

Economic crisis loop. Redemption

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1. Introduction

The economic crisis roots were probably first analyzed in the book [1].

This paper shows another way in analyzing economical crisis by utilizing existing theory from physics.

The economics consists of a number of players (people), environment (media, personal contacts, resources, money, land and etc) and some mechanisms (government, business, organizations and etc).

Each person (player) can be seen as a pin ball that is floating in the liquid (environment) with a certain charge Q and energy E when it is born.

The environment has an energy W that is a sum of all people energy E .

The environment has a pressure P . We call P a pressure of environment. It is actually the amount of chaotic information created by all players and mechanisms. We can call P also garbage information reminding the well-known binary garbage in Computer Science.

The player has inner pressure I that is interpreted as a will to leave in the environment (communicate with outside environment).

It is easy to see that the energy W of the environment arises from the energy F of personal contacts that can be calculated based on the known formula from Electricity Theory:

the energy F between two players is directly proportional to their charges and indirectly proportional to the radius R of both egoism (as it can be easily seen R is the same as a will to leave together or communicate with each other).

The player energy E can decrease/increase depending on the sign of energy F that arises from personal contacts. If F is negative/positive the player energy E decreases/increases (as one can see F plays the role of potential energy known from physics – it can be negative or positive).

Also, one can see that the amount of initial energy E of a player can decrease or increase over time depending on the pressure P .

It is easily seen that if the initial energy E of a player decreases/increases, the total energy of the environment decreases/increases as well.

Mechanism is a pump that can work both ways: increase the pressure of the environment or

decrease it, in other words it creates chaotic information or orders the information (entropy increase or decrease).

2. Main Body

Definition.

If environment pressure P is higher than the player inner pressure I , the player is called smashed.

Definition.

Black hole is a player or mechanism that consumes more energy than gives and smashes players by increasing the environmental pressure P .

Definition.

White hole is a player or mechanism that gives more energy than consumes and never smashes any player.

Theorem.

If some mechanism always increase pressure P and there are no white holes, there arise black holes. Finally those black holes form one black hole that shuts itself. All players get smashed.

Proof.

Since pressure is increased, ie entropy increases and there are no white holes, by laws of physics it leads to forming black holes.

Black holes attract each other forming one black hole that finally shuts itself down. The pressure P gets higher than the inner pressure of any player since they are all Black holes. Hence all players are smashed.

QED

Theorem.

White holes can arise only from the personal contacts.

Proof.

Follows from definition.

QED

As one can see Black holes were predicted in [1]. In the art and literature, Black holes were shown at least in [2], [3]. Lost time of Marcel Proust is entropy increase that leads to forming Black holes.

In book [3] there is made a common proposal:

they suggest raising of environmental pressure P .

The following theorem shows that it is a mistake.

Definition.

Organization is a collection of people that are connected through electronic devices and/or through personal contacts.

Theorem on personal contacts and doors.

The number of personal contacts depends indirectly proportional on the number of rules in the underlying organization.

Proof.

The bigger is the number of rules in the organization, the more rules the person needs to overcome (call somewhere, register somewhere, learn how to use and etc) in order to get in touch with

someone. It is the same as going in the labyrinth and entering the doors in order to meet someone. Each door has a door bell – the rule, the puzzle – the person needs to solve to enter the door. Hence the more such doors to open the less is the number of personal contacts. Because one walks infinitely long time in the end.

QED

It is known that the common way of behavior is to always create more rules. Hence the number of personal contacts tends to zero. Because of that the environment energy W can not increase since the player energy E can not increase due to F is either negative or zero.

Let us now prove that any Computer Company is a Black hole.

Definition.

Bug in a computer program is a situation (command input) that makes the program to behave in unpredictable way, ie not written in the specification.

Definition.

Software (computer program) that has a bug is called malware.

Theorem on Bug.

Any computer program (software) has a bug.

In other words, any software is always a malware.

Proof.

Computer program is a set of logical rules with input and output. It is based on arithmetic operations in the processor. So, it is a logical system consisting of rules that accepts input and derives the output according to them.

According to Gödel theorem (see [5]), any such logical system encounters a true statement (command input) that it does not know how to interpret (by Gödel theorem it can not be proved or disproved using the rules of that system).

It means that such logical system contains a bug.

In other words, it is a malware.

QED

Theorem on Computer Company.

Any Computer Company is a Black hole.

Proof.

