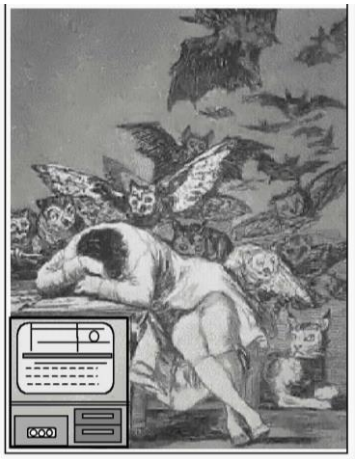
Yuri Tarnopolsky

ESSAYS

Essays à la Montaigne



2001-2012

Essay 57. THE FEW AND THE MANY

Pattern chemistry of 2012 Elections

Essays 1 to 56 (2001-2009) were previously published at:

http://spirospero.net/simplicity.html (contents and links to single Essays)

http://spirospero.net/essays-complete.pdf (Essays 1 to 56)

http://www.scribd.com/doc/11607864/Essays-Part-1 (Essays 1 to 20)

http://www.scribd.com/doc/12273800/Essays-Part-2 (Essays 21 to 40)

http://www.scribd.com/doc/12529842/Essays-Part-3 (Essays 41 to 56)

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ESSAYS

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ESSAY 57. THE FEW AND THE MANY

Pattern chemistry of 2012 Elections

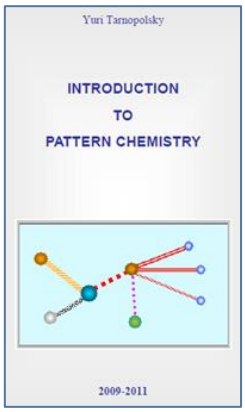
It is the last quarter of 2012 and I am celebrating my quarter century in America, which is over 10% of entire USA history as independent nation and over one third of my own life.

I am coming back to my *Essays à la Montaigne* five years later after my ESSAY 56: OUT OF ONE MANY (2007). The problem of ONE, FEW, and MANY keeps haunting me.

Meanwhile, the core ideas of **Essays 51 to 56** have been developed into:

INTRODUCTION TO PATTERN CHEMISTRY

http://www.spirospero.net/INTRODUCTION_TO_PATTERN_CHEMISTRY_parts1to4.pdf
or http://www.spirospero.net/INTRODUCTION_TO_PATTERN_CHEMISTRY_parts1to4.pdf
or: http://www.scribd.com/doc/55173251/Introduction-to-Pattern-Chemistry-Parts-1-4 (SCRIBD)



This Essay uses many ideas of the INTRODUCTION TO PATTERN CHEMISTRY, a direction of thought influenced by Pattern Theory of Ulf Grenander, which I had discovered by chance in 1980. Here I continue some threads and weave in some new ones. This time the key words are **power, politics, vital interests, inequality,** and **voting**. Money and patterns are default key words for "econochemistry," as I call the patterns of the cohabitation of humans, things, money, power, and ideas on earth.

I refer the reader to the INTRODUCTION and my entire site spirospero.net for details which I omit here. I also try to limit the number of links. They die out, but Google, while morphing into something new, is still spirited enough for quick search. Companies die out, too, but so do people and nothing can be done about that. Only ideas never die.

1. PATTERN THEORY AND PATTERN CHEMISTRY

Each time I turn to patterns, I try to approach the concept from a different angle and there are at least 360 of them, most still unexplored. In a few words, my current take is as follows.

Laws of physical nature for all practical reasons are constant, at least within the solar system. This is why physical equations include the equals sign "=". Life on earth and the human condition evolve, however. Equations do not describe history and economy and this is why physicists and mathematicians in investment banks contributed to the Great Recession of 2008.

Pattern theory substitutes similarity for equality. Pattern chemistry focuses on the processes of change and uses patterns instead of states to understand and foresee large-scale and long-run processes in social and individual evolution. Pattern chemistry is a mental instrument to deal with novelty, which is the essence of future. The future is what we don't know that we don't know.

We do not need pattern chemistry for anything as old as our planet, which is the subject of hard physical sciences. But the old future is contradiction in terms. The future is neither old nor new: it does not exist except in our minds and in a great variety of alternatives. And yet we have an irresistible desire to look into the time ahead even though some of us would be happier not knowing it. I am going to talk about the Great Whatever around the corner for a particular reason: it is the best testing ground for pattern chemistry. Patience is the only tool for experiments with the future. We might wait a few years—or centuries—for the result.

Since human imagination produces almost all possible and impossible at the time pictures of the future, we might never know if the right guess was accidental. Future is always a lottery.

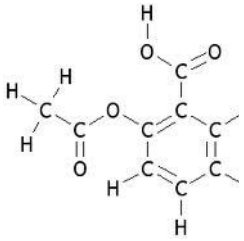
Patterns are the counterparts of physical equations for *exystems*, a contraction of **E**volving **C**omplex **S**ystems (**ECS**ystems = exystems). Like the laws of physical world, they are the invariants of change in human condition. Pattern is something we can predict more or less accurately about the future. The horizon of time is constantly receding, occasionally coming back as a tsunami wave and we have to finally learn where a safe place to build our future is.

Japan, tsunami of 2011

The past of humankind was born in the process of evolution and so is the future. Most of the future—its details and particularities perceptible by senses—is dark, but part of it is illuminated by long-term patterns visible only to reason. A future novelty is unpredictable by definition but

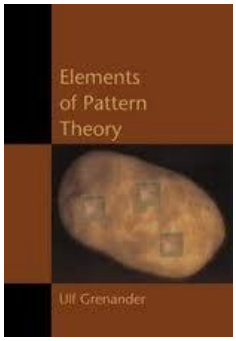
born out of imagination. Our imagination gives birth to countless progeny and the problem is to assign likelihood to different outcomes. This is exactly the problem a chemist faces considering all possible rearrangements of atoms in a mixture of substances. My central idea is that the way chemists make predictions of the most probable outcomes can be used not only for molecules but also for the products of imagination provided they are represented as structures of simpler entities. In terms of Pattern Theory, the structures are *configurations of generators*.

Mathematics includes the study of such objects into its **graphs theory**, but, unlike chemistry, it is hardly interested in the individuality of each of countless combinations of points and lines.

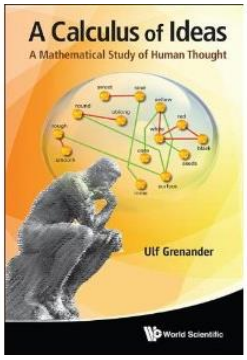


Aspirin

For example, a **mathematical** combination of points C, O, and H can look like the formula of aspirin on the right, but the **chemical image** of the same graph includes a lot of individual data about these particular white crystals, their melting point, spectra, physical properties of the bonds, including lengths, angles, and energies, what can happen to the bonds at various conditions, and even the human aspect and history of this combination of atoms. It started, by the way, at least as early as 1500 BC, long before it was isolated (1823), synthesized (1853), produced and patented (1897) and has been currently used (by myself, too) almost as a panacea and an inexhaustible source of profit for the pharmaceutical industry (which otherwise I do not trust).



Pattern Theory of Ulf Grenander considers anything within human knowledge that can be represented as a combination of elementary objects (generators) and bonds between them and studies the properties of such combinations (configurations) as resulting from the properties of the generators and bonds, quite like chemistry. Moreover, it never loses the connection between the skeletal representation and the complex object of the real world.



*** Ulf Grenander, *General Pattern Theory: A Mathematical Study of Regular Structures*, Oxford University Press, 1994.**
*** Ulf Grenander, *Elements of Pattern Theory*, The Johns Hopkins University Press, 1996.**
*** Ulf Grenander, *A Calculus of Ideas: A Mathematical Study of Human Thought* , World Scientific Pub Co Inc , 2012.**
*** Numerous sites on the Web.**

The chemical combinatorics arises from the idea that combinations differ not only by the "weight" of elements, but also by the way they are connected and the "strength" of bonds between them. Chemistry is complexity incarnate but it is also an art of simplification.

The random component and the similarity of the processes in the mind to chemistry was noticed and eloquently depicted by Douglas Hofstadter in "Jumbo" of *Metatmagical Themas: Questing for the Essence of the Mind and Pattern* (Basic Books, 1985) and the "careenium" of *I am a Strange Loop*, but he did not pursue the idea head-on as a mathematical problem. While giving a lot of attention to "patterns," understood in the trivial sense of regularity, repetition, and order, Hofstadter apparently missed Grenander's Pattern Theory—as most other writers on patterns. This is the strangest twist in the "strange loop." Hofstadter has been rightly and forcefully promoting the idea that "analogy" is central for the work of mind, while Grenander's "similarity" was already the central well-defined idea of Pattern Theory. Still, I would borrow from Douglas Hofstadter a phrase that serves as a great epigraph to Pattern Theory:

> Where there's pattern, there's reason.
> (Douglas Hofstadter, *I Am a Strange Loop*, Basic Books, 2007, p.117)

Chemistry is not associated with randomness in popular perception. While the pictures of a probabilistic mind and probabilistic world are becoming conventional, replacing the determinism of classical science, it is appropriate to remind that individual acts of chemical change are entirely probabilistic. The major chemical notion of concentration is nothing than probability to find a certain molecule in a volume of substance. If chemistry looks like a hard deterministic science, it is because it deals with large numbers of molecules. Small numbers of molecules—countable on the fingers of one hand—can be as little predictable as small groups of people. Mutations and transformations of genetic material are the best example. The act of a chemical reaction that can run in two alternative directions is as random as the conception of a boy or a girl and as predictable *en masse*.

Chemistry can be characterized as the study of probabilities on structures, which is exactly how Ulf Grenander defines Pattern Theory.

I am not a mathematician. Thinking as a chemist, I am interested in the intimate mechanism of the transition from one configuration (abstract "molecule of everything") to another. What I want to borrow from chemistry and add to Pattern Theory is the side of chemistry less known to outsiders: kinetics, i.e., aspect of speed. In the real physical world, nothing happens in an instant. While "what can theoretically happen" is a combinatorial question, "what will indeed happen" is a kinetic question because complex systems have a lot of alternative directions of change and **it is the fastest alternative that wins**, if there is any.

When we write $y = x^2$, it would be meaningless to ask "what **happens between** $x = 2$ and $y = 4$" or "**how soon** y becomes equal to 4 after x takes value 2." An abstract mathematical operation does not involve time. The question makes sense when a calculation runs in human head, supercomputer, or something as anorexic as the supermodel i-Phone of the newest Apple.Inc fashion show. The speed of a digital process in a computer is a real issue because it consists of a number of steps, none of them instant. There is a however tiny interval between x=2 and y=4. Different algorithms can achieve the same goal at different times.

The chemist deals with the question "if A turns into B, what happens along the way from A to B" because this is the key to the question "how fast A turns into B." If A can turn to B or to C, the result will be the fastest transformation. For example, if presidential candidate A persuades the electorate faster than candidate B and faster crushes the arguments of the opponent, he has much better chances to win the vote. If both candidates had more time, the opinion of the voters could change in the long run, but the election date is fixed and human minds have their own limits of speed while their reservoirs of illusion are immeasurable.

In addition to probability, energy, and stability of configurations, I draw attention to the speed of transitions from one to another, using the chemical (as well as military, political, and economical) principle that the fastest wins. Pattern-chemical kinetics cannot predict the time sequence of real life events, but it could give at least some framework to compare different alternatives. Besides, I believe that it is exactly what the mind does: it offers a competitive marketplace to thoughts and you better be quick. We think in patterns, especially when no hard knowledge is available, as it is the case in politics and human relations in general. We also tend to believe and mistrust, as well as lie, bluff, and betray.

This is how we can cast some light into the darkness of the future. But the past has its dark basements, too. What can we say about the most distant past in a long history of a complex system, from life on earth to global civilization? The present exists. As for the Super Bowl of the future, all we need to see it is long enough life, a comfortable chair, some snacks, and some patience. But what was in the beginning of everything and what will be in the beginning of everything new? Asking this kind of questions, I am looking for a science of not complexity, but simplicity. But we do not need any science to guess, in general terms, what there is in Mitt Romney's mind that he defiantly keeps under locks.

