

Economies of Design and Other Adventures in Nomad Economics

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Prelude

At one point in history the idea of an “economic” adventure was a bit redundant, for the very word adventure actually once had explicitly economic overtones. Today of course few people think about economics in any sort of adventurous way, yet traces of the link stay with us in the word “venture” as in “venture capitalist”. Skip back 600 years and those venture capitalists would probably find themselves at home among the Merchant Adventure’s guild in England, despite the differences in time, technology and culture both groups are pretty much in the same business. This book is not about either of these groups at all, but rather what lies in between, the stuff that constitutes the economy, the exchanges, movements and flows of goods, services and information.

The adventures that the Merchant Adventurers of late medieval England were engaged in were trading ventures or *journeys of exchange*. When I talk about adventures in nomad economics this is exactly what I am talking about. This is a journey that we are about to begin, and it is a journey in which I hope an extraordinary exchange of ideas can take place. In some remixed version of contemporary economic terms you could say I am hoping to engage in an act of intellectual arbitrage, the movement of concepts from one space to another. And with fortune on my side the result will be profitable for all parties involved.

Now despite the many centuries separating them, both the venture capitalists and Merchant Adventurers were engaged in a very similar business, the business of risk. Risk is of course integral to the concept of an adventure and at its core economics too about risk. Risk and how people, institutions and cultures handle risk. It's an idea that contemporary economics has addressed extensively. Perhaps too extensively though, for in their focus on risk economists have gifted it with a meaning rather different than many of you readers may look at it. The core distinction was made by the great Frank Knight, one of those rare seminal figures that economists of deeply opposing schools of thought all want to claim for themselves. Knight's great insight was to make a distinction between risk and uncertainty. Risk to Knight is something manageable. It might be

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helpful to think of it as probabilistic risk, knowing for instance that a stock has a 60% of going up is enough to allow you to make very concrete economic decisions. Uncertainty on the other hand is the unknown, risks that can not be predicted (yet), risks that no one knows how to foresee.

This little journey of ours, this economic adventure, is not risky the way a 15th century shipping voyage was. The physical risks are not even remotely the same, nor are the financial ones. Whether or not I have taken any intellectual risks is really for you the reader to decide not me the writer to say. So this venture is not particularly about risk but it is very much about uncertainty. It is about opening up the realms of uncertainty that contemporary economics has studiously ignored and hidden behind the far more manageable concept of risks. It is about forgotten economic spaces, and perhaps even ones yet to be discovered, it is a venture into uncharted territory.

One often associates nomads with the desert and the steppes, but these merchant adventurers were just as nomadic, shifting with the trade winds, moving with the cycles of the sea. In a way it is redundant to say these are adventures in nomad economics, for the adventure and the nomad imply almost the same thing. This is a journey out of and around the space territorialized by economics proper. An attempt to find unoccupied spaces, places of fruitful exchange. To swarm out from and

around the centers of economic rigidity on the risky assumption that there is insight to be found outside the walls. For the past century the main thrust of economics has been to take the turbulent flows and constant motion of the economy and capture it into some sort of equilibrium. This has been a fruitful and rewarding construction, and it has left us with quite an interesting set of tools. But at the core of these adventures is a move away from equilibrium and back out into the unmapped waters of the economy where risk transforms into uncertainty.

At the heart of this venture is an act of faith, a belief in an economics of *multiplying possibilities*. The concern is not with how you *should* spend your money, but how you *might* spend your money. Not with how people should or must organize, but with how they *might*. It is a faith based not the assumption that there is something new to be discovered in economics, but in an assumption that there are possibilities that are already out there, but not yet accessible. A nomad economics already exists, it is just up to us to find it and build it. Let's go!

Sell It For A Song

How much is a song worth? Go to the iTunes music store and the answer is simple, 99 cents. But if you head to a record store you'll probably need to pay around \$12 for the CD just to get one song. A used CD though will produce the exact same same digital files probably costs \$6. Head over to Rhapsody and it's more complex, you can hear that one song, plus anything else in their library for \$9.99 a month. Go to a concert though and you might be paying \$40 for a couple hours. And there is only hope, not a guarantee, that the artist plays that song you are dying to hear. Putting a price on a song is a tricky thing, head over to allofmp3.com, a Russian site that claims to have the legal right to sell digital music in Russia, that same song might cost only 8 cents. And if the gray market is too easy for you,

you can search around for a torrent of the song or download it via a peer to peer trading network and pay absolutely nothing.

Now how much *would* you pay for a song? I have a song on my laptop, I made it last night with my neighbor's cat, a couple pots and pans and an out of tune piano. How much would you pay for it? Probably nothing right? But what about your favorite songs? The ones that get stuck in your head, the ones that echo through your best dreams? The one that came on the radio that night in high school when you were driving around with your first love and everything seemed to turn to magic? Every song has a story, and that right story at the right time, maybe it can be more valuable than anything in the world. But how do you put a price on it?

A song is an intense object. It can not be broken up into component chunks without losing all its value. Take all the notes jumble them up and all you have is noise. Take all the beats and reorder them, and you have no rhythm left. Take the lyrics and let them hover out of time, drift off key and it's painful. Shuffle them out of order and it's meaningless. Have you ever seen one of those comedians on late night TV read aloud hit song lyrics? In a song they may be the the most intense words in the world, read flat they are the worst poetry you've heard.

You can of course chop a song up by time, maybe say into 3

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second chunks, or 16 bar chunks, or just in half. But just what those divisions mean is a whole other story. Just hearing one bar, or maybe even just the first distinctive note of a song might leave you craving more. Or maybe it will satisfy your craving completely. Sometimes we want a song to go on forever, sometimes it's only good because it ends fast enough to leave you wanting it to go on forever. Sometimes playing a song twice makes it better, sometimes it makes it intolerable. Record labels sometimes issue extended mixes for club DJs, or the DJs do it themselves mixing back and forth with two Technics 1200s or on their laptop running ProTools. Then again the very same labels also release edits that make the song shorter for a different set of DJs (and the computers that have replaced them), those on the radio. Does making a song longer increase its value, or does making it shorter increase? Neither and both is the honest answer, there is no consistent metric, no way to transform song length directly into value.

To lock down the value of a song to a single number is something of a ludicrous proposition. Yet it happens every second, probably many times every second. If there is going to a sale, an exchange of music for money, then there needs to be a price. The transaction will happen, and if that requires locking a particular dollar value to a particular song or set of songs at a given time, and usually it does, then some precise metric value will be assigned to that music. There is no wonder to it, it just has to

happen in order for the exchange to take place. That does not mean it is accurate (it usually if not always is not), nor does it mean that that particular value will have meaning in the future (although often it does). It just means that a discrete exchange occurred, that at some point in time two parties agreed that a given number would work for the purposes of their transaction. So, it has to happen, but just how does it happen?

How does a song end up with a price? There are of course issues of supply and demand, although in this digital era supply is virtually infinite, creating a rather difficult computational situation. Demand too is trickier than a mainstream “equilibrium” approach to economics might make it seem, for the recorded music industry spends a vast amount of energy attempting to generate its own excitement. When a song becomes a hit, it enters into a positive feedback loop with demand generating money, some of which is fed back into efforts to generate more demand until we all get absolutely sick of that damn song we once loved. On the surface it would seem that demand has little or no effect on price, the album that sells a million copies costs the same as one that sells 800, and there are more records released by major labels that sell 800 copies than you would think. The price then appears quite inflexible. Yet at the same time the wide range of prices that get attached to songs at different venues indicates the opposite, that prices are in fact extraordinarily flexible, that people are willing to place a huge

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range of value on any given song.

In the end the real limiting factor on the price of the song has nothing to do with the song itself and everything to do with the seller’s expectations of the audience’s income. For several decades the popular music industry assumed their audience was mainly teenagers and young adults. People with a small but persistent stream of income. Music then could be consumed in small chunks, singles and albums and prices were kept as low as possible. In the 1990’s though a revelation slowly spread through the industry, people were willing to pay more than expected, the prices began creeping up towards the \$20 a compact disk range. And then MP3s popped that bubble and popped it fast. Suddenly the music industry was the villain and people were no longer willing to pay anything at all for a full song. Of course many of the same people happily spent a few dollars a pop for low res ringtone versions the same songs. A strange outrage against the record labels spread with Napster and its peers. They charged too much, yet somehow people had been willing and able to pay. In fact CD sales have not disappeared although the prices have dropped a bit from their peaks.

At the core of these price fluctuations lies that fact that the value of a song is ultimately uncalculatable and unknown. When you buy a song maybe you have heard it before, if you have you at least know that you have liked it in the past. Maybe

you are “dying” to hear it again. Or maybe you are guessing, taking a gamble based on the artists previous work or a review in some magazine or the words of some blogger. Regardless of how much information you have when you buy it, you have no way of knowing just what value it will have to you in the future. Maybe you will put it on repeat for a week straight and then never want to hear it again. Maybe it will be in the background as you first kiss that perfect someone. Maybe it will be the only thing that carries you through the pain as that perfect something falls apart. Maybe you will hate it tomorrow. Maybe it will come on your car stereo as you cross that mountain pass and burst into the sunshine and smell the seashore as the melody carries you into heavenly bliss. The right song at the right time is worth every penny you have in your pocket. But how can you know? How can a record industry executive in Santa Monica know? All they can sell is hopes and gambles.

When the costs of CDs crept upwards because it could, because inside each CD was something potentially worth many many times it's \$16 price tag. But there were no guarantees and the higher the price the bigger the potential for disappointment. That is the tragedy of the record executive, one day they are selling heaven, the next day disappointment. When peer to peer filesharing hit the scene people were willing to grab everything for free, but not because they thought that is what the songs were actually worth. People are happy to pay artists,

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people know that musicians need to live and are willing to pay them. Buskers on the street and in subways stations give their songs away for free, yet money streams in after the fact out of sheer appreciation. People are willing to pay plenty for music, but were incredibly bitter about the prices the record industry was charging. Why? A short answer is that the record industry was charging too much for risk, and not enough for quality. Instead of selling know quantities, like singles, they sold unknown albums based on one or two known quantities, usually the artists history and a few singles and video released into the music networks of TV, radio and nightclubs. The problem is not the cost of good music, but the cost of unknown music and ultimately the record industry's failure to adequately address the risks consumers take when they buy an album.

Just how much will people pay for a song? How much are they happy to pay? How much will create a relationship of trust between the music makers and the audience? In order to understand that fully we need to move far beyond just the dominant neoclassical price theory and into a whole other set of economic understandings. We need to understand the various networks that the music industry is embedded in, both on technological and social layers. We need to understand the flow of materials and energy that constitutes the production of a song and the flow of social connections that constitutes an exchange. We need to understand the markets that music

operates in not as abstract models, but as concrete and specific sets of objects and connections. We need to understand the institutions at work inside these markets, the habits of thought that shape our understanding of music, the motivations driving musicians to create and wish to distribute their music, the drives of the A&R and marketing executives who run record labels. We need to understand the legal constraints that shape those institutions as well. This books marks just a beginning of such an understanding, a cursory looks at how a fuller economic understanding can be reached.

I write this now as am approaching the end of the first public draft (or at least I hope I am). As yet I have only brushed the surface of these questions, the journey has just begun. I can not promise anything but the start of the answers, but the adventures have begun and with any luck there should be many more. Enjoy.

The Nomadic Threshold of Money

The idea of non-metric money is about as counterintuitive as you can get. Money after all exists primarily if not solely because it can be calculated, because it is numbers. Yet a non-metric, lets call it nomadic, money does exist. Pinning it down of course is a whole other story though...

Lets start with a small experiment. Without looking how much cash are you carrying on you? Or if the answer is currently nothing, how about the last time you went out?

Now count the cash, get an exact figure, down to the pennies. Odds are it's not exactly the same as the first answer is it? Do the math, figure out the difference, this is a very rough indi-

cator of what your own personal *nomadic threshold* might be. Maybe it's a few pennies, maybe its a few bucks, maybe its a million dollars, in a dream that is.

The nomadic threshold is a phase change, a point where the behavior of money changes, much the way the properties of water transform as it turns from liquid into ice. On one side of the threshold is money as a number, as something you calculate, or at least try too. On the other side is liberation, money that you don't even think about, money whose metric value is just something you might notice in passing as you hand it over. Money you forget is in your pocket, handbag, sock or where ever else you may keep it. Money that's not worth your time to think about, but may well be worth a candy bar or a beer.

For most people the nomadic threshold is far too low. In Williamsburg, Brooklyn there is a bum who hangs out by a free-way exit, begging for change. Walk past him and you'll notice something odd though, the entire sidewalk shimmers with the copper glow of pennies. As the bum collects spare change he sorts out the pennies and tosses them on the ground. The pennies lie so far below his nomadic threshold he'd rather not even deal them. And if the multitude of "give a penny, take a penny" jars found at cash registers across the country are any indications, plenty of other Americans agree.

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Thankfully your own threshold is probably more than a penny, you can probably buy a candy bar or cup of coffee without much of a thought, nor will you need to go to ATM after that purchase, unless you already had already needed to. Some people though have thresholds much higher than a candy bar though. Prince Jefri of Brunei may well be the most blatant example, his playboy adventures at one point squandered nearly half of his country's fantastic oil wealth on luxuries like a stable of 40 prostitutes kept year round in a London luxury hotel. He may well have been buying sports cars the way you might by a pack of M&Ms, without much concern as to the cost, without calculation.

In a classic experiment first conducted over 50 years ago psychologists asked subjects to draw a circle the size of a quarter (an American coin for those of you in other countries), without actually looking at one. What they found was a direct correlation between the size of the drawn circle and the economic status of the subjects. The smaller the circle was the richer the illustrator. The quarters just didn't seem as big in the richer kids minds as they did to the poorer ones. This wasn't exactly the expected result, but its not a particularly surprising one either, money is a much bigger deal when you don't have it than when you do. Money just doesn't mean the same thing to a rich person as it does to a poor one.

While the results were statistically valid, it's important to note they are not an ironclad law. You can't ask people to draw quarter sized circles and then figure out their net worth off that drawing. Some rich people draw huge circles, money is still a big deal for them, while some poor people draw small circles, perhaps they don't care too much about how much money they don't have. Legend has it F.W. Woolworth once kept his secretary overtime for an hour to look for a quarter he had lost in his office. That office was in the tallest building in the world at the time, and Woolworth was one of the country's wealthiest individuals. Still I suppose its shouldn't shock us that a man who built his fortune on "five and dime" stores clearly did not see a quarter as being below his nomadic threshold.

So how does one move a nomadic threshold? Clearly having more money helps. Sometimes it helps too much, there are plenty of stories of lottery winners who find themselves broke and destitute a few years later. A sudden influx of cash into your life or a sudden increase in the numbers in your bank statement can skyrocket your nomadic threshold to a dangerous space. In the case of the unlucky lotto winners they may well have thought they had more money than they'd ever need. A sports car, free drinks for you friends, a trip to Europe... It must be marvelous, until that morning you wake up and realize it's all gone.

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If you've ever gotten a large check and then a short while later found yourself wondering "where did it all go?" you've experienced a small version of this first hand. And the answer to the question is simple, it all slipped away beneath your nomadic threshold. And then once you realize it your threshold will come crashing back down to earth, hopefully before you run out of money for the rent.

So money itself can move the threshold, the more money you have the less you need to worry about it, that's pretty much common sense. But money alone can not be the only factor, or else we'd never find a millionaire (from the times when that meant something) on the floor of his office with his secretary looking for that lost quarter. Nor would you have someone like the legendary miser Hetty Green. Adjusted for inflation she may well have been the wealthiest woman ever, yet she lived in the cheapest boarding houses and ate the cheapest meals of beans or pie she could find. She wore the same dress for decades, with various stocks and loans to the city of New York hidden in secret pockets. She owned several railroads, but rode only in her ancient carriage. When her son broke his leg she pulled him out of the hospital out of fear they might charge her for his medical care. He ended up with gangrene and then an amputated leg. Clearly money alone can not move the threshold, there is a personal psychological component as well.