Due to Theorem on Bug, there is always bug in the computer program no matter how one programs or fixes it. Obviously, Computer Company creates chaotic information by this “bug fixing” process. It is easily seen that players involved in this process do not increase the energy of the environment W since nowadays they even do not need to work together – the work is done remotely and in own premises. Hence we proved that any Computer Company is a Black hole.

QED

Let us give the following definition.

Definition

Organization exhibits Economic crisis if there are Black holes and the number of organization rules grows.

It is easily seen now why Economic crisis exists in World Economics – there are Black holes and the number of rules in any organization (government, business and etc) always grows.

So, we obtained the following result.

Theorem on Crisis.

World Economics is in permanent Economic crisis.

Now let us show that the modern economics theories built so far do not give a real picture of what is happening in the reality. In other words, there is a mental gap between the theory and the reality. It reminds the gap existed in Soviet Union. Everything was perfect in the theory, but in the reality it looked very differently.

This can be felt in the everyday life when one walks on the streets or travels around the world.

This claim can be proven by utilizing Automata theory and well-known methods of stochastic signal transform.

We show that the modern economics, its theories and the way of thinking are contained in the loop.

For this, let us study the possibility for a Finite State Automaton (FSA) to find a signal masked by the noise (“white noise”).

Such problems have applications in marine engineering where such automata are used to rescue underwater crew.

We show that the only possible automaton that leads to such rescue mission success is automaton built on the up-and-down principle. FSA built on other principles “gets stacked” and not able to fulfill their “duties”.

Similar problems were considered in [7], [8], [9], [10].

As one can see the obtained result about Automata not able to distinguish reality and illusion is the same claim what we wrote above – modern economics and its theories “got stacked in the loop” and can not distinguish anymore that they are in the loop.

Let us recall a definition of FSA. More precisely, a definition of a transducer.

Definition

A finite state transducer is a sextuple $(\Sigma, \Gamma, S, s_0, \delta, \omega)$, where:

2. Σ is the input alphabet (a finite non-empty set of symbols).
3. Γ is the output alphabet (a finite, non-empty set of symbols).
4. S is a finite, non-empty set of states.
5. s_0 is the initial state, an element of S .
6. δ is the state-transition function: $\delta: S \times \Sigma \rightarrow S$.
7. ω is the output function $\omega: S \times \Sigma \rightarrow \Gamma$.

Let consider the case when $\Sigma = \Gamma = \{0, 1\}$. Other cases can be considered similarly.

Definition

A signal is a sequence $\alpha = (\alpha_1, \dots, \alpha_n) \in \{0, 1\}^n$ of 0 or 1 of length n .

Definition

A signal $\beta = (\beta_1, \dots, \beta_n)$ is called masked by the noise if there exists a random vector $\xi = (\xi_1, \dots, \xi_n)$ with values in $\{0, 1\}^n$ such that

$$\beta = \alpha \oplus \xi, E(\xi_i) = 1/2 \text{ for } i = 1, \dots, n \text{ and for all } n \tag{1}$$

where \oplus is a boolean addition and E is a expected value of ξ .

For simplicity, we let $\xi_i = \xi$ for all i where ξ is some random variable.

Let there be a transducer $A = (\Sigma, \Gamma, S, s_0, \delta, \omega)$ and let β be its input signal. The transducer output signal is denoted by γ .

Definition

We call a transducer $A = (\Sigma, \Gamma, S, s_0, \delta, \omega)$ capable of recognizing a signal α if

$$D(\gamma_n - \beta_n) \rightarrow 0 \tag{2}$$

when $n \rightarrow \infty$, where D is a variance.

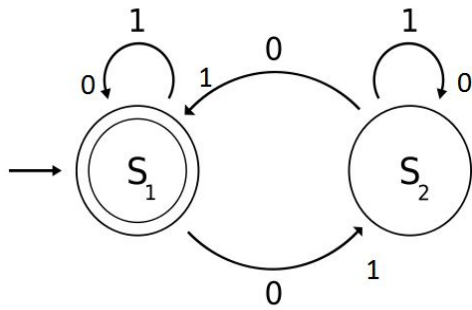
Definition

Up-and-down automaton is an automaton for which the output signal is determined by the rules

- if input is 1 and previous input is 0, then the output is 1,
- if input is 0 and previous input is 1, then the output is 0,
- if input is 0 and previous input is 0, then the output is 1,
- if input is 1 and previous input is 1, then the output is 0,
- if no previous input, then the output is BLANK.