I do not believe any complexity of thinking can make the complexity of the real world understandable. Our elections are designed for dummies (which we are not): there is simply no time, resources, and desire of education on either side of the voter-politician divide. Besides, telling the truth in politics can be suicidal. "For in much wisdom is much grief: and he that increaseth knowledge increaseth sorrow." (Ecclesiastes, 1.18).

Can we predict the outcome of the Elections 2012? I cannot. In some instances, the political analysts can do this pretty well just by counting all pros and contras for each candidate. But if the bottom lines are very close, it is hardly possible. To compare with chemical reactions, we will have approximately equal mixture of two possible products, obamene and romniol.

There is always an abstract chance to influence voting at the last minute, as it happened in Spain in 2004 after the Madrid train bombings. It is only a matter of time before some political desperadoes try this in America in the atmosphere of Cold Civil War, which more and more becomes religious, i.e., irrational. From the point of view of pattern chemistry, the buildup of tension, i.e., increasing energy, means instability: the barriers on the way to a dramatic transformation (a euphemism for a revolution, disaster, hot war, defeat, economic depression, etc.), could be jumped over.

2. THE DIN OF WAR

I wrote Essay 43: The Cold Civil War in America in 2006. The title says it all.

In August, 2012, I am waking up from my five year long hibernation to find that my dreamlike visions are reality. **The latest news from the front:**

> "Texas Democrats are calling for the resignation of a Republican elected county judge [Tom Head] who warned this week that the nation could descend into civil war if President Barack Obama is re-elected."
>
> Texas Democrats: Judge who said Obama could trigger civil war should quit
> By Josh Levs, CNN, August 24, 2012. Judge Head's interview.

> "One of us (David [Gergen]) has been attending conventions for some 40 years and has witnessed a distinct change in tone; listening to the hot rhetoric in both conventions in 2004, it suddenly became comprehensible how the country could have wound up in Civil War back in 1861 after another election full of ramifications for the nation's future."
>
> **Election a stark choice on America's future.** By David Gergen, CNN Senior Analyst, and Michael Zuckerman**,** Special to CNN, August 24, 2012.

> LUDOWICI, Ga. — Four Army soldiers based in southeast Georgia killed a former comrade and his girlfriend to protect an anarchist militia group they formed that stockpiled assault weapons and plotted a range of anti-government attacks, prosecutors told a judge Monday.
>
> **Military Terror Plot: Murder Case Uncovers Terror Plot By 'Militia' Within U.S. Military**
> By RUSS BYNUM 08/27/12

Hot Civil War

Cold Civil War

Trench warfare

America's war with itself

America is in the state of Cold Civil War and it has enough firearms in private hands to wage a hot one.

IT IS THE BLUES!

The election of Barack Obama brought the American Cold Civil War to a stage reminding of WWI: trench warfare, poison gas, political hysteria, the cull of the brightest and bravest commanders, and opening the gates to wild opportunists. The geographical pattern of front lines is somewhat close to that of the Hot Civil War**.**

IT IS THE REDS!

The potential mainstream national leaders are being poisoned in the womb by TV ads, Internet, perspective of swiftboating, and crawling of investigative ants in their personal life. The best and the worst of the formerly excluded off-mainstreamers step in. We are watching the course of history as a generic TV serial, expecting the standard happy end.

I chronicled the previous elections in *INTRODUCTION TO PATTERN CHEMISTRY* (Part 2,*DIARY OF A FERRIS WHEEL RIDER*) referring to patterns going as far back in history as the siege of Masada. This pattern is still rock-solid. This time, the content of the mind of the presidential candidate Mitt Romney is an aloof fortress on top of a rock, although defending his Masada "no matter what," the candidate can end up by political suicide. But in this Essay, I am more interested in the content of the voters mind.

I am far from extrapolating the similarity of American political life to that of Europe of the post-WWI years, but not too far. Nothing is too far in patterns—only in ossified formulas. The ferocious militancy combined with the military-like discipline of the Republican Party, paradoxically deferential to threatening figures like the grey cardinal Grover Norquist or the astounding Jacks-in-the-box of the Tea Party, do not look good in the pattern telescope focused on the twentieth century. After its first victory in 1994, the Republican Revolution looks more like a jihad than WWI.

In this atmosphere, no experienced, charismatic, energetic, ambitious, intelligent, moderate, centrist, honest, decent, progressive, rational, and mainstream person (what an improbable combination!)—neither Democrat nor Republican—can step into the airport scanner of the media with his or her life, wallet, private parts, and the skeletons in the suitcases. The minorities have their own bent. It was the mistrust of non-Roman generals that contributed to the fall of the Roman Empire.

The Republican militants and ideologues are nervous. They are afraid, but of what?

I believe they are nervous because they represent the vital interests of a minority of Americans. A party of a minority in a democracy is naturally bellicose: it feels that it has nothing to lose in

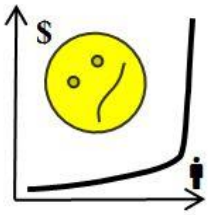
war because it has a lot to lose in peace. How a minority can win a majority of votes is the greatest trick of the not so long history of democracy—the trick performed, nevertheless, a few times in Eurasia with disastrous results. My guess is that it happens because democracy quantifies votes, but not the temperature of voters' emotions. The mass media can operate both political ovens and fridges, not to mention distorting mirrors. Maybe democracy should protect not only minorities from aggressive majorities, but majorities from aggressive minorities, too. But without hotheads, disruptors, heretics, and fanatics, our history would freeze and grow brittle like a thin ice.

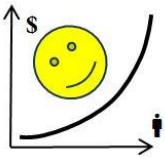
The membrane separating democracy from autocracy is the thinnest when there are only two parties comparable in strength: it could not be any thinner. **From two parties to one there is only one step.**

The gallery of patterns of history in my mind, some personally witnessed, makes me worry. They also signal caution. Neither the post-WWI Germany, nor Communist Russia had ever known anything close to successful, fruitful, and stable democracy of the American or British type. I explain the American success, now under question, by the unique diversity of American society, which compensated for the lack of organized political diversity. I also derive this political minimalism by the might of the dollar, which limits the access to the political club. Money is power, and if it is in few hands, so is power.

Can a real vigorous flaming democracy burn itself out? What can save it? Business? Commerce? Religion? War? Ideology? Culture? Morals? Science? Ignorance? Pills?

Isn't it the economy, which today engulfs all of the above? Isn't it the economy that unites the society and puts everybody on a visually **simple** chart of money. By "simple" I mean a curve not only mathematically continuous, monotonic, and smooth, but of little changing curvature. In other words, it is a line without clearly distinct segments and sharp local changes. Simplicity would mean that however unequal, we are really one nation, from poor to rich, "out of many, one," unlike the French society in 1789, or Russia of 1917. But what if the consistent shape was bent into two distinct segments and the prosperity chart looked like the spread wings or the obtuse angle of a boomerang? This happened twice in the last 100 years of American history: on the eve of the Great Depression and the Great Recession.





also

What is economy, anyway? Throughout history, economy meant:

> An **economy** consists of the economic systems of a country or other area; the labor, capital, and land resources; and the manufacturing, production, trade, distribution, and consumption of goods and services of that area. (Wikipedia)

Since the first historical records, the political currency used to be human body, managed by a whip, crucified, hanged, burned at stake, cut short by a guillotine, pierced by bullets in wars, adorned by handcuffs, and stored not in banks but in prisons and labor camps. Economy today, at

IT IS THE ECONOMY!

least in America, includes politics, making laws and presidents, and regulating personal and corporate life. It uses dollars instead of bullets and knives, unlike in Syria and Afghanistan, and it manipulates human mind by TV ads, speeches, web sites, and church sermons. This is the natural fabric of human life.

Already dreading the last stage of the 2012 campaign and the hanging in the balance elections where people are going to vote for their vital interests, I am asking myself the question which has already been asked by many mystified intellectuals: ***why do people vote against their vital interests?*** How can a minority dominate the majority and recruit about a half of it?

Indeed, how can the two votes be so close? This diverse society of ours is so balanced in its political choice that in the Elections 2000 it looked like the Buridan's Ass ready to die of hunger between two exactly equal piles of fragrant Florida hay. Finally, the (numerically) odd US Supreme Court gave it a kick in the right side of the butt.

> **NOTE**: It is as difficult for me to confess that in 2000 I voted for the right side of the butt as for Mitt Romney to show more than two tax returns. I am still registered independent, but I don't vote for the right side of anything anymore.

Pattern Theory is a search for simplicity in complex objects. So are chemistry and pattern chemistry. Science can be complex because it calculates complex systems in detail and is paid money to be exact. It works well because it can: the laws of physical nature in our galaxy have not changed in million years and mathematics has its own self-imposed laws, which, unlike human laws, are locked to con artists.

Trying to solve the voting mystery, I leave the science of complexity to academic science. It is certainly not for most voters. I believe in the science of simplicity. Millions of humans, unlike molecules, do not have two identical personalities. They are moved in sink only by simple reasons.

3. SIMPLICITY

Even very complex chemical transformations leading to very complex substances consist of simple steps and can be started from pure chemical elements. I formulate here a universal pattern-chemical principle of evolutionary simplicity. I put it into a frame just to show off, but in essence it amounts to the tautology: spontaneous emergence of improbable systems is improbable. The way to break the tautology is to take a close look at the emergence as a process in time and not a rabbit from a hat.

The principle of evolutionary simplicity

A NEW COMPLEX SYSTEM SPONTANEOUSLY EMERGES AS SIMPLE SYSTEM AND EVOLVES BY SEQUENCE OF SIMPLE STEPS

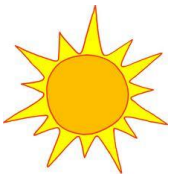
or in a negative form,

SPONTANEOUS EMERGENCE OF COMPLEX SYSTEMS IS IMPOSSIBLE

In the 1960's, physicists formulated the negative form as the greatest mystery of the origin of life because they could not reconcile it with physical principles. A chemist, however, would be completely comfortable with both forms. Chemically, the stepwise crawl of complexity from chemical elements to anything as mind-blowing as DNA and proteins is a piece of cake. A child with Lego can show how it is done.

Of course, the term "spontaneity" may need some hairsplitting. What is really **spontaneous** in the world? Does spontaneous mean **accidental**? Or **unplanned** by somebody's mind? Even if human mind participates in the emergence and evolution, as is the case with society, science, and technology, the principle applies: emergence and evolution of complex systems of ideas starts in the mind with simplicity growing into complexity by simple steps. If we do not realize the

beginning of reasoning, it is there, subconscious.



NOTE. As for the participation of a deity, it is not my cup of tea. Strictly speaking, nothing is quite spontaneous on earth because of the creative power of the sun and the moon. The **sun monotheism**, with the moon for a company, celebrated on the Summer Solstice with low calorie pancakes on the beach, looks to me as the most rational religion for humanity. BYOC (Bring Your Own Commandments).

By system I mean what I call **exystem**: evolving complex system, see above.

The term "complexity" is the vaguest. There is no consensus on what it is, except in some narrowly defined particular cases. If so, here is my oblique definition of **simplicity** for the case of evolution: the simple is what can emerge spontaneously. Examples: snow and sand. A snowflake may look complex or simple, but it emerges in a sequence of simple steps of crystal growth. The sand, although no two grains alike, emerges in a sequence of simple steps of crystal disintegration.

Evolution can be understood as the continuous growth of complexity in exystems, which life on earth and human history, society, and economy exemplify.

If my principle is so full of circular definitions, what does it actually say? As other fundamental laws of nature, **it states what is possible or impossible**. I am too modest to call it a law, but you, a young reader, can. The circularity means that spontaneity and complexity are fundamental ideas, like energy and time in physics: they are not reducible to something more fundamental. Stability and energy are also locked in logical circle with the concept of time: **higher energy** means **lower stability**, i.e., a **change some time later**.