Even the stingiest of people have their weak points though, Hetty Green's was apparently her dog, who it was only half joked she fed far better than herself. The nomadic threshold moves not just with money itself or within the realms of psychology, but also from place to place, circumstance to circumstance. One of the more pleasant manifestations is vacation, something perhaps you would like to be taking right now. Vacation is great precisely because it produces circumstances where you do things you'd never do in your day-to-day. Maybe it's lie on the pristine white sands of a Caribbean beach, or climb the steps of an ancient Cambodian temple, or maybe it's just spending money on things you'd never even consider...

It's a classic tourist moment, you are standing in a store, the owner speaking to in an alien tongue. In your hands is a pile of coins and bills, funny colors, different shapes. How much do you owe her? How much is this stuff even worth? You don't really know and for a second at least you don't really care. You hold your hands out to the owner, and let her pick the right amount out for you. Trusting, hoping or perhaps not even caring if it's the right amount.

Nothing can me more nomadic, more liberating than *being able to not care about how much money you are spending*. Yet being able to not care is not the same thing as not caring. Hetty Green shows us the stingy side, while lottery winners some-

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times end up on what could be called the overconfident side. If you don't care how much money you are spending you might have an enjoyable run, a few days, weeks or perhaps even years of a life in flow. But if you are spending more than you are taking in in the process you just might find yourself lying on the wrong side of the nomadic threshold in the worst way. Perhaps not all nomadic thresholds are created equal. Some are sustainable, no matter how little you think about those purchases below the threshold, they'll never add up to enough to drain your resources away. Others are perhaps dangerous, a nomadic threshold of money that sits too high will inevitably collapse, unless of course an unexpected infusion of money props it up.

A credit card is a tool for shifting the nomadic threshold, often in the wrong direction. It almost certainly was not originally designed as such, but it certainly has taken on the function with a gusto. What's so devious about the credit card is the way it completely divorces the need to calculate from the act of purchasing. You swipe the card, some program on a server across the country runs the numbers and either authorizes or declines. You sign the slip and it is not until a month later that the numbers confront you.

Of course it doesn't force you not to calculate. You could keep a mental note of how much you've run up on the card this month, cross reference it with your household budget and your anticipated income. I'm sure that's what the credit card people

would say you should do, and some people probably do something of the sort. But being capable of doing something just is not the same as actually doing it, and problems of this sort are often best addressed through potential and probability. Credit cards create the potential to enter what could be called a false nomadic state of money, and the probability of entering it is high enough for it to be a real issue for a decent amount of people.

A false nomadic state of money is one which is produced via the application of an outside force, a factor independent of you and your money. It is important to note that there is no value judgement to the “false”, for say a shopaholic it’s probably negative, but for someone like Hetty Green it may well have done her a world of good. There is also no direct correlation between a false nomadic state and a sustainable one, although by looking at both you may well be able to make out at least the beginnings of a value judgement, a false nomadic state that pushes someone into an unsustainable one is, let’s say, problematic.

The credit card is only one of many ways to enter a false nomadic state. A smooth salesman, a couple beers, an attractive member of the sex of your choice, so many things can do the trick. Sometime the item itself, the object of purchase, can do it. Maybe it “calls you”, “speaks your name”, maybe you need to have it. Maybe you’ve done all the calculations and its too

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much, yet somehow when you come back to your senses you’ve pulled the trigger, you own that beautiful thing, at the expense of your bank balance.

The operation of a credit card is simple, it merely makes the numbers disappear into time and space, only to return slightly inflated in the near future. Lets break it down step by step. You walk (or surf) into a store and see an item you want, maybe you were looking for it, maybe you just stumbled across it. Now most of the time even with a credit card you probably look at the price, so there is at least some calculation going on. There is a good chance you’ll mentally make sure the price is within your credit limit. You might think about your budget too, or maybe you don’t. Don’t worry though, that sort of flexibility is not happening on the other side of the data connection as the retailer swipes your card. The credit card company is running all the numbers, to the cent, maybe even to the fraction of a cent. The credit rating is calculated, the limit is calculated, the interest is calculated, and you can be damn sure the monthly bill is calculated as well. They calculate so you don’t need too, until the monthly bill arrives that is.

Of course you could have calculated perfectly. But did you? Every step in the transaction is set up to let you slip. And every time you add a transaction to the mix the odds of you not calculating multiply. You might have seen your latest credit limit

on your statement, but have you updated it to reflect all the charges since then? What about your budget, if that's the sort of thing you do, do you still remember where it's at after sliding the plastic a few times? Maybe you know how much is in your bank account, but how much of that are you expecting to hand off to the credit card company at the end of the month? The more you use the credit card, the harder it is to answer those questions I suspect. There is a hidden, unstated, and unacknowledged yet implicit deal in the credit card. You gain access to a nomadic state of spending, and in exchange you pay exorbitant interest rates.

Those who love to calculate might be intrigued to know that this also means that the cost of the nomadic threshold is theoretically discoverable. There is quite a huge difference between the rate of interest that banks pay on money coming in, savings accounts, certificates of deposit and the like, and the interest they charge on credit cards. A healthy chunk of this difference can be accounted for as the cost of risk, credit cards are unsecured loans and a certain percentage of people default, while others need to be chased in order to pay up. Another chunk is administrative, the high volume of transactions adds up to quite a bit of costs I suspect. There are other costs too, marketing, the minimum expected profit, and more. But when they all add up, do they fully account for the difference between the interest rates on money coming in versus those going out? I

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suspect they do not and the difference should provide an indication of just what the average premium people are paying for that nomadic fluidity a credit card provides. It's worth investigating at the least, particularly as services like Prosper.com try and shrink the margins on personal loans giving a better sense of what the "market" rate actually is.

There is a whole approach though, one that perhaps tells us far more about the differences between those using their credit cards to escape the math, and those for whom the math is intimate to the heart of their spending. One can look at the difference between the interest rates charged to the good customers, the calculated ones, the ones who pay on time, shop around for the best rates, shift balances and are generally on top of their funds. And one can compare it to the rates, and of course fees, the companies are charging the sloppy customers. The ones that don't pay attention to their bill, pay late, don't watch the rates, don't balance the budgets. In this gap is perhaps the best numeric marker of the nomadic threshold, just how valuable that crossover can be. An indicator of just *how much people are willing to pay not to think about money*.

There is another threshold too, another direction in which economic transactions become less calculated. A threshold based not on smallness and flow but on hugeness and intensity. A space where calculation no longer matters not because the price

is so small or so hidden, but because it is so potentially large as to be meaningless. You can call it the Mastercard space, as they have tried to trademark the idea of “priceless”. For now though I will call it the intensive threshold.

The intensive threshold is somewhat more present in contemporary economic thought than the nomadic one, although it still is often avoided, perhaps because it leads to situations rather embarrassing economists. Few things can make the “free market” look worse than the situation of a private art collector paying millions for an art work and then promptly locking it away in storage. In such a situation nearly everyone loses, the general public certainly does, if the piece were in a museum it would be rather easy to view it, in a private collectors hands that ability is rested clean away from just about everyone. It is a clear case of a market benefiting one individual at the expense of everyone else in the world. Except that often the winner of such an auction also loses. The seller clearly wins, they walk away with the money, auctions can be great for a seller. But winners often suffer a curse of sorts. One of these curses is rather well known and called simply the “winner’s curse”, the other I call the intensive curse.

The winner’s curse occurs when non-intensive objects are being auctioned. It is credited with first being named by the oil industry, where contracts to explore and develop potential oil

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fields are sometimes auctioned off to the highest bidder. The problem with these auctions is uncertainty, no one really knows the actual value of the potential oil fields. In an auction setting the winner is often the bidder that estimates the value of something to be higher than everyone else in the process. As James Surowiecki has shown, groups of people making estimates are extremely good at averaging numbers, odds are the true value of those oil fields is far closer to the average estimate of the auction participants than to the high estimate of the winner. What that adds up to is the winner’s curse, the party that wins the auction for an oil field is often the one that overestimates its value. Far from working effectively in these particular cases the market functions to acutely overprice items.

With the winner’s curse though, the items being sold are ultimately of a completely calculable value, it is just that the value can not be determined beforehand. With the intensive curse, the opposite is true. A value gets set by the transaction, but in the end the object is intense, it is impossible to value numerically.

The concept of the intensive here is rather specific and borrowed from physics via the philosophers Gilles Deleuze and Manuel DeLanda. In physics an intensive property of an object, in perhaps oversimplified terms, is one that can not be divided if the object itself is split. Temperature is an intensive property,

weight is not. If you split an apple pie exactly in half, each half will weigh half of what the whole pie did, yet the temperature of the half will be the same as the whole pie. This concept as I've wrested it over to economics takes on a similar but slightly different implication. An intense economic object is one that can not be valued in discrete economic units. Yes transactions will be made and some value will get attached to the object at the point of sale, but this occurs simple because it has to, not because of any underlying economic relation. The object in the end is priceless, impossible to price, yet it gets priced plenty of times. It is just that those prices reflect not any actual value of the object, but the amount of money the buyer can spend.

The intensive curse comes into effect because it is impossible to value an object that you personally see as intense. Its value is no longer economic, but something else. Maybe it moves you, maybe it calms you, gives you faith or simply excites. But once you encounter a personally intensive object you can only value it in terms of how much you can spend, not how much you think it is worth. That does not mean you are going to get ripped off, or spend all your money, it just means that the potential exists. Stay calm, bargain well, shop around, odds are you will come out of the transaction just fine. But a sharp salesperson can take advantage of you, manufacture confusion and urgency, try and get you to slip into a transaction that is way more than you should spend rationally. In an auction setting

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everything gets magnified into a frenzy. How much is a painting worth? A masterpiece, one that moves hundreds or millions of people in its intensity. At an auction it will get slapped with a price, but that price has nothing to do with its real value, and everything to do with how wealthy the bidders are. Run it again with a different set of bidders and the results will not even be close. There are a hell of a lot of people who might have bid it all even higher too, they just do not have the pocket change to spend a million on a painting.

What the nomadic and intensive threshold do, is not a critique of economics, but an expansion. For years economists have constrained themselves too closely to the concept of calculation and within certain bounds their work can be extremely useful. But those bounds must be understood, the economic world is far too close to home, far too important to all of us to be reduced solely to a science of complex mathematical calculations. Perhaps the true wealth is not a number at all, but something we can find at the margins of economic thought, at the thresholds of a better way of thinking.

The Beauty of Neoclassical Economics

“I don’t care who writes the nation’s laws if I can write its economics textbooks.” - attributed to Paul Samuelson who indeed did write the primary economics textbook for over half a century.*

“The abstract methodological issues we have been discussing have a direct bearing on the perennial criticism of “orthodox”

* Quoted from The puzzling failure of economics, *The Economist*, 23 August 1997. While the quote pops up with some frequency I have never seen any actual evidence that Samuelson actually said such a thing, and if so where and when he did.

economic theory as “unrealistic”... criticism of this type is largely beside the point unless supplemented by evidence that a hypothesis differing in one or another of these respects from the theory being criticized yields better predictions for as wide a range of phenomena.” - Milton Friedman in *Methodology of Positive Economics* (1953)

“The aide said that guys like me were ‘in what we call the reality-based community,’ which he defined as people who ‘believe that solutions emerge from your judicious study of discernible reality.’ I nodded and murmured something about enlightenment principles and empiricism. He cut me off. ‘That’s not the way the world really works anymore,’ he continued. ‘We’re an empire now, and when we act, we create our own reality. And while you’re studying that reality -- judiciously, as you will - - we’ll act again, creating other new realities, which you can study too, and that’s how things will sort out. We’re history’s actors . . . and you, all of you, will be left to just study what we do.’” - Ron Suskind interviewing a “senior adviser” to President George W. Bush in the *New York Times Magazine*, October 17th, 2004

You can practically smell it when you open the covers, it makes me shudder when I think of it. Maybe it is the scent of good ideas gone to rot. It is the scent of a writer caught in what I call

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the *critical trap*. Accumulate a collection of texts on “alternative” economics the way I have and the smell might just take you under. The literature of what is sometimes called “heterodox” economics, perhaps they picked such a willfully obscure name to hide their odors from the world, reeks of a pained frustration. Sometimes it verges on a mania, overflows with an anger that sucks you in with negativity. Nearly all of it directed towards neoclassical economics, the mainstream economics of the past half century. The trap is strong, all too many writers are sucked into it. Make it hip hop and you would probably call it player hating, neoclassical economics is extraordinarily successful as an academic movement and popular philosophy. To cap it off, it stays an incredibly calm discipline, capable of shrugging off or ignoring all the criticism that comes its way. A whole lot of people want to hate it, and more so many of them seem almost mystified, they just can not understand how its ideas can be so prevalent, popular and powerful. The result is inevitably an attack, a critique, an overload of negativity. It is not pleasant and I want no part of it.

As hard as I may try to avoid this critical trap though, I still sometimes find myself slipping into it. The reality of it is that I’m not out to attack neoclassical economics at all, nor do I see a nomad economics as being in any particular opposition to it. A nomad economics is not a critical economics in any way. There are points of overlap between the nomadic approach and the

neoclassic tradition, points where ideas may come into a certain conflict but ultimately a nomad economics must achieve success not by any dialectical, critical or competitive means, but by expansion. Think of it as swarming around neoclassical economics, opening up new and unexplored spaces, multiplying possibilities and embracing increasing perspectives. There is plenty of room for the neoclassical tradition to survive, thrive and evolve alongside, inside, just around the corner or simply elsewhere from a nomad economics. It is time then to say a few words in praise of neoclassical economics, to talk about the beauty of neoclassical economics.

What is so beautiful about neoclassical economics is just how damn usable it is. Not usable in the sense of being easy to use, but usable in a far more basic sense. Usable in that *it can be used*. More perhaps than any other academic discipline, the neoclassicals focus upon creating tools, tools that have direct applications. I am prone to calling certain other fields, management theory and accounting in particular, pragmatic economics, for they are truly far more pragmatic than economics itself. But inside the academy proper the borders shift. Neoclassical economics is all about pragmatic mathematics, pragmatic social science, pragmatic theory. No matter how obtuse and convoluted it gets, no matter how abstract the models get, you can take economics tools and use the results.

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Now if one takes Milton Friedman at his word, as quoted at the top of this piece, economics does not claim to be realistic at all. It makes no claims to being an accurate reflection of reality, yet it remains extremely usable in the real world. Man that must be so liberating. Is there any other discipline that allows you to get so abstract, so deep into models, numbers and equations and divorced from the dirtiness of the day to day, yet retain it's ability to be applied directly to real problems? Once you get in, learn the ropes, practice with the equipment, you are left with a degree of potency few academics ever achieve. Economics has mastered the art of transforming the abstract and the numerical into power and action.

What is really telling in rereading Friedman's famous essay on methodology, is just how well his criteria for success has stood up. For Friedman, what's important is not how well a model captures reality, but how well it can make predictions. And neoclassical economics has succeeded not by making better predictions, their predictions for the most part are a bust. A bust most spectacularly exemplified by the collapse of Long Term Capital Management (LTCM), a hedge fund powered by the Nobel Prize winners who created some of the most important financial equations around. Now prediction models that fail as spectacularly as the \$4.6 billion that LTCM lost in four months in 1998 or the still essentially unexplained \$500 billion dollar "Black Monday" crash of 1987, might not sound so

great to an outsider, and they hardly appear to meet Friedman's criteria on the surface. Yet the fact remains that they really do make the best predictions of any set of economic models. Why? Because *they are practically the only ones that make any sorts of predictions at all.*

Numerous critics have delved into the problems and limitations of economic models and predictions, most recently and perhaps notably the famed inventor of fractals Benoit Mandelbrot. Mandelbrot has created a set of models that can explain why events like Black Monday occur. But he does not create tools, his models can not be used to make predictions. So if your job is to make decisions, would you rather have a model that on rare occasions fails spectacularly or no model at all? You don't really need to answer that question to appreciate that at least some people would rather have that model, and the risks it entails, than no model at all. And that brings us right up to the margin of another beautiful thing inside neoclassical economics, the way it incorporates and runs with risk as concept.

No matter how conservative economics may seem, can you think of any other academic field that so thoroughly embraces risk? No, most disciplines are thoroughly risk adverse. They may occasionally praise a risky work, but generally only if it actually succeeds. Economics on the other hand takes risk right into its core. Managing risk is a central concept. Something

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fails? Tweak the model and get back to business. LTCM's John Meriwether was back with another hedge fund a year after losing those billions. With a resiliency like that who cares about critics?