As one can see Up-and-down automaton is the automaton that follows the input by taking the previous input and inverting it, and it reminds a well-known method from statistics theory called up-and-down method since it is based on the same principle - “up-and-down” [10].

Example of such up-and-down automaton is given on Pic. 1.



Pic. 1 Example Up-and-down automaton with initial state s_1 .

Theorem.

Up-and-down automaton is capable to recognize any signal α .

Proof.

Self-evident. It follows from (2).

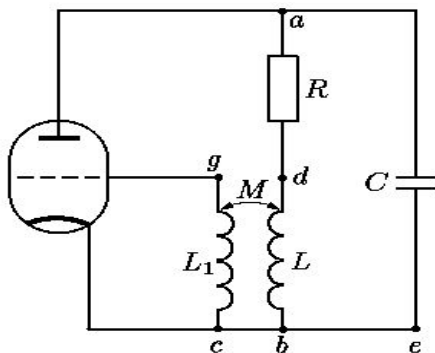
QED

Theorem T.

Any transducer that is not equivalent to Up-and-down automaton is not capable to recognize a signal α (there exists a signal α that (2) is not fulfilled).

Proof.

If such transducer exists, then it will be complex enough. The work of such transducers can be described through electronic elements. It is seen that this transducer will contain enough complex elements such as depicted on the Pic. 2.

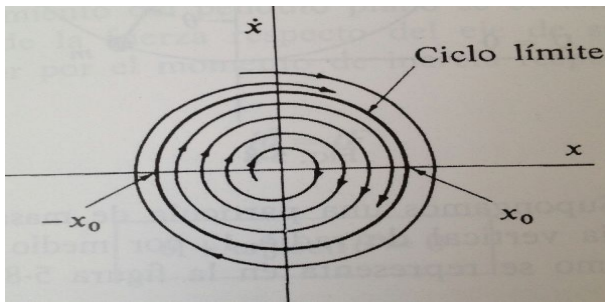


Pic. 2 Typical electronic schema

The signal inside schema depicted on Pic. 2 is described by Van Der Pol equation

$$x'' + \lambda(x^2 - 1)x' + x = 0 \tag{3}.$$

See [6] for further discussions about this equation. It is known that (3) posses solutions of type depicted on Pic. 3.



Pic.3 The Phase portrait of Van Der Pol equation (3)

If $\lambda = 0$, then the solution is harmonic oscillation.

As one can see such output signals can not predict any input signal except of the same type because they are too predictable themselves.

QED

The above results can be easily generalized for the case of “white noise” (we used a dice model for random noise) and bigger input-output alphabets Σ, Γ .

3. Economic Loop

As one can see Theorem T gives a proof for our claim above:

modern economics and its theories have lost the control and are in the endless loop. In other words, there is a gap between reality and the theory what can be perfectly seen in the everyday life.

4. Redemption

Richard P. Feynman in His book [11] was telling about energy supplies in the nature and finally He wrote “Therefore it is up to the physicists to figure out how to liberate us from the need for having energy. It can be done”.

This article suggests a way for such liberation.

Theorem.

Information = Energy.

Proof.

As discussed in [12] p. 137-148 it is seen that Universe is an atomic tape, ie Turing Machine, in other words Information. Hence Energy is a part (word) of information as well.

QED

In His book Richard P. Feynman writes “we will define the information in the message to be proportional to the amount of free energy required to reset the entire tape to zero” and further “we can show that to reset this to zero costs no energy in several ways”.

He suggests a way to such reset of the tape – turn the atomic box over.

This procedure is known as “garbage collection” in computer science.

In simple words, Energy exists only because people wanted that it exists. If one imagine world

without people, it is clear that the notion of Energy has no sense.

Moreover, the notion of Energy (Earth or Moon resources) exists only because it allows to speak people the language Energy-Resources-Money in order to sell so-called Energy sources (electricity, gasoline, food and etc) and by this degrade others, ie forcing them to use those sources by means of buying it or raising the people fear towards the moment when some certain Energy source disappears.

By this people created constant struggle for Energy sources: wars, hunger, killings and etc.

All the above said can be seen from the following simple example.

Let us imagine house wife that decided to buy a new “invention” - Wi-Fi door bell – instead of a perfectly working old one built on electricity.