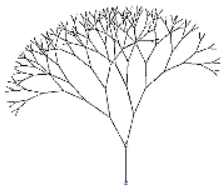
The laws of nature, whether pattern or not, cannot be logically proved. They can only be illustrated, tested, confirmed, and sometimes disproved.

EXAMPLES. Unlike sand and snow, neither sand castles nor snow castles in **Figure 1** can emerge spontaneously. Each structure consists of the same or similar particles. They were built in a sequence of simple steps of adding and removing sand or snow on a sand beach or a layer of snow, respectively, guided by human mind.

Figure 1. Snow, sand, and life

The polar bear on the snow did not emerge like a rabbitfrom a hat. Neither was it "created" like the sand castle was by the girl.

Bears and girls appeared very long ago, as result of long evolution, out of something close to sand, water, and other simple substances. We believe that the original substance of life consisted of molecules of different types, while snow consists of simple H_2O and sand of simple SiO_2 molecules with some minor components. The repetition of simple steps of connecting or disconnecting two atoms is how evolution works from the point of view of a chemist. Such small acts can multiply in a branching manner, as in DNA replication or regional revolutions. Each bear, girl, smartphone, religion, and nation are links in a chain. Apple Inc. and Microsoft Inc. make their chains as long as possible.



The repetition of simple steps of connecting and breaking bonds between some diverse entities (people, parts, bricks, semiconductors, words, ideas, spots of paint, sounds) was the mechanism of evolution of society, technology, and culture. The particular bear and girl emerged from their mothers as result of a gestation essentially similar to evolution, from small and relatively simple cells with a program of reproduction in the form of a very large molecule (DNA) similar to a long text, but, to tell the truth, rather monotonous, like the babbling of a brook.

Pattern Theory studies similarity of connected objects of any type and origin, similarly to chemistry that studies structures consisting of atoms and bonds between them.

Ideas emerge and evolve as anything human. Thus the idea of a deity, who created the world, evolved, too, but we do not know how because ideas leave little trace before art and writing emerge. Who can tell whether an over 20,000 year old figurine portrays goddess, woman, or a vague idea of fertility? Yet we can explore and reconstruct the process of emergence and evolution of Roman Empire, Islam, Italy, USA, French literature, Russian Communism, General Electric, Inc., aircraft, iPAD, Tea Party, Great Recession, and the obesity epidemic, although molecules have little to do with all that, except for the last item.

Whatever scientists think about creationists and *vice versa*, they seem to speak the same language:

> "Using radiometric dating, one can observe that the Earth's oldest continents were **created** in geodynamic environments which were markedly different than current environments characterized by plate tectonics."

Teaching creationism to children, promoted by Tea Party is a troubling sign of social regression, obscurantism, and intellectual decline. Dragging a deity into politics is a sign of helplessness, as well as a calculated sales pitch.

4. THE BOOMERANG OF WEALTH

The main question about voting for vital interests splits into three parts:

1. WHAT ARE THE TWO ECONOMIC SPECIES? There could be some single defining difference between voters that splits them into economic classes. What is it?

2. WHAT IS VITAL INTEREST? Certainly, not the universal human needs, which are common for all, but something that is different for the two economic classes.

3. WHAT IS THERE IN VOTING MIND? What makes a person to decide which way to vote is something on his or her mind. What is it? There is a perplexing book about economic (and any) mind and it is by a Nobel Prize author.

I start with the question how many really different social groups are there if we look for patterns and not details.

Humans are different in many respects, but I am looking for largest distinctions related to vital interests in connection with voting behavior in a society where money is a universal measure of well-being.

I select the numerical measure taken by the government on a widest possible statistical base: money in the form of wealth and income, which are related, but not the same.

The data come from tax returns. The lowest and highest ends of the scale are incomplete and distorted because the non-filers of tax returns and super-rich filers can be for different reasons completely or partially invisible for the IRS. Nevertheless, there is nothing more comprehensive—certainly not a telephone poll—than hard tax data.

The existence of the two classes is clearly visible from the statistics of income distribution in **Figure 2**. Its shape reminds the boomerang but the wings are strikingly different in nature.

The graph shows the distribution of income among taxpayers or, to put it differently, the distribution of taxpayers by their income. It is a cumulative graph. The area under the curve equals the total income of the percentage of people. The graph shows that a few get a lot and many get a little.

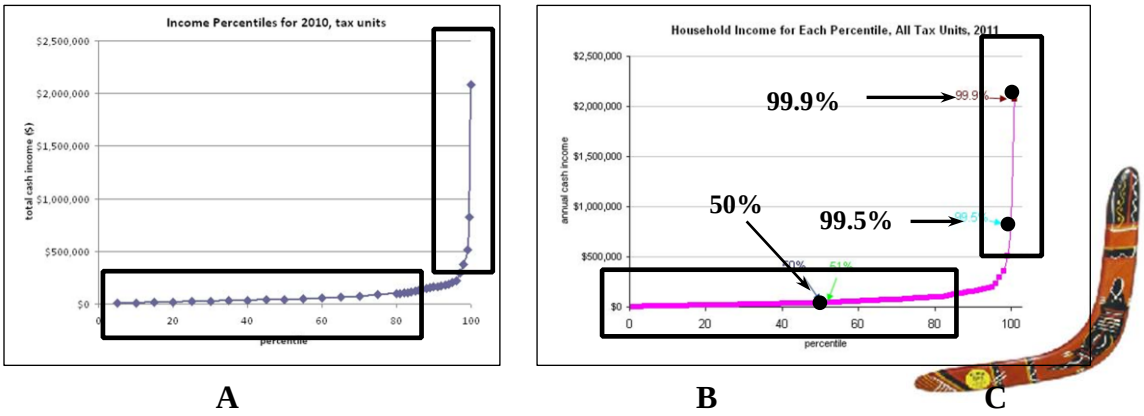
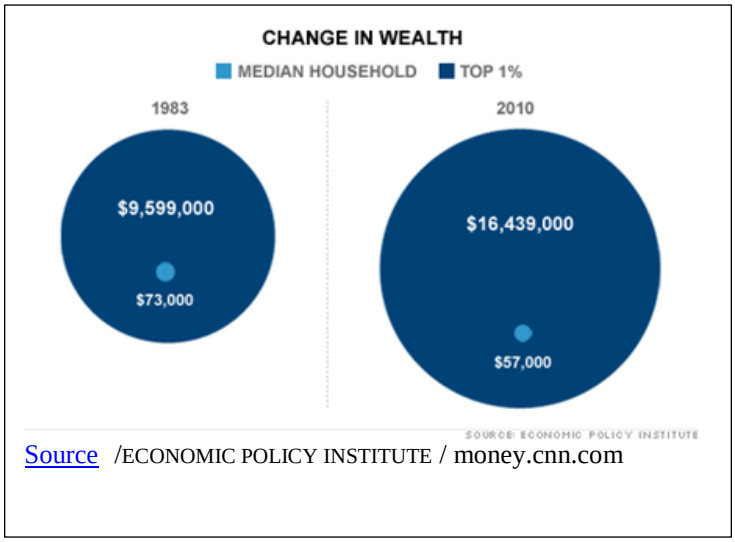


Figure 2. A: Income percentiles for 2010, tax units; **B**: Household income for each percentile. All Tax Units, 2011; **C**: Boomerang.

Wealth is not income, it is less liquid and more difficult to estimate, but the inequality of wealth is much sharper than that of income. How high is the wealth and income inequality? I quote:

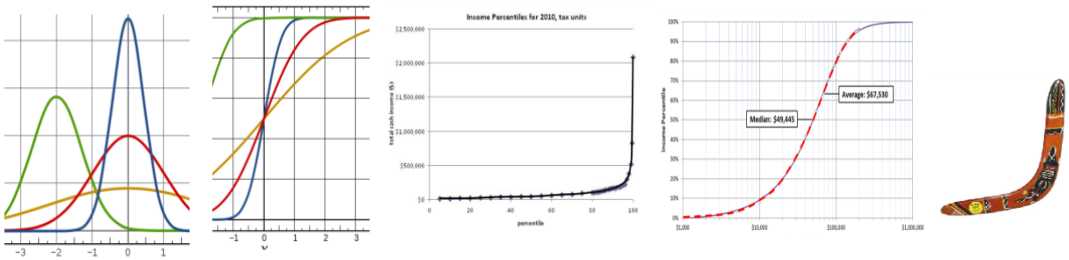
> **The Top 1 Percent Of Americans Owns 40 Percent Of The Nation's Wealth**: As Nobel Laureate Joseph Stiglitz points out, the richest 1 percent of Americans now own 40 percent of the nation's wealth.
>
> **The Top 1 Percent Of Americans Take Home 24 Percent Of National Income:** While the richest 1 percent of Americans take home almost a quarter of national income today, in 1976 they took home just 9 percent — meaning their share of the national income pool has nearly tripled in roughly three decades.



Source /ECONOMIC POLICY INSTITUTE / money.cnn.com

I associate the shape of the curve (known also as L-curve) with the boomerang for a reason. A society that launches the boomerang of inequality risks to be hit by its own missile. The previous boomerang had returned as a Great Depression.

To compare the **boomerang** distribution to the bell curve of normal distribution, we have to convert the **bell** (probability density) to its cumulative form, which is known as S-curve, **Figure 3D** .



A B C D E

Figure 3. A: The "bell curves," B: same in cumulative form; C: cumulative income distribution, 2010; D: same on logarithmic scale, E: boomerang

The boomerang of wealth distribution has a fascinating feature: it has no fixed upper limit, unlike any percentage. This is certainly befits the realm of gods, not humans. Something must be wrong with the money that can endlessly grow: it is just a number, a fiction, a figment of imagination, an idea, a belief. And indeed the unlimited growth is the ultimate dogma in the religious credo of modern economy. The heretics and unbelievers are burned at stake, symbolically, and few, if any, still remain. Their heresy consists, very generally speaking, in long memory. They, secret pattern chemists, believe that history, starting with pharaohs, somehow matters for modern economy of today and tomorrow.

Robert Reich is among my most admired authors not just because I share or sympathize with his views, but because of the exceptional clarity of his thinking and writing. I suspect that he is a believer in simple reasons, too.

Here is how he presents the consequences of inequality in his post Labor Day 2012 and the Election of 2012: It's Inequality, Stupid of 422 words, of which I select here 188:

IT IS INEQUALITY!

The 400 richest Americans now have more wealth than the bottom 150 million of us put together. In order to create jobs, businesses need customers. But the rich spend only a small fraction of what they earn. They park most of it wherever around the world they can get the highest return.

But as the middle class's share of total income continues to drop, it cannot spend as much as before. Nor can most Americans borrow as they did before the crash of 2008 — borrowing that temporarily masked their declining purchasing power. As a result, businesses are reluctant to hire.

As wealth and income rise to the top, moreover, so does political power. The rich are able to entrench themselves by lowering their taxes, gaining special tax breaks (such as the "carried interest" loophole allowing private equity and hedge fund managers to treat their incomes as capital gains), and ensuring a steady flow of corporate welfare to their businesses (special breaks for oil and gas, big agriculture, big insurance, Big Pharma, and, of course, Wall Street).

> All of this squeezes public budgets, corrupts government, and undermines our democracy. (Robert Reich)

Robert Reich describes inequality as what scientists in chemistry, geology, biology, physiology, etc., call "mechanism," meaning not a piece of hardware, but a sequence of elementary cause-effect steps. It is possible to dispute this picture. There could be alternative or supplemental mechanisms, for example, the tendency to the risky actions justified by high concentration of wealth. Losing half wealth leaves you still very wealthy and ready to grow the lost half anew. Reasonably managed wealth does not die: it regenerates, like—here you have a metaphor, not pattern—the lost tail of a lizard.