Risk goes hand in hand with margins, and if neoclassical economists have one concept they can really call their own it's marginal thinking, and I find it stunningly beautiful. Right or wrong, the idea that the important things take place on the margin, at the edges, is quite radical especially coming from a field that is so often seen as the most conservative of the social sciences. Of course in reality it is the most "conservative" of the economists are really the ones with the most extremely radical of ideas. The intense individualism, the over the top focus on the individual as the only agent worth considering is close to unprecedented in history. Whether it was god, society or country, the entire tradition of western thought almost never breaks down to just people, nothing more, nothing less. And does not need to agree with this stance to admire the bold overarchingness of the vision.

It is a seductive idea, so perfectly wrought with tension, the idea that the selfish actions of free individuals left alone in the "market" can produce better results than any amount of planning, foresight and structure designed for the improvement of society. One can imagine the tension and excitement it un-

leashes in the minds of young economists to be, prone as they tend to be towards logic and math. A seeming paradox, yet somehow it makes sense. And it comes complete with a system, models, curves and equations. So eminently usable, yet so tricky to learn how to use. It's a strong path presented, a long journey into the world where math turns into power and money. A strong path where abstract ideas, and complex equations translate into reality.

In those hectic days before the 2004 United States presidential election the “reality-based community” quickly became a running joke, one that still holds some traction among the American left two years later. The idea that a senior White House advisor, Karl Rove being the prime suspect, would go out and question the existence of reality seems to many thoroughly laughable. Personally though I've always thought the joke was on the left. Bush after all won the election, and while reality has in many ways come crashing back down upon him he still holds power. Rewriting reality might not be quite as simple as “Rove” makes it out to be, but if neoclassical economics have

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anything to teach us, it certainly is possible.* For as Friedman lays out, while economic models do not actually have to be realistic as long as they predict, economists have never had a problem applying the results of those models back on reality. And as soon as those results are put into action, and economists are no strangers to putting ideas in action at the highest levels of government and business, those ideas very much become part of economic reality. As a designer I find this completely invigorating and perhaps even essential. How else can one test

*This is an idea that has been explored in some depth in the Michel Callon edited *The Laws of the Markets* (1998), particularly in Callon's own opening and closing essays. His favored term is the “performing of the economy”. Philip Mirowski and Edward Nik-Khah have written a scathing and as yet unpublished critique of Callon and his followers titled “Markets Made Flesh: Performativity, and a Problem in Science Studies, augmented with Consideration of the FCC auctions”. My own view is somewhere in between both camps and not quite settled. Donald MacKenzie's *An Engine, Not a Camera: How Financial Models Shape Markets* is due to be published just several days after this version of this book is due at the printer and I have not gotten my hands on an advance. However I suspect that it will contain a major advancement of these concepts and am excited as to where it may lead.

an idea except by putting it into action?

So many disciplines seem fearful and hesitant to engage outside of the worlds of the academy and books. Those that do step into government are all too willing to dive into the depths of bureaucratic entanglement, and far too restrained in engaging the public directly. Economics on the other hand plunges headlong in. Stephen Dubner, the journalist co-author of *Freakonomics* leads off the book by saying he often found that many economists “often spoke English as if it were a fourth or fifth language.” Yet somehow the field has since the end of the World War II persistently been able to sell its ideas to the public at large with extraordinary success. I am a populist at heart, I can only hope I can do some fraction of the same. There is a long way to go for a nomad economics to reach towards these beauties encased inside of neoclassical economics.

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Units of Transformation: The Radical Americanism of Jane Jacobs and Thorstein Veblen

“As I’ve said many times, the future is already here, it’s just not very evenly distributed.” - William Gibson (*Talk of the Nation*, National Public Radio, November 30, 1999)

I can only call it a radical americanism. It’s a label placed on two figures, two heroes of a nomad economics, a label I suspect both might feel rather uncomfortable with, but still it is applicable. Jane Jacobs and Thorstein Veblen, two giants of twentieth century American thought. Often cited, rarely applied, one could look at them as disturbances to the intellectual landscape, forces of concept that never can quite be contained in traditional academic frameworks. The world never did quite figure out what to do with Veblen, and while Jacobs’ brand of urbanism

has a potent following, the economics that persistently rides shotgun to it in her texts is almost completely ignored. In the end though what ties them together is an intellectual approach that's both thoroughly American and completely outside the mainstream of academia, a radical americanism.

There is a direct line between Veblen and Jacobs, and it runs through Veblen's most famous student Lewis Mumford. Mumford was an early supporter of Jacobs, but turned on her quickly, her first book tore into the Garden City movement, an idea dear to Mumford's heart. A first book, *Death and Life of Great American Cities* (1992, originally 1961) that defined her fame as completely and thoroughly as Veblen's first *Theory of the Leisure Class* (1994, originally 1899). You can call them the pop hits, although in the end both works are fully justified in their successes. The radical americanism blooms early and with good reason, at its root lies a deep empiricism, an intensive reliance on extensive observation. Both "Death and Life" and "Leisure Class" are epic navigations through the heart of American culture, and the authors never quite got it up to repeat the process with anything close to that initial intensity.

Jacobs was a complete outsider, a magazine reporter with the streets of New York as her beat. Veblen was employed as a proper academic, but in no way could you construe his methods as anything but the opposite. Veblen simply couldn't be bothered

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to follow even the simplest academic protocol, he was far more adapt at getting fired for sex scandals than in advancing inside the academy. More than perhaps anyone he fit the stereotype of the absent minded professor. He mumbled through lectures, cleaned his dishes on his lawn with a garden hose, and never bothered to include bibliographies in his books. Even the fame of his books couldn't keep students in his classrooms and neither he nor his school administrations could ever quite handle the women who threw themselves at his strange figure.

Pick up a Veblen book and its extraordinarily clear that whatever absentmindedness he might project, underneath it all lay one of the most piercing observers of culture ever to publish. The source of Jane Jacobs early observations are clear, she walked the streets of New York for years as a reporter before getting down to publishing a book. Veblen on the other hand practically never touched a street. He grew up on a farm in Minnesota, immersed in books and avoiding physical labor. He hopped and jumped through a series of universities before leaving Yale with a Ph.D. in philosophy. Failing to land a job he retreated back to the family farm, where apparently he did nothing but read books for six years. It was only after he returned to graduate school yet again that he found employment, at the Rockefeller funded University of Chicago.

Reading through the acidic satire of *Theory of the Leisure Class*

leaves an impression he spent his entire life as an observer standing slightly off to the side, seeing every action participating in none. From his undergrad at the midwestern Carleton College to the mid-Atlantic wealth of John Hopkins and the New England conservatism of Yale, he certainly saw a decent spectrum of wealthy young Americans. But just how his collegiate and farm centered life translated into a piercingly insightful ride through the excesses of American culture is a dicey question to answer. His intellect was certainly prestigious, he spoke 25 languages and was apparently extraordinarily well read. Yet his books contain no bibliographies and few footnotes, his Ph.D. thesis lost in the stacks at Yale virtually unread and completely uncommented on. If the books are the main source of his vision then he left precious little in the way of a trail back to them. Not that there is particularly much in the way of prior art, Veblen's insights were in the end both radical and intensely American.

Beyond the marginalized native American population, America is of course a nation of immigrants. Or more aptly a nation of children of immigrants. The journey across the ocean is as clear a threshold of transformation as there is. The oceans were crossed to get to a new world, a new space of possibility. In the coastal cities and in the cloistered spaces of academia though ties back to the old were plentiful and persistent. Out in a Minnesota farm though the new world was complete, Ve-

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blen would be hard pressed to find a place to grow more disconnected from the flows of European intellectual traditional. And perhaps that is what it took for something so distinctly American in it's insight to develop. Veblen looked at America through a fresh set of eyes, well read but virtually untaught, his insights and interpretations were his own and only his. When he looked, he looked hard and deep. What he saw was a radical americanism, a new way of thinking, large parts of which still feels completely fresh today.

Jacobs in contrast was eminently social. The public space of the city was her turf and she knew its characters and patterns as well as street hustler. Like Veblen any connection she had to intellectual tradition came through her reading, she learned but she was never taught. She came with a journalists eye, but it was only by bringing her own personal interpretations of scientific theory to the reality of street life that her observations came alive. Perhaps there is the secret to the radical americanism, one must learn the past to move forward, but one must also avoid indoctrination. The world is full of sharp observers, but Veblen and Jacobs brought not just observation to the table, but whole new theoretical constructs for viewing the world. There are others too, Mumford, William James, Charles Pierce, but is Veblen and Jacobs that set the pace and lay the ground work for a distinctly American philosophy.

A radical americanism can never be confused with a defense of “the American way of life”. In their own ways both Jacobs and Veblen were intense critics of society, although both widely avoided the deep negativity that so often rides shotgun to a “critical” approach. Far more than being critics as well both shared an ability to see society in units blind to their contemporaries. Both steadfastly refused to look at the world as either molecular or global but instead argued vigorously that a vibrant in between was necessary. Their world is not reducible down to just the some of individual actions, nor can it be explained by the superhuman sized entities of “society” and “nations”. For Veblen the answer lay in institutions and habits, two materialist modes of propagation and transmission of behavior through culture. Jacobs focus relentlessly on cities, but quickly became aware that cities as active entities are not always the same as cities as political units. Instead Jacobs focused on neighborhoods and what she called “city regions”. Institutions, habits, neighborhoods and city regions, what ties them all together is an intense Darwinism, a commitment to *the algorithm* and to the existence of *emergent properties*.

Both Jacobs and Veblen owe a great debt to Darwin, as of course do all so many intellectuals who have followed in his massive wake. Yet one has to wonder if perhaps it took being in the new world to really take Darwin breakthroughs to a fuller social realization. Social Darwinism of course has about

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the lowest academic reputation a set of ideas can have, but it is important to realize that it is a fundamentally conservative operation. There was nothing new about the racism, sexism and class biases of the social darwinist agendas, but in fact quite the opposite. Darwin in this case was being used merely as a tool to justify and entrench the old order. It is doubtful that the Social Darwinists planned it as such, but their maneuvers had a second conservative effect, one that produced a nasty double bind in which we are just now struggling to escape. By tying Darwin’s name, and a rather slipshod interpretation of his thinking, to a strong conservative agenda they ended up neutralizing Darwin himself. The concepts that were used to push back against the Social Darwinists were themselves deeply rooted in an old world way of thinking. What was called in to trump the radical individualist “every man for himself” modus operandi of the Social Darwinists was society and the nation state. Nothing illustrates the conservative rooting of society than the term “high society”. Emile Durkheim, Max Weber and Talcott Parsons may have stretched society into an omnipresent and all encompassing term, but the idea that an elite few can speak for us all lives on inside what Bruno Latour has termed the “sociology of the social”.

It was only through biology in the 1970’s, through Edward O Wilson and Richard Dawkins that evolutionary thinking forced its way back into the realm of the social sciences, and it

has only progressed in a long slow creep since then. Jacobs and Veblen though, never quite got the memo that Darwin and the social realm were not supposed to go together. Of course when Veblen was writing that memo was not quite written yet, and if Geoffrey Hodgson (2004) is correct it may well have Talcott Parsons' writing Veblen out of the history of sociology that finalized the excommunication of evolution from the genre. Perhaps Veblen's ideas were a bit too radical, a bit too American, for the European tastes of Parsons. One can not blame him either, for Veblen was writing long before the rediscovery of Mendel's work in genetics produced a mechanism to explain Darwin's rather outlandish theory. There is a shock of recognition that comes in reading Veblen's texts that may well indicate he was writing way too far ahead of his time. His habits, institutions and genetic processes certainly at least foreshadow Dawkins' much ridiculed but highly influential concept of the "meme". Foreshadow is maybe an understatement, perhaps loom over and render insignificant might be a better way to put it, for Veblen's constructs are far better realized, far more nuanced and far more potent than Dawkins' rather half baked memes.

One thing is certain though, Dawkins with his "meme" was far better at naming and branding than Veblen could ever be. The concept of "institutions" for instance might just well be the most poorly named and misunderstood intellectual construct around. So much so that the "around" should probably be at-

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tached to the words "just barely" as in institutional economics is just barely around. At one point the concept was so misunderstood that Clarence Ayres, the mid-century economist, saw himself as being inspired directly by Veblen's work, yet managed to conceive of it in a way quite the opposite of just about any logical interpretation. Fundamental to this misinterpretation is the fact that there two rather different ways to look just what an institution is. One is encapsulated well in the phrase "the institution of marriage" and the other in the idea of say a "mental institution". While I don't quite agree 100% with him, the economic historian Douglas North (2005) illustrates the distinction well:

The study of institutions has been bedeviled by ambiguity about the meaning of the term. Institutions are the rules of the game; organizations are the players. They entail different modelings to understand the way they operate and interact with each other. Modeling institutions is modeling the man-made constraints on *human interaction that define the incentive structure of the society*. Modeling organizations is theorizing about the structure, governance, and policies of purposive social entities. (the emphasis is mine)

North belongs to a very particular economic tradition known as the "new institutional economics". Despite the similarity in name to the "institutional economics" that Veblen and many key American economists before World War Two were consid-

ered a part of, the new institutionalists should be looked at as a variation upon the orthodox neoclassical tradition. In other words they are another deeply conservative strand of thinking, another set of thinkers who have yet to come to grips with Darwin. The new institutionalists, also known as transaction cost economists, have a clearly denoted beginning, a paper by the then young Roland Coase entitled “The Nature of the Firm” and published in 1937.* This paper sat nearly unnoticed until the 1970’s when Oliver Williamson lead a revival and essentially founded the transaction cost school of thinking. At the core of this approach is one sharp break with the neoclassical traditions of economics, the realization that organizations matter and must be accounted for within economics. The means by which this was accomplished was not a break at all from tradition, but an extension. According to Coase, firms exist because certain transactions are cheaper when done inside the hierarchy of a business firm. In other words they exist simply because it is cheaper then doing everything on the open market. While this acknowledges the existence of entities larger than just individual humans, it denies the possibility that these entities have relevant emergent properties and instead seeks to

*Coase incidentally is still alive as I write this and teaching at the University of Chicago. Tellingly though he teaches not in their famed economics department, but at the Law School which maintains its own economic and law department.

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explain them entirely in terms of individuals maximizing their value and looking for the best costs. What it amounts to is a way to extend the twin obsessions of mainstream economics, the selfish individual and the primacy of cost, into the world of large organizations.

The obsession with the individual is of course a deeply conservative concern, on that stretches back towards the core of liberalism. It stands as the flip side to European thought prior to Darwin’s still incomplete intervention. On one side are the massive entities, those too large to be properly delineated: society, capitalism, the nation state. It is a strange proposition, either you can look at the world in terms of entities too big to be properly understood, too big to be proven to exist, or you can look at it entirely in terms of individuals. These are the entities of the old world, the intellectual traditions that stand strong today. In their radical americanism Jacobs and Veblen stand nearly alone as thinkers willing to dive into the middle, to attempt to take Darwin’s’ thinking into the realm of the social, to see new entities that European thought never fully grasped.

Lets return to that tricky concept of the institution. North defines them as the “rules of the game”, as his contrast with the idea of the organization. This is a start, but it lacks something, an understanding of evolution. A lack of the algorithm and a lack of emergent properties. The rules of a game are the same

each time they are played. An algorithm is also a set of rules, but unlike a game it is explicitly transformative. What goes into an algorithm is not what comes out. And each movement through the algorithm produces an change, changes iterated upon changes with potential to repeat until infinity. Institutions do not stay the same, but instead are in a constant, although most likely punctuated, state of evolution. Perhaps more importantly, and ultimately a far trickier proposition to grasp is that institutions have emergent properties, properties that can not be reduced to any lower unit of explanation.

Emergent properties are even slipperier to grasp than institutions, particularly in the context of evolutionary thinking, because of the rather contradictory requirement that they both be properties not reducible down to the sum of their parts but at the same time, evolutionary thinking requires that a causal explanation for those properties to exist. Perhaps a better way to think of it is that an emergent property is one that is not predictable from the sum of it's parts, one that only shows up when the parts are organized in certain ways, and the interactions between them following certain patterns.