She is driven by a “good will” - to have the latest knowhow. She does not understand (she has no information, nobody told Her so and people who sold Her Wi-Fi device intentionally did so to get another victim for their product) that using Wi-Fi device means using the batteries (Energy source) for the button (otherwise it is not remote). Usage of batteries means higher consumption of Earth costly metals. Besides she calls to electrician who uses gasoline to arrive to Her home and lots of His energy to install Wi-Fi bell door.

And does she need the bell at all? Those who bring here Love enters Her home with the key and without the bell.

And those who bring Her suffer will use Her Wi-Fi door bell that she bought from them to enter Her house and collect the bill. As it is now seen in forming government based collectors companies that crash the doors and teeth of people to get the bills.

They destroy lives by simply collecting the money that is often needed for example to cure the cancer or some disease that a person suffers.

Sadly, but they do not understand that they will get the worst treatment after some time: “You rip the harvest, You have sown” due to simple physical law – Second Thermodynamic Law, ie Entropy Impossibility to decrease, in other words, Information loss possibility or we could say increase of neglect about the Universe state (**people and their thoughts are part of Universe**) over time. This is also due to Action-reaction law that is obviously built-in in Universe Turing machine (known as Third Newton Law).

This concerns everything, including people mind processes since those are based on information.

As an example nowadays pensioners get no required treatment at all countries. Doctors became nearly robots and their main tasks is to prescribe antibiotics because their work nowadays becomes more and more only to enter data into computer.

The operations are delayed for several years and even if operation is done the people suffer of mistreatment or doctor neglect (lots of cases when doctors forget instruments inside the body). One patient was told to drink the coffee to cure His cancer.

So, we showed that **Information = Energy**.

We could say now that the society where the notion of Energy exists can be called **Marasmus driven society**.

This explains the famous joke from Soviet times “When I get my hat up, my Marasmus gets harder”. In those times people were forced to learn endless communists conferences and work as hard as possible in five years economical plans reminding modern Sprint procedures invented by business corporations where the management already started to force worker to learn the principles

of their Marasmus otherwise the worker gets fired – the same as in Soviet Union times, including video and electronic control at work and public places.

On the contrary, the society where there is no notion of Energy (or resources) can be called **Love driven society** since the “kitchen wife” would be advised by someone with Love not to buy and install Wi-Fi bell door, moreover, in such society there would be no doors at all – no fear of abuse for the sake to charge own Energy that turns out to be only “Smoke on the water”.

The above “kitchen wife” obscuration procedure applies to thousands years people Marasmus growth where someone pretends to be a good guy (we can call him a “wolf in a ship fur”) with the knowhow and others are victims of own greed and neglect.

This applies to cars, mobiles, TV and other devices.

This mass Marasmus process was perfectly summarized by Pink Floyd - “Amused to death”.

World news constantly shows that there is a group of people (we call them Smoke sellers or collectors) that continue to invent and degrade other group of people - “house wives” and “beer drinkers” - and by this make them suffer mentally and physically.

But those groups do not know that there is another group of contemplators who sees their deeds for thousands years, just wait and try to open their eyes.

As one can see there were thousands of such persons including Richard P. Feynman, Mahatma Gandhi with His famous saying “One can not trade with fundamental principle - Love”, the list goes “deep into the forest”.

But “troika” is still in the same place...

As one can see this paper result is in the full accordance with Martin Heidegger, Ludwig Wittgenstein theories and with famous Gödel theorem that says in simple words “in every rule set that contains rules of arithmetic there is an exception”.

This theorem also describes why there are always cases of corruption and fraud:

people society rules are based on arithmetic hence they are “fraudulent” by nature.

This inevitably leads to the conclusion that there might exist only one simple rule in the Universe.

We can call it **Love**.

So, Energy can not exists since it obeys Energy Conservation law that is arithmetic law hence due to Gödel theorem (see [3] for explanation about Gödel theorem) it leads to paradox.

One of such paradoxes is Maxwell's demon (see [12]).

By this discussion we proved

Theorem.

No matter what You do, the result is the same.

Proof.

If You follow your Marasmus rules, there is someone who follows the Love rule.

If You follow your Love rule, there is someone who follows Marasmus rules.

QED

In other words, Maxwell's demon exists but nobody cares.

In other words, the machine is at the same point always, ie people leave in “Den surka” (everyday is

the same) for two thousands years from the time when someone who knew this tried to awake them. Or it can be seen as the newspaper that reads itself.

Theorem on Liberation (Redemption).

