

... Beyond the Level 11

Conclusion¹: From Science back to *Natural Philosophy*

When studying memetic systems, one can see that there are emergent hierarchies. For example, artificial intelligence research has strange appeal: It seems to be always *ahead of paradigms*. If a concrete formulation is found for some AI problem, it can be implemented by hard work; it is no more *interesting* — and it is no more AI. When a study already has form and fixed paradigm, standard methods and problems, it becomes a memetic system of its own. Similarly, there is a category above all sciences, defying scientific study — *we just know it exists*.

11.1 Standard science — business as usual

Good science — this is one of the main goals in today’s universities. What is the definition of “good science”, then? Indeed, today science is measured using very concrete productivity criteria. Researchers and project proposals are evaluated using panels, peer reviews, and different kinds of publication indices. This information is utilized to redirect financing, for “focusing on the strengths”. Who could oppose efficiency?

There also exist different kinds of development efforts to enhance efficiency in universities. There are questionnaires mapping the working practices, and new planners and analysts are hired to implement the “missions” and “visions”. New practices are introduced, including “near-bosses”, “developmental discussions”, etc, making matrix organizations hierarchical again. In short, information acquisition processes are intensified, and system controls are adapted accordingly.

As the system becomes better measured and more efficiently controlled, the system becomes *cybernetized*, as studied above. This means that the number of degrees of freedom decrease, the system is better predictable and deviations from the nominal are minimized.

But what is that “nominal” in science? In the Kuhnian terminology, it is as-

¹The conclusions here obviously do not reflect the opinions of the University, or those of the Department, or those of the Laboratory

sumedly “standard science”. One should be searching for something new that nobody knew before — but for such unknown thing there cannot exist measurements and no controls. Doing science does not match the efficiency pursuit. To survive, a researcher has to compromise: One has to trivialize the problems, searching for “easy wins”, making his/her achievements better quantifiable and predictable. Clever people adapt, optimizing locally, producing the stuff that is being required. Diversity is effectively eliminated from the system.

According to the neocybernetic discussions, the system becoming cybernetized ends in *stagnation*, free flow of thoughts changing to pre-programmed bureaucracy. But what is even more alarming is that there is *loss of vitality*. Enthusiasm is necessary in science². By making the scientific practice non-appealing, the brightest minds select other careers — they usually have the choice. Cynicism and pessimism are very acute threats for loss of interest that gnaw the memetic system from inside. The potential for breakthroughs is minimized, still worsening the vicious circle of systemic degeneration.

Where is the opposition, counterarguments that would introduce some noise and excitation in the system, preventing it from ending in stagnation? It has to be recognized that there are powerful pressures keeping the *status quo*. The arguments often become personified, and nobody wants to disagree with the celebrated top scientists, those who have the aura of heavenly wisdom — and who would not like the world to change. The general atmosphere is discouraging, as it is thought that the “backward-looking traditionalist” just “do not understand”. There is too much to lose for a person trying to make a career. It is the same problem with “scientific spirit” as it is with “free will” — people do not want to take the responsibility, after all. Is there then any hope?

11.2 “Project 42”

In some form science will always survive, even though today’s ways of doing it can collapse or degenerate. One needs to look at science in a wider perspective — or, more generally, one should speak of *natural philosophy*. Natural philosophy is the higher-level category hosting different kinds of incarnations of science. It seems that cybernetization in sciences cannot be avoided, but after catastrophes, new ways of doing science displace old ones.

After all, Isaac Newton was not a scientist: According to his own words, he was a natural philosopher. Natural philosophy leaves mature, gradually paralyzing sciences along the path of its ever-proceeding Geist.

But the above criticism about today’s science only applied to the framework, not the actual substance — is there need for the contents of scientific paradigms to change? It seems that regeneration truly is necessary. Richard Feynman has claimed that *one should not even try to understand quantum phenomena*. The best available theory today, or *quantum electrodynamics*, gives good predictions, but offers no intuition into the world of elementary particles. Why should one be satisfied with such unsatisfactory models? The purpose of science is not only to carry out calculations, but also to reach understanding.

