

# "Russian" scientometrics: national adoption strategies

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**Abstract.** Scientometrics as an applied discipline is becoming increasingly popular in the field of organization of scientific research and higher education. At the same time, it is increasingly opposed to "real" science, there is always an active dialogue between scientists and managers in order to find a compromise. Therefore, the purpose of this study is to model the cognitive image of scientometrics in the Russian scientific discourse, with the help of which it will be possible to identify cognitive scenario failures and basic mental conflict points. The cognitive method of metaphorical modeling is the main tool of our research. As a result of the conducted research, the high productivity of the morbid metaphor was revealed, which, in turn, allowed to formulate the theory of the boundary state of acceptance of applied scientometrics in the Russian scientific discourse. The theoretical significance of the results obtained consists in the expansion of scientific research in the field of scientometrics in Russia. The practical significance of the results received through our research consists in the possibility of their implementation in the development of scientometric awareness and improvement of scientometric literacy on various levels.

## 1 Introduction

Applied scientometrics as a tool of scientific administration has recently been in the constant focus of experts in the field of organization of scientific activities, higher education lecturers and even journalists. Increasingly, scientometrics is opposed to "real science" and is perceived as an invective, as an offensive concept towards scientists. Colleagues write about "the tyranny of indicators and the crisis of confidence among the academic community in any formal assessment of their activities" [1].

Scientometrics is a relatively new phenomenon for the Russian scientific discourse, and currently we are going through the next stage of accepting it as an integral part, which causes such an ambiguous attitude. There is no doubt that this conflict is based on a number of reasons starting from ethnic to managerial ones. Unfortunately, indicators of scientific efficiency / effectiveness in the Russian scientific community are increasingly turning into an end in itself at various levels (from the lecturer to the university as a whole), and

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scientometrics turns from an objective means of analysis into a manipulated object, an instrument of the so-called scientometric game. For example, the researchers note: "for the academic community, scientific work turns into an element of the game to achieve formal indicators, sometimes not even in the most honest way" [3].

Earlier in our research we have already expressed the position that the main causes of the crisis of trust in the Russian scientific discourse are:

- unformed scientometric awareness;
- low scientometric literacy [14].

In the course of the development and adoption of scientometrics, an active dialogue is constantly going on between scientists and managers in order to find a compromise: attempts are being made to mitigate the pressure of scientometric indicators due to their scientific specialization and the expansion of the range of assessments. For example, a new indicator of 2021 percentile at the core of the RSCI reflects a place in the rating within a certain scientific direction, which partly removes one of the eternal conflicting questions about the "equality" and "balance" of physicists and lyricists in scientometric databases. It is indisputable that scientometric indicators used today in the modern academic sphere as an assessment and management tool do not always reflect all the variety of forms of scientific communication. Researchers rightly point out "that of all the variety of activities of a scientist, only a scientific article and the fact of its citation are taken into account" [2]. But even now the most well-known citation bases take into account such types of researcher's work as: peer review of scientific papers, scientific guidance / consulting, expert and patent activities, as well as the organization of various scientific forms of communication (conferences, forums, symposiums, etc.).

But improving the assessment tool is a constant process that does not have a chance to get to some ideal point. It is not the instrument that needs to be changed, but the attitude towards it, its place in the minds of representatives of scientific discourse. That is why the purpose of our study was to model the cognitive image of scientometrics in the Russian scientific discourse, which will allow us to identify cognitive scenario failures and basic mental conflict points.

## **2 Materials and Methods**

We chose the cognitive method of metaphorical modeling as the main research tool. The theory of cognitive metaphor is widely known in scientific discourse both in Russia (Arutyunova N.D., Chudinov A.P., etc.) and abroad (J. Lakoff, M. Johnson, etc.), and its basic method of metaphorical modeling is widely used in studies of communication (Budaev E.V., Kolmogorova A.V., Chudinov A.P., etc.) and organizational culture (Bessonov I.V., Chernyaeva T.I., Garrett M., etc.).

In our study, the metaphor acts as a cognitive mechanism, "as a complex of "mirrors", which, firstly, reflects the mental world of a person and society as a whole (the metaphor gives us extensive material for studying cognitive mechanisms in human consciousness and social perception of the world), secondly, in this mirror we see a reflection of ordinary ("naive") ideas of people about conceptual spheres-sources of replenishment of the system" [13].

The use of the classical cognitive approach for the interpretation of the concept of "metaphor" as "any way of indirect expression of thought" [6] makes it possible to use it not only in the analysis of a verbal sign, but also as a visual, auditory sign. The theory and methodology of the study of a visual (creolized) metaphor has been developed in detail in modern scientific discourse [8,9,10].