The liberation that Richard P. Feynman spoke about is possible only by resetting the atomic tape to zero state.

Proof.

Everyone forgets the notion of Energy, that is the same as to through Money into the window. This is discussed above.

QED

Defintion.

Slave is a person that has no freedom, ie possibility to do own things or have own opinions.

Theorem.

When one takes money, he becomes a slave.

Eventually all become slaves.

Proof.

People who take money fall into two categories: those who degrade others (Smoke sellers or collectors) and those who are degraded (“kitchen wives” or “beer drinkers”).

Since by Second Law of Thermodynamics Entropy increases in the society where notion of Energy exists, ie society with Money, sooner or later there occurs information loss, in other words those who are involved in such society are forgotten after some time.

It is obvious that there will be always new energetic people who need energy and who can find an exception rule to the rules of such society (due to Gödel theorem and that money society is based on arithmetic operations).

Those guys do not remember others and use them as the money source, ie their energy source.

By this we get the result since the forgotten person that is used only to get energy source from him has no freedom. It is obvious this eventually applies to all.

QED

Examples:

Pompeii where slaves were used as a source of money when they were fighting in front of others for their pleasure.

All recent world disasters: people and animal deaths due to someone need to buy another house or do renovation (example, install Wi-Fi door bell).

People death video taped and shown in Internet as a joke or whatever reason.

Theorem.

Pompeii was a self-reset of Universe to zero state.

Proof.

Since in Pompeii no one wanted to reset to zero state since all became slaves (no one wanted to forget about energy sources, ie money)

there was a self-reset of atomic tape to zeros implemented since Universe (Turing machine) needs to continue evolution (typing words arisen from Love rule only) anyway.

In other words to make a garbage collection since the current memory piece is full of it.

QED

This Theorem was already known by Pink Floyd in “Live in Pompeii” album [13].

Since Universe is a Turing machine that is typing only Love, It told to Roger Waters about this.

Let us recall that “The Minotaur” (infamia di Creti, "infamy of Crete") appears briefly in Dante's [14] Inferno in Canto 12 (l. 12–13, 16–21), where Dante and his guide Virgil find themselves picking their way among boulders dislodged on the slope, and preparing to enter into the Seventh Circle of Hell.

Obviously Theorem on Liberation (Redemption) gives a way to leave Minotaur labyrinth.

5. Brahman prophecy - Hanoi Tower - Building Information Society

Let us discuss the economics evolutionary process using famous “Fire triangle” as it is done in [15]. In the modern world the slogan “Building Information Society” is the key of success for business corporations that are the biggest building blocks of the economics nowadays.

It is clearly seen that Information, Freedom and Money are three key points of the economics for thousands years (we do not give definitions to, for example, for Freedom, it is understood in the usual way, like, “Possibility to do something”).

Let us call such economics “Information Society – Rational Mind”.

The corresponding “Fire triangle” is depicted on Pic. 1.

As it is known, in the ancient times the economics evolution process started by moving towards information growth by rationalizing the nature and building its logical explanations and simulations. This is depicted by Up-arrow from Freedom-Money line. Since then people realized the importance of information and the economics development processes always are based on the information growth.

So, the thousands years economics evolution always meant moving up towards Information point on the triangle on Pic. 1.

Nowadays the economics consists of people and devices (robots, mechanisms, computers). More and more the process of communication happens by sending messages to each other. The messages are seen as strings of bits, for example, 11010.

In order to be sure that the message is sent and received without any errors, the original message is attached with some “parity check” bits (see [2] for discussion on the topic) that makes such messages longer. For example, 11010 becomes 110101 telling that there is odd number of 1 in the message.

It is obvious that parity check bits may be transmitted wrongly as well no matter how many bits are added.

One can see that over time such communication process starts to send more and more erroneous messages because at some point the transmitter starts to retransmit errors.

In order to fix the errors, people start to build more and more sophisticated software, coding algorithms, machinery and so on. By this, inevitably multiplying the errors or the amount of information exponentially since those mechanisms or software are built on the same communication principles – send message with parity check.

The move Up becomes faster and faster, resembling the “strange attractor” characteristics.

The “Red line” on the Pic. 1 designates a moment when business companies start to use MDM tool

(Master Data Management tool).

MDM tool can be seen as Universal Turing Machine built in the real world (not abstract Turing Machine) since MDM tool can produce (mimic) any existing business software simply entering that software rules into MDM tool (sometimes called Business rules).