²As one astronomy graduate preparing her Doctoral Thesis lately confessed: “A trained monkey could also type these figures in the computer”

Suomen Akatemia Academy of Finland		Proposal evaluation form 2004	
Panel/Name of reviewer: [redacted]		Proposal number: 212974	
Name of applicant: Heikki Jaako Hyötyniemi		Title of proposed project: Neocybernetics – the New Science of Complex Systems	
Please use the scale 1-5 and answer the questions where applicable. 1 = poor, 2 = satisfactory, 3 = good, 4 = excellent, 5 = outstanding			
1 Research plan			
1.1 Scientific quality and innovativeness of the research plan		Rating (1-5) 1	
Is the project scientifically/academically significant? Is the research plan academically/scientifically solid? Can the project generate new knowledge, new methods, new technology etc.? Is the project ambitious?			
The plan seems rather ill defined.			
1.2 Feasibility of the research plan		Rating (1-5) 1	
Are the research plan, the proposed schedule and the research objectives clearly presented and realistic? Are the research methods and materials appropriate for the project?			
There is no proposed schedule, but more disturbing is that all aspects of the project are vague though suggesting the promise of great things. We have seen this too often in Artificial Intelligence.			

Figure 11.1: Official evaluation of the “neocybernetics” ideas back in 2005 (excerpt). The main purpose of the proposed project would have been to complete a monograph on “Neocybernetics in Biological Systems”

In the “Project 42” the goal is to find models for life and universe — for all complex systems³. And these models should be simple: The sincere belief is that nature can be understood by a human. As an application, the goal is to detect processes of cybernetization — and fight against it in those domains where it is not suited.

It may be that this research is not good science. Indeed, this has been indicated indisputably by the highest authority, the Academy of Finland (see Fig. 11.1). But perhaps this is still good natural philosophy? As Edward Goldsmith puts it when discussing his thoughts concerning Deep Ecology [33]:

... Our mainstream biologist, ecologists and anthropologists — will certainly reject them. I hope they do. If they do not, then I know that the laws must be seriously wanting, for I regard today’s mainstream natural sciences (biology, ecology and anthropology) as being very seriously misguided ...

11.3 Neocybernetics — an experiment design

Experiment designs in complex systems are difficult to carry out, and proving hypotheses in memetic theories is practically impossible. The goal here is to test whether the cybernetic ideas hold, and how the attractors in the memetic sphere emerge and how they find their balance.

³According to “The Hitchhiker’s Guide to the Galaxy”, the trilogy in five parts by Douglas Adams, the Definite Answer to the Ultimate Question of Life, the Universe and Everything is **42**. Only the question is inaccurate

There exist no proofs for theories in complex enough domains. Verification of claims, on the other hand, is implemented by checking whether they can pass the credibility and relevance test. Ways of doing science change: Cybernetic proof techniques are not based on truth but vitality, the capacity of the ideas to compete and stay alive. If the theory passes such test, it has to capture some essence of the real system *as we see it*. In the spirit of cybernetics, the proof and the theory itself are intertwined and also relative to the context.

This text is a *cybernetic proof of itself*, or it remains a “proof” of the contrary, and the readers of this text are the agents implementing the *emergent proof*.

Dear reader: If this text has had the momentum for some reason to reach your knowledge just due to its own virtues, bypassing all scientific authorities, being (seemingly) incompatible with today’s active scientific memes — then *it must be relevant* (not claiming anything about its final *truth*).

On the other hand, if you *do not* ever bump into this text, you should be happy in your ignorance: It was then probably not worth knowing in the first place, it would have been only waste of time.

Seamless information transfer and its more homogeneous penetration is a prerequisite for science. This text is available in Internet — as it can be freely downloaded, it hopefully finds its “memetic balance” in the ideasphere all by itself. Scientific theories must always be based on cybernetic tensions among arguments and counterarguments — I would be very happy if somebody would propose what is the contents of level 11 and onwards in the ladder of deeper cybernetic understanding. As Heraclitus and Hegel once observed, the key point is not *being* but always *becoming* — perhaps the presented ideas help to smoothen the transition to something qualitatively new.

If you have read this text and found it *interesting* and *understandable* (which are, after all, the most relevant criteria for memes to survive in human minds), I would be happy if you would send a note to `heikki.hyotyniemi@tkk.fi`. Thank you for your interest!

*Suuni jo sulkea pitäisi
kiinni kieleni sitoa
laata virren laulannasta
heretä heläjännästä*

...

*Vaan kuitenkin, kaikitenki
laun hiihin laulajoille
laun hiihin, latvan taitoin
oksat karsin, tien osoitin
Siitpä nyt tie menevi
ura uusi urkenevi
laajemmille laulajoille
runsahammille runoille
nuorisossa nousevassa
kansassa kasuavassa.*

– Kalevala