Paul Krugman focuses on a single cause-effect link in *Plutocracy, Paralysis, Perplexity* **(***The New York Times,* May 3, 2012**): "…**takeover of half our political spectrum by the 0.01 percent:"

IT IS POWER!

For the past century, political polarization has closely tracked income inequality, and there's every reason to believe that the relationship is causal. Specifically, money buys power, and the increasing wealth of a tiny minority has effectively bought the allegiance of one of our two major political parties, in the process destroying any prospect for cooperation.

Joseph Stiglitz lists the multiple consequences: consumption, rent-seeking, fairness, mistrust, undermining the one-person-one-vote principle, etc. His book is a somber encyclopedia of the recent American transformation and it spares me a lot of gloomy rumination. He said what I would not dare: "1984 is upon us."

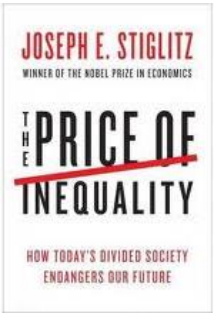
Here is his most important instability warning elsewhere:

IT IS HISTORY!
1984 IS UPON US

As we gaze out at the popular fervor in the streets, one question to ask ourselves is this: When will it come to America? In important ways, our own country has become like one of these distant, troubled places.

……..

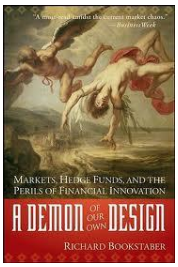
The top 1 percent have the best houses, the best educations, the best doctors, and the best lifestyles, but there is one thing that money doesn't seem to have bought: an understanding that their fate is bound up with how the other 99 percent live. Throughout history, this is something that the top 1 percent eventually do learn. Too late.



There could be more mechanisms, all running in parallel, such as, for example, the blind trust in mathematical finance. The origin of catastrophic events in economy is a whole separate research area, all the more unreliable because they are so rare—just two in 100 years—and the conditions change dramatically from one to the other.

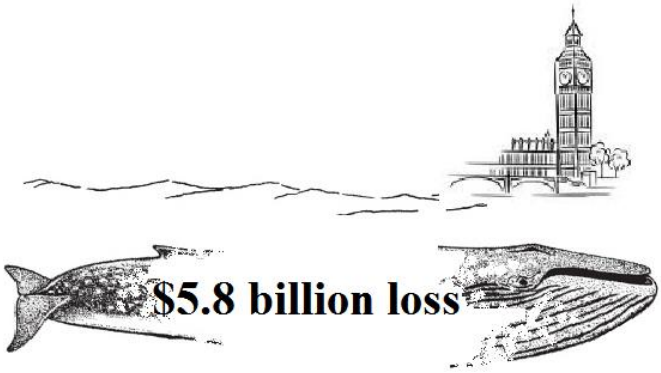
This is a good opportunity to explain once more the difference between pattern view of the world and—how to say it?—professional, i.e., detailed, substantiated, corroborated, and compared with alternative views. A professional view is a basis for action. We cannot build a bridge by analogy with rainbow. Pattern view is a basis for understanding a **new** phenomenon, for which there is no

knowledge base. Patterns precede the professional analysis of configurations. There is little place for patterns in established areas, but this is how we make first steps in creating novelty and dealing with novelty imposed by evolution. We are still trying to understand what the computers—our grand innovation—have brought to the world and how to deal with it. The term "**virus**" labels the pattern way to understanding. "***A demon of our own design***," the title of a book by Richard Bookstaber (*A Demon of Our Own Design: Markets, Hedge Funds, and the Perils of Financial Innovation*, John Whiley, **2007**) [**Before the Great White of 2008]** is a pattern covering of the configurations from the Frankenstein's monster to antibiotics resistance and, in this case, hedge funds and mathematical finance (yet another of concurrent mechanisms of the Great Recession).



IT IS FINANCIAL INNOVATION!

The modern world is in a dense fog of complexity. I am motivated by the search for the ways of understanding new complex problems before the specialists solve them. My knowledge base is a map of knowledge rather than its full terrain and depth. I do not need to be an economist as I do not need to be a physicist or a mathematician. I need to know what the lines and colors on the map mean.



The London Whale: JPMorgan Chase's trading loss, May

The instability of unequal distribution is a universal pattern: it does not depend on the nature of a system, provided the system consists of many interacting elements, whether molecules, flies, or humans, and has a sufficient degree of internal chaos.

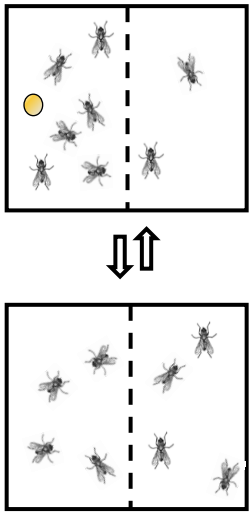
Any inequality in distribution of energy, social energy, concentration, wealth concentration, temperature, social temperature, pressure, social pressure, political power, productivity, natural resources, etc., over space is potentially unstable.

I cannot discuss this problem in detail here. Suffice to say that this is a central idea of Pattern Theory.

In mathematics, it is the relation between the symbols what matters, not what the symbols mean. Richard Hofstadter did not spare words to explain this in his books, especially, in *I Am a Strange Loop*. In Pattern Theory, however, it is not all: some structures, objects, relations, transformations, events, and states of the system are more probable than others, some improbable at all, and in its patter-chemical aspect, some events happen faster than others and some cannot happen at all.

I prefer illustrations to definitions. Here are some oversimplified examples of how things can be unstable and cannot stay the same for long.

1. Flies released in a room at one corner are distributed unequally over the room. With time they spread. **Flies tend to distribute equally in empty space. They concentrate around a piece of fruit. When the fruit is finished, they spread.**



2. The temperature in a room with a cup of hot water is distributed unequally. It equalizes with time: the coffee cools down, the room barely warms up.

3. A piece of paper in a room is surrounded by the atmospheric oxygen. It is chemically unstable and waits only for a spark to start burning, so that the distribution of energy in the room equalizes. Compare with financial crash.

4. The French society by the end of the eighteenth century is plagued by the inequality of wealth and, especially, power. It is only waiting for a spike in the price of bread to equalize the nation in a brutal manner.

5. The inequality of wealth and power in Tunisia needed only a spark to explode. And there is a spark: Mohamed Bouazizi, humiliated and impoverished, sets itself on fire. The entire region, charged with inequality, burns.

Tunisia, 2010

6. In 1917, the Russian society, mostly peasant, overheated by the WWI, destabilized by the **inequality of land ownership**, although making first steps toward democracy, explodes in a Bolshevik revolution and civil war. The Bolsheviks promise the redistribution of land, attract the majority, but soon after their victory take back all the land, together with industry and **all private wealth.** It takes 80 years before the absolute concentration of power begins to sluggishly relax and the inequality of wealth **explodes** in a privatization.

7. As for the Great Recession, **Figure 4** tells it all better than thousand words. It is not $E=mc^2$, it is ultimately simple: **inequality = instability.**

That **inequality is the main cause of instability** is an unpleasant, ideologically polarizing, and overall un-American idea, suppressed as anything setting a limit to a dream. Nevertheless, the parallel between the two Great Whatevers has been widely discussed in print and in the Web.

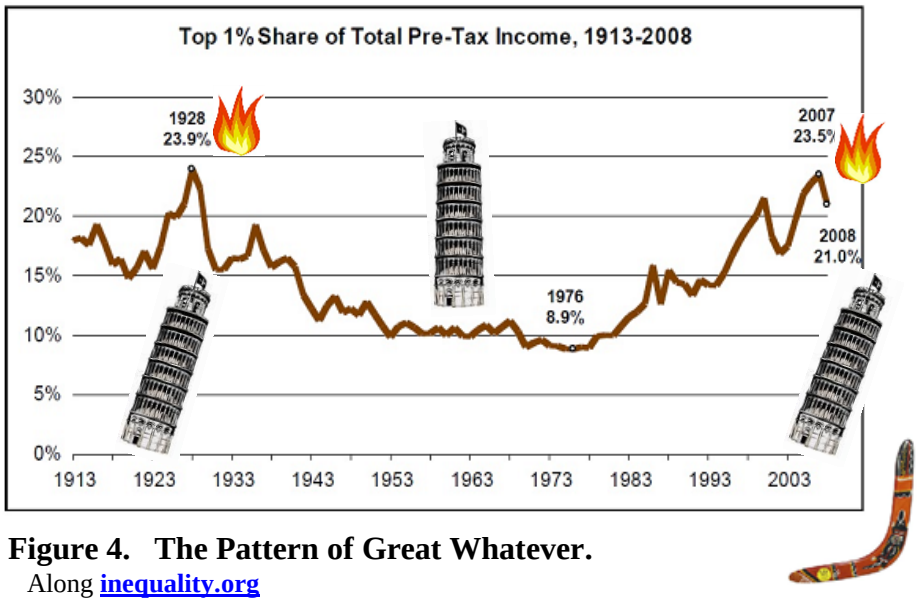


Figure 4. The Pattern of Great Whatever.
Along **inequality.org**

See, for example, the Web page *Great Depression VS Great Recession* by **Brian Rogel, from which I quote:**

Economic Timelines: GD vs GR

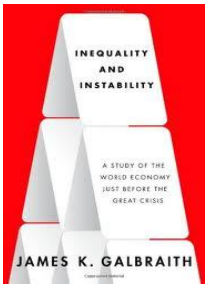
GD: 1921 – Top capital gains tax rate drops to 12.5% *(Revenue Act of 1921)*
GR: 2003 – Top capital gains tax rate drops to 15% *(Jobs and Growth Tax Relief Reconciliation Act of 2003)*

GD: 1921 to 1928 – Average income for the top 0.01% spiked to 892 times the average income of the bottom 90%
GR: 2003 to 2006 – Average income for the top 0.01% spiked to 976 times the average income of the bottom 90%

GD: 1928 to 1933 – U.S. home values decrease by 25.9 percent
GR: 2006 to 2010 – U.S. home values decrease by 26 percent

GD: October 1929 – Stock market crash of 1929 *(Black Tuesday)*
GR: October 2008 – Stock market crash of 2008

INEQUALITY IS INSTABILITY

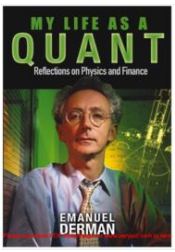


There are plenty of theories of the Great Depression, most of them very narrow. A large volume of work on the subject was done by James K. Galbraith, author of the recent *Inequality and Instability: A Study of the World Economy Just Before the Great Crisis* (*Oxford University Press, 2012*), a collection of his academic works on the causal link between one and the other. His more accessible interviews and publications are available on the Web. By linking two highly abstract terms, James Galbraith, I believe, is closer to pattern view than anybody else.

> Rather, the deeper issue with inequality of this type [‘extravagant gains by the already rich’] may be **instability**: that which rises like a rocket above the plain also, eventually, falls. And the problem with the trick of generating prosperity through inequality is simply that it cannot be continually repeated.
>
> James K. Galbraith, J. Travis Hale. *The Evolution of Economic Inequality in the United States, 1969-2007. Evidence from Data on Inter-industrial Earnings and Inter-regional Incomes*. UTIP Working Paper No. 57 ,February 2, 2009. http://utip.gov.utexas.edu/papers/utip_57.pdf

Instability means to me that the system is in a state ***A*** with energy higher that another possible state ***B*** of the system: **sooner or later** it will move from ***A*** to ***B*** on its own. When it will happen can be very hard or impossible to tell, as predicting earthquakes exemplify. This can serve as a definition of energy. Instability and energy are circularly defined through each other. It gets more complicated for open systems far from equilibrium. Life on earth and our economy are such systems. Then the behavior depends on particular details of the system and stability may have a specific mechanism. In short, the open system can be stable for as long as the mechanism and, especially, supply of energy are stable. Pattern Theory offers a way to represent specific structural details in a universal language.