Think perhaps of a gun. Imagine you are robbing a bank. You walk up to the teller, look them straight in the eye and calmly lay a gun on the counter, the barrel point straight at them. You may or may not succeed in your robbery attempt, but you cer-

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tainly will produce a reaction, yes? Now imagine instead that you walk up to the teller, look them straight in the eye and dump a bag full of gun parts on the counter. What sort of reaction do you suppose you will get?

The ability to shoot is an emergent property of a gun. If one knows what one is doing, reducing a gun down to it's component parts is a rather simple task. Explaining just why and how it can fire a projectile at high speeds in a very specific direction is not a hugely difficult task to someone familiar with the mechanics of firearms. But going in the opposite direction is an almost helpless task. That bag of parts you dumped in front of the teller? They were specifically designed for a gun so you have quite an advantage over say someone working with just lumps of metal. But even still without knowing how a gun works beforehand you'd have an extraordinarily difficult time producing a gunshot from those parts. Maybe if you were lucky you could get a spark out of knocking the right pieces of metal together. Maybe if you could gather enough of the gunpowder, assuming it is premixed out of generosity, into one place so that the spark might cause an explosion. But how do you direct that explosion, channel it towards it's source. Odds are that the men in uniform would have shown up long before you reached that particular problem and removed you from the bank. Most likely they would be locking you up in a room with padded walls, not metal bars. The fact that you can not get out is an

emergent property of that room.

The whole is more than the sum of its parts because the whole includes the relations between the parts. You can credit Geoffrey Hodgson (2004 p. 102) for that summation of emergent properties, although it's not a direct quote, but instead a reediting of two sentences. Maybe you can call it the remix. Regardless its as crisp of an explanation of emergent properties as you are going to get. It might need a footnote though, in that the relations between the parts can not be the default mode for those

parts. George Henry Lewes*, who coined the term emergent as noun (used as we are using emergent property here) used water as his example of emergent properties. There is nothing in the many hydrogen and oxygen atoms in the air around us that explains how we can swim through water or use it to water our plants and wash our dishes. However if hydrogen and oxygen always or nearly always merged into H₂O when coming in contact with each other, one could perhaps make a case that say the drinkability of water is not an emergent property since you can predict it from just the presence of two hydrogen and one

* Lewes is yet another in our curious chain of out of the academic mainstream individuals that passes through the protagonists of this essay. Maybe they should be called *renegade intellectuals*. Darwin himself is the first, an independent practitioner whose main observations came from a voyage about as far into the new world as possible, the Galapagos Islands, being far off the Pacific coast of Latin America. Lewes, like Darwin was British, but grew up moving through Brittany and Jersey (an independent British crown dependency in the Channel Islands) among other places. He was mainly self taught receiving no formal higher education. Veblen and Jacobs, with Mumford connecting them are mentioned elsewhere, and if they have an inheritor it may well be Manuel DeLanda, the Mexican “street philosopher” whose call for a new political economy is the most explicit starting point for this work.

oxygen atom. That is not the case in the real world though, and in fact water is just one particular special case of those three atoms being in the same place at the same time. This is important to economics because curiously enough there are people who would like to make the case that humans have only one mode of interaction with each other, that the behavior of the entire world economy can not just be explained on the level of individual human behavior but also predicted.

Jane Jacobs and Thorstein Veblen stand, cut relatively free from indoctrination of European intellectual tradition, and looking at our economic world they see it units that few others have ever noticed. You can think of it as a radical multiplication of possibilities. Rather than the calculus of just individuals, selfishly maximizing their own utility, you have an environment filled with fascinating economic institutions. Private property and joint stock companies. Commons and co-ops. Neighborhoods and trade unions. Family trusts and perhaps the last feudal fief remaining in Europe on the isle of Sark. Tax exempt organizations and local vigilantes. Veblen and Jacobs identify and explore a few of these in their writings, sometimes with great even stunning insight and sometimes with a maddening lack of rigor. But what it is really crucial, what is so completely liberating is the potential embedded in their world view. Perhaps they never even realized it but in their Radical Americanism they can free us from the economics bound to hedonistic individu-

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als on one side, a formless omnipresent society on another and the equally persistent nation state on one more. If there is a way forward towards a better economy it is in this middle ground, big enough to not just be individuals alone, but small enough to grasp and work with. Its a future in vibrant neighborhoods, institutions of trust, and experimental organizations. A future of multiplying possibilities.

Incorporating Profit

profit:

noun

1 [C or U] money which is earned in trade or business, especially after paying the costs of producing and selling goods and services:

2 [U] the benefit or advantage that can be achieved by a particular action or activity:

<http://dictionary.cambridge.org>

What is the difference between a for-profit and nonprofit organization?

To answer that we first need to ask what is profit?

Well profit is usually money. But not just any money, it's a particular subset of money. And defining just what money becomes profit and what does not is a dicey proposition. A proposition that keeps countless accountants, lawyers and bureaucrats employed and busy the world over.

So what is profit again?

Profit is a social fact, a social convention that distinguishes one set of money from another. Its a social convention that has been codified into law, but it remains a surprisingly fluid and flexible convention as any small business owner or accountant could tell you. The Wikipedia (on Wednesday, December 14th 2005 9:34AM EST) gives a hint of this fluidity: "It (profit) is a relatively ill-defined concept - methods of calculation differ between accountants and economists."

Where profit really becomes truly strange is when we look at corporations. In particular there is a class of corporations known as nonprofits or not-for-profit organizations. The very fact that these entities are corporations at all is generally obscured, few advertise that fact at least in America, where incidentally most of this inquiry will be focused. Nor is it very well known that no nonprofit is tax exempt by default, tax exempt status must be applied for with the federal government in a separate pro-

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cess than the state run incorporation procedure.

Stripped of the legalese and cultural cladding though, a for-profit and nonprofit corporation are remarkably similar. Both are organizations that limit the liabilities of the people that start and run them. Both are chartered by states. Both pay taxes on any positive returns not based on donations. Even nonprofits with tax exempt status need to pay taxes on the surplus of certain returns, say on the sale of t-shirts and buttons. What separates nonprofits and for-profits is a social fact, the concept of profit. In a for-profit corporation positive surplus funds are transformed into profit. In a nonprofit, that very same surplus is just regular money, it can not by definition be profit. From this social difference has emerged a widely divergent set of corporate cultures. The goal of this paper is to explore these differences and then find a point of convergence (or perhaps reconvergence) between the two.

The modern corporation first began to take its shape in 1830s America as states began to develop more and more general laws for incorporation. Corporations had been around for centuries before, but were essentially handcrafted one at a time by the joint efforts of governmental officials and the corporate founders. The government vested each corporation with a very specific set of goals and a specific set of rights. Goals of say trading in the East Indies, or building a bridge across the Charles River.

Rights to perhaps sell stocks, or the rights for the directors to be limited in legal liabilities, the rights to charge tolls, or even mount standing armies in foreign territories. Every single set of circumstances lead to an new charter, a new incorporation of purposes and goals.

At its best this form of chartering allowed for the creation of institutions uniquely tailored to the needs of the local community or to specific tasks on the national level. At its worst it leads to the sort of corruption and influence peddling that all so often emerges at the juxtaposition of government and commerce. It also leads to a particular sort of corporate culture that is quite at odds with the viewpoints of both the economists and industrialists of the past. Adam Smith might be a hero to the contemporary CEO but in his opinion companies “have in the long run proved, universally, either burdensome or useless, and have either mismanaged or confined the trade.” (<http://www.adamsmith.org/smith/won/won-b5-c1-article-1-ss2.html>)

Smith instead favored individual businessmen and small economic partnerships, the economic form also favored by the early industrialists. According to John Micklethwait and Adrian Wooldridge, “limited liability, that was viewed, to the extent it was considered at all, as a weakness rather than a strength, because it would lower the commitment of the partner-owners”. The risky propositions of an economic partnership, where each

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partner assumes the potential liabilities for each others debts, were considered an advantage for the precisely how tightly they bound the partners together socially. In a partnership trust is at the core of the relationship, the partners have literally everything to lose if something goes sour. The limited liability of a corporation in a large part protects the owners from each other, and reduces the amount of trust required to enter into a collective enterprise.

The creation of the abstract corporation played a large role in dampening the intensity of trust at the core of a business relationship. Starting in the 1830's and drawn out in a nearly century long race to the bottom, state governments in America began to create more and more abstract legal conceptions of corporations. As the popularity of limited liability corporations increased in America, the state's power to shape each and every corporate charter began to seem less like a power and more like a legislative burden. The response was to create generic, modular means of incorporation. Fill out some forms, pay a few fees and a businessperson could obtain there own vessel of limited liability. In order to create this abstract corporation though, the states need to simplify the process, the old complexity need to be transformed.

The key to this operation was the bifurcation of the corporation into two entities. One being corporations chartered with

specific reasons in mind, the other being corporations chartered mainly to produce surplus cash for their owners. In other words nonprofit and for-profit corporations. The bulk of this operation centered around the later, by stripping out the need for a corporation to be vested with a purpose or goal, the states created a vastly simpler and easier to replicate form of incorporation. By simplifying the process the states amplified the already growing demand, and the corporate form began to evolve rapidly and with it a new business culture.

Today there are very few nonprofits out there that will stress the fact that they are incorporated (with the RAND Corporation being the prominent exception). The very word has become associated with the for-profit world. Over the past century and a half a large philosophical and cultural gap has opened up between the two corporate forms. The for-profit corporation has become the default business organizational form, an abstract catch all vehicle that can be filled with a large array of purposes. The nonprofit has become a purpose driven organizational form, each individual one is vested with a particular purpose or set of purposes at birth, purposes that seemingly then protect the organizations from both the positive and negative advances of their for-profit corporate cousins.

It is quite clear that for-profit enterprises have been evolving at a rapid rate over the past century. Part of this comes from the

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very abstractness of the laws that govern their incorporation. Once incorporated the organization can decide to do just about anything. A select few grow into multinational behemoths, the Exxons and General Electrics with their own distinct and doubtlessly bizarre corporate cultures. Others stay small and privately held, local grocery stores, graphic design firms and family holding companies. Others take more unique and twisted paths, Enron's corporate structure became so complex and incestuous that it practically existed solely to perpetuate the company itself, but instead led to its collapse. Technology companies in Silicon Valley mesh together in a complex network of shared experiences and supply chains as their engineers hop from firm to firm, while those around Boston opt for more vertically integrated and paranoid forms similar to the New England mills of centuries before.

Some corporations like Gore are almost completely flat and non-hierarchical, while others like Apple can sometimes resemble their CEO's private kingdoms. Some like Newman's Own are highly charitable, others like Wall Street hedge funds exist only to skim cash off the top of other people's money. With all this range, is there anything cohesive to the for-profit corporate form? Art Kleiner has proposed a theory of core groups, that all organizations have group of individuals at their center that generate the goals and directions of the entire organization. This is probably true on many levels, but it tells us very little

about what separates a nonprofit from a for-profit, as nonprofits have core groups too.

No what separates nonprofits from for-profits is self evident in their names. A for-profit corporation possess a certain social gravity that subtly pushes the organization to transform money into profit, to create a set of money that can be extracted from the system and placed into private hands. This social gravity can sometimes be put in check for quite some time. Privately held companies can be lead in strange directions by their founders, Benetton for example funds a design school, magazine and ad campaigns that sometimes act more like activist broadsides than calls to consumption. But the social gravity towards profit never disappears, and is often amplified by the common act of taking a company public.

When an company sells a bit of itself on the stock markets it loses a degree of autonomy. The shareholders not only have a small degree of control over the company, they also generally have very little interest in the day to day operations of the company. They tend to buy stock to make money, not because they are interested in seeing the company improve its products, or even maintain quality in any way. Nor are they particularly interested in the research and development of the companies engineers or the marketing teams efforts to communicate well with customers, except in the ways that these activities might

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help generate profit. What they are interested in is what has come be known as a company's fiduciary duty, the legal need for the company to act in the best interests of its shareholders, interests that tend to be defined in financial terms.

One of the clearer and more dramatic examples of this process in action is the Body Shop, a cosmetics retailer founded in the 1970's by Anita Roddick. As the founder Roddick vested the company with an extensive set of social and environmental goals. The products made extensive use of sustainable natural ingredients, playing a large role in generating a market for goods that had previously had none. The company developed close relationships with various growers of the raw goods they used, push recyclable and low impact packaging, and refused to advertise. Instead their stores used their display space to propagate a particular brand of social awareness, pushing a message where most operations would be pushing products.

The Body Shop was wildly successful and expanded rapidly. As part of the process the companies stock was floated on the open market, raising funds for growth, but diluting Roddick's financial position as controller of the company. At first this was a somewhat irrelevant financial fact, as long as the company continued to grow and generate profit, the shareholders and the board that represented them were happy to allow Roddick to continue to lead the company as she had. But if economic

history has just one lesson to teach it's that the good times can not continue on forever, and the Body Shop stumbled badly in it's rapid expansion across the US market. Suddenly the company's philosophy and fiduciary duty came into conflict, the board pushed for changes, they wanted the company to start advertising and stop scaring off consumers with political messages. Roddick struggled to maintain the stances she imbued the company with from the get go, but could only stand her ground so long and eventually resigned. While the Body Shop still stands significantly to the left of most corporations today, it is no longer the activist vehicle it once was, and instead just another shop in the mall.

At the peak of activism the Body Shop reached the sort of effectiveness that very few nonprofits ever achieve. Even without using advertising they had the ability to spread their message widely and strongly and then back up the message with real economic actions. Technically there is very little reason why a nonprofit couldn't step up and do exactly what the Body Shop did, and like wise there is little reason Roddick couldn't have organized the Body Shop as a nonprofit is she had so chose. Financially the vehicles for expansion would need to be different and perhaps more difficult to obtain, but by no means impossible, nonprofits for instance are capable of issuing bonds and in some cases even certain classes of stock.

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What really separates nonprofits from for-profits are the modes of thinking involved. Nonprofits have an embedded fear of selling, that only a few organizations have overcome. Most prefer methods of fundraising that date back to sovereign eras in their thinking, either they inherit their money from some wealthy founder or they go out and beg for it as either donations or grants. There is perhaps some confusion between the effects of profit and the effects of increasing the velocity of cash flows, that prevents many nonprofits from learning from the for profit world. This spreads to the area of hiring, where nonprofits actually have a tactic that gives them a huge leverage over for-profits, the fact that they have a purpose, and the purpose is defined and guaranteed by the act of incorporation. This advantage is often tempered by the lower levels of cash flow most nonprofits suffer. Given equal or similar salaries, job descriptions and benefits how many people do you think would chose a nonprofit over for-profit as an employer?

There is a similar, although in ways quite different effect at work in the opposite direction. It's entirely possible for an entrepreneur to start the exact same company, which at the present is almost always incorporated for-profit, as a nonprofit, but it is an extremely rare occurrence. For one its not common knowledge that it's even an option. Beyond that though is a particular entrepreneur's dream, that the company will reach a point where it can be sold off or cashed out, that the founder

can step away and never work again.

The heads of successful nonprofits are rather well compensated, well entrenched socially and economically in the upper classes with healthy six figure salaries. But they need to work day to day, year to year to maintain this status, and while rich they are not filthy rich. Few entrepreneurs are ever filthy rich either, most aren't even rich, and many take great enjoyment and personal interest in their work, but somehow the cash out dream remains compelling, despite it's rarity. For an entrepreneur to decide to incorporate as a nonprofit means giving up this particular dream, for in a nonprofit there is no exit strategy, but instead a purpose.

What would happen if nonprofits started to learn more from business, or if business decided they where actually going to hard code themselves a purpose, rather than just talk about it? Its a difficult question to answer, but what is clear is that there is a space that exists in between the traditional for-profit and nonprofit corporation. What lies in this space is not exactly answers to myriad of problems facing both the nonprofit and for-profit corporation as organizational forms, but merely the potential for answers, and that to me is a start.

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What is a Market?

What is a market?

A market is a network. Actually a market is not one network but multiple intersecting networks and that is a crucial distinction. A market is not the same as “the market” or “the free market”, which are abstract entities that mash the multitude of markets across the globe into one neat concept. For the moment at least we are concerned with the plural, with markets not the market, with networks not a network.

