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Preface

Measures of science

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Abstract

This article presents two scientific cultures, which have different indicators and measures of scientific achievement. Community orientated culture is concerned with building of the common area of ideas and it tries to unify glossary, methodology, rules and promotion of good practices. Scope directed cultures are inclusive and open for cooperation. Measures of science are totally different in the two cultures- more unpredictable in the first case and very clear in the scope orientated scientific culture. For young scientists the closer community should only be a first stage on the long route to scientific success. This article indicates virtual communities as a way for finding new possibilities of making science at the satisfactory level.

Key words: university, scientific culture, evaluation of science, scientific community,

Young scientists should ask themselves a fundamental question right at the outset of their academic career or better- before they even start thinking about any kind of research. They should have a clear idea of the goal of their scientific work as well. So a reasonable answer for the question "what for " is needed.

In theory, science is a tough environment, in which only the most active, talented, determined and hard-working people will succeed. In practice there are many ways of making science and a lot of possibilities for scientific work.

Longstanding research and successful scientific communication need patience and stubbornness. The above mentioned characteristics and virtues are helpful but not sufficient. Moreover scientific success is more than elusive and can be evaluated only by the appropriate, competent scientific communities.

Unfortunately there is no way of establishing transparent and consistent measures for scientific work and achievements. Every scientific community has its own criteria of science evaluation. In many cases it is the product of a long tradition of research methodology, in other cases it could simply be dependent on the agreement between professors, who are well known authorities or powerful members of scientific committees, who decide about the quality and promotion of science. In effect the young scientists could be confused and think that there

are no rules, criteria or measures of scientific work. Some could even think that scientific success is not dependent on hard work and other mentioned characteristics but on non-meritocratic factors, like a position in a social structure, liking, favours, loyalty. There is no doubt, that if we would like to attract many young people to work in the field of science, criteria and measures of scientific achievements should be very clear and non-discursive in every way.

At the moment we can define two different ways of creating science, science communication and evaluation of science. All the mentioned processes are strictly linked and dependent on each other. We could define both ways as specific science cultures, which are fundamental for the behaviour of scientists. One of these cultures could be denominated as community orientated, while another one could be qualified as scope directed.

Community orientated scientific culture is concerned with building a fellowship. The main values are the specific scientific school, bonds, collectivity. The members of the particular scientific community are usually convinced about the priority of the same methodological paradigm. Research teams and groups are usually managed by charismatic leaders, who are a kind of judges of methodological and scientific purity. The leaders decide what is scientific and what can not be defined as scientifically valuable. The structure of this kind of community is usually hierarchical and the competences or authority to judge are strictly determined by the position in the hierarchy. The measures of science are defined by the highly positioned authorities and they are mysterious as well as inevitable. Occupation of the highest positions in the academic structure is equal to the rights to judge the effects of other scientists' work. We should be aware that there are three levels of initiation. Most academics can be only evaluated and they do not have any chance for evaluation of the work of the others. In a better situation are academics who can evaluate others' articles and theses but their influence in the world of science and their opinions are not highly valued. The top of the hierarchy belongs to the full professors, who decide about everything, which could be important in the world of science: organization, financing, promoting, evaluation, academic careers and titles. Some of them have the status of the highest authorities and the others are a kind of scientobrities (celebrieties in the world of science). Their opinions are practically impossible to impugn.

These kinds of communities are exclusive. Community orientated scientific culture on the other hand creates new rules of promotion and evaluation of science or acceptance of additional rules to those existing and commonly accepted. The additional rules are very often hidden and not logically possible to justify. Hidden rules, new deals and difficulties are kinds of thresholds and obstacles especially annoying for young scientists. They cannot understand why something must be hardly achievable. The additional rules cause the scientific success to be unreal.

Specific rules of the scientific game in community orientated scientific cultures are supported by weird communication, which may be misleading or even deceptive for other people. Locally defined concepts (especially in the case

of the most significant and core ideas and words) have their own meanings. Sometimes they are even defined totally opposite to the conventional meaning, which is accepted by the whole scientific world outside the community.