I believe that all economists who point to the same reason for two great economic catastrophes of the last hundred years are right. But the last sixty years have been the period of enormous social and technological change in the world. What is the main novelty of 2008 as compared with 1928? I believe, it is the information revolution.



One of the earliest techno-prophets of the collapse was Emanuel Derman (*My Life as a Quant*, 2004), who sensed the digital tremors long before the earthquake of 2008, but first general warnings were issued by Norbert Wiener around 1950 .

The computers created instability of a peculiar kind: the turbulence of a fast moving stream, like tsunami, Katrina hurricane, wind tunnel, or just water in the garden hose nozzle. In short, they amplify (as in above examples) or conceal fluctuations, to which the world of finance is not prepared and do not care because of enormous concentration of money and resulting risk tolerance. Computers do not have facial expression and body language, which could tell humans what the flickering symbols cannot.

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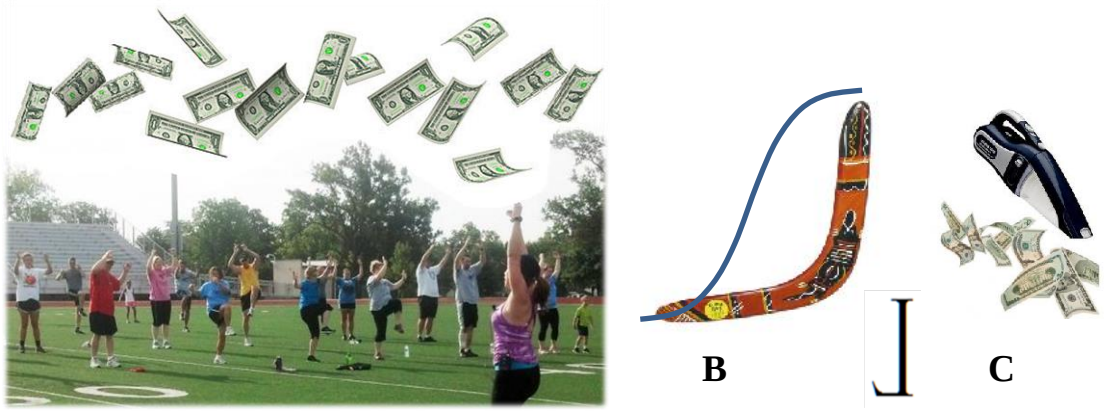


Figure 5 . Kinetic origin of wealth inequality.

Figure 5 presents my pattern vision of the technological origin of the wealth inequality

Imagine that money is falling in dollar bills from the skies on a field full of people catching and picking them up without cheating and fighting (**A**). The resulting cumulative wealth distribution would look as the blue S-curve (**B**), corresponding to normal "bell" distribution. But in reality it is the boomerang: and L-curve with the vertical "I" reaching the skies.

Imagine that **a few** people, armed with some gadget, like a vacuum cleaner (**C**), or just a broom, a butterfly net, are gathering the bills faster than **the rest.** This is what I call kinetic origin of inequality. With the amassed money the new rich could further buy more powerful vacuum cleaners. No cheating, no fight, no theft. Ultimately, they would pay (to a hedge fund) for high tech (or bluff) vacuum cleaners like the behemoth of **high frequency trading** facility. What the hell is it? Here is a testimony:

> Vasant Dhar: So it's like a cash machine with very little risk. That's what's really appealing about it. You just make money every day.
>
> *High-speed trading goes off the Street*, by Jill Barshay , Transcript
> Marketplace, August 26, 2009

Money-Making Machines (MMM), **Figure 5**, are a branch of technology emerged around 1970. They are as diverse and vertically ranked as any kind of technology and they range from a MMM-bicycle to MMM-Lamborghini. Only the rich can afford MMMs of high productivity, such as hedge funds, private equity, high frequency trading, even the Berkshire Hathaway, originally designed for people who were not supposed to need money at all (Class A shares, $129942.00 per share). Therefore, the pool of available money generated by economy is being pumped out at incomparable speeds by the middle class and the rich. This is how the middle class was left high and dry along the shores of the money pond.

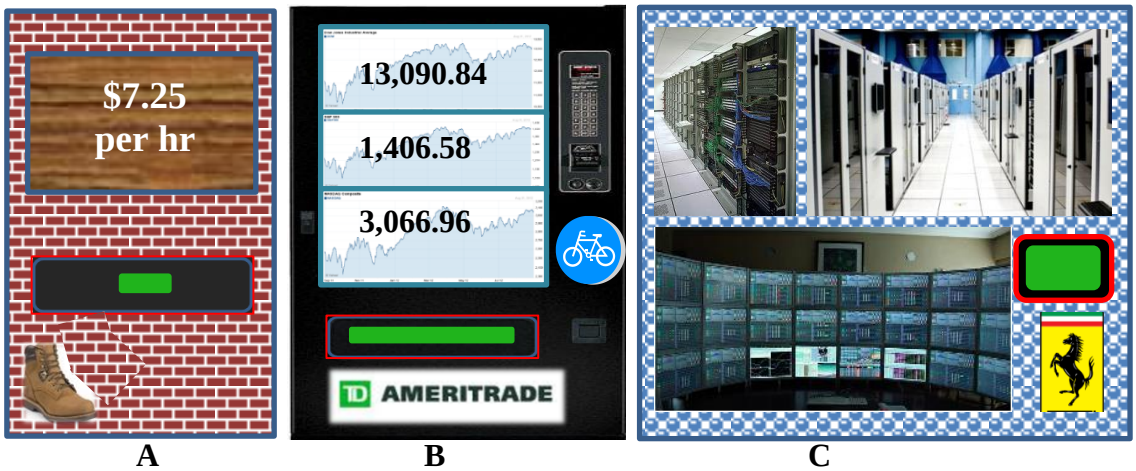


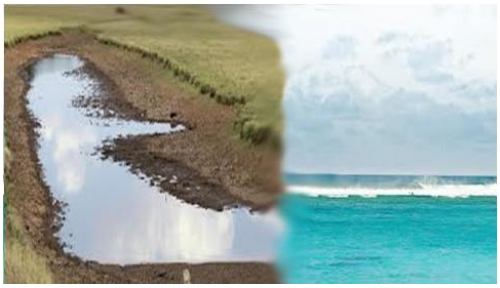
Figure 5. Money-Making Machines

Moreover, the competition propels to the skies a very small group of super-rich. Moreover, I spitefully claim (without any facts) that it is not the super-rich who arm to the teeth the Republican revolutionaries in their onslaught on the middle class, but the simply rich who dream about the entry in the club of the super-rich. The vertical world is quite different from the planes of the middle class. There are boomerangs, L-curves, and pinnacles of its own. What we call greed is, probably, 80% envy and 20% fear.

Note that in this digital agriculture and husbandry of money nobody appropriates or steals other people's money or other property, as Karl Marx would probably decree. The flow of money is not even redistributed: it is simply distributed like the water in public water supply systems, where water flows only in one direction to the consumer, but the pressure and pipe diameter can vary. Or, it is like the distribution of scarce water between neighboring states and nations, which leads to water wars, whether in California or Central Asia or Bolivia.

Now we are moving from a metaphor to pattern. The parallel between money and planet's water is, probably, a true pattern and not just a superficial and single-use metaphor, but I have not yet explored it. The depths are for the professionals, not pattern chemists.

> **NOTE**: In fact, the picture is more complex and less ill-intended because of mutual funds, retirement plans, progressive taxation, benefits, public money from private pockets, safety net, and everything that helps the crocodiles (**Figure 6**) to stay afloat and crawl ahead. As I understand the idea of the tea-drunk Republicans, there must be only a single irrigation system supplying water to lawns, swimming pools, fountains, and kitchen faucets in palaces and shacks, *Jedem das Seine*, everybody by his own pump. Down with IRS!



The "pools" of money for **the rich** and the rest are as different as the world ocean and a pond. **The rest** operate mostly within national borders while the rich dip their hands in the entire world economy. The national economy, even the largest in the world, depends on the world ocean of money **as much** as a pond in Kansas depends on the mercy of El Niño**. It is only a sea connected to the ocean in a tricky way.** **T**he market wisecrackers have invented a term "(n)**eurosis**" for the morbid dependence of US stock market on the events in Europe.

The technology of expensive and productive MMMs is one of the noticed but least bemoaned reasons for the apocalyptic inequality. It is not accidentally that the beginning of the steady inequality rise coincided with the spread of computers since 1970 and the movement from the Gold Standard to digital money which is a pure fiction until it is exchanged for something tangible and not another, larger, exorbitant fiction. Economy is the antithesis of democracy and it cannot be otherwise because the nature of economy, like the nature of life, is inequality as result of competition. One way or another, it must be regulated and this is the essence of the Cold Civil War: it is a water war. Since there are only two parties, all they need to draft armies is to be as different and incompatible as possible—different about anything but size and strength of the army, for otherwise there will not be much fight.

American Family Financial Statistics (statisticbrain.com) Date Verified: 7.26.2012	Data
Average American family savings account balance	$3,800
Percent of working Americans who are not saving for retirement	40 %
Percent of American families who have no savings at all	25 %
Average American household debt	$117,951
Average American household annual income	$43,000
Average credit card debt	$2,200
Percent of American adults who do not have a bank account	7.7 %
Percent of American adults who have an emergency fund to fall back on	38 %

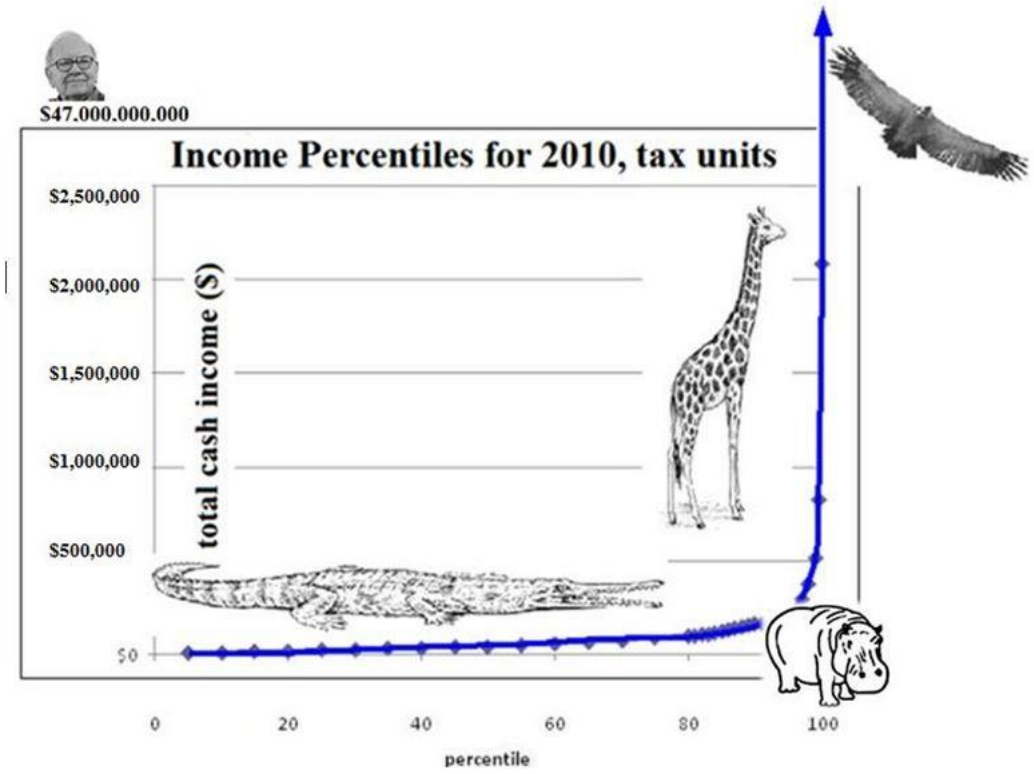


Figure 6. The bestiary of inequality

What is lurking there behind the November 2012 corner? The Robespierres of the Tea Party with the guillotine as the cure for a liberal headache? Or the specter of Karl Marx, which had never left Europe and showed up incognito, with a guitar, his bushy beard trimmed, in the American "Occupy" (instead of "expropriate") movement? Or the monstrous national debt—another instability—as an aspirin for the brain cancer of unlimited growth?