Conventional economic theory has surprisingly little to say about what a market is and how it functions. Perhaps it shouldn't be so surprising though. Adam Smith (2003, originally 1776)

the godfather of economics in his most famous moment described the market as an “invisible hand” leading individuals to make decisions for the better of the “public interest” and from that moment on markets (or all too frequently “the market”) has been vested with almost magical powers.* Perhaps then it should not be so surprising that little work has been done by economists on the underlying mechanics of the market, for the market is the ether in which so much of economics wants to exist, an ontological assumption to be taken as a matter of faith. Instead of asking “how markets work” economists would rather take a step inside and deal with a slightly smaller but similar problem, price theory or “how does a price get set?” Or to give it a little perspective you can look at it as: “how does the market set the price?” While this is certainly an important question and must be addressed at some point, it just might be pertinent to first ask just “how does a market work?” before trying to figure out how it sets prices.

When I said that conventional economic theory has surprisingly little to say about how markets work that certainly does not mean it has nothing to say about the question. There is a

*the religious overtones of economic tenets has been the subject of a handful of commentaries, most extensively perhaps in Robert Nelson’s *Economics as Religion*.

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small but increasing body of work that gets at at least some of the issue. George Akerlof and Joseph Stiglitz won a Nobel Prize for their work on asymmetrical information and the “market for lemons”. Away from high profile glow of the Nobel, game theorists and auction theorists have begun digging into the very specifics of market forms. The contemporary climax of this work is John McMillan’s *Reinventing the Bazaar: A Natural History of Markets*, a lucid trip through the many markets of today. McMillan is an economics professor at Stanford and thus as one might expect relatively entrenched in the mainstream of economic thought. But he’s a professor of economics in the business school, not in the economics department, and thus already has a bit of well needed perspective that shines through in his pragmatism. Step a bit for more perspective and there are more interesting individuals to be found.

Perhaps most epic of them all is Karl Polanyi’s *The Great Transformation* a deep investigation into the beginnings of the industrial age in England. The great French historian Fernand Braudel goes dramatically further back into history and with far more detail in his massive three volumes on *Civilization and Capitalism*. Alfred Chandler is far less concerned with markets per se, but if we are talking about epic economic histories, his *The Visible Hand: The Managerial Revolution in American Business* must also be included and needless to say it is not with considerable information on the development of

American markets. While Chandler and Braudel continue to enjoy plenty of readership, at least among fans of history and management theory if not from economists, Polanyi's work is increasingly buried in obscurity. Braudel has a research center devoted to his work up at SUNY Binghamton university, while Chandler, still alive and teaching, has the unimpeachable institutional force of Harvard Business School behind him. Polanyi's biggest fans might get no more impressive than the constructivist sociologists associated with Michel Callon and Bruno Latour. Callon in particular has recently made markets a major concern of his, advancing a theory of a *performative* economy. The constructivist's stand slightly outside the mainstream of sociology though, and inside that mainstream there is indeed more insight to be found, both markets and more extensively on networks. The two collide most explicitly in the work of Harrison White, where markets are seen not as being networks themselves, but as being deeply embedded inside of other larger networks.

All the work from Polanyi to White can be compressed to one crucial point, that markets can only exist within a particular set of contexts. They require a degree of peace, autonomy, and shared cultural understanding in order to emerge and function. But in order to fully get a grasp on how markets relate to their outside contexts it is necessary to first know what markets are. John McMillen provides an excellent launching pad in that

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regard:

A definition of a market transaction, then, is an exchange that is voluntary: each party can veto it, and (subject to the rules of the marketplace) each freely agrees to the terms. A market is a forum for carrying out such exchanges.

Now that definition carries some politically loaded assumptions that are somewhat irrelevant to the task at hand. There is a certainly a level at which many people feel they are not voluntarily participating in market transactions, but instead are forced to by culture. "Voluntary" and "freely agrees" are best seen as being local decisions. Maybe you don't want to have to use money to get food, maybe you think there is a better way. But when you are standing in the supermarket checkout you willfully hand over your cash or swipe your card in order to get those groceries. No one is literally holding the proverbial gun to your head. You might not like the context of the choice you make, but you are quite willing to go along with the local results, cash for food. There maybe plenty of indirect energy making you act in a somewhat involuntary and unfree manner, ie your rent is due or you'd rather not deal with these bastards but they are the only ones who have what you need, but when it comes to the direct energy placed into the transaction it is all voluntary. Both sides come to an agreement to the exchange

without explicitly being forced into it.

So a market is a forum for exchange, but just what is getting exchanged? Here is where it gets tricky. Clearly some sort of goods or services are being exchanged. Maybe someone is buying widgets or Pez dispensers, or pork bellies. Trace out the connections that lead to this exchange and you'll draw yourself a simple network. But what actually makes the market function is not the exchange of goods and services, exchanges that can be seen as transfers of energy between buyer and seller. No *what makes the market function as a market is the exchange of information*. Information about price, and information about those values that might determine price. Trace out the path of the information as moves from party to party and you will also get a network, and it will not be the same network you get when tracing the flow of goods and services. Both networks are integral to the market, and both operate in a tightly coupled relationship, an uneasy feedback loop.

What in the world is an “uneasy feedback loop”? Well it's a figure of speech not a technical term. A feedback loop is of course a technical term and it describes a situation where two things (and I use that in the roughest sense) are in a relationship where they both react to each other. The input feeds back into the output, which feeds back into the input until infinity. When you hear the most famous example, the guitar feedback

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mastered by the likes of Jimi Hendrix and My Bloody Valentine, what you are hearing is pure amplification. The original plucked string fades into history, it's sound sent to a speaker via an electric pickup, and when the guitar is too close to that speaker that pickup also pickups up the sounds of it's own amplification. That of course gets sent back to the speaker, amplified more and picked up by the pickup again. From the text of it sounds like it might explode, but instead you get the high pitched squeals that Hendrix managed to ride so well.

Guitar feedback is an example of what is called positive feedback, where each round through the feedback loop pushes both things in the same direction. The somewhat misleadingly titled “negative feedback” actually tends to be the more useful type of feedback. In positive feedback, the two things are both pushing the signals in the same direction, the guitar pickup and the speaker (or really the speaker plus the amplifier) are both means of amplification, they are taking an input and making it louder. In negative feedback the two things are self-regulating. The canonical example is a thermostat, the device that regulates the temperature in many homes and offices. The two things in a thermostat are a thermometer switch and a heating device. The temperature you set on the thermostat as your desired one is not what the heating device puts out, but instead a threshold. If the temperature drops below the threshold the thermometer switch opens up, causing the heating device to pump out

hot air. As long as the temperature stays below the threshold the thermometer switch stays open. As soon as it crosses the threshold though the heat is cut off. If the room cools enough to cross back below the threshold, boom the heat is back on. That's self-regulation at its most basic.

Markets are very much self-regulating, but they are in no way basic. Let's return to the uneasy feedback loop. In it are two things, two networks, one of goods and services being exchanged and one of information about those goods and services being passed around. And the relationship between these two networks is uneasy not because it's a positive feedback loop, in most cases it is not, but because the two networks operate on two wildly different scales. The network of information scales exponentially, each exchange of information potentially creating more information, while the network of exchanges scales additively.

Every physical exchange, every transaction, produces a bit of information. When your friend buys a Japanese track bike for \$500, he gets a bike and the seller loses a bike. But both the buyer and seller keep the information that it cost \$500. Your friend might tell you too, so now three people know. What about if you want to buy the exact same model of bike? Knowing that your friend paid \$500 becomes valuable information. So does knowing that someone else bought that model

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for \$600. The dealer knowing that you know that your friend paid \$500 is also information. Maybe you also go online and find out that the bike only costs the dealer \$200, that's also information. Maybe you decide it's better to buy them directly and sell them for \$400. That is also information and it is probably quite valuable to the dealer and maybe knowing that he'll start selling the bikes for \$350 just to keep you from becoming competition. Of course if you know that information then you might not want to go into the business in the first place. It all gets very messy very quick, and all the while you still haven't exchanged that money for a bike have you? The information multiplies upon itself while the transaction does not even need to happen.

Now sometimes information does trigger a transaction. Maybe it's seeing that "Hot Deals" sign in the window, maybe it's knowing that Scarlett Johansson bought a pair of those jeans last week, or maybe it's just knowing the battery life on that new cellphone. There are always bits of information that trigger sales. But most information does not trigger anything except more information. A transaction on the other hand, every single transaction, produces at least one piece of information, and usually far more than that. Information also generates production, so there are points where say a sales chart could translate into thousands of new units in one swift point. But as soon as those units are back on the market each and everyone is back at

work generating more information upon more information.

Imagine tracing out the network of a Japanese track bike someone just bought in the Lower East Side. It spans half the globe, from the one man shop in Tokyo that made the bike, the painters who added detail, the racer who rode it for a season, the mechanic who buys used frames from racers and sends them to his friend in San Jose who resells them on Ebay for the American market. It may span the globe, but I did a decent job encapsulating it all in one comma heavy sentence. Maybe it should have been traced back to the iron mines, and stretched out to include the various components that are added onto the frame, but ultimately tracing the flow of materials, the series of actual transactions, is a manageable task.

What about if we want to trace the information that went into setting the price of that bicycle? Well then maybe we would need to look back to the bike maker's training in Osaka, his pedigree certainly effects the price. Has he made frames for champions. Did the racer win any races on that bike. Is the bike scratched or dented. What color is the paint? How much does the racer selling to the mechanic know about the demand for Japanese track frames in the United States? Does he know that they are the hottest ride on the streets of San Francisco? And if he does know does he care enough to change the price? What about the seller in San Jose, is he doing this to make

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money or is he doing it to promote the sport in the United States? And those buyers on Ebay what do they know? Do they like the way it looks, or do they just want to race? Do they have friends in Japan who could get one for them cheaper? Are there more of the same being shipped into the country or is this it, the last Japanese track frame in America? This information is potentially infinite. Each iteration multiplying in on itself. Like the amplification of Hendrix's guitar one wonders if it might just explode, but instead it finds its form, a price gets set.

So we have two networks. One of transactions, of physical goods and in the case of service of human energy moving around. A material network. The other is of information, of bits of data rapidly reproducing themselves across the entire marketplace, increasing exponentially with every transmission. The pacing and complexity of these networks is completely out of sync, an uneasy relationship. Yet generally they function like a negative feedback loop, a self regulating system that results in a price, or perhaps an array of prices.

Looking at markets as networks can tell us a whole lot about a variety of economic problems. It can also guide towards looking at markets not as something that is beyond our control or vested with the magical powers of an invisible hand, but instead as very real things. Things I might add as a designer, that can be shaped formed and designed, if not necessarily pre-

dicted. Understanding markets can help us answer some crucial questions (although I certainly can not promise to answer them all myself). Why do markets work? And why don't they work? How do prices get set? How do they change? Why did the planned economies of the Soviet Union fail so miserably yet the planned economics of Wal-Mart work so well (for the shareholder at least)? Perhaps more important it should at least give us a start to answering the question, what can we do about markets? Can we design to improve markets? Or maybe we can design around them?

For most of the twentieth century thinking about markets could be roughly divided into two camps. Those with faith in the invisible hand wanted markets to be left alone. Doubters saw the need for some intervention though, practically always undertaken by the government. On one end of the spectrum was the centrally planned economies of the Soviet Union and China. On the other end the libertarian fantasies of Ayn Rand. Western countries trended towards that libertarian side but the highly pragmatic forces of government never let control slip away completely from their grasp. The Soviet Union and China's experiments failed rather publicly, China's went away rather calmly while the Soviet's went out with a rather spectacular bang. That collapse has shattered our thinking on markets. For market fetishists history was over and they had won, all that was left for them to remove was the stubborn pragmatic prac-

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tices of socialism. On the level of theory all that market critics could muster could be written off as a feeble "markets are bad and we don't really know what works better". But are markets really good or bad? How can we even understand enough to make that judgment?

Let's actually start with another question. Why can FedEx operate a highly centralized distribution network when the Soviet Union failed so dramatically? Now the collapse of the Soviet Union is an incredibly complex and interwoven story, but there is very little question that their repeated failures to administer a centrally planned economy had a large role in the process. When the Soviet premier Nikita Khrushchev visited the United States in 1959, he allegedly was convinced that the supermarket he visited was an elaborate Potemkin Village, a staged political prop designed to make the west look good.

Fourty years later it was another supermarket that deeply affected the soon to be Russian president Boris Yeltsin. Unlike Khrushchev though Yeltsin understood the implications of an ordinary US supermarket succeeding in filling the shelves when over half a decade of Soviet planning had failed. "They had to fool the people," he told a college as left town "It is now clear why they made it so difficult for the average Soviet citizen to go abroad. They were afraid that people's eyes would open." A few years later Yeltsin was leading the Soviet Union to it's

break up and Russia into a tumultuous entry into the world of unconstrained markets. As for the opening eyes, history as yet to let Russia settle in to its post-communist fate, but there is a Russian joke that might tell us a little: “Everything they told us about communism turned out to be false” it starts out “but everything they told us about capitalism turned out to be true.”

Now Russia’s post-communism failure to create anything remotely like the markets found in western countries can tell us a whole lot about the need for markets to be culturally established before they can emerge, but for the moment let us look at the failure so of the planned economy during the communist period. Only months before become the first leader of the Soviet Union Lenin wrote about the transition to a planned economy stating that “the bookkeeping and control necessary for this have been simplified by capitalism to the utmost, till they have become the extraordinarily simple operations of watching, recording and issuing receipts, within reach of anybody who can read and write and knows the first four arithmetical rules.” But standing in those supermarkets one must imagine that neither Kruschew nor Yeltsin would have been able to agree with those sentiments, for the Soviets inability to run the economy had

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become a fact obvious to nearly all observers.*

Yet in 1917 Lenin’s observations were hardly his most revolutionary statements, but in fact were quite logical progressions from the facts of economic development. For almost a century industrial expansion had been marked not so much by markets, although they certainly expanded as well, but by centralization. Centralization not in the hands of governments, but in the hands of businessmen. From Standard Oil to AT&T the industrial age brought about a remarkable concentration of production and distribution processes into the hands of a few organizations. Organizations that were managed not by the bottom up magic associated with markets or the democratic consensus of liberal governments, but by the centralized command and control systems not particularly different than those of a totalitarian regime. How much different is a command and control country from a command and control company? How much different is a cartel of cartels from a just plain cartel? If Rockefeller could control oil, Carnegie steel and Duke

* Ironically enough it was the most stringently anti-communist observers who insisted on the strength of their system. How else could they justify the amount of money, energy and hatred they directed toward the Soviets? A Soviet Union collapsing internally just could not fit into the cognitive model of those who were convinced of the need to aggressively wage a cold war.

tobacco, what was to stop Lenin and his people from running Russia the same way?

The answer, or at least part of it can be found in the two uneasy networks weaving together to form the markets. There is the slower network of physical transitions and the explosive network of information. Perhaps it violently simplifies history into too much of an abstraction, but the extensive centralization and consolidation that marked those decades around the turn of the century were marked by constant expanding of the physical network obtained by careful modulation of the information network. Alfred Chandler offers an extensive account of management's rise to power in *The Visible Hand*. Standardization and advanced accounting techniques followed by Taylorization and the assembly line all combined to reduce the variables in the production process. Parts matched up smoothly where confusion once reigned, numbers matched up where previously wild guess work provided the only clues.

Perhaps one of centralization's successes comes from relatively recent times though, and that is Fed Ex, the overnight package delivery company. And understanding just why Fed Ex works so well can help us understand just why the Soviet Union failed so conclusively. Fed Ex revolutionized the package delivery business by setting itself up with one central hub in Memphis

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through which close to all of its deliveries are routed through.* But Fed Ex is able to achieve this remarkable centralization only through a radical collapsing of the information involved. Fed Ex doesn't care what is inside of a package, but instead used the package as a means to reduce information. Everything inside that box gets reduced down to one unique identifier, one unit of information to encapsulate everything the package might contain.