The main sources of material determination were:

- 1) texts of scientific, popular science and journalistic literature covering the issues of

applied scientometrics in Russian discourse (53 texts were studied in total);

2) creolized texts (memes, cartoons, etc.) of informal scientific discourse (we analyzed 67 texts);

3) materials of a free associative experiment (115 scientists from Russian universities took part in the experiment)

4) texts of interviews with representatives of the analyzed discourse - teachers, specialists of scientific departments or scientometric centers (15 interviews were conducted)

So, the main methods of collecting materials were: the method of continuous sampling; free associative experiment (respondents were asked to present the first reactions that came to mind when presenting the stimulus word "scientometrics"); oral interview (this method was used to confirm the materials received).

At the stage of analyzing the collected material on the basis of the traditional method of describing the metaphorical model developed by A.P. Chudinov, we identified the following elements:

1. The initial conceptual domain (in other terminology, the source sphere), that is, the conceptual domain to which the non-metaphorical meanings of the units covered by the model belong.

2. The component that connects the primary (in the source sphere) and metaphorical (in the target sphere) meanings of the units covered by this model.

3. The discursive characteristic of the model, that is, the conceptual vectors typical of the corresponding metaphors, the leading emotional characteristics, the pragmatic potential of the model, its relationship with the analyzed situation and problem, with the views and attitudes of the subjects, etc.

### 3 Results

We will present the results of the study by groups of sources, since each level of the analyzed discourse (intra-academic - informal - journalistic) had a significant impact on the perception and interpretation of the image of "scientometrics". It should also be noted that the results of the free associative experiment and the interview were also influenced by the academic status of the respondent (teacher - scientist - manager; the Hirsch index is up to 10 and more).

The highest metaphorical "density" and productivity were noted in scientific, popular science and journalistic texts. 241 examples of metaphorical usage were found in 53 texts.

Among the most productive target areas (see Table 1), that is, basic images when realizing the subject of our research, we noted the following:

**Table 1.** Productive spheres-sources of the metaphorical image of "scientometrics" (scientific, popular science and journalistic texts).

№	Sphere-source	Productivity coefficient
1	Illness	8,0
2	Religion	5,1
3	Punishment	3,8
4	Game / Sport	3
5	Business	2,7

*Source:* Compiled by the authors.

The productivity of the sphere was determined by the degree of frequency and the ability to deploy a metaphor (playing with images, a detailed description, the described history of the image, etc.).

The high productivity of the metaphor of morbidity is predictable. Illness is always a kind of malfunction, crisis, disruption of normal life. The disease in the Russian language

picture of the world is closely related to emotional experiences, which also determines the relevance of the image in our study.

It is important that in this metaphorical model, two scenarios for the development of the image can be distinguished:

(1) Madness (madness, scientometric nonsense), which cannot be explained and defeated, and vice versa

(2) search for treatment and medicine ("the diagnosis is clear", "who are we treating?", "how to use it to treat, not to cripple").

Productivity indicators of positive and negative scenarios are equivalent, which once again confirms our theory of the borderline state of acceptance of applied scientometrics in the Russian scientific discourse.

The connotative assessments of the metaphorical model "scientometrics – game/ sport" are equally ambiguous. On the one hand, there are neutral or even positive images of the game, racing - as an image of development and progress. Note that we have recorded examples with an open positive assessment: "fair race", "open game"). On the other hand, there are images that are no less in demand: the image of excitement, that is, risk or a game, which is not always honest, it is this meaning that develops in the image of "fight without rules".

But the metaphors of punishment predictably get into the negative zone: the images of the guillotine and the whip were the most in demand. In the same zone there is a metaphorical model of "scientometrics - religion": for example, quasi-religion, h-index servility, scientific paganism, etc. So condemned in the Russian scientific discourse are the images of money: profit, business.

The vivid expressiveness of the metaphorical models presented, of course, is conditioned by both the sharpness of the problematic and the journalistic canons.

But these images almost did not receive their development in an equally vivid and expressive informal discourse, when analyzing creolized texts, we identified only one metaphorical model. It should also be noted that the target area in this context was the Hirsch index as the main tool of modern scientometrics.

So, the most popular was the physiological metaphor (Fig. 1.), in which the Hirsch index is considered as one of the physiological indicators. Note that in relation to a woman, this indicator may vary (body weight, hair color, height, etc.)

