

## Share your performance!

*...or what web 3.0 will look like*

### Socialization as a trend. From web 1.0 to 3.0 through 2.0. Signatures of different e-eras

Global web is a funny thing. Being probably the most advanced product of Western culture, it is extraordinary fast developing and evolving rather in accordance with the rules of East. No doubts, the Internet seems to be an incarnate Yin Yang, where hopeless trash hole accumulating almost all Humankind consumption unexpectedly bears humble chits of Mr. Pure Progress, which, generally speaking, couldn't be met anywhere else.

Let me make a paltry historical excursus. Global network was born as a practically proprietary structure. From the budgeting point of view, ARPANET represented some echo of the Manhattan project, i.e. a reflectory attempt of US military clique to obtain from the scientific society something useful for the Nation. It was the more so topical under the increasing intensity of the Cold War. Certainly, Web usage in that years was the privilege of the 'four hundreds'. *I am forced to explain that here I use 'four hundred' term not for pop-musicians and nouveau riches but for insiders from university media and government organizations.* Reasonably, that an old-school Internet (i.e. so-called web 1.0), i.e. the Web in its 80-90s format, became a bulwark of the triumphant user individualism, as well as the jubilant corporate enterprise. Although there is a lot of remarkable details in web 1.0 physiology, the main question to be discussed in context of the present article is the content production and consumption. And the key property of young Web was the separation of these processes between different executives. Generally, the first gen Internet was a very capitalistic system developing synchronously with PC hardware and strongly secondary relative to it.

As soon as a ratio between content-writers and content-readers had overcome some critical threshold, the Web 2.0 was born. This stage to some extent appeared as a result of multiplication of a natural people's craving for self-expression by a highly decreased average user quality. The latter factor was mostly induced by a global popularization of the Web. Vulgus lusted for a content production, aiming to belch out all their priceless and sacral wastes. Organizing forces (which remained absolutely constant after 1.0 era) not only didn't try to stop this process but gave all instruments to content-writers. The stage described above could be characterized as a controlled socialization. Web became not a simple set of individual users but the society under tender care of corporations, for which Internet transformed from an innovative fun to a direct source of income. Thus, Web 2.0 also represents a capitalistic (i.e. controlled by the corporations) system in which, however, content production and consumption is done by the same force, and, even more importantly, Web became markedly public, sugary socialized and primary relative to local hardware.

What's next? If "socialization" looks quite well-defined as a trendmaker of WWW development, then one has no choice but clear out the "controlled" epithet, aiming at breaking the organizing basis of Internet. Before the instantiation let me make few lyrical digressions.

### Cyber-communism concept. The lessons from amateur LANs

From the global, systemic point of view every process initiation (and with this – any system formation) could start either from upper or from the lower strata. In the first case, some pre-existing organization initiates an appearance of a daughter structure and performs its further

management. Such a phenomenon is probably logically connected with the highly-organized structures' replication process in its particular, social sense. Second way of process initiation deals with a structural units' self-organization supplemented by a selfish internal management system framing. The last one could take the diversity of forms, from strictly centralized to highly distributed (up to perfectly chaotic variations).

On a personal level I strongly prefer initiations originated from the lower strata. Why? I don't know exactly... Maybe because life on the Earth was born by self-organization (?) Or maybe I find some their interconnections with libertarian ideas that are dear to me (?) Finally, those human progress elements, that in my opinion deserve a maximal respect, appeared in self-organization of single personalities, but not by a command from above.

Self-organization is an extremely complex and diversely expressed phenomenon. I'm afraid that it's nearly impossible to make a brief overview focusing on its elementary description *a fortiori* a classification. That is why I'll limit our story with only some examples and analogies relevant to it. First thing to be remembered in the hi-tech sphere is an amateur radio communication. Fully selfish, non-commercial, non-governmental organization with the highly distributed management and potential to solve global goals. Properly speaking, amateurs' resources represent world-wide reserve capacities in a case of emergency. And note, no corporations with their initiatives.

Let's disassemble even more relevant example... I mean amateur LANs, which were quite popular at least in exUSSR in 90s. Here they are! First brairds of cyber-communism! No initiatives from above, only consolidation of little private resources, and only self-organization. What did the LAN newcomer obtain? Chats, huge base of a locally stored files (including movies, music, software), network games, etc. Absolutely! All the same services that you obtain today in a pretty envelope from the social networks.

More global-scale triumph of cyber-communism are popular p2p-networks (such as bit-torrents). I hope they don't need a special introduction.

### Capitalism and communism advantages and disadvantages.

I would like to discuss separately a phenomenology of the most essential weak and strong sides of a management system in capitalism and communism. I'll use one-syllable words to do this.