Fed Ex is certainly not the only innovator in this regard, but in fact merely was refining a system that has been in development far longer. The first revolutionary act belongs to a humble postage stamp commonly called the Penny Black. Before the Penny Black the mail system was a baroque system in which prices were calculated separately for every single letter posted. Distance, weight, tax, and bribery were all factors. The sender might never know what the final cost of delivery might be, for the old system required that the recipient pay, no one would trust a messenger to actually deliver something if they had been

* There is of course a degree of decentralization, a package going from midtown Manhattan to downtown Manhattan is not going all the way to Memphis and then back overnight, but is instead stopped at smaller hub en route and sent back out overnight. But a package from say Manhattan to Philadelphia may well go to Memphis and back.

paid in advance. With the Penny Black, often seen as the first postage stamp, the British Postal Service changed the system radically. From here on in the sender tended to pay, and what they would pay was a flat fee for any object smaller than a certain set of size and weight specifications. Whether the letter was going to the next block in London or from the southern tip of the nation towards the industrial north of Manchester was irrelevant, the cost was the same.

With the Penny Black the amount of information the postage service needed to deal with in each letter collapsed dramatically. And with that collapse in information came a dramatic rise in it's ability to handle mail. The more letters that go from place to place, the more information there is circulating. But the post office does not care, for their system is successfully insulated from that information by a layer of envelope and a simple postage stamp. The system does however encounter a certain expansion in information as soon as certain thresholds of weight and size are passed. The shear physicality of the objects forces the amount of information involved to increase. Letters are light and discrete enough so that a postal service can process them all identically as if they are the exact same type of unit. But when packages get large or heavy enough they literally force the postal services to handle them differently.

A very similar process has happened in the sphere of long dis-

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tance shipping over the past half century. In their case the unit that arose was the rather generically named “container” or ISO container. To understand just how this changed the world of shipping, think back to the last time you moved homes. There is a good chance you used a moving van or truck of some kind and filling that vehicle was probably a rather haphazard affair. Some of your boxes probably stacked up nicely, but what about the furniture? Were there some loose items? What about boxes that needed special care and attention? Strange shapes and odd shoving may well have gotten involved, no?

Ok so hopefully you have a mental picture of a packed moving truck in your head. Now imagine that truck on the scale of an ocean going vessel and maybe you will have a sense of what shipping was like before the first container ship left Newark, New Jersey in 1956. Presumably a port was better managed and planned than a man with van operation, but fundamentally the process was the same, pack everything in as best you can. Each object had to be evaluated and it's place in the hold calculated. Bales of cotton were handled differently than barrels of beer. To make it all work a massive amount of human labor was required. The docks of a port were vibrant places, filled with longshoremen and stevedores, whose livelihood was the loading and unloading of ships. While the scale of the goods being shipped might have been massive, the work of loading and unloading were distinctly human in their scale.

Flip through historical pictures of any portside neighborhood and you will see images of vibrant neighborhoods, bustling with activity. Head to one today, say the Red Hook Terminal in Brooklyn or the Port of Oakland in the San Francisco Bay, and you'll likely stare in silence through gates, parking lots and rows of upon rows of containers. The amount of information that the shipping companies need to deal with has decreased radically since the advent of the ISO container, and with it so has the human activity on the docks. Suddenly a load of bananas could get loaded up exactly as if it were a load of cotton, and can be handled mainly by machines. The results are not exactly something easy to judge in terms of good and bad. The amount of work in port communities has dropped radically, but longshore work has always been backbreaking and dangerous labor. The neighborhoods often suffer in the short run, but may well have greater potential as residential waterfront rather than industrial waterfront. And there is no question that movement of goods across the world has skyrocketed with the new ease in which it can enter and leave ports via those ISO containers.

Pull back a little to our two networks and you can see a clear trade off in the containerization of shipping. The amount of information needed to move cargo was reduced dramatically, allowing for a rapid increase in efficiency in the physical network

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of point to point movement of goods. Pull back again to our question as to why the Soviet Union failed so drastically in its attempt to centrally control the distribution of goods. While the physical problems of distributing goods across a country, even one as large as the Soviet Union, are not quite as trivial as Lenin made them out to be at the onset of the Russian Revolution, they are in fact quite solvable problems. Not the physical networks involved were not what tripped up the grand Soviet plans, although they certainly without their own problems. What made the problem unescapable was in the information network necessary to coordinate the physical distribution.

Consolidating and controlling an industry of some sort is not an easy task, but it is a doable one and one that has been repeated throughout time and across the globe in the past century. And on a smaller but still grand scale plenty of large firms have built up extensive command and control based infrastructures that send massive amounts of goods across the world. But in order to reach that scale it is critical that they reign in the multiplication of information through the system and reduce the necessary information down to a manageable form. The expansion and centralization of industry in the late 1800's and early 1900's that must have vested Lenin with much of his overconfidence in the powers of industry, did not occur evenly and out of the blue. Rather they occurred (and sometimes never occurred) at different times in different industries and always

were triggered via a very particular alignment of industry specific factors.

The Soviet assumption was two fold, one was that they could duplicate western industrial successes and make them work within their system. They sometimes succeeded quite well in this, but the second assumption proved quite problematic. The second assumption was that one enterprise and just one, the government of the Soviet Union, could manage all the diverse and different industries that make up an industrial economy. Buried within this assumption is another one that I doubt the soviets ever consciously made, that information only increases additively. In other words that the amount of information involved in two industries being managed separately is the same as when those two industries are being managed under one authority. Nothing could be further from the truth, for information has the capacity to increase exponentially at any given juncture. The very act of information being passed on to some central point creates even more information that might need to be taken into account. By collapsing the information that tends to be distributed across multiple markets into one centralized system, the Soviets created an unmanageable information problem. Perhaps then the extremes of blandness these systems inflicted on their populations can even be seen as attempts to manage the proliferation of information, although it might be a mistake to let the political philosophical reasoning

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behind it get off to easily.

This is not a particularly new observation that the centralized economic planning system failed to adequately deal with multiplication of information. The Austrian economist and political philosopher, Friedrich A. Hayek first laid much of it out in a 1945 essay “The Use of Knowledge in Society”. Hayek is a curious intellectual and that particular essay marks a rather peculiar point in his career. Hayek is perhaps better known today, than he was in his lifetime, with the exception perhaps of the period right when that essay occurred. Hayek’s contemporary fame and renown has far more to do with his libertarian political stances than with the economics that he intertwined with them. But in 1945 Hayek was at the height of his reputation among economists, having just published his most famous book *The Road to Serfdom* a blistering attack on socialism, that sells briskly today here in 2006. With that publication Hayek was actually well on the way to transforming himself from an economist into a political theorist, but he had one last economic point to make, one that ensured his alienation from economics for quite a while.

In “The Use of Knowledge in Society” Hayek makes several crucial points. One is that the price system is “a mechanism for communicating information”. That’s a familiar Hayek theme although he probably expressed it best in this particular essay.

As usual although without much of the excess polemics he usually brings he extends that observation towards infinity, into an argument that no centralized authority can ever manage that information the way the price system can. In the case of the Soviet Union he probably was correct, but Hayek's libertarian arguments tend to collapse in the middle ground, never addressing how much private centralization is involved in markets, and never quite reaching that perhaps impossible task of proving the impossible. It is the last set of points though were Hayek managed to alienate those economists who really should have been his main fan base as he moved into more explicitly political territory.

In a few short pages Hayek ripped into the increasingly mathematical approach of neoclassical economics, attacking the sacred cow, general equilibrium theory. Hayek of course not alone in this position, his critique can sit nicely beside Thorstein Veblen and Herbert Simon's as a classic in pre-autistic economics. But Hayek reasoning is quite different, he does not it seems critique because he wants to, but perhaps because he feels he has too. One gets the sense that he actually likes the general equilibrium theory, or at least sympathizes with its approach. But politically it can not stand, for if prices can be predicted using a mathematical economic model, than markets are theoretically unnecessary. One could just use the equilibrium theory to assign prices from some centralized location if one has the

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computing power to do the calculations. It's easy to forget in an age where economics has an almost knee-jerk association with conservatism, but many of the key pushers of neoclassical economics, Leon Walras and Paul Samuelson in particular, were socialists by nature for this very reason. So perhaps it was only in response to this threat that Hayek was capable of generating the insights of the market as a mechanism for communicating information, or in more contemporary terms a network. In the end Hayek's motivations and politics are of little concern to our inquiry, nor for that matter is general equilibrium theory. The market is a network, or a set of networks, let us continue, with Hayek as just the beginning:

We must look at the price system as such a mechanism for communicating information if we want to understand its real function—a function which, of course, it fulfils less perfectly as prices grow more rigid. (Even when quoted prices have become quite rigid, however, the forces which would operate through changes in price still operate to a considerable extent through changes in the other terms of the contract.) The most significant fact about this system is the economy of knowledge with which it operates, or how little the individual participants need to know in order to be able to take the right action. In abbreviated form, by a kind of symbol, only the most essential information is

passed on and passed on only to those concerned. It is more than a metaphor to describe the price system as a kind of machinery for registering change, or a system of telecommunications which enables individual producers to watch merely the movement of a few pointers, as an engineer might watch the hands of a few dials, in order to adjust their activities to changes of which they may never know more than is reflected in the price movement.

Of course, these adjustments are probably never “perfect” in the sense in which the economist conceives of them in his equilibrium analysis. But I fear that our theoretical habits of approaching the problem with the assumption of more or less perfect knowledge on the part of almost everyone has made us somewhat blind to the true function of the price mechanism and led us to apply rather misleading standards in judging its efficiency. (Hayek, 1945)

Perhaps Hayek never knew it, or perhaps he disliked the term, but what he is describing is a network. A dense network of interconnected pieces of information that intersect in curious mathematical points known as “prices”. We often say that prices were assigned or perhaps we look at them as having emerged, but it might be more accurate to look at them as having been

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captured. A price is an intense condensation of information down into one discreet and mathematically manipulatable unit. The process of transforming the network of information about a product into a price is almost an act of violence.

The network of information extends towards infinity, an overlapping and interlocking trail of data that few people ever bother to trace fully, if in fact that is even possible. When a price gets set the product is essentially cut loose from those trails and forced into a number. The buyer may choose to reconnect to the network and chase the trails on their own, but the price itself marks both the culmination of the seller’s knowledge and the cutting off of the object from the network and into one specific price point. Hayek is entirely correct to stress that this knowledge is never perfect, and the idea of prices as a “machinery for registering change” is rather stunning in its beauty. But one has to wonder just what the process is by which the price becomes “only the most essential information”. How is it that a machinery for registering change can transform imperfect information into the “most essential”? Not being Hayek I doubt it is a question I can answer, but there is still plenty to be gained from going thicker into this machinery, plenty to be gained from exploring the network.

So far we have talked about the networks of information and the networks of physical transactions, but what about a net-

work of prices? Clearly prices are information and thus an integral part of that network. But if prices are captured, there is a separation, an extraction from the network as well. Not only can prices be looked at as an individual network on their own, but that network can be viewed far more distinctly easily than the fuzzy fractality of the full information network the prices are embedded in. Hopefully you as the reader will not be too offended if we give this network a rather obvious name, let's call it the *price network*.

A network needs two things, a point or node, and a connection or lines between the nodes. In the price network the prices are quite clearly the nodes, but the lines are perhaps a bit trickier to encode. What connects the various prices, the various nodes, is the transformation between one price to another. The lines trace the movement of a good or service from price point to price point until that good or service is taken off the market. Taken off the market often means it gets sold. But one can never assume all goods get sold, some decay or break, others get forgotten or lost while still others just get tossed in the trash.

The transformation from price point to price point can sometimes be quite simple. Retail stores for instance often have a set mark-up they apply to all goods coming in. A shipment of handbags for instance might be marked up 250%, so if they come in \$300 the entire order quickly gets transformed into

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\$750. If those handbags sell at a nice steady pace that's pretty much the end of story, a convergence on one price of \$750. But what about if they sell poorly? A few might sell at \$750, but then what? Odds are the store will eventually put them on sale. 20% off, a few more sales. Bring it down to 35% off, a couple more. 50% off now things are moving. Perhaps maybe that clears the store. But perhaps the goods just never get sold. Maybe they get given away as gifts to the staff. Maybe they sit in a warehouse for ever. Maybe they get sold to an odd lots company that sells them for \$20 to flea market dealers who try and charge \$50 but can be haggled down to \$25 by the right shopper.

Say you map this network by showing only the last transformation. You would get a set of lines pointing to nodes where the goods have either already sold or are currently priced at. If all the lines point towards the very same node, than there is a very clear sense of the value of an object. Perhaps everywhere you go in the world the price of a prophylactic is \$1, in that case the you could actually make a nearly impeccably strong claim that the value of a prophylactic is \$1. But what about that handbag in the previous example, what is its value? Is it the \$25 that the skilled haggler in a Denver flea market can get the bag price down to? Or is it the \$750 the store pushed so hard? Maybe it's really \$375 the price that more bag than any sold at. How about none of the above. In the network there is no need for

the bag to have value at all. It is in fact free to have multiple prices at the same time and therefore different values to different people.

Now the fact that an object might have different prices depending on circumstances might seem self evident, but it a concept that conventional economic price theory has a rather difficult time handling. Central to the general equilibrium theory by which prices are supposedly set is the idea of a “market clearing price”, a magic price generated by the market that manages to satisfy all buyers and sellers. Now prices across a market will almost always move in sync with each other and have for centuries, but they almost never fully converge into just one price. They come closest perhaps in large organized markets like the New York Stock Exchange (NYSE), but even then they make a mockery of the idea of equilibrium.

On the NYSE for instance there is never one price for a stock but instead a whole array of them. There is always the bid price,

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the offer price, and the print price.* Those same stocks also trade on several other networks, all of which have slightly different rules and prices that might vary slightly from that on the official NYSE exchange. While these multitude of prices might all hover closely around a particular point, they practically (and perhaps actually) never will fully converge on that point. Furthermore they only are able to reach a state near to one of full convergence by a constant variation through time. Often this variation is quite the opposite of what one would consider equilibrium, something perhaps far better termed volatile. If the market is really achieving prices that satisfy all buyers and sellers then it is going to have to do it not through achieving an equilibrium or market clearing price, but through producing a multitude of prices for various parties at various times and places.

* The bid price is how much a “market maker” or broker is willing to pay for a stock. The offer is how much they are willing to sell it for. They make much of their profits on the spread, the difference between these two prices. The bid and offer prices are the “quote” prices. The print price, or “last sale” is the price that the last executed trade was at, this may be the same as either of the quote prices, but does not need to be.

Networking Prices

By looking at prices as a network we can ignore the entire concept of an equilibrium entirely and instead look at prices as the dynamic and ever varying things that they actually are. Furthermore I suspect that the math of networks, often called graph theory, might offer a far more accurate and useful price theory than what presently exists. While the mathematics of it all is way beyond the scope of this essay, I can at least offer a rough beginning to this project.

The physicist Albert-László Barabási has done extensive work in the mathematics of networks over the past decade, work that collected and popularized in his 2002 book, *Linked*. Prior to the work Barabási and his colleagues embarked upon in the

1990's, networks (or more accurately what are know as distributed networks)* were often considered to possess a rather radical equality. Nodes in the network were all expected to have roughly the same number of links between them. In mathematical terms the number of links for each node was anticipated to follow a bell curve distribution. But when researchers like Barabási started to look at actual distributed networks, the internet being the biggest and most famous example, nothing could be farther from the truth. Rather than possessing and intrinsic equality, they seemed to be defined by the opposite, an extreme inequality. Instead of following a bell curve distribution, it follows what is known as a power law distribution.

The best illustration of just what a power law is and what it implies is a scenario called the architect's nightmare. The height of humans currently follows a bell curve distribution. Perhaps you remember bell curves from somewhere in your education, unsurprisingly they look a bit like a bell, or at least the profile of a bell drawn in two dimensions. On a graph a curve like this means most of the data falls in center, with only a small

* A distributed network is a network in which an particular node can potentially connect to any other node in the network. It can be contrasted with more structured networks, particularly centralized networks where all nodes point towards on center node.