Any situation, in which the rules of communication and evaluation of science are not clear, cannot be comfortable to any academics but it is the younger who are starting their careers that suffer the most. They are not able to plan anything in the longer perspective and are totally dependent on the opinion and justification of professors. Unfortunately all kinds of uncertainty enhance academic feudalism and hidden unhealthy academic structures.

Specific communication and additional rules of evaluation separate the local community orientated scientific cultures from the wider world of science. Sometimes they try to find allies in the international community, but it is possible only in other specific closed communities working abroad.

Everything in the community has to build a picture of science as a very difficult environment, which must be guarded by professors against any vulgarities. The members of the community are convinced that science can be created only by strictly selected people. The truth is legitimised only by the highest instance and a man-made institution, who is the full professor.

Scope directed scientific cultures have different rules of creating, evaluating and promoting science. The most important is the scientific effect, which could be measured by strictly defined measures. The rules of estimation are well known in the world of science and scientists are able to plan their academic careers. Of course it does not mean that the academic success is easy to achieve. Scientists have to fight for grants and do research. Grants for financing research are very hard to win, because of the strong competition. The process of the research engages bigger teams, which need to work sometimes for a few years. The scientific value of the article, which is the effect of the scientific team work could be the book, although the text is short (in comparison to any book).

Scope orientated scientific culture is very open and transparent. Everyone, who is ready to be hard working, will be accepted. The process of teaching of the young scientists and preparing them for their own scientific research is longstanding, but the position is easy to define. Achievements are easy to count and compare with other academics. There are a lot of measures, which could be used to define achievements and results and many publishers are supporting researchers in dissemination of the research. So communication is a base for building wider scientific communities. Probably the communication patterns will change in the near future from printed to digital. For many years we have observed an inclination to publishing in Open Access, online and on specific internet sites, dedicated to spreading of the research results, for example academia.edu, slideshow, researchgate. Very often the new portals even have their own measures and indicators, which define the influence of scientist-members of the virtual community. It is hard to imagine a more open and inclusive scientific communication. For beginners this whole situation must be very comfortable, because they watch the patterns of scientific development and are able to plan their careers in a more realistic way. They are able to reco-

gnize the most effective scientist and in many cases they can ask for help. Such a possibility is offered for example by researchgate.net.

For the scope directed scientific cultures, any form of international cooperation is always highly valued. They prefer international conferences and multicultural studies. Rather than the problems of internal communication of the community orientated culture, young scientists have to face the problem of the common language of science. No doubt it is less problematic, especially for the young people, who speak quite good English already, or wouldn't have any problems with learning a new language.

The two scientific cultures are so different that they are not able to communicate with each other. Furthermore they are not able to evaluate results of the research from the opposite culture. Usually they do not want to evaluate each other in public but in many private conversations with members of both cultures we can find very unpleasant statements regarding the other.

Beginners are not aware of such huge differences. Sometimes they do not even have any idea of the basic rules of making science and are in dire need of a master, who would be able to show them the way towards academic success. Unfortunately their start depends on the environment, which could be supportive or not. In the community orientated scientific cultures professors should support younger scientists but they do not feel personally responsible for the careers of their students. Additionally under the rules of this feudal system of rating and inappropriate communication there are barriers, which render academic careers totally unpredictable.

Disciplines, universities, institutes and even smaller scientific communities have their own rites and rules. Students only theoretically have the possibility to make a choice between different scientific cultures. Usually they are socialised by the closed social environment with definite accepted patterns of behaviour. They are not able to find other communities, because they do not even think that an alternative scientific reality actually exists.

There is hope for the young scientist. New digital communities are open and inclusive. Beginners will find there specific precise indicators and independent measures of scientific work. Friendly, very competent members are helpful and interested in alternative forms of scientific publication. It could be wonderful support on every stage of the academic career and be a good start for joining the real international community of scientists interested in the same research.

Digital communities cannot avoid the problem of local power. Community orientated scientific cultures are managed by the professors, who will support and promote only the young scientists sharing the same values and with the same patterns of behaviour. In this totally ineffective and non-supportive environment the only way seems to be searching for allies in research outside, and publishing in international scientific journals, which are indexed in many databases.