So, capitalism needs some owner as a primary manager, i.e. proprietor of some organization having a personal and direct concerns on its prosperity. Capitalistic organizations live in competitive medium, and those which stay the course are managed in highly effective manner. It is true at least if the medium really contains all signs of meritocracy. Corporations, that we discussed earlier and will many times discuss below, are the particular cases of the capitalistic organization, in which there are typically multiple owners not always having strictly codirectional goals. I mean that some collectivism exists in corporations' management ☺ Nota bene! Thus, management of normal capitalistic organization is effective, because the solutions are made by interested party, the owner. Where are the disadvantages? Or, at least, possible weak spots? Their origin is in owner's motives that are certainly of a private, pragmatic nature. The typical goal of a capitalistic company head is building the capital ☺ When hiring you a room in a hotel, landlord doesn't really think about your convenience, just about his/her income; a comfort of this room represents a secondary phenomenon originating from the market competition. Thus, the progress for capitalist is a side-product; if market realm doesn't require it, then it doesn't appear. In IT sphere, relationship between pure progress and capitalistic interests could be illustrated well by ZiLOG company advent. It was founded by the best engineering team from

Intel which was alive with new processors development. Market situation is a circumstance not always stimulating new ideas promotion, and that time processors' giant restrained an enthusiasm of the advanced minds standing and waiting for new operating systems. And that is the essence of capitalistic organization: effective management for earthly targets.

What's about communists? As you may surmise – something just the opposite. There is all right here with the progressive ambitions but deplorably with the management efficiency. Any doubts? Then compare workforce productivity of soviet collective farms to that of an average private farm. But from the other hand, let me remember soviet farms' names... "Path of light", "World to sunrise", "Progress", "New world". Symbolic, isn't it? It is believed that communistic organizations were a common property of all their staff members, and such a collective management was ineffective due to 'Circular firing squad' phenomenon. I.e. low efficiency is tried to explain, virtually, with a pluralism in management. I strongly disagree this 'point of view'. First, in fact nothing similar to pluralism was existed in such organizations. Second, joint interest and public administration rules were so badly formalized, regulatory environment giving The Owner status to a subject was so weak, that an organization nominally owned by people was in practice no one's. And it is nonsense to manage unadopted structure effectively. The second factor determining low efficiency of communistic administration is a weak compatibility with the principles of meritocracy. Natural selection acting through a competition is virtually absent here, although the competitiveness was ideologically declared. Weak management and lofty aims state the main lineament of a communistic organization portrait.

Are there some organizations which united advantages of capitalistic and communistic concepts? Rather no. But there are no obvious taboos on their appearance. Everything is good in its season. For instance, the most democratic of democracies (I mean attical) had not only been existing for centuries, but thus far represents a kind of reference in the management systems.

### The end of corporations domination

How are multi-billion bankrolls in IT sphere usually made? I think it's no secret that by "salami shaving" principle. There are a lot of users in the world, and if we're offered with some useful service for only 10 cents, then totally payments will state hundreds of millions and billions. Nice business, isn't it? But note, that infrastructure of such services is not bought but rented by us. Doesn't matter, it is still convenient. There are only two slight hitches. First, hardware (all your gadgets) price is not included to the rental payments, at that the inherent value of hardware is doubtful thing today. Second, usability and functional features development is frequently performed in "we better know what you need" manner. First fact seems offensive, second is generally and particularly not always true. <sarcasm> *Moreover, any corporation is mortal, and just try to imagine what would you do with your newest iPhone, if the Fruit company data-center is under siege from workers on strike* <sarcasm/end>. The Humankind, certainly, will not downshift to the Stone Age of a local offline PCs leading by a bizarre opinion of a handful of retrogrades. But like water finds the way through any depths, free reason and common sense can naturally elaborate some internal competition policy which could be stronger than even the most stable social structures.

Let's speak again about Ancient Greece, specifically about an application of Athens democracy best practice to a donation vote process. This is a modification, and simultaneously an alternative to the corporate "we better know what you need" policy. And for sure the last days trend. Let us call this Web 2.5.

What I mean? Internet crowdfunding (as I know, effective crowdfunding is possible on the Web only) and independent start-up media. Here we all together can solve particular problems and/or support particular elaboration. This is first. Wikipedia. We collectively write a global knowledge base. This is second. All-purpose freelance. And I make accent on the really wide range of services. Not only near-IT second bananas, but services like YouDo or Bla-bla-car. Generally, the places where one can easily find a direct access to any jobs' performers. And this is third. One can find much more examples if needed. The essence of Web 2.5 is, consequently, in common resources that support a private initiative. In this case, initiative will win its life only when supported by a 'sight' of some critical peoples' mass. The line between this approach and corporate one is really fine, and it's hidden in pluralism and initiatives' multiplicity. Let's face it, two and half is not precisely three, because of too strong influence of initiatives' owners to their development. However, half after two is, in my opinion, enough for the good ticket to future.