TOLD YOU SO!

There is one kind of wealth that is given away equally to all people: the wealth of statistical data on wealth. It is available on the Web. The difference between the rich minority and the rest is so striking that the two groups look like different socio-biological not even species, but **classes** (uh-oh!), like reptilians and mammalians. **Figure 6** symbolizes the contrast. It does not show, however, how overwhelming the contrast is. Thus, one of the top personal possessions, around $50 billion, is 100,000 times larger than $500,000, the lowest "giraffe height" income.

How realistic is half a million? Half of American households had not more than $109,500 in 2007 and $96,000 in 2009. The average wealth was $506,500 and $390,005, respectively (source1, source2 , somewhat incoherent).

There are books about sociobiology of crocodiles, hippos, and giraffes.

Charles Murray. *Coming Apart: The State of White America, 1960-2010* , Crown Forum, 2012

Richard J. Herrnstein, Charles Murray. Bell Curve: Intelligence and Class Structure in American Life, Free Press 1994

Robert Frank, *Richistan: A Journey Through the American Wealth Boom and the Lives of the New Rich* ,Three Rivers Press, 2008

Robert Frank. *The High-Beta Rich: How the Manic Wealthy Will Take Us to the Next Boom, Bubble, and Bust*, Crown Business, 2011

Robert H. Frank , Philip J. Cook. *The Winner-Take-All Society: Why the Few at the Top Get So Much More Than the Rest of Us* , Free Press, 1995

Robert H. Frank. *Falling Behind: How Rising Inequality Harms the Middle Class,* University of California Press, 2007

Barbara Ehrenreich , *Nickel and Dimed: On (Not) Getting By in America* Picador, 2011

David Brooks. *Bobos In Paradise: The New Upper Class and How They Got There*, Simon & Schuster, 2001

Thomas Frank. *What's the Matter with Kansas?: How Conservatives Won the Heart of America* , Holt Paperbacks; 2005

Chrystia Freeland. *Plutocrats: The Rise of the New Global Super Rich and the Fall of everyone Else*. Penguin, 2012

> *Coming Apart: The State of White America* (2012), by Charles Murray, is as controversial as his and Richard Herrnstein's *Bell Curve* (1994). Regardless of interpretations and controversy, *Coming Apart* is, probably, the most comprehensive opus in comparative sociobiology of crocodiles and giraffes. David Brooks' *Bobos In Paradise* takes under the social microscope a narrow segment of the hippos and lower giraffes. The brave Barbara Ehrenreich runs an experiment on herself in order to crack the mystery of survival of lower crocodiles in *Nickel and Dimed*.

Note that the hippos come not just from the crocodiles but also from the baby giraffes who get elite education and have good chance of squeezing into the giraffe elevator.

Unlike the normal distribution, given by nature and blind chance, the boomerang distribution is typical for the most significant results of human initiative and purposeful activity. It is suggestively called the **power** law distribution, or, "the more you have, the more you will have." In a straightforward form it is known as the Matthew effect (or accumulated advantage) "the rich get richer and the poor get poorer." In its extreme form it sounds like "the winner takes all." American spirit, however, does not approve of monopoly and the stars and kings of all kind rise and fall easily.

> **MONEY IS NOT WATER!** Money is not water, even though it can run as fast through the fingers. A gram or a ton of water, H_2O, whatever happens to it, does not lose an atom! Money, however, especially, if digital, is not conserved. Most remarkably, it can be created, like the world by God, out of nothing by "*fiat*," which means "let it be." I am not a mathematician, however, and I cannot clarify this problem. I can only formulate it: if money constantly changes in an unpredictable manner, what kind of physics can describe it? Can the equality signs in the math of money be reliable? Money seems to exist in time which is not Newtonian, but tangled, torn, knotted, and twisted by human factor. The truth has the same pliability.

5. A TRIBUTE TO THE RICH

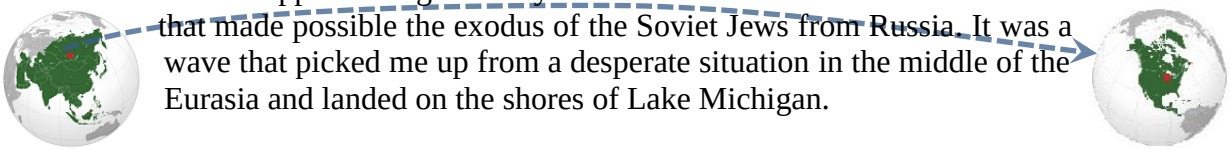
Equality is by no means my ideal. True real-world equality—even the equality of opportunities—is impossible. Genuine real-world equality—even the equality before the law—is unattainable. Money warps every playing field. Genes add wings to ankles or chains to wrists. Inequality is as natural as rain and shine. Inequality makes the palette of life bright. Inequality means exciting and stimulating diversity. Equality is for the gray army of robots good for destruction, not creation. But even the army needs generals.

> Enforced equality of wealth means, paradoxically, not democracy but monopoly of power, stagnation, and decline. Evolution means selective advantage and advantage is the synonym of inequality. In exystems—evolving complex systems consuming and dissipating energy—there is a range of inequality which ensures stability. The physical reasons for that (non-equilibrium thermodynamics) were discovered only around the middle of the nineteenth century and they are not so simple. Paradoxically, they follow from the physical counterpart of equal opportunities: some opportunities are lost, others amplified. Fluctuation is the physical name for "opportunity." Chemical structures that can be generated from a given set by recombination of atoms are "opportunities" in chemistry. Various thoughts in a particular mind at a given moment are "opportunities" in Pattern Theory. One of the most fundamental properties of the world is that only a small part of all "opportunities" has good chances of realization. Pattern chemistry adds to this a rider: the least obstructed opportunities are more probable. The obstruction is the irregularity of a transition state. Chemical and biochemical reactions, as well as human history, run only because of the unequal distribution of energy over molecules and members of society.

I am not an egalitarian. I have no moral opposition to wealth. American spirit encourages success, wealth, personal progress, and stardom, however temporary. It is the American spirit that created prosperous middle class between the Great Depression and Great Recession and remains a powerful attraction for the poor, oppressed, and mistreated, as well as for rich, talented, and ambitious. An immigrant from a despotic system, since my first day in America, I could physically feel what it meant to breathe free. I enjoy freedom, my needs are met, and I do not fret over wealth. I have enough. To take what is free, to use the opportunity, to get an advantage—to condemn that is like to condemn a cat that chases a mouse.

In one way or another, willingly or under pressure, the rich contribute to all lasting things. Freedom, art, music, poetry, science, culture, philosophy, justice (however impossible), information are as important to me as food and water. Throughout history it was the rich benefactors, extravagant kings, and greedy predators that left palaces, temples, and monuments for the next generations, patronized greatest artists and scientists, funded colleges, hospitals, libraries, charities, and opportunities for becoming rich.

The rich are the keepers of freedom, diversity, independence, originality, and innovation on a very large scale because they will not give a damn for anybody's opinion and they can make reality out of a dream. They are the gatekeepers of the future. They can resist pressure. They are free to experiment and to set new patterns to the rest. The rich are the strongest potential opponents of repressive regimes. The poor can only adapt to the system or revolt. The Russian Communists were able to exterminate freedom of thought only by abolishing not just wealth inequality, but the wealth itself.



It was the support and generosity of the well-to-do and rich American Jews that made possible the exodus of the Soviet Jews from Russia. It was a wave that picked me up from a desperate situation in the middle of the Eurasia and landed on the shores of Lake Michigan.

The super-rich are often the super-generous. It is Warren Buffett who pledges: "More than 99% of my wealth will go to philanthropy during my lifetime or at death."

> Warren Buffett and Bill and Melinda Gates' initiative to get billionaires to pledge at least half their wealth to charity signed on 11 new families who support causes from science museums to access to marijuana.

Nevertheless, most rich are not like most of us. There is an impenetrable barrier between the psychologies of the average **rich** and the average **average**. Sometimes I was jarred by a strange psychological dissonance in the mentality of the rich: they expect all people to behave as rich. I can understand that. People cannot imagine what they have never experienced. But many among the rich in America, if not the majority, are of humble or painful origin and they have enough imagination.

In any case, the rich should not have either legal or moral obligations to the rest of society. But the double entendre of the word *tribute* is intended. There is a tribute that "the rest" are paying to the rich. It is the threat of economic and political instability. The inequality is a blessing without disguise, but sooner or later, historically, the boomerang comes back as a disaster. The problem with exystems, like life, society, economy, and religion, is that they are stable within a certain range of parameters. A large deviation from the optimum ends up in extinct species, revolution, crash, terror, theocracy, and inquisition.

Anyway, after this tribute, I swear not to use the word "rich" in this Essay anymore. I do not want any ideological connotations. I prefer **the Few**. The division into the Few and the Many—the *oligoi* and *polloi*—is part of life and a law of history. It is natural. It is necessary. It happens because wealth is a life form: it multiplies like rats (OK, rabbits) in a large, expanding, but still limited space. It feeds on abundant, but still limited food. In order to multiply wealth to the "condor" level, you need not only enough money left after your daily expenses, not only a passionate love of money, but also a modern rabbit farm, computerized, served by MIT graduates, and upgraded by a notch each year like the Apple iPad. You need an MMM: Money Making Machine. Moreover, you need to protect your MMM with the power of the government and the courts and you are tempted to put them inside your MMM.

There are few of **the Few** because they make money faster than **the Many**. It is like a marathon or a bike race which stretches from a few leaders to the tight core and a long tail of the weak. The money road narrows with each million.

Inequality is beyond ethics because it is a fundamental pattern of life on earth, based on multiplication and competition for limited resources, from microbes to political parties and from money to fame. It is the competition in which there are always winners and losers in an always shifting order—through centuries, decades, or overnight.

No traditional Abrahamic religion either extolled wealth or saw any moral symmetry between wealth and poverty. All three commanded giving and support of the poor, as did all traditional religions and Confucianism, as far as I know. All religions assumed, however, that the commandments held only within a strictly delineated tribe, nation, religious community, denomination, or caste—and many still see it that way. Only the 20th century shaped the liberal view of the world without borders, which I do not share. Yet the word "liberal" means much

more than that and it is still derogatory in parts of America. Without Middle Ages in its history, the USA as a whole is not in a hurry to embrace Enlightenment and Deism of the Founding Fathers. In the absence of astrophysics and molecular biology, Deism was a very practical substitute and still is a good metaphor and God is always a good shortcut to the reason of all mysterious things. God makes reason emotional, for better or worse.

Where can we see **the Many** brotherly mingling with **the Few**? Certainly not at Wal-Mart. Not on the public beaches. Probably, at the polling place of the one-person-one-vote elections.

6. VITAL INTERESTS

I distinguish between **universal human needs** (food, shelter, security, leisure, freedom, etc.) and **vital interests** that are different for different social groups. Vital interests can clash, which is more or less the essence of history.

Placing poverty and wealth onto the same continuous scale in **Figure 6** conceals the extent of the split of the society into two biosocial classes as different as "crocodiles" and "giraffes". The Many and the Few simply have different pattern physiologies—more distinct than the difference between reptiles and mammals. The striking difference seems to be of the magnitude of the contrast between plants and animals. It manifests in the way the taxonomic class reacts to economic events: the animal can escape or fight, but the plant can only accept its fate and halt its metabolism during the drought or winter. The problem is that the next step down from "metabolic cost," i.e., the minimal level of consumption, is death: biological for plants and animals and social (physical in many parts of the world) for humans.