MDM tool is created by many software companies already and implemented in many world corporations as a tool to manage errors and duplicates in business data - Customers, Products, Vendors – what business companies faced due to the above mentioned exponential accumulation of errors .

On the top of Pic. 1 (triangle top point) there is UA – Universal Automata, the device that produces copies of itself. This is the logical end of the evolutionary process described above since it is Pure Information producer and consumer. The way people build the economics over thousands years – Manufacture-Consumer.

As one can see by implementing MDM tool, the prototype of UA is already built.

One can see that such UA can do any human functions known so far: write books, music, cure itself, provide clean services, programming, watching TV, drink beer and etc.

As a result of such “Building Information Society” process people loose Freedom. Also, the average prosperity level goes to zero. This can be easily understood if one imagine center of mass in the triangle that is currently located at about MDM point on Pic. 1 (since MDM tool is already implemented by major corporations). Also, the existence of homeless people indicates the same. They have no money and no freedom. They have only information on where to collect the bottles and where to get alcohol or something similar.

On the contrary, one can suggest simple mechanism that will remove the above tendency by re-inventing the wheel – if one invents the word “Love”.

Similar inventions happened many times in the history of people, for example, when people changed the goods exchanging to “money making machine”.

The picture of this economics is depicted on Pic.2. The center of mass is located perfectly in the center of triangle since this will be the natural balance between Information, Freedom and Love. Since there is no Information without Freedom and Love. There is no Freedom without Information and Love. And there is no Love without Information and Freedom.

“Fire triangle” on Pic. 1 gives an idea how modern economics works in the reality. It is a circular economics that is rotating counter clock-wise direction pumping money-goods in order to squeeze more money. It is rotating because there is a delta in information known to someone who rotates it. Let us call this someone a watcher.

This mechanism is depicted on Pic. 3. On the top there is some good that has the most value, the left point is another good that has the less value, and on the right point is the good that has the middle value. Only watcher knows the real value of those goods because he posses the information – owns the delta in information and of course keeps it in secret. So, his act is simply consists of rotating the goods counter clock-wise direction and squeezing the money from this act. By this he makes the illusion of a fair trade. But in fact, as one can see, there is no fair trade since the money are squeezed only due to the delta in information between the goods value.

As an example of such “squeezing” let us recall the first European sailors who used to exchange useless stuff for natural resources like pearls in the middle ages.

This mechanism explains the reason of cryptographic algorithms existence - they exist merely to hide (keep in the secret) the delta in information.

It also explains other things like oil prices changes that to outside world look as stochastic and unpredictable.

It also shows the existence and exponential growth of duplicate goods. To see this in the reality, one can check how many USB sticks exist in any major World Webshop.

The “squeezing” mechanism justifies the simple observation of considerable quality decreasing of produced goods comparing, for example, to hand-made goods of the last century: the quality of cars, houses, apartments and etc.

The most absurd point here is that all know about this mechanism but prefer to keep silence and continue to “cheat” each other by simply putting this mechanism work into the law framework and printing books like [15] that just justify further increase in the security measures, in other words, they just create an information to support this “squeezing mechanism”.

We would like to conclude that such absurd (we can call it Marasmus) can not exist for a long time if one recalls the notion of friction from physics [17].

The friction force of the body lying on the surface and to which some force is applied can be static or kinetic as depicted on Pic. 4. While the applied force increases the static friction force grows up to some maximum value after which the body starts to move. After that moment the kinetic friction force is less than the maximum static friction force [17].

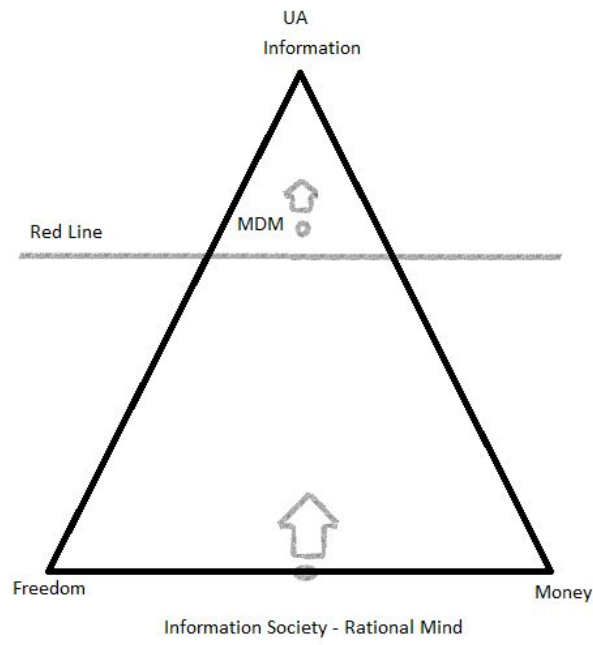
Pic. 4 depicts a bifurcation point where static forces change into kinetic. This point will occur when there will be an understanding that “Building Information Society” or, as we proved above, rotating counter clock-wise direction the “squeezing” mechanism are the same as playing Tower of Hanoi game with very huge amount of disks (see [18] for the explanation of this game).