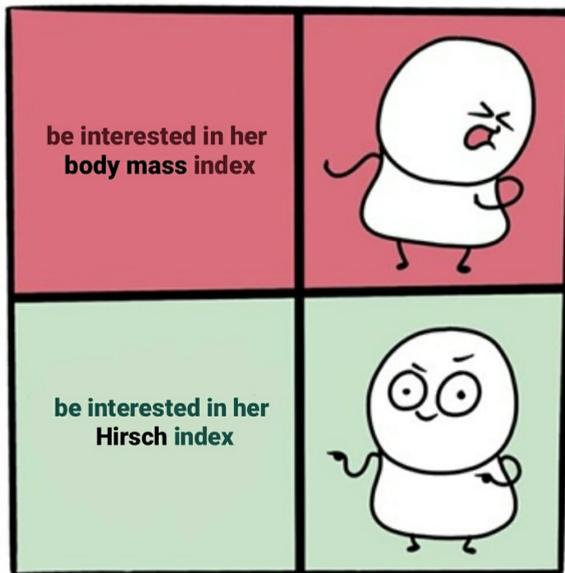


Fig. 1. Physiological metaphor of Hirsch [2].

In relation to men, the productivity of the metaphor tends to zero and is often reduced to a sexual image (Fig. 2): "the Hirsch index as a tool for learning the joy of mutual quoting."



Fig. 2. Physiological metaphor of Hirsch [6].

As part of the analysis of the results of the free associative experiment, we noted a minimal degree of expressiveness.

Only 7% of the responses had a pronounced connotation, both positive and negative. All recorded examples with expressive evaluation were previously recorded and described at the first stage of the study of the texts from the journalistic segment of scientific discourse.

The core was made up of target images, which are presented in more detail in Table 2.

**Table 2.** Productive spheres-targets of the metaphorical image of "scientometrics" (free associative

experiment).

№	Sphere-source	Productivity coefficient
1	Knowledge / scientific knowledge / science / knowledge management	5,7
2	Publications / articles / dissertations / scientific review	5,1
3	Hirsch / Index / Hirsch Index / Impact Factor	4
4	Libraries / Databases / Scopus / WOS	3,8
5	Scientific qualification / scientific efficiency / scientific profile	2,5

*Source:* Compiled by the authors.

We note two features recorded by us during the analysis of the results:

1. 12% of the responses were written in English (journal, impact) or using the Latin alphabet (Scopus / WOS), while mentions of Russian databases (RSCI, map of science) were isolated and did not get into the core.

2. Respondents with a Hirsch Index (RSCI data for October-November 2020) above 10 - recorded the reactions of groups 1 and 5 (science and scientific qualifications), respondents with index below 5 - called the most "terrible" tool of scientometrics – Hirsch.

## 4 Discussion

To test our hypothesis about the dependence of the metaphorical image on the level of discourse (academic – journalistic – informal) and the status of the respondent (management scientist, with high and low Hirsch Index), we conducted a series of interviews, during which we were able to confirm a number of our observations and refute some common myths.

1. The expressiveness of metaphors depends on the format of the interview, the less formal the situation and the relationship of the interlocutors, the brighter the images were, which confirms the dependence of the image on the level of discourse and speaks of its "sharpness" for the participants, but the sharpness restrained in the "academic" environment.

2. It was not possible to establish the superiority of a positive or negative connotative assessment of a metaphorical image in the minds of managers and higher school lecturers, which allows debunking the myth of a special "love" of managers for this instrument of torture and "dislike", reaching curses of real science representatives.

3. Respondents with Hirsch Index (RSCI data for October-November 2020) above 10 behaved naturally and calmly in conversation, more often did not give bright images, answered neutrally, joked less often; respondents with index below 5 behaved emotionally, if joking, they often used rude images recorded earlier in informal discourse, were often aggressive. Also in this group, we recorded 4 cases of categorical refusal to participate in the experiment, after the topic of the interview was indicated.

## 5 Conclusion

In the presented study, in order to model the cognitive image of scientometrics in the Russian scientific discourse, the following results were obtained.

Firstly, the highest metaphorical "density" and productivity were noted in scientific, popular science and journalistic texts.

Secondly, the high productivity of the metaphor of morbidity proved its predictability as the disease in the Russian language picture of the world is closely related to emotional

experiences, which also determines the relevance of the image in our study.

Thirdly, productivity indicators of positive and negative scenarios are equivalent, which once again confirms our theory of the borderline state of acceptance of applied scientometrics in the Russian scientific discourse.

Fourth, the connotative assessments of the metaphorical model "scientometrics – game/sport" are equally ambiguous while the metaphors of punishment predictably get into the negative zone.

Fifth, when analyzing creolