Computer Power and Human Greed

Norm Cimon, 1208 First Street, La Grande, Oregon 97850

Joseph Weizenbaum died last year[1] and to very little fanfare. Hopefully the case he made didn't go to the grave with him. The fact is that the current state of near-panic on Wall Street and in the banking world – and the reasons for it – could have been ripped right from the pages of his *Computer Power and Human Reason*[2]*,* though you'd be hard-pressed to hear that coming from the denizens of the counting houses. Most don't know what hit them. They might try reading the book.

In it, Weizenbaum, one of the pioneers of artificial intelligence, expresses his grave concern about the lure of "thinking machines". He didn't want them taking on what he felt should be human-to-human relationships. The experience of watching the psychiatrist-patient interaction mediated through his software creation, Eliza, helped to catalyze this discomfort. In the end, however, he foresaw that an even bigger threat from computers would come in a much more banal guise.

The mortgage industry was blindsided by something we all take for granted since it's now so integral to everyday existence, something neither they nor we have yet to fully digest, yet something that Weizenbaum focused on in his writing. It is this: the most subtle yet arguably the

---

[1] John Markoff, "Joseph Weizenbaum, Famed Programmer, Is Dead at 85," *The New York Times*, March 13, 2008, sec. International / Europe, http://www.nytimes.com/2008/03/13/world/europe/13weizenbaum.html?_r=2&ei=5090&en=447b50a5dbef197d&ex=1363147200&oref=slogin&partner=rssuserland&emc=rss&pagewanted=all

[2] Joseph Weizenbaum, *Computer Power and Human Reason: From Judgment to Calculation* (W. H. Freeman \& Co., 1976), http://portal.acm.org/citation.cfm?id=540249

most potent effect computers have on society is to make the mundane and repetitive trivial and automatic. In doing so, they extend the power of government and corporate bureaucracies enormously. He believed that when used in this manner, they are reactionary in their outcomes, extending and amplifying control over every facet of human existence to which they are applied.

This straightforward ability to iterate through any set of operations as many times as desired while changing parameters such as names, social security and account numbers fed in from database records seems inconsequential. But the result can add enormous value to the aggregate, compounding what little may have existed in a single transaction. The prospective synergy this introduces into human affairs cannot be overstated. Though it is nothing more than the ability to run through the script, changing a few words here and there at each performance, there is the potential to create a power center where none existed when the individual actions are reproduced thousands or millions of times.

So it is that bankers and mortgage brokers unwittingly became the handmaidens and bureaucratic appendages of just such an emerging power center: the securitization industry. Pioneered in the complete absence of regulatory controls and barely twenty years old, the new instruments generated by the industry relied on, indeed were completely dependent on, networked computing power to create enormous value quickly. Mortgage bundles were sliced, packaged, diced, and re-packaged, again and again. The resulting "products" derived as they were from mortgages, could be treated as regular income streams, and many were given triple-A grades by the investment rating services. Into the bank portfolios they went.

But the resulting convolution of millions of individual mortgages is beyond anything that can be dealt with by human examiners. This mass of ever-expanding detail – which mortgages got split into what parts and who was given which share – has to be captured at the front end with the aid of the very computers creating the transactions if there's to be any hope of keeping an honest set of books. That's where the story gets interesting.

Database modeling and management are the arcane disciplines central to any coherent effort at grabbing hold of the emergent complex that results from such newly generated hyper-activity. Both have storied histories replete with irascible figures such as E. F. "Ted" Codd and Larry Ellison. At the heart of the technical narrative is a concept called the relational database developed by Codd and commercialized in database management systems such as Oracle, a product and company shepherded to industry dominance by Ellison.

A logical model based on the Codd's relational theory and a robust physical implementation of that model in a system like Oracle's usually form the basis for any attempt to manage a large mass of data intelligently. The model defines all the relevant "entities" such as buyer, seller, sale, security, and all the other concepts which make up the transactions the system performs. It also describes the links between the entities, providing "referential integrity" – the business rules – so that, for example, no sale can be recorded until the seller has been entered into the system. The physical implementation then mirrors these entities and their relationships in a set of linked tables, very much like a stack of spreadsheets with piping between them. That's how the world of recordkeeping proceeds these days, or how it should according to Codd's acolytes.

It's how Amazon gets you your books and DVDs, how the department store associates you with your purchases, how the state motor vehicles department figures out which of your vehicles needs re-registration, and how the water department gets you your bill, to name just a few examples. It can safely be said that this technology has more of a day-to-day impact on how people on the Internet live their lives and manage their affairs than any other software invention to date.

But the development of a good relational database design relies on the sort of cooperative effort that only exists in a handful of companies. That's because extracting all the information from the involved parties is a daunting task. The rule of thumb is that it can represent upwards of 85% of the effort involved in re-engineering a corporation's data assets, while the actual code to accomplish the job accounts for less than one-fifth of the work.

Why? Knowledge is power. Wresting data from, say, a shop foreman who learned years ago that keeping tight control of the business' information as it flowed through his station meant keeping his job, can be a daunting task. Now imagine coordinating the collection of such information across something as vast as the global mortgage-backed security industry which developed over the last 5-10 years. It never happened.

No one has a complete picture of who holds which portion of what mortgage asset since nobody bothered to track where they were all going. Without that relational roadmap, those investment portfolios simply mirror the chaotic jumble derived from the endless stream of transactions that created them. Bankers can't deal with risk and this environment is absolutely fraught with it. So

the credit markets have seized up because the lenders don't have a clear idea of what return, if any, they're getting on their investments. They're reluctant to dig the hole any deeper till they can figure out how far down they've traveled so far.

There's enough irony for a dozen novels in this story. The brokers didn't care at all when the only perceived losers were the mortgage holders who found themselves unable to make the balloon payments that followed on the heels of low initial rates. The foreclosed homes would simply revert to the lenders in the resulting bankruptcy proceedings. These same lenders appear to have had little comprehension of the way mortgages had been wired to the investment portfolios banks rely on for lending liquidity so that yet more mortgages can be written. They certainly didn't understand what the feedback from a flood of failed mortgages would do to those portfolios in the long run. This is poetic justice with a particular bent for vengeance

In the latter stages of the debacle, the repetitive, computerized processes that created all that apparent value in those securities, created an inexorable demand for more mortgages, any and all mortgages. Like a firestorm which goes convective, drawing in fuel from an evermore distant periphery to feed the monstrosity it has become, the pressure for an increasing stream of these investment widgets was insatiable. Demand greatly outran supply, lending standards became non-existent, and portfolios inflated to outlandish perceived valuations. The underlying monetization, as the suits like to say, moved from the quiet room where reality lives to the raucous casino floor. The trance-like state of bettors on a heavy run at a gambling table prevailed. Ponzi schemes always reduce to this in the end.

The realm of mortgage-backed securities, barely nascent in 1985, crystallized, matured, and became sclerotic at Internet speed in the new millennium. The fund-managers were revealed to be blind to the perils of their creation, driving their vehicle off the cliff convinced all the while they were flying. What additional evidence do we need? We are unable to deal with indeed we are oblivious to, the ramifications of applying overwhelming computing power without forethought into human affairs.

It's impossible to wrap our minds around what it means to change the fundamental scope and scale of a process by amplifying it through iteration. The sooner we understand this, the better our chances of gaining some control over such practices. Systems theory and particularly ecology can help here. In those disciplines, such emergent properties – those that only show up when the system is fully scaled and integrated – are a recognized phenomenon. An entomologist no more expects to understand the hive by only studying the individual bee, than a neurobiologist expects to predict brain function from a single cell in isolation. Why should it be any different with the fundamental units of debt and credit that make up securitization? Isn't it time to accept the fact that the parts will coalesce into a much greater whole once they're wired into the financial instruments that populate so much of the modern marketplace?

Regulate or die is the message, and for the reasons just outlined above. We can't possibly know all the repercussions that will follow from yoking credit and debt processing into a loosely-coupled whole and then iterating the resulting machine so as to aggregate value. Since we can't fathom all the emergent properties of this new machine as it scales, the regulatory apparatus needs to be in place and ready to act as the new market develops. Asking the parties to police

themselves in such a situation is patently absurd, the equivalent of asking a bettor at a craps table to track all the other players' evolving stakes, checking them against individual credit limits as the game proceeds. It isn't going to happen. There's too much money on the table. The effort necessary to do all the bookkeeping can and will be cast aside if the detail work steals even a little from the margin. That much is guaranteed.

The mortgage-investment appliance created from scalable networked computing power is just one instance of many such appliances that can and will be created. Computers are general machines themselves and thus applicable to any programmable task we focus them on. As one specific instance, however, it does provide us with an important window into the nature of that power: it is both global and transcendent as the current crisis shows. The worldwide investment community is feeling the repercussions and it has become the primary focus of economic regulators everywhere.

The development of transparent networks of computers linked into an emergent global nervous system – and that's what this is – was much ballyhooed by the mystic and savant Teilhard de Chardin. The noosphere, as it was called, was also abhorrent to the critic and historian Lewis Mumford who feared the complete denaturing of human life. He believed strongly that technics could be either authoritarian or democratic[3] and that we ignore the difference at our peril. Dismissed as a Luddite, Mumford's prescient writing is barely known among economists today[4], which brings us full circle back to Joseph Weizenbaum. As a seminal figure in the history of computing, he is much harder to cast aside.

---

[3] Mumford, Lewis, "Authoritarian and Democratic Technics," *Technology and Culture* 5, no. 1 (1964): 1-8
[4] Long, Steward, "Lews Mumford and Institutional Economics," *Journal of Economic Issues* XXXVI, no. 1 (March 2002): 167-182

Weizenbaum's book contains a very powerful argument for exerting human control over important business processes. He understood intuitively what we would end up doing to our accounting practices, our banking concerns, our investment houses, and all the other institutions when easily automated tasks could thoughtlessly be driven by limitless computing power. With networked computers now cast by all organizations, including the financial sector, into the role of wizard-behind-the-curtain, we all live in Oz. It's long past time we pull back the veil and call a halt to the mindless application of this supreme and supremely dangerous creation before the damage gets any greater.