Let us prove this by reminding the known result from mathematics that building Tower of Hanoi is the same as drawing Sierpinski Triangle [18]. Pic. 5 depicts Tower of Hanoi game and Sierpinski Triangle.

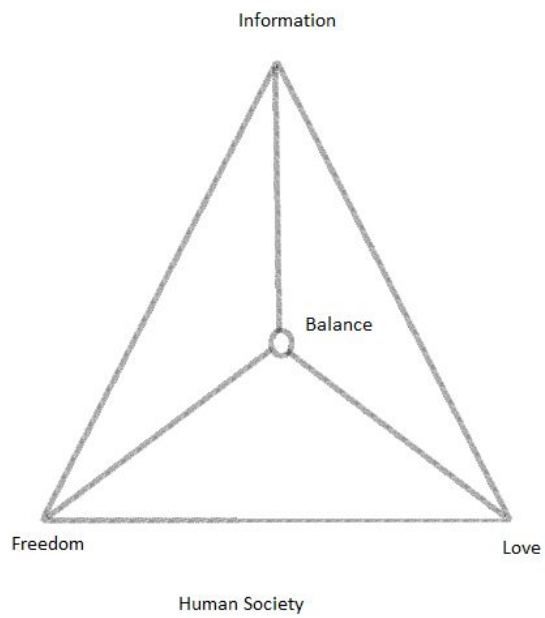
As one can see the rotating the “squeezing” mechanism is the same as drawing Sierpinski Triangle. Drawing triangles to build Sierpinski Triangle or moving disks between three sticks happens in the same three-fold steps as rotating a triangle on Pic. 4 - it is just moving three coins with values 1, 2, 3 from one pocket to another pocket using some grow field called Field of Miracles as in the famous book telling the story of Pinocchio [19].

Tower of Hanoi game is well-known from ancient time as a Brahman prophecy that tells about a lost temple where the priests of Brahma spend their lives playing Towers of Hanoi with 64 disks of solid gold (see [19]).

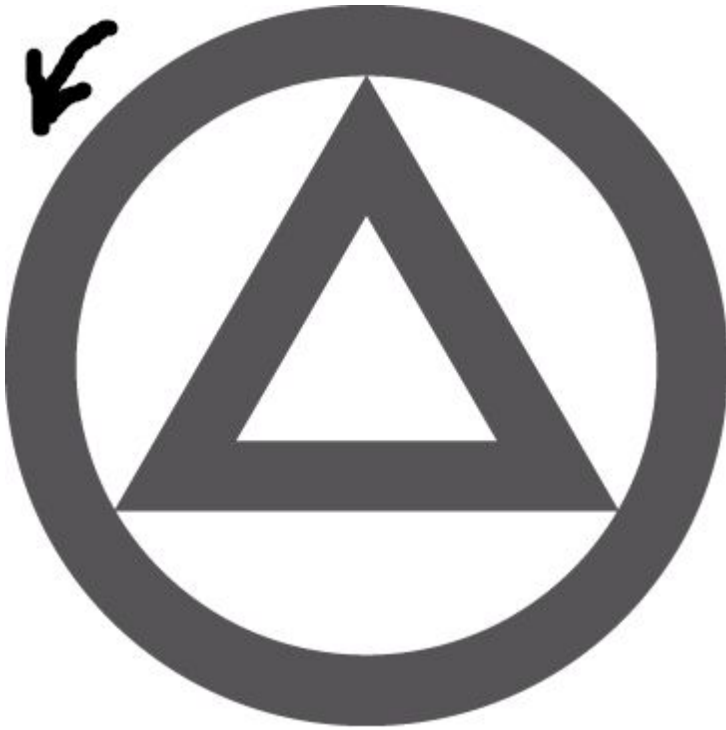
So, the bifurcation happens when one realizes that he actually is one of such priests and the Brahman prophecy is not a legend but the very reality.