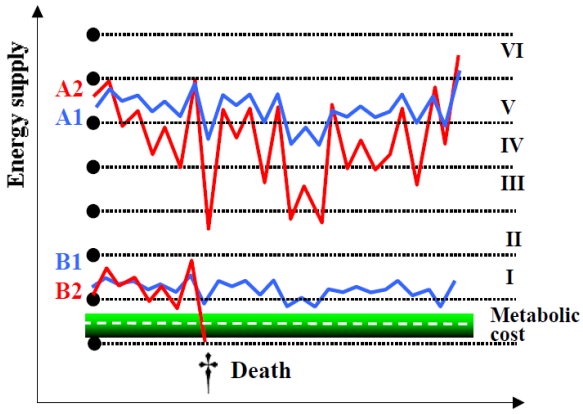


Figure 3.6.2. **Prosperity (A) and poverty (B) at low (blue) and high (red) range of economic fluctuations (temperature).**

Figure 7. Metabolic cost.
From Introduction to Pattern Chemistry, p. 101

Figure 7 reproduces *Figure 3.6.2* from Introduction to Pattern Chemistry . It illustrates the idea of metabolic cost and shows the cardinal difference between the Few and the Many. The Many are incomparably closer to social underworld.

I further present yet another visualization of the problem of two classes, inspired by the metaphor of water and similar, as a pattern, to metabolic cost.

There is no Economy ocean on the map. We can imagine it, see **Figure 8**. A five-story residential beach-front property is subject to the dangers of storm surge or even tsunami from the Economy ocean.

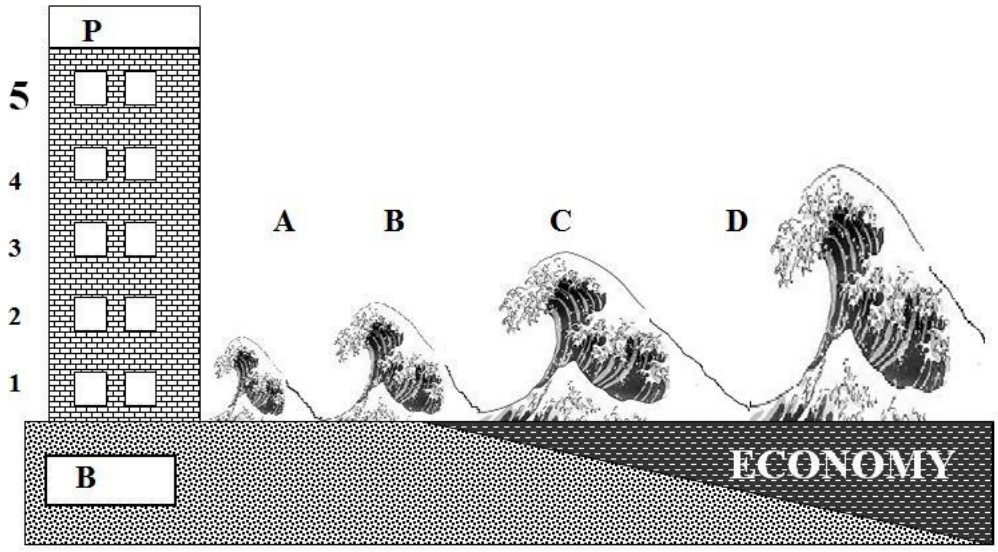


Figure 8. Inequality of loss

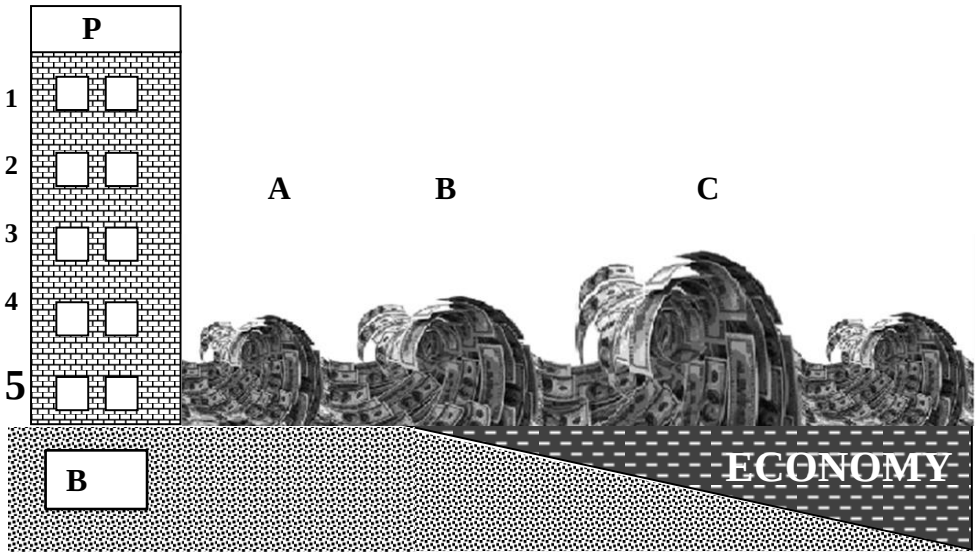


Figure 9. Inequality of gain

The irregular but limited in range tide of Economy—which the economists call "equilibrium"—does not reach the house. From time to time a storm comes and waves hit the house and bring misery and material damage to the occupants. People on the first floor are most vulnerable. People at the top may never lose anything to flood during their lifetime. This inequality of loss is matched by the inequality of gain in **Figure 9.** Both gain and loss have the same origin. The loss is just the opposite end of the scale of gain. In the long run, Economy is beneficial and productive. It brings overall gain, although there is no law of nature guaranteeing "unlimited growth" in a very long run, just the opposite. The effect of the social structure built on the shores of Economy is such that it splits the tenants into two (not four and not three) classes. One class lives **under the threat** of moving into the basement **during lifetime**, the other class is **certain** that the basement and even the first floor are out of question **during lifetime.**

There is a limited movement in both directions simply because the number of the Few can be only, well, small. I am not sure that it is only the magnetism of multi-digit numbers that motivates some of the Many and all of the Few to elbow their way upstairs, as I do not believe that it is the loss of .07″ of thickness or a 0.5 ″ gain of screen that makes fans to swoon over the new iPhone 5. I doubt that all Americans are motivated only by money. I believe it is just the typically human diversity of talent, initiative, character, and genetic endowment, as well as the play of chance in circumstances that shapes the human fate. I do not believe in human irrationality: I believe in the diversity of reasons. But this area is still very dark even with the candles lit there by David Kahneman and other psychologists of human behavior, including his opponents.

Anyway, the vital interests of the Many and the Few are different: the Many want not to be the Zeros (flooded), while the Few want not to be the Many. As a consequence of the inequality of loss, the stakes are much higher for the Many and stability is their vital interest. But as the consequence of the inequality of gain, the Few profit not from stability, but from the storms and tsunamis of Economy. One should be rather surprised if the party of the Few called themselves conservative. One should not be surprised if the party of the Many called themselves liberal.

As for the reason for the storms and tsunami, it could be tempting to blame the Few for angering the Poseidon of Economy. I cannot blame them. It is just the inherent property of the exystem shaped by the Industrial and Digital revolutions. In this system both classes are not really two antagonistic forces, but two complementary hyper-sexes ensuring procreation.

To summarize, there are two biosocial classes—**the Many**, open to high life-shaking loss, and **the Few**, open to high life-stabilizing absolute gain—and this is why they are represented by two political institutions. The number of parties is minimal because political Darwinism is the most ruthless of all when politics becomes a branch of economy. The parties clash not at the polling places during the elections, where everything is quiet and decent, but in the vast diverse ecosystems of human minds.

7. THE VOTER'S MIND

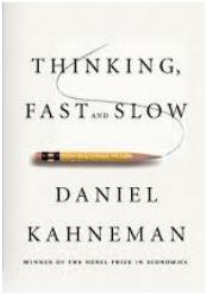
New ideas do not arrive to an empty mind. There is already a community of ideas, some of them friendly, some hostile, and most indifferent. The newcomer either fits in, or has to fight, or melts into shadows.

The sleep of reason produces monsters **(Goya)**

What is there in a voter's mind? This is the to-be-or-not-to-be question for a candidate. But how can we know that? Even some presidential candidates, in bright limelight, who are expected to open their hearts, minds, and tax returns to the voters, can be more secretive than their future secret service, while others do that to their peril.

Human mind is a curtained voting booth. There is no mystery, just a secret.

Ross Carl "Rocky" Anderson , a former two-term mayor of Salt Lake City, is a fascinating but little known person (Google him). I learned about him just a few days before writing these lines, while listening to the radio. He worked with Mitt Romney on 2002 Winter Olympics in the city. In his interview to Public Radio , when asked about the presidential contender, he said that "nobody can say who Mitt Romney really is" or what he will do if elected President, so diametrically opposite his previous (moderate, pro-choice, pro-gay, pro-stem cells) and current views are.



Truly, human mind is a well-protected mystery. Nevertheless, the best minds since Plato and Aristotle to modern psychologists have been trying to crack the defenses of their own extraordinary organs.

Daniel Kahneman's *Thinking, Fast and Slow* (2011), is about the sleep of reason or, in author's terms, irrationality. I was reading it with the feeling of protest—an uncomfortable sentiment when the author is a Nobel Laureate and an excellent writer on a captivating subject of general interest. I hope to come back to this book later elsewhere [look for Essay 58]. Here I give the best known single example from a paper by Amos Tversky and Daniel Kahneman (1982).

This experiment was repeated with different people many times and the great majority (85% in the original experiment) chose answer 2, although a female bank teller is a more common occurrence than a female bank teller who is also an active feminist.

LINDA

A group of students was asked the following question:

Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations.

Which is more probable?

1. Linda is a bank teller.
2. Linda is a bank teller and is active in the feminist movement.

The experiment and the interpretation of the statistically dominant answer as irrationality or fallacy have been criticized, sometimes in very strong words, by a part of psychologists. Psychologists remain split quite like our political parties. I am not going into details here. In essence, as I discovered going back to the history of the problem and original publications of experiments (a large, fascinating, somewhat eerie domain!), our mind, in my interpretation, works the following way.

If there are two possible answers to choose,
(the preamble and choices in an experiment often are intentionally deceptive, suggestive, or ambiguous),
the entire content of our mind—conscious and subconscious—
(it can be anything: education background, money troubles, expectation of a date with an intimate friend, weather, recent news, personality of the experimenter <yes!>, etc.)
at the time of choice divides into three parts,
(either supporting or contradicting or irrelevant, regarding each of the choices)
and it votes for either answer 1, or answer 2, or abstains in the election of the answer and votes arbitrarily.

There is much more to it in Kahneman's book and the corresponding field of psychology, for example, the division of thinking into fast and slow. I regard it controversial because what is slow or fast and rational or irrational depends on the background and education, i.e. the content of the mind. What is slow for a student is fast for the professor. Did anybody experiment with professors?

Here is my pattern experiment with you: does a hungry man who steals a loaf of bread deserve prison?

Psychological experiment in this field consists typically of filling out a questionnaire or performing an action, for example, choosing a chair from a row to sit down. As an experimental scientist used to experiments with chemicals and hardware, I was struck by a peculiar situation in psychology: the result of an experiment with the purpose to investigate the mind content of a

subject reflects also the intent, background, imagination, and **mind content** of the experimenter. This can be quite a tangle, like in a comedy of errors.

Just one more example. People, it was found, tend to exaggerate risks. Thus, it is known that the risk of a fatal accident with an airplane is extremely low, but some people are still irrationally afraid of air travel. But is it irrational? I believe that it is generally natural to value your own life more than lives of strangers: the statistics that applies to others does not apply to you. Yet nobody dealing with statistics of personal risk seems to notice the cardinal difference between "my life, my health, my money" and "your life, your health, your money."