### Web 3.0

I think everybody knows in general terms how does commercial bank work. There is some infrastructure aimed to money collecting and turnover. Resources of each individual depositor are seldom able to solve the global issues, total assets change the world. Patron and main beneficial owner is represented here by an in-crowd of bank directors (do you recognize the corporate principle?). *Lyrical digression: corporations in modern economy's era are, in fact, transformed to the richest banks owing circa a half of world's cash.* Now imagine another model: the same depositors, the same money, but more distributed management. Mutual investment fund has been obtained. They are quite well working structures, if initially some of founders didn't bamboozled others substituting collective fund by his own pocket. To conclude, we deal with collection of some universal resource for its planned usage. *Just imagine the never-never land, where this usage is purely collective, no kidding, and based on "give all you need, bring all you don't need" principle.*

What could be described as a universal resource in IT world? Answer is in the question. Speaking about computers we perceive memory and drive capacity, CPU or GPU performance as the 'resources'. The idea of multiple depositors' resources collection was implemented first long time ago in the shape of distributed computation systems (so-called GRIDs), and the idea about computer resources as a universal currency – quite recently, in the shape of cryptocurrencies (Bitcoin looks the most famous among them).

In my opinion, particularly a combination of two these concepts states an essence of the new era in networking. A single problem to be solved is an effective collective management, which may in a case of abovementioned mutual funds look like circular firing squad. So, the solution seems simple. It's just a complete freedom for people in goal setting with the automatic distribution of resources available for each "depositor". Robots are bad cheaters yet.

Me and the partners of mine call such systems the performance torrents. In similar networking particular user "shares" a part of his/her hardware performance (not only PC) to a community, adjusting its external usage either manually or using ready-to-use presets in a special client application. Consequently, computational Solaris is formed from the little drops shared individually by the single users. The more participants - the deeper this ocean will be, up to mind boggling limits. Taking into account total idle time for the majority of electronic devices, and a client software functionality to change output channel capacity dynamically in dependence to a local CPU usage, one can speak at least about the global energy saving ☺ Jokes aside, with a relatively frugal deposit (compare to the bank deposits) any torrent participant controls really huge performance. While an office building dwellers are eating their lunch, their PCs are

computing the weather forecast for tomorrow. And they will do it not worse than supercomputer pricing like the Empire State Building. Architecturally, it is the same GRID, just performing not single client special tasks, but any user-defined tasks from any users' number. There is nothing new in the distributed computation, except that it has never been used in household.

Do we need an access to supercomputers' resources in real life? Data centers customers, "hard" applications (like high-resolution video editing, scientific computations, 3D-modelling, diverse big-data) users, as well as the owners of weak PCs with intense parallel job, already know the answer. The same is for the corporate clients, i.e. organizations, that need a lot of computing with high speed and maximal security. The rest of users should more attentively analyze their needs, and they could, at least, be interested in the torrent-connected online services. For instance, cloud applications running in "solaris" medium for a ten cents subscription. Believe me, that Word or Photoshop of the latest versions, requiring exactly zero bytes on your hard drive, never suffering from viruses, and performing fast as a lightning, will satisfy you.

That's all with fantasies, let's move to the weak points. How all this is going to work? To my mind, the secret of the performance torrent successful start includes a perfect work of two algorithms groups. First, the algorithm adjusting the dynamic performance distribution between users (i.e. accessing only a particular "solaris" harbor for a free sailing). Second, the innovative parallelizing, fragmentation, and data transfer algorithm, performing in the lowest-level, and starting from a CPU queue fragmentation with ping-and-batch-free communication. Do you have some elaborations on these topics? We do ☺

At the very first stage of development, performance torrents will probably have a client-server architecture. Users requests will be collected and distributed by the server owing relevant shared resources and connection statistics. However, I find this stage as just a temporary solution, giving the time for more advanced structures development. In the future torrents self-sufficiency will tend to increase, up to a perfectly decentralized decision making model. Otherwise speaking, "solaris" will become its own server. Examples of successfully working decentralized computers are obvious, for instance, our brain (at least, its higher regions) functions in such a manner. Thus, torrents future lies somewhere in specific neuron networks. And right here we face to "uncontrolled" socialization.

### Reverse phase change

Let me announce one more banality. The essence of the Internet revolution that has been expanding for approximately last twenty years was in "primary matter" phase change from hardware to Web. Certainly, hardware didn't vanish in haze, but it completely lost its inherent value without connection to Web. Now it is time for the reverse phase change, from Web to hardware.

All the same like in Engels helices and Ecclesiast stones... I actually more like ancient Chinese formula – from shapelessness to shape, and from shape to shapelessness.

### Instead of an epilogue

Evolution is blind. All the beautiful in form and in content, all the fine and wise, all the perfectly detailed and rational, all, that may be thought to be exclusively a result of some master plan, is, in fact, the product of a global bruteforce, which, leading by the dominating Time, tramps "losers" into Eternity, and gives momentary hopes to those "lucky bastards", who fit the particular conditions.

Evolution is effective. How can its masterpiece doubt in this? ☺

Evolution is pitiless. To obtain its wonderful (but tiny in a scale of whole Universe) creations, it spends billions of years, as well as enormous tredecillions of particles, building and destroying nondenumerably many of their combinations, with you and I among them.

Society also evolves according to the analogous rules. And the competition represents a main propeller for the consumer society. But in contrary to the blind evolution, human being owns the observant gift allowing to watch humankind development from the sidelines. And human can be a revolutionist, such “an act of God” that with arbitrary decision forces evolution to change the way. Pure consumption concept looks like a train travelling on the razor edge; progress there is constituted with sugar-free chewing gum. It is time to switch the points.

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