notoriety, in 1920, Ponzi could boast 30,000 investors. At the height of its own notoriety, Steorn had not only attracted investment capital in the millions of euros range, but it also had achieved success in Digital Era terms: hits on its website. Success, in both instances, can indeed set the stage for catastrophe. Shiller points out that "The scheme must end eventually, since the supply of investors cannot increase forever, and the perpetrator of the scheme no doubt knows this" (74). That Steorn is approaching Alsetalokin's critical angle is reflected in the rate-of-burn of investment funds versus the rate of attraction of new investors (although new ones have recently come aboard). Perhaps more significantly, the steep angle that can be said to represent forum members' general enthusiasm for the project leading up to the failed demo has definitely slipped "into a lower-energy state."

3. "an extraordinary gift for hope…"

DANA
(after a long pause)
I think something in my refrigerator is trying to get me.
Venkman stares at her, trying to make sense of her last statement.
VENKMAN
Generally, you don't see that kind of behavior in a major appliance.
What do you think, Egon?
SPENGLER
(*checking the polygraph*)
She's telling the truth—or at least she thinks she is.
—Scene from *Ghostbusters*

Surveying the 1990's, Shiller writes of companies enlisting "showmen and media-savvy personalities as heads of corporations, in order to lure investors and boost stock prices" (77). No doubt Steorn owes much of its success and notoriety to its CEO, Sean McCarthy. He is featured in many of the company's website videos. In the formative years of Steorn's forum, he was a presiding presence, spending a great deal of time answering members' questions and debating the possibility of perpetual motion itself. Even today, debate both on and off the forum rages as to the nature of his role in the Steorn enterprise: Misunderstood genius? Well meaning but self-deluded? A publicity seeker? A scam artist? What is beyond debate is his ability to attract interest in an enterprise that otherwise might have gone the way of similar ventures. He believes in himself like no other. It is this genuine belief in themselves that attracts others desirous of sharing in the vision. As enginerd notes, "Isn't that the most consistent thing about Sean? Everybody says he can be charming." In a clipped fashion, Knuckles O'Toole responds "All con men are." He proceeds in his analysis: "It's a truism. No one could build confidence if they acted shifty or insincere. That is why sociopaths make such good con men. They do not have any qualms about faking sincerity. Actually, that is what they do best." Legendre quips, "It's as if he seeks to take you into his CONfidence..."

Since the discerning of motives is a devilish proposition, we might want to consider him as a type, a familiar character in the history of perpetual motion inventors. A romantic, a visionary, he shares those qualities with other claimants. One has to leaf through works of fiction to find such infectious enthusiasm and commitment to an ideal. In my own mind, he comes straight out of the pages of *The Great Gatsby*:

> If personality is an unbroken series of successful gestures, then there was something gorgeous about him, some heightened sensitivity to the promises of life, as if he were related to one of those intricate machines that register earthquakes ten thousand miles away…. it was an extraordinary gift for hope, a romantic readiness such as I have never found in any other person and which it is not likely I shall ever find again.

Drawn in by—what else?—a magnetic personality, even the most skeptical of forum members found him an engaging spokesperson. There was to him a Gatsby-like confidence, an ability to connect to people over an electronic medium in ways that remained personable. Like Gatsby's, his smile

> understood you just so far as you wanted to be understood, believed in you as you would like to believe in yourself, and assured you that it had precisely the impression of you that, at your best, you hoped to convey. Precisely at that point it vanished—and I was looking at an elegant young rough-neck…

Gatsby, of course, was not seeking perpetual motion; indeed, his own excitement at the prospect of recovering his dream caused him, in reaction, to run down "like an overwound clock." Still, McCarthy's improbable challenge to Newtonianism has the same emotional resonances and fervor Gatsby reveals in responding to the more practical-minded Nick Calloway: "Can't repeat the past?" he cried incredulously. "Why of course you can!"

In the final analysis, we might find people summing up McCarthy's role in all of this in terms similar to those employed by Galbraith in describing Bernard Cornfield: "It is difficult to believe that he was guilty of anything beyond his own misguided energy and ambition" (93). Even as infamous a figure as Ponzi started out with relatively honest motives, initially at least believing his system would work. A Gatsby knock-off, he is described as "a human dynamo….He wore a new Palm Beach suit, impossibly crisp given the sultry weather, with a silk handkerchief peeking from the coat pocket like a fresh-cut daffodil" (11). More symbolic of a casual age, McCarthy often appears in blue jeans and a tee-shirt emblazoned with such anti-science-establishment statements as "CEO vs. CoE" or "Challenge Science."

Such figures also come with saving graces. Ponzi was no usurer exacting his pound of flesh; indeed, he had given over 120 square inches of flesh from his back and thigh to help a burn victim at one time (Zuckoff 53). McCarthy, with his promise to offer free licenses to Orbo technology to Third World countries, struck the same balance between "altruism and avarice" that Zuckoff observes in Ponzi (7). Whether it involved having one's head shaved as a fund-raiser for the children of Chernobyl or helping poor widows magnify returns on their investments, both men demonstrated a charitable side even while engaging in the most speculative of enterprises. It may well be that such figures get caught up in their own self-affirming feedback loops, trying to secure for themselves an ideal. Unfortunately, it takes a high burn-rate to keep such an enterprise a going concern. Zuckoff diagnoses Ponzi of having become "caught up in the mania of spending their [investors'] money and making himself the man he had always dreamed of becoming" (147). The same could be said of Gatsby, and perhaps McCarthy as well. Such ideals, however, have to be bought in hard currency.

A sense of melancholy has descended on much of the Steorn forum. Like Gatsby waiting for the phone call that never comes, we have begun to believe that validation of Steorn's promise will not arrive either. Perhaps, too, we feel as though we have "paid a high price for living too long with a single dream." Friction, entropy, and death always prove to be formidable opponents in whatever game is played:

> No—Gatsby turned out all right at the end; it is what preyed on Gatsby, what foul dust floated in the wake of his dreams that temporarily closed out my interest in the abortive sorrows and short-winded elations of men.

4. Afterword

"the magnetic machine story that never ends"

—Zdnet

"There is an art to the building up of suspense."

—Rosencrantz and Guildenstern Are Dead

Apparently finally getting its bearings right, Steorn returned with a vengeance on December 15, 2009. The promised demo in Dublin was preceded by a giant "light show" in which Steorn projected an impressive series of slides on the blank wall of a factory across from the soon-to-premier demo at the Waterways Centre venue. Along with re-evocations of Steorn's original advertisements—"Imagine a world with an infinite supply of pure energy"—Steorn also had the effrontery to quote some of its most ardent critics from the past:

> "magic **fairy powered**
> rotary and **magnetic systems**"
> *Endgadget*, February 2009
> "It's a **fraud**."

Dr. Michio Kaku
ABC News, August 2006
"Perpetual **nonsense"**
The Economist, July 2007
"Powered by **Blarney**"
Forbes, July 2007

Unfortunately, the light show preceded what turned out to be a lite show. Knuckles O'Toole, writing in the alternate Not the [Word Removed at the Request of Steorn] Forum, summed up the underwhelmed response of its members:

> This is ludicrous. Without any metrics whatsoever on the component interactions but just a spinning wheel powered by a battery that no one can investigate it is supposed to by itself wow the skeptics into some kind of epiphany? Even some believers are disgusted with this approach. It is not scientific but hearkens to more of a PT Barnum sideshow spectacle with all the panache of Las Vegas. I am surprised there weren't any scantily clad bimbos next to the displays.

Reminiscent of Giragossian's device, Steorn's models came equipped with a battery for the motor/generator component, rather ludicrous in spite of McCarthy's claim that excess energy was being created nonetheless. Some members observed that the price of a license for Orbo technology—419 euros—was a thinly veiled allusion to Nigerian investment scams, themselves labeled 419 Scams. Was McCarthy merely "cocking a snook" or signaling his scorn for everybody here? Referring to the 419 allusion and assuming a McCarthy persona, Joshs offered cogent and revealing insights into the psychological mechanism at work here:

It suggests to me he is flaunting the fact that he does not [have an overunity device]. It is as though he is trying to say:

> "Look, just how freaking obvious do I have to make this to you? I told you not to believe me. I told you we are in the same group as all those who have in the past claimed free energy and they have always been wrong. I have shown you nothing that should make you think I have anything like I claim other than just saying that I do. I've told one story after another that doesn't hold water, or pump it for thirsty Africans. Why is it you people still don't get it? I show you the most preposterous excuses for breakthrough machines imaginable. I show you things that don't even spin. I show you motor / generator combinations that require batteries, that stall out and require frequent changes while showing absolutely no evidence they make any excess power. I just tell you that they do.
>
> I advertise the evaluations of respected experts that call my claims fraud, blarney, and delusion. I show you my own jury's evaluation that I never evidenced what I long claimed. I butcher science in the most blatant ways. I promise and promise and promise to show evidence of my far-fetched claims but never do. I call you fools and tools. I draw repeated comparison between myself and Nigerian 419 scam artists. I even go so far as to set my fees to 419 euro. Still none of this is enough for some of you to come to your senses such that you follow my original advice: Don't believe me! What must I do before you act reasonably? Do I have to hit you across the face with a 2x4?

More succinctly, Evolvealready sets up the situation in a limerick:

Said Seamus, "We took Bessler's cue
We're doing a demo for you
The thing's in plain sight
(Except late at night)
And each morning it's spinning like new!

Perhaps a diversionary tactic but nonetheless providing some comic relief, a Steorn employee with a tachometer perpetually makes his rounds measuring the rotation rates of the various models. As one appears to falter or slow down, he tinkers with it or—out of camera range—switches it for another device. Affectionately labeled Tachoman, he has won the hearts and minds of alternate forum members. Glued to the live video stream, they obsessively follow and chart his movements as he makes adjustments to the objects. Here is an example of the tracking, courtesy of blueletter:

Date: 2009-12-16
Time: ~19:58 - 20:15 UTC
Shelf: (no swap)
Tech: Skinny, bearded Tacho man and Sean McCarthy
Notes:
-Tachoman measures, comes back to shelf 2 for a second measurement
-Access Denied from user created 3-view site.
-Sean McCarthy applies voltmeter to battery on shelf 2.
-Sean appears to apply blu-tack to battery.
-Sean applies voltmeter to shelves 1 and 3.
-Tacho takes measurements on all 3 shelves.
-Tacho fiddles with battery on shelf 3 (with his pen?).

Blueletter remarks sympathetically: "If they're going to be doing this until January, they should at least get the guy a cordless drill." Fishtown opines: "I've had pointless jobs before. But swapping out perpetual motion machines takes the cake." Exasperated by all the criticism, McCarthy addressed the forum in the following limerick "forwarded" by HedyL:

'Everyone here, quit your bitching.
The Orbo requires constant switching.
We don't do it hiding,
Just at times overriding
The video stream to stop snitching!'

Like all followers of the perpetual motion enterprise, we members constantly struggle to get our own bearings. Fortunately or unfortunately, the Steorn saga mirrors the operations of its own device, involving, as McCarthy describes it, "very strong radial forces that change direction in angular displacements. Hence an Orbo system built using traditional bearings is like driving your car at high speed over speed bumps—you can do it, but after a small distance your car will simply break down." Speed bumps, indeed! Irrational exuberance, as it turns out, is a devilishly difficult force to harness and maintain. My own advice? Obey Sir Isaac's speed limit!

References

Brown, Brendan. *Bubbles in Credit and Currency: How Hot Markets Cool Down* (New York: Palgrave, 2008),
Calore, Michael. "Vaporware 2007: Long Live the King." *Wired* magazine.
http://www.wired.com/gadgets/gadgetreviews/multimedia/2007/12/YE_Vaporware? slide=1&slideView=10

Galbraith, John Kenneth, *A Short History of Financial Euphoria* (New York: Penguin Books, 1993), 44.
Goodwins, Rupert. "Steorn renews perpetual promise to show free energy machine." Blog entry accessed 10/12/2009.
http://community.zdnet.co.uk/blog/0,1000000567,10014160o-2000331777b,00.htm

Mackay, Charles, *Extraordinary Popular Delusions and the Madness of Crowds*. New York: Wordsworth, 1995. 42.

Okin, J. R. *The Technology Revolution: The Not-For-Dummies Guide to the Impact, Perils, and Promise of the Internet* (Winter Harbor, Maine: Ironbound Press, 2005).

Ord-Hume, Arthur. *Perpetual Motion: The History of an Obsession* (New York: St. Martin's Press, 1977), p. 215.

Ramis, Harold, and Dan Aykroyd. *Ghostbusters*. Final Shooting Script. Last revised October 7, 1983.
http://www.scifiscripts.com/scripts/Ghostbusters.txt

Shiller, Robert J. *Irrational Exuberance*. 2nd edition. New York: Doubleday, 2005.

Simanek, Donald E. *Perpetual Futility: A short history of the search for perpetual motion.*
wq http://www.lhup.edu/~dsimanek/museum/people/people.htm

Zuckoff, Mitchell . *Ponzi's Scheme: The True Story of a Financial Legend* (New York: Random House, 2006), 113.

NOTES

[1] As the Wikipedia informs us, "'I'm Forever Blowing Bubbles' is a popular song which debuted in 1918 and was first published in 1919. The tune is by John Kellette. The lyrics are credited to 'Jaan Kenbrovin', actually a collective pseudonym for the writers James Kendis, James Brockman and Nat Vincent."

[2] Information about Steorn and its ongoing efforts to achieve overunity can be found on its website: http://www.steorn.com/

[3] Qtd. in Shiller, 113. Moody, John. "The New Era in Wall Street," *Atlantic Monthly*, August 1928,p. 260.

[4] Refer to Donald E. Simanek, "Testing a SMOT." http://www.google.com/search?q=smot&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:en-US:official&client=firefox-a

[5] These disaffected and banned members have since migrated to a new forum under the rubric: "Not the [Word removed at the Request of Steorn] Forum. 10/14/2009 http://www.moletrap.co.uk/forum/comments.php?DiscussionID=80&page=1#Item_0 Originally entitled "Not the Steorn Forum," it had to be changed at the request of Steorn.

[6] Limerick by HedyL, "forwarded" from McCarthy.