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amount spreading out to either edge. In America the average height of an adult is somewhere under six feet. There are very few adults over seven feet or more than a few inches shorter than five feet. All an architect needs to do is make the doorways over seven feet and the door knobs low enough so that say an six year old can reach them and the doorway will work. If height followed a power law distribution, our architects would be working on nearly impossible tasks. The bulk of the people in world would still be around the same height. But there would also be a bunch of 20 and 30 feet people around, in your high school homeroom of about 20 people say, maybe three or four of them would be clocking in in that range. If that the entire grade has about 200 people, one or two of them would probably be a whole lot larger, maybe around 100 or 300 feet tall. In the whole school there is probably someone who reaches all the way to 1000 feet. And then if you are cutting class and running around the city, well every once and a while you might see one of the 10,000 foot people, it'd be rare, sort of like seeing someone who is six foot ten, and it'd probably be hard to see them smile, 10,000 feet is nearly two miles high. Even those giants though would have difficulty talking eye to eye with that one 100,000 foot tall person roaming around. And just what architect is going to build that building where the 10,000 footer, a couple 100 footers, a handful of 40 footers and a whole ship-load of six footers can all go to school together?

Lets sit back down in a chair a more comfortable 16 inches off the ground and explain why this wild speculation is relevant to our network of prices. When Barabási started looking at distributed networks like the internet he saw power laws everywhere. Map out the links between webpages and you will get a power law. Sites like Google and MySpace are the 100,000 footers, pulling in massive amounts more links than say ABCNews, which is still pretty impressive standing around the 10,000 foot mark. Some of the biggest blogs reach those heights too, but many fall closer to the 100-1000 range, and well most of them, the ones that only your 5 friends read, or that you started for two months and gave up on, well they clock in down at that six foot range of a normal human. Now if this power law just showed up for websites and nowhere else, well it might be interesting, but it probably would not be relevant to our problem of a network of prices. But it turns out that power laws show up nearly everywhere distributed networks are found. To pull things back to economics, the power law distribution is sometimes known as a Pareto distribution or 80-20 law. This comes from the observation by the Italian economist Vilfredo Pareto that 80% of the wealth in Italy was in the hands of just 20% of the population. It is an observation that holds quite true in America today, and across the globe as well. The power law distribution is indeed the distribution of radical inequality when it comes to money, but what happens when applied to prices?

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Rewind a little bit and remember that we looking at a network composed of price points and connected via the transformations from one price into another. What is interesting about a power law distribution in this context is that it provides the potential mechanism by which multiple prices can exist for a particular item, yet one or several of those prices can “rise to the top” and generate something of a stable price. In other words if the network of prices generates a power law distribution it can generate something resembling an equilibrium convergence around one price, but without all the trappings of the general equilibrium theory. And as Philip Mirowski (1991 and also 2001) has so extensively and rigorously shown, the trappings of general equilibrium theory are extensive and sometimes painful. Economics it is sometimes said suffers from “physics envy”. But what is curious about this physics envy is that the physics being emulated is physics circa 1870. The general equilibrium theory is a sloppy emulation of the laws of classical mechanics. Economics has yet to reach it’s theory relativity, the point physics hit right at the turn of the 19th into the 20th century, let alone it’s quantum stage. If economics wants to emulate physics it’s got a long way to go.

The market clearing price is one of those trappings of the general equilibrium theory. We live in a world in which different people see the same objects quite differently. What might be worth thousands to one might only be worth a few hundred to

another person. But neoclassical economics is obsessed with the idea that the market should produce one and only one price to satisfy all parties. Nevermind the fact that prices are constantly changing as they travel through both time and space, as well as when they enter into the realm of person to person negotiation.

To look at prices as a network is in this sense profoundly liberating, for the prices themselves if not for humans. Suddenly an object can take on multiple prices for various situations, perhaps getting more expensive for the luxury market and cheaper for those in need. This sometimes happens already, well endowed universities in America, when functioning well, provide quite different prices dependent on the needs of each student. Perhaps they would phrase it differently though, in many regards they go great lengths to maintain the illusion that only one price is offered. Similar situations often arise in establishments that cater to multiple audiences, say a restaurant that has a set of local clientele and also tends to attract wealthy visitors during certain times. The menu might show the same prices, but when the check shows up the regulars quite likely will find certain items made it to their table quiet nicely but somehow forgot to show up on the bill. On one level it's just showing appreciation to frequent customers, but on another it the generation of a whole second pricing structure, a way to adjust to the different needs and situations of different people.

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So just how might this network of price points work? What are the mechanism by which prices emerge and cluster? Barabási in his work has produced several models for the generation of what he calls scale-free networks, or networks that follow power law distributions. There are two core components to these networks. One that the networks are growing (or perhaps shrinking) over time, as opposed to being generated all in one shot. Two that the connections in the network, the connections between nodes are generated by a process of selective attachment. That is to say that nodes as they are formed are more likely to connect to some nodes more than others. In Barabási's terminology this selective attachment is marked by the fitness of any given node. A more fit node will attract more links to itself than a less fit node. What is intriguing about Barabási's model is that if these two criteria are met, and no other countervailing force is involved the network that emerges will always follow a power law distribution. If links from website to website involve some sort of preferential system, the resulting network will never, ever resemble a bell curve but will instead more closely resemble that 80-20 unequal distribution of wealth. Unless that is, and this is a big if, there is some other factor involved in the generation.

Now lets map this model over to the world of prices. Prices are constantly changing and new items constantly being intro-

duced into the market so the network is clearly growing and shrinking. And some prices are quite clearly more favorable than others, so there is indeed a degree of preferential attachment. That means unless there is some other counteracting force involved in the network formation the distribution of prices should form a power law. This in turn means that a network of pricing information can easily produce a prevailing price, a price that is radically more fit than the others and as such can be seen as dominant. Barabási has gone as far as proving that it is mathematically possible for a scale-free network to result in one node claiming all the connections, although in reality this seems to rarely, if ever, happen. A more common scenario is that several nodes predominate. In the case of say a new sweater these could be the prices that follow a certain pattern, the wholesale price offered by the manufacturer could be one. The discount price they offer Wal-Mart might be a second. The third is likely the suggested retail price. These are the prices that most of those sweaters get sold at. But they are not the only prices, there are in fact many more. Extra expensive ones sold to tourists in airports, cheaper ones sold at end of season sales and in discount outlets, random ones picked by confused retailers and more. The network of prices it seems has potential to provide a mathematical model of markets were there is no market clearing price, but instead a multitude, and with that perhaps economic theory can bring itself closer to reality.

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Interlude on Networks

Network. What is a network? Other than the hot terminology of the moment of course. It is a word that gets tossed around a lot, and is rarely well understood. I am certainly guilty of tossing it around a lot in these texts, so with some luck at least I try to help you understand it the way I understand it. Or understand them. A network, what is it? what are they?

First lets go the boring and safe route and see what the Oxford English Dictionary has to say. It has 13 different definitions just for the use of the word as a noun, and of those 13 a full nine of them are actually relevant to our use:

-A piece of work having the form or construction of a net; an arrangement or structure with intersecting lines and interstices resembling those of a net.

- A chain or system of interconnected immaterial things.

- Any netlike or complex system or collection of interrelated things, as topographical features, lines of transportation, or telecommunications routes (esp. telephone lines).

- Broadcasting. A broadcasting system consisting of a series of transmitters able to be linked together to carry the same programme; a group of radio or television stations linked by such a system; (chiefly U.S.) a large (esp. nationwide) broadcasting company which produces programmes to be relayed to affiliated local stations. Also (occas.): a nationwide broadcasting channel.

- Computing. A system of interconnected computers. Freq. attrib. local area network, wide area network: see the first element.

- An interconnected group or chain of retailers, businesses, or other organizations.

- An interconnected group of people; an organization; spec. a group of people having certain connections (freq. as a result of attending a particular school or university) which may be exploited to gain preferment, information, etc., esp. for professional advantage.

- Math. A graph, esp. a digraph, in which each edge has

associated with it a non-negative number (its capacity).

- Math. A diagrammatic representation of interconnected events, processes, etc., used in the planning of complex projects or sequences of operations.

Ok, hopefully you can get a sense of why network is such a tricky term to pin down. It can mean just about anything: “A chain or system of interconnected immaterial things”, “Any netlike or complex system or collection of interrelated things”, “A diagrammatic representation of interconnected events, processes”. But a few key features do stand out in that long list of definitions. “Inter” is key, plurality is key, a network is never about one thing but about multiple things that are connected. Lets make it really simple, a network is connected things. Lines and nodes. Things and the things that connect the things.

Still pretty much anything can be a network. No that is wrong pretty much any things can be a network. One thing can never be a network unless that thing can be broken apart. And if any things can be a network how is a network useful to us?

Well it’s useful because so many things are networks, or at least hold the potential to be networks. It is useful not because of the things though, the world is full of useful tools for addressing and understanding things. It’s useful because of the inter, the lines, the connections between the things. The world is not full

of useful tools for addressing and understanding what connects things together, and a network is important because it marks a start.

If you look back over that list of OED definitions perhaps you will understand just why we can not just throw the term network around casually (although of course we do anyway). A computer network is not the same as a broadcast network, the internet is not NBC, a LAN is not the BBC. Nor is a “system of interconnected immaterial things” the same as a “diagrammatic representation of interconnected events”. But that is where it starts to get more complex, for the math always has the *potential* to also offer an explanation or way towards greater insight into any other network. Yet having potential is not the same as a guarantee. If anything could hold this collection of definitions together, if anything could make these things a network, it is the math. But that is a wildly unproven proposition, we must be wary of thinking that one network might behave like the next just because of the math (although of course we do anyway).

Perhaps the most fundamental question we can ask ourselves about a network is, “is it real?” Some networks are, others are closer to imaginary, and distinguishing the two is often difficult, sometimes impossible and sometimes a very distinct possibility. A network can be said to be real if we can accurately

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identify the mechanisms by which all nodes connect to each other. We can call these networks *protocological networks* or *generative networks* because it is through protocols embedded in the nodes that the network is generated. Computer networks are the classic example of this, although the postal system or the hub and spokes system of a late 20th century airline are close too being valid examples as well. Computer networks are ideal though, because the protocols can usually be run entirely by machines and thus enforced with a degree of rigor that mere humans can not always maintain. A renegade postman for instance can opt to ignore his instructions, trash a load of mail and spend the day at the ballpark, while a digital router is far more likely to stick to the protocol in doing its job.

Most networks are not protocological at all, or at least have yet to be confirmed to be protocological but instead are what could be called *traced networks*. These networks can not be said to be real, although they certainly can be suspected of being so. In a traced network there is no proof that the connections are actually relevant other than the word of the observer. In other words what ties all the elements together is not necessarily inherent in the elements themselves, but instead has been applied externally. This does not mean that the network in question is not actually cohesive, just that we can not prove that it is. Yet a network by definition transforms a multitude of things into one, a bunch of nodes become one singular network. If that

cohesion can not be explained through protocol, through the nodes themselves, than it must be assumed to have been vested there by the identifier.

If one is identifying a traced network, perhaps you can say they are capturing a network, then it is critical that the *suspected* source of cohesion be identified. There are at least two very valid reasons for vesting a collection of things with the unifying identifier of a network. One is the belief that there actually is a protocol, but that it just has not been discovered yet. Another is that there is no actual cohesion to the network, the network is not real at all but instead an artificial construct used explicitly to collapse a complex set of objects and connections into one neat construct. While this can be an incredibly useful intellectual tool, it is absolutely essential to remember that such a network has no agency of any sort. The artificial network itself can not be used to explain anything, but rather any explanatory powers it possesses must come from somewhere, some mechanism, within the network.

The original networks were quite literally large workings of nets, and their home territory was the fishing villages and trading ports along the ocean. That the first real global networks to develop where in large part also tied to the sea via these ports is most likely a coincidence, although one wonders if the merchants saw echoes of their crisscrossed routes and exchanges in

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the netting holding down their cargoes. If their home was the sea then the home of the major protocological networks must have been the air, although early communications technology, from complex messenger systems to the telegraph wires where rooted to the ground. But the technology driven worlds of radio and television really forced protocols up into the atmosphere and with satellites beyond. The computer networks of course started on the ground too, but over the past few years are reaching for that wireless space as well, it is perhaps no accident that Apple brands its wireless technology “airport”.

The traced network really found its first home in sociology, a discipline, less concerned with the earth, sea and air and more perhaps with the ether. One might suspect their interest in networks originated as an attempt to figure out the mysterious workings of that mythical construct of theirs “society”. That might sound like a critique, but it is not for some of the journey’s they have produced have been truly fantastic, Howard Becker’s immensely enjoyable *Art Worlds* (1984) springs to mind first. Perhaps more importantly boldness of sociologists in jumping into the concept of a network has produced a wealth of insights and techniques from which to build on.

The finest articulation of the traced network concept is Bruno Latour’s (as a clear leader of a loose group) Actor Network Theory or ANT. Latour is by no means an uncontroversial figure

among sociologists to the point where it might just be best to not look at him as a sociologist at all, an idea he seems to flirt with then discard in his latest and most accessible work *Reassembling the Social* (2004). Indeed it is the terms that he brings in and then opts to discard that are most potent and telling in that book. Sociology Latour argues should no longer be about “society”, a concept, I might add, that is so broad and amorphous that it is better suited for explaining away than for actually explaining. Instead he proposes that sociology should be about *associations*, before as an aside wishing that he could use the rather glorious term “*associology*”. Instead he concludes “alas, the historical name is ‘actor-network-theory’, a name that is so awkward, so confusing, so meaningless that it deserves to be kept.” With a bit of research into the context though one sees that he really means something more along the lines of “I’ve tried to kill this dumb fucking name for two decades now, and it won’t go a way so I better just embrace it again”.

As one might gather from the name that historical Actor Network Theory name, associology is where the social sciences have really begun to grapple with the slippery concepts of networks. Not just any networks though but very explicitly just traced networks. I’ll let Latour round off the details here: “Network is a concept, not a thing out there. It is a tool to help describe something, not what is being described. It has the same relationship with the topic at hand as a perspective grid to a tradi-

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tional single point perspective painting: drawn first, the lines might allow one to project a three-dimensional object onto a flat piece of linen; but they are not what is to be painted, only what has allowed the painter to give the impression of depth before they are erased.” (Latour 2005, p131)

To distinguish these traced networks from the real, or in Latour’s terminology “technical networks”, Latour proposed and then immediately discards the simultaneously awkward and elegant “worknet”. Well perhaps it is more awkward than anything else, and in the end I doubt it will survive. Yet it does compress the sense that these networks, as identified by sociologists and associologists and other less disciplined people (like me!), are not real at all, but in actuality the products of people doing actual work in order to cast a net around some set of things. In other words worknets/traced networks are apparatuses of capture. Ways to take the amorphous and hard to pin down collections and trap them into one thing, into one network.

Ultimately though this capture holds its own trap, for if an actual mechanism of cohesion does not exist for the network, how does one know where the network ends? And how does one know if what is left out is just the necessary holes in the net or in fact whole collections of nodes? The question is really one of cohesion, the tracer is out to turn a collection of things

into one network and as such must provide some element of cohesion to transform many into one. The simple answer is to just pick one thing and generate the entire network out of connections going into and out of the thing. In an early work Latour himself chose Louis Pasteur the great French scientist. But this approach is clearly problematic, in that each connection tends to lead towards more things, things that each have their own potential networks. At some point the lines must be drawn and the work turned in to a publisher, or else the associologist themselves might perish. And it is exactly at this point that Latour finds his point of cohesion. What ties this network together should not be tied to any given point in the network, but instead is the book itself.*

Now it is pretty easy to frame that concept as critique, to frame it as a cop out, the associologist (and sociologist too) is out there trying to trace a network and it goes on forever so he just bounds it nice and conveniently where the book ends. But in fact it should not be seen as a critique at all but instead an act

* There is a very clear and interesting parallel with Deleuze and Guattari's overused figure of the rhizome, which they actually explicitly (if not particularly clearly) introduce as being a book. Interestingly Latour, who is familiar with their work does not seem to catch or acknowledge this, although he does occasionally give nods towards the rhizome terminology.

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of radical liberation. For the associologist in action is at high risk of trapping themselves into the network of their own devising. By seeing the book itself as the final point of cohesion suddenly they are free to stop pretending to be social *scientists* and instead become social *novelists*. If one stops to realize that sociologists are interested in gaining a fuller understanding of the world and that for centuries this sort of understanding has always been best communicated not via academic publishing but via literature then it makes absolute sense that the (traced) network in the end is a book.

None of this means that associologists should just go out and make everything up the way fiction writers do. No, just as good novelists often do extraordinary amounts of research, the associologist also must head out to the field and discover. A good novel after all must possess novelty, just as a good work of academic research must produce some new. This means in effect that the associologists actually possess a tremendous unfair advantage over traditional novelists. The associologist after all is connected to an extensive apparatus designed for the discovery of the novel, the poor novelist needs to go out and do all the work on their own. That massive advantage is quickly tossed out the window when one considers that becoming a sociologist requires an extraordinary indoctrination into techniques of bad writing. Latour, for all his attempts to the contrary, has not done anything to change this situation, expect perhaps to ac-

celerate it, and unfortunately I would probably be just as guilty were I actually to be a sociologist. Of course a little acceleration can go a long way too, perhaps sociology's problems might actually stem from being too adequate as writers. In fields where the writing is even worse, economics being the case to point, although physics and biology probably fit as well, it often gets bad enough that someone actually tries to make it better.

While early economics was blessed with a series of writers capable of writing decent prose, its movement deeper and deeper into the obscurities of math was met by a remarkable series of translators, writers capable of transforming the dense concepts of the field into crisp public prose. The latest example the ingenious Freakonomics tag team of an economist with a professional journalist, represents something new though, an attempt by economics profession to hijack sociology's turf. The battle lines were laid a few decades ago, when Margaret Thatcher, channeling Friedrich Hayek declared "there is no such thing as society. There are individual men and women."* When the Freakonomics team, channeling Gary Becker, says "incentives matter" this is ultimately their point, for neoclassical econom-

* She actually also added "and there are families" to the end of that, she was of course a diplomat. It also can be seen as a foot in the door towards a whole world of other *institutions*, a critical point elsewhere in this work.

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ics wants nothing more than to explain away society as the actions of selfish or hedonistic individuals. Out of all the sociologists it is Latour who provides the strongest strike back against this move, perhaps channeling Thatcher his argument can be boiled down to: there is no such thing as society, only networks.* But it is now left to the associologists, if any even exist, to tell that story.

* Latour does not say it quite that implicitly, one wonders if paraphrasing Thatcher would be too much even for his rather developed taste for the intellectual shock. His actual words are a bit more like this: "Conversely, when our definition of the social is retraced, the common definition of the social has to vanish first. It's hard to see a more extreme contrast: it is either a society or a network." (2005 p.131)

Economies of Design

Economics is nothing more than a set of tools used to understand economies. Some are physical tools, some are explicit models performed on computers. Others lie on a more philosophical level, as ways of thinking used to approach the economic subject. The exact same thing can be said about nearly any other intellectual discipline, but the tools of economics differ greatly from those used by say particle physics or literary theory in that the subject matter is directly, persistently and intensely relevant to our everyday lives. The modus operandi of economics, like most sciences, is to build highly specialized tools for use by a highly trained priesthood of sorts. Perhaps because it impacts our lives so greatly economics has had greater success than most fields in popularizing its ideas. But

economics popularizes itself not by making its tools open and accessible to the public but by dictating its ideas in a broadcast format. When we talk about economics by design the challenge is to design new tools for economics that are designed to be used, not just by specialists, but by the very people who are making the economy work, you, me and nearly everyone else in this world.

A design process often starts with a discovery phase, an intensive immersion into the space. The economy is a massive space, and the problems embedded within it scale way beyond those that designers are accustomed too. Yet when you start looking closer, start the discovery phase, there is a whole lot there that designers should find quite familiar. Economics is about goods and services, design is about objects and information. Economics is about production, distribution and consumption, design is about creation and use. Economics is a social science, it is concerned with how humans relate to the raw materials of the economy. Design is also a social science although it might not know it yet. It is concerned with how humans relate to the finished things that happen constitute a large chunk of the economy. So far a designer wishing to make popular tools for economists might find themselves on relatively familiar ground. The objects involved are practically identical although encoded in a slightly different language. A good designer is trained to learn the language of the client though,

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so so far so good. While they might look radically different on the surface, underneath the hood designers and economists are dealing surprisingly similar concerns. Until one gets to that problem of scale, and when you get there the similarities fall all apart.

Design needs to scale. Not just in terms of using design to look at the economy, but in general. Like neoclassical economics, design was once just about the individual and the object. But neoclassical economics always had, from its birth with Adam Smith onward, a favorite magic trick up it's sleeve. The invisible hand of the market is immanent in the neoclassical world, perpetually transforming the actions of individuals into global effects. Designers have nothing close, the elusive "brand" maybe makes an attempt, but it pales in comparison. Designers after all have deliverables, concrete goals to meet, discrete objects to produce. What do economists deliver? Economists work with quite real models and produce plenty of information, but they tend to deliver only abstract results. The goals of economists never have come close to the clarity and necessity of a designer's deliverables. And in many ways it is these deliverables that have had so much to do with preventing design from scaling, and they just maybe what allows them now to finally get that freedom.

Designs' ties to the individual and the object is clearest in prod-

uct design. The design of products was once the realm of anthropometry, the measurement of the human body. Did the hammer handle fit into an average male hand? Were the car seats wide enough for that average American ass? Are the door handles high enough for a tall man to reach without pain, yet low enough for an eight year old to reach up and grab? These were the sorts of issues a designer was concerned with in say the early 1960's and it was quite similar in viewpoint to how a neoclassical economist might look at design, in terms of individuals and static numbers. But design did not stay static but instead has evolved rapidly since that point. The first transformation was into ergonomics, whether that hammer fit into the average hand was no longer the only concern, motion and time needed to be factored in. What happens when that hammer needs to stay balanced when it is swung. And when it's swung again and again what happens to the elbow, what happens to the wrist?

Long before design ever came to full grips with the issues of ergonomics though, a whole new set of issues came crashing in. Graphic design has always concerned itself with information, but starting slowly in the 1950's and ramping up until it exploded in the 1980's and 90's the problems of designing information underwent a phase change. The traditional graphic design problems of posters and books, charts and letterheads, were measured slow and static challenges. But as communi-

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cations networks and computers expanded rapidly and then essentially merged into one, design plunged rapidly into the world of dynamic information. To design say a computer interface or website meant designing something not only to be used, but designed to be transformed. Often these transformations might be manageable and somewhat predictable, but then again sometimes they were not. Design suddenly came face to face with risk and uncertainty.

Risk was always present in design, the risk that the client would not like something, the risk that the message was unclear, the risk of a product being dangerous. But risk is manageable and predictable, designers, like any business people, developed ways to deal. Uncertainty is not predictable, perhaps it can be best viewed as what insurance agents and lawyers call "acts of god". Except that in the case of design, uncertainty could be better understood as "acts of creativity". What a business card or book is going to be used for is relatively easy to predict, but just what a program like Photoshop, or a site like MySpace will be used for is a whole other story. Just what sort of images the Photoshop user is working with is beyond the scope of the designer, as is the sort of content a MySpace user wants on their page, so it's up to the designer to create design an open ended and flexible tool that the user can co-opt for their own needs. Now an old school tool like a hammer actually has this very same flexibility, but what is different is the designer's relation-

ship with the user.

Say it's 1962 and you are buying a hammer. What happens if you notice a problem with it. Say the handle is not balanced right when for some reason you need to use it upside down. Maybe you are hanging out a window installing a flower pot, who knows? In any case what do you do? Maybe you call the operator, track down the plant making the hammer and reach a receptionist. And then what? What about if you write a letter, it will take some time. Then you need to track down the address of the maker and send it off to their mailroom. How often do you think the industrial designer received feedback? Not nearly enough most likely. Designers have known this is a problem of course and sometimes, when possible, constructed various user testing mechanisms. But here now in 2006 it's not always necessary. An email address or feedback form on a website shortens the feedback loop considerably. With that shortening of the feedback loop though, comes something even more important, a lowering of the threshold required to give feedback. It takes far less work to initiate the conversation. In fact in the case of a website it takes almost negative work, the user is transmitting perhaps more information than they would like to about how they are using the site. The connection between user and designer is rapidly approaching real time (whether it can reach real time is a whole other question of course.)

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Rewind a second and let us talk about economics again. What is the connection between economists and the people using the tools they design. Well it actually often is real time because economists often design their own tools for their work. But what about the relationship between the economist and the billions of people who are using the economy every single day? Does it even exist? It does of course, but what an awful feedback loop it makes. The tools of the economist come out in specialist journals and books and then filter through professors, occasionally come out in populist books, articles, blog posts and get filtered through the media. And how do the billions of people using the economy communicate back? Well they get transformed into economic data at some point, become a tick in a database, a number among numbers in some graph. Sure they could try and write an email or two, but it is hardly a synchronous relationship is it?

Perhaps that sounds like a critique of sorts, but really it is not. There is always a need for specialists willing to travel far and deep along a particular path. To become as obscure as many corners of economics have. What economics needs is not a transformation, the tools it has developed have their particular uses and need to continue their own development. No what economics needs is an opening up. Economists are designers already, they are not the ones that need a design intervention. It is economics as a concept that needs to be addressed. And

designers are uniquely situated to be the ones doing the opening, for better or for worse.

Information design may be fast heading to some sort of synchronicity, a complete feedback loop between user and designer. But what about material design, what about physical products? For a long time the designer was just a gatekeeper of sorts, raw materials were selected, transformed and shipped out the door then forgotten. A small amount of feedback was established and maintained with user testing and with a lessening of the barriers for users to establish dialogues with the designers. But designers have increasingly woken up to the fact that where those raw materials come from and where those finished products wind up when finished or discarded, is damn important. To design a good product doesn't just mean something that does it's job well, and does it well repeatedly, and makes a profit for the seller. No to design a good product, a really good product, means it needs to accomplish those positives without offsetting them with negatives before and after the designer is involved. To design a really good product means getting involved from start to finish and back again, or what William McDonough and Michael Braungart call "cradle to cradle".

To really design from start to finish and back again is an immense proposition. The scope of the problems multiplies fast. There are environmental issues, where do the materials come

from? how much energy was spent to get them? what sort of byproducts were emitted? how far did it travel and at what cost? what about putting it together, how much waste is involved? chemicals? energy? what about the packaging, is it wasteful? how do the retailers handle it? what do the consumers do with it? does it need batteries? how much power does it pull? how long does it last? can it be repaired? when it breaks will people throw it away? what happens when it sits in a landfill or floats in the ocean? will it still be here in 5,000 years? is that a good or a bad thing? what about the people working on each step of this project? are they getting paid well enough to buy the product themselves? how are they treated? do they get insurance? benefits? job security?

These are not easy questions, and they multiply with each step in the chain. If designers are serious about designing cradle to cradle, they will be faced with the task of designing something far more than just products, far more than even services and systems, they will be faced with the task of designing economies. It is not a task designers are particularly prepared for, but truth be told it is not a task economists are particularly prepared for either. As documented by the likes of Joseph Stiglitz and John Kay the 1990's was a high time for economists attempting to apply their theories to actual economies and most cases, Russian and Africa in particular, they failed spectacularly. The difference between economics as it existed on paper and in the

refined contours of universities, think tanks and governmental bodies and the harsh reality of economics as it is practiced on the ground is vast and persistent.

Ironically enough given the political stances of so many contemporary economists, the one body with real significant experience mediating between economic theory and economic reality, the only one that gets results, is the government. The actual street level and market level practitioners of the economy, individuals, small business, corporations and the like, very few of them could give a shit what economists have to say, for they are far too deeply involved in the reality of producing the economy to be able to see the economics from the trees. Yet while governments have a occasional successes to their record in fostering economies, and some have a decent track record not destroying economies, they are ultimately a flawed and dangerous tool for the task of economic design. For every “asian tiger” there are dozens of governments who would rather steal than build. For every Chinese cheap electronics success story there is a Russian mafia economic takeover story. Governments have the power, or at least sometimes they do, to make economies work. But it is the exact same power that brought us countless dictators, fascists and kleptocrats. This power is not going anywhere, governments are not about to disappear and will remain an economic force that must be accounted for, you will not find me indulging in libertarian fantasies. But if the

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20th century, with its nuclear bombs, death camps and world wars, has one lesson, it is not to place faith in the government to bring us solutions.

In this context perhaps it may seem absurd to place design into such an intense and crucial juncture, yet design has two crucial lessons to bring to the real world of economics. One is a deep and well learned lesson, the other young, raw and truthfully not one designers have fully mastered yet. The first is a long developed pragmatic practice of creating real results. The second is an economy of design, the realization that sometimes the best design means not designing at all. The two are actually intimately related, although only via an intensive learning process. It is through an extensive pragmatic practice of developing results, that one learns the limits of design, when to apply direct energy to a problem and when to let go. Where does the design object stop and the user begin? This is a perpetual challenge for a designer. Does adding more info to a chart make it easier to read or harder? If the car can drive itself, how can the user make it stop? When a person comes to the website can you assume you know where they want to go? These sorts of dynamic questions occur in economics all the time, but all too many economists have a rather bizarre way of answering them, they want the market to do the work. Plenty of economists disagree of course, but all too many of them have a far blander, but perhaps far more dangerous answer, the government needs

to intervene.

The market versus government divide is one of the classic traps of economics and it is easy enough to escape if one just realizes that is no such thing as the “free market”, but in fact there are many many markets and each one behaves differently. Each market has its own set of rules, its own genetic codes by which it maintains its existence. Some of these rules and codes are explicit, say that the farmer’s market happens every Wednesday and Saturday. Others of these rules are implicit and encoded on a more cultural level, the understanding for instance that you can pick out your food, put it in a bag, but you can not leave with it until you pay the farmer. The more entrenched a rule or code is into the local culture the harder it is to change. But in the end most are changeable, and when they change the shape of the market changes. A market is a designable object. One perhaps that is larger than most designers are used to dealing with, but one is eminently doable.

Every market out there is after all the product of human labor and insight. More to the point it is a practice that some economists have actually engaged in and most like will in the future. The development of auctions for rights to use certain wavelengths of radio spectrum and the creation of markets for trading the rights to pollute are two well known examples. Yet while it is reasonable to assume that the economists involved

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have a decent understanding of the issues at stake, is it reasonable to assume they know how to design as well?

Now the exact same question can, and should, be asked of designers as well, is it reasonable to think that they can actually add something to the economic process? Of course on one level that is a pointless question, like any and every other person in the world with a job or the capacity to use cash all, designers are intimately and inexplicably part of the economic process. In that regard to not want to apply their skills to economics would be slightly tragic. So that would leave us with a slightly different question, is it reasonable to think that designers can successfully look at economics as a design problem? It is not a question that can be answered with any absolute certainty, but as it is probably clear by now my personal answer is a resounding yes, I do think it is both reasonable and worthwhile, but to do so design needs to scale.

In a way this book can be seen as my own personal discovery process, or at least the start of it. And from that process comes a set of objects, economic objects that I believe are approachable as design objects:

institutions are tricky concepts to grasp, but the institutional economics of Thorstein Veblen and Jane Jacobs gives us the most solid historical grounding to navigate this strange eco-

conomic space that neither breaks everything down to the actions of individuals nor abstracts it all away to evershifting concepts like “society” and the “free market”.

money is an institution, but it is also one so developed and fundamental to our current world that it merits its own category. Money should be understood in relative terms, as something that is not static, that the numbers attached to it are necessarily the same as the values we attach to it. It is an important enough topic when money was just gold, coins and bills, but as it electrifies and diversifies it becomes even more crucial that we learn how to design better money.

organizations are perhaps the best studied of these objects, an entire alternative craft of economics has emerged, in part from the remains of institutional economics, inside companies, business schools and consulting firms. There is plenty to be learned from these practitioners but there is also a striking lack of creativity on the broader scales, the focus is on what lies inside the organizations rather than how we can design, generate and codify new forms of organizations.

markets are better understood as forms of networks and are in fact designable. Networks are widely misunderstood but design is slowly coming to understand the concept of networks as well as any discipline today, through the development of networked

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objects of all sorts.

It is my hope that from these objects, and perhaps there are more to be found, we have the beginnings of the tools to design better economies. In order to do so though it is crucial that they be approached with an economy of design. It is the designers art to know when to design and when to leave be. To know when explicit direction, form and structure are needed and when they are best left to the users and participants to create. Through this art can we escape the traps of 20th century economics, the conflict between planned economies, relying on centralized directives and faith based economies relying on a belief in the supernatural powers of “the” market to work things out. This is the nomadic resolution, the space not in between these two conflicting concepts, but the space that connects, moves through and expands around. An economics of multiplying possibilities.

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