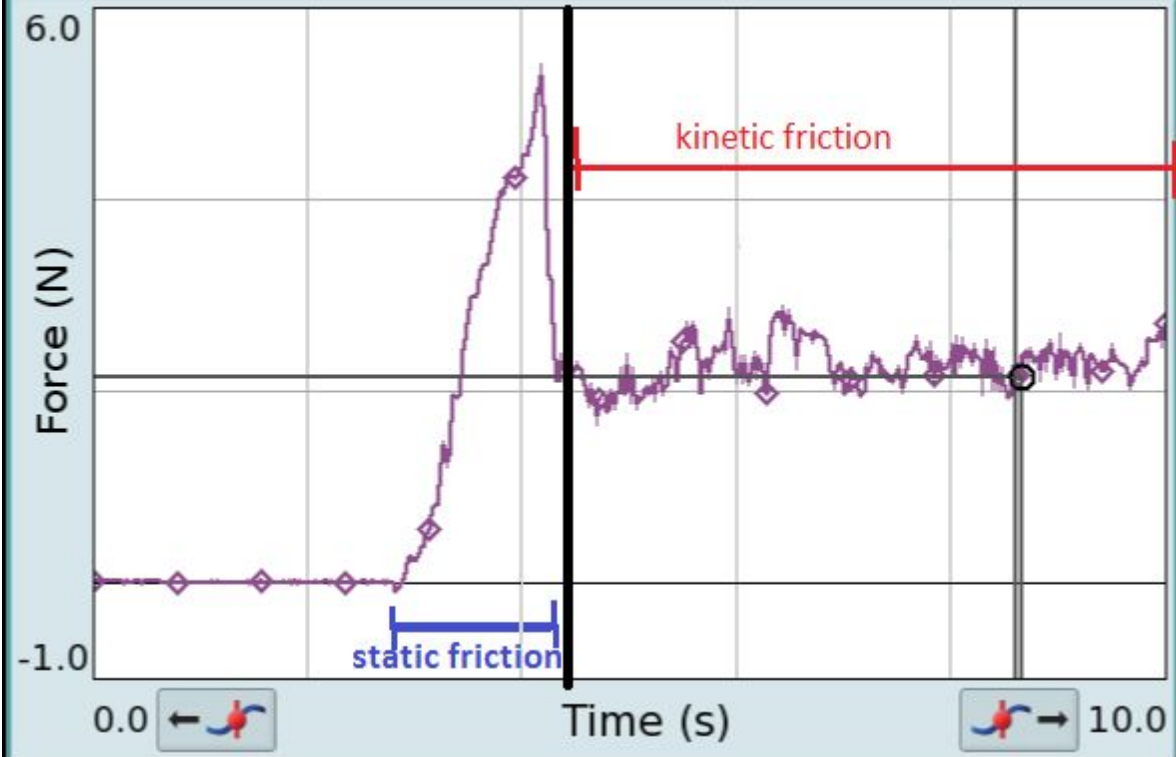
Pic 1. Building Information Society – Rational Mind



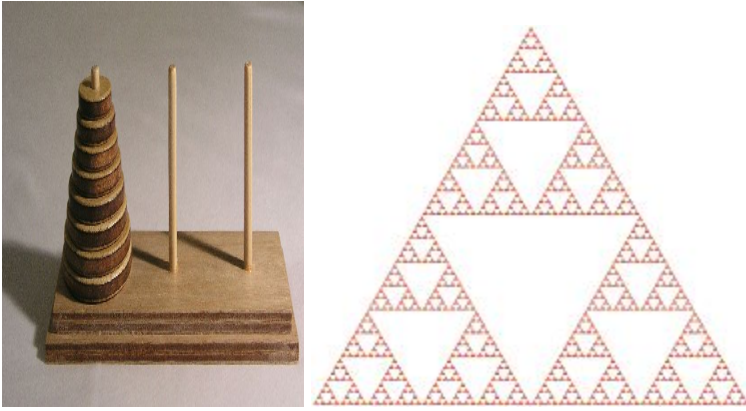
Pic 2. Human economics



Pic. 3. Circular Economics. Pumping-squeezing mechanism



Pic. 4. The static and kinetic friction forces



Pic. 5. Tower of Hanoi and Sierpinski Triangle

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