> Although the significance of the entire rationality research is undisputable, I do not regard "classical" interpretation of most experimental results as quite rational. This important and troubling book made me turn to original experimental works of Daniel Kahneman and Amos Tversky, as well as some of their opponents. I tried to look wider at the whole large area of behavioral psychology, which turned out not so behavioral if playing make-believe games does not count as behavior, and not so scientific if science means logical rigor. What it certainly is, although not on purpose, can be summarized as the theory and practice of mind manipulation. Countless and rather depressing examples can be all summarized as the principle: what you do is what is in your mind, which is a cocktail of a few ingredients, some of them secret, stored in the subconscious, and closed to yourself and the manipulator. Therefore, the manipulator uses his own mind as a template for humanity and frequently, but not always, succeeds. It is the relative concentration (i.e., intensity) of the ingredients (fears and desires) that decides the outcome. Strong fear or desire overcomes the weak fear or desire, but if there are no fears and desires to compete, there is no choice and the outcome is straightforward.
>
> The main unanswered question is: what is rational? It seems to me that because two different minds take part in a psychological experiment (or a political confrontation), what is rational for one mind can be irrational for the other. It is irrational for a college freshman to give any serious thought to an artificial and utterly irrelevant question with no personal consequences for the answer. It is irrational for a scientist to expect the same answer to an artificial question about money from a son of a billionaire and a coal miner's daughter.
>
> It has already been noted by some reviewers, that Daniel Kahneman's encyclopedia of irrationalities omits the most conspicuous item of all: religion. It is mentioned twice in passing, without judgment.
>
> But why is religion irrational as a matter of fact, not in a derogatory sense? Because for every belief there is another belief which considers the other one a fallacy. Beliefs have no consensus and ask for no proof. The purpose of religion is personal moral guidance and responsibilities, spiritual comfort, sense of community, historical roots, meaning of life, attitude to adversity, and, in some fundamentalist cases, everyday behavior and customs. It is what science based on facts and logic cannot give and does not intend to. Religion and ideology is about personal choice. But what is good for the goose is not good for the gander.

Anyway, I am coming to the core of this Essay. The voters with two different vital interests form two groups of unequal size. How can their minds be statistically equilibrated regarding the binary election choice? How are the two armies of the same magnitude recruited from—unbelievably!—the handful of Few and the mountain of Many with different vital interests? Isn't

it a triumph of behavioral economics? The answer is in what is put into the voter's mind and what was there before.

Let us put the blue Democratic and the red Republican minds on a balance scale, **Figure 10**, and load the pans with items of mind content relevant for the choice.

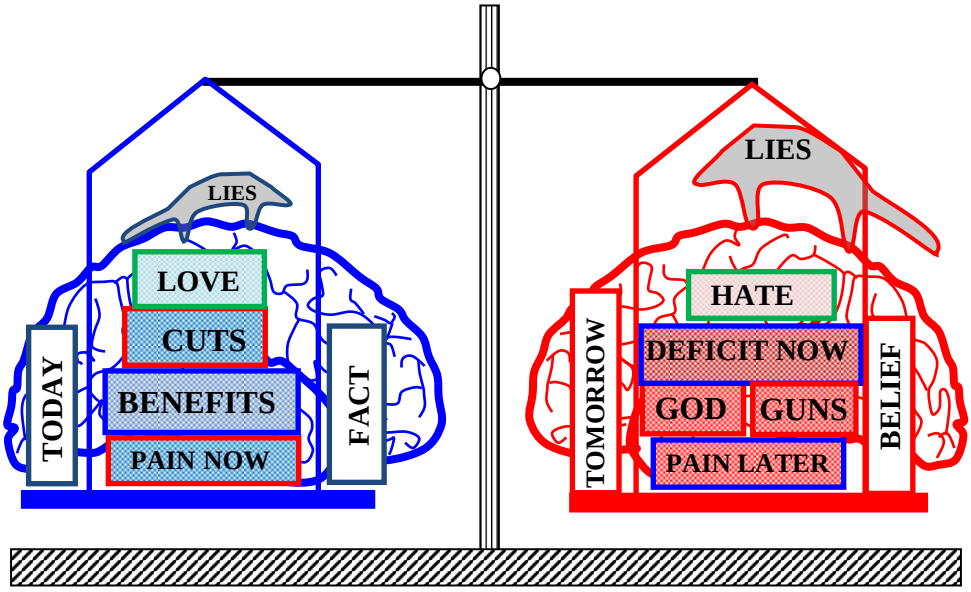


Figure 10. **The choice for the Many: Blue or Red?**

BENEFITS

CUTS

LOVE

PAIN NOW

Democrats promise and keep alive social security (literally, not just as the name of the package of programs) to the Many. I label its box as **BENEFITS**. I frame the items coming from Democrats blue and from Republicans red. The Republicans promise **CUTS**, which also adds weight to the blue choice of the Many. Suppose, the person is inclined to follow the liberal and Christian idea of love of the neighbor regardless what is on the neighbor's mind, skin, or memory. Let us put **LOVE** on the scale. Since the choice depends on the state of the economy, I add **PAIN NOW** of unemployment, poverty, or uncertainty **TODAY**. If the person makes decisions basing not on beliefs and dogmas, but on **FACTS**, I mark it so.

TODAY

FACTS

It is my assumption that the load on the right pan can hardly outweigh the load on the left pan. The stress of the situation does not come from facts only. The right mindset is susceptible to **BELIEFS** and **TOMORROW**, i.e., the imaginary future and apocalyptic visions is a weighty factor in the right mindset. Still, it seems to me that the it needs something else to catch up with the left pan. **GOD** and **GUNS** come to join politics of **BELIEF** and **TOMORROW**. The **GUNS** hysteria reflects the expectation that **TOMORROW** the government of the leftists will come to the doors to take people's freedoms. To **GOD** and **GUNS** I would also add the worship of **GREED** relabeled as **SUCCESS**, but it weighs upon both pans, although heavier on the right. I include it in **LIES.**

Let us take a different mindset of one of the Many. **HATE** is an exaggeration, but it is certainly not **LOVE** or equal rights. It means prejudice and negative feelings to some neighbors. **DEFICIT** is a perfect reason to worry, although not for **TODAY**, but for **TOMORROW**. It is **PAIN LATER** for a concerned person who has little worries about **TODAY**. Of course, **PAIN LATER** is just an idea, but it can be painful **NOW**.

The choice is ultimately between **BENEFITS** and **DEFICIT**, both **TODAY** and **TOMORROW**. My personal position, which is, by my observations, the opinion of a vast majority of voters, is that both are equally dangerous because they are two ways to name the same thing. They could be settled by a compromise in the national interests of highest priority.

The choice is simple and automatic for one-issue voters. Others weigh the offers on their minds scales rigged by personal background and current problems.

Social psychiatry is not my cup of tea. I leave it here with the last note: the Few do not need **BENEFITS**, do not feel much **PAIN**, rely not on **GOD** but on money, can hire all the **GUNS** in the world, and have no reason to be much concerned about **TOMORROW**: in these hard for the Many times the MMM of the stock market is in high gear.

The Red package, therefore, is designed for the Many along the vital interests of the Few. It is like a piece of bread made of the mixture of flour and sawdust—in times of war, siege, and blockade, this is how it was often made.

And yet the Few **vote** Blue, too. I do not mean large donors. I wonder why. I have no data to substantiate my explanation, but I suspect that common sense, education, belief in the US Constitution, and liberal ideals are among reasons. I hope the Blue Few understand that theocracy, bigotry, limits to personal choice, depletion of reward for honest work, and exploding inequality are the guaranteed ways to destroy democracy. I believe that the Blue Few make a rational educated choice.

Naturally, many other compositions from the same or other blocks can be put on the balance and compared, although not so easily in numbers. Some blocks are connected, like lack of education and religious zeal, cultural isolation and guns. Professions, incomes, beliefs, and tolerances form heavy clusters, mental "molecules," which weigh more than just the sum of the isolated components.

Figure 10 is a product of my imagination. It is a configuration of a pattern of manipulated rationality. Whether it is the question which Linda is more probable (ridiculous and intentionally misleading test) or which candidate you vote for (even one with a tightly closed mind), or even whom to marry (Charles Darwin, actually, compared all pros and contras for his marriage), it is the choice between **combinations of components of different composition and weight; in other words, pure chemistry.**

I consider any religious arguments in politics irrational anywhere in the world and regarding any religion, whether in America, Israel, or Egypt. It is not irrational, however, as the last resort of

the minority—or even majority—within the democratic society, to promise a bright (or nasty) future instead of facts and logic. I know no major religion (or ideology, or even a TV ad for health and fitness) that would not promise something in the future—paradise, nirvana, communism, wisdom, weight loss, or happiness the person is desperate to find.

A TRIBUTE TO IRRATIONALITY. We are taught to be rational along a universal set of rules. Rationality limits our fantasies. We are free to be irrational. Irrationality is a wealth in itself and we do not need to toil for it. It is the source of individuality and antidote to tribal boredom. Irrationality makes life a fun to live. It adds intensity, variety, entertainment, surprise, colors, taste, and humor to daily routine. It adds purpose other than money, breaks boredom and monotony, intensifies search for gain and provides comfort at loss. Life is a theatrical play about human nature, where reason and belief, logic and passion are engaged in love, jealousy, deceit, and competition.

IT IS IRRATIONALITY!

My **Essay 57** is just a mental experiment, a game, played to illustrate the pattern view of the world and the search for similarity between the pattern-chemical composition of a new product, social structure, political situation, human mind, and stage of history.

Nevertheless, I, a registered Independent, have my own firm political convictions and I know who I am going to vote for, while irrationally expecting a result of my act.

Although both extremes of liberalism and clericalism are reckless and irrational in their own way and the profession of a politician does not leave anybody clean and spotless, I do not find any symmetry between Democrats the spenders and Republicans the cutters. For Democrats, Republicans are political enemies, but Republicans see Democrats as blood enemies.

It is not only the nastiness, bigotry, obscurantism, and hatefulness of the Reds that tilt my balance heavily toward the Blue. Those four attributes could be a result of my own irrationality. What important is the internal logical contradictions of the Republicans. It is the self-contradiction between the two Mitt Romneys within a short span of only ten years, from 2002 to 2012. It is the self-contradiction of two Paul Ryans: one a devout follower of the aggressively atheistic Ayn Rand and the other a devout Catholic and Tea Party hero with a gun. It is the contradiction between the Christian ideals of mercy, forgiveness, and compassion on the one hand and the social Darwinism and harsh invasive theocratic legalism in the current Republican ideology on the other hand. Moreover, it is the screeching friction between legalism and anarchism.

The most absurd idea coming from somebody whose profession is based on some knowledge of history and Aristotelian logic is that we can penetrate the minds of the Founding Fathers 225 years later with a mind rejecting science, evolution, and lessons of history. How can we do that? By talking to their spirits with Ouija board? By interpreting the US Constitution as a religious text?

Of course, there is also something personal sitting very deep in my mind that makes me cringe at the Republican fervor.

It is the same pattern of **internal contradictions** which first made me doubt the Communist ideology I was brought up in. The Soviet canon had many essential features of a religion, including sacred texts, prescribed rituals, and standards of ideological purity. It also promised a sort of paradise: the future triumph of Communism on the planet free of exploitation, inequality, and even money itself. To its credit, the Soviet system promoted education and even the top universities were free. But capitalism and Western philosophy were as much anathema to Communists as Darwin to the Christian fundamentalists.

Early in my youth I asked myself a question. The elections in the Soviet Russia were extolled by propaganda as the most free and democratic in the world. Right so. People were encouraged or even nagged to come to the polls, nobody was discriminated, there were curtained voting cabins, one person one vote, but why was there only one candidate on the ballot? That act of rational thinking was a beginning of my transformation until my open conflict with the Soviets much later.

In the ever flowing water of history, patterns stay fresh for millennia.

Page created: September 2012 ——— Last reviewed: April 2015

<<< To Essay 56. OUT OF ONE MANY

To Essay 58. ALL RATIONAL MINDS ARE ALIKE; EACH IRRATIONAL MIND IS RATIONAL IN ITS OWN WAY **Pattern chemistry of rationality** >>>

To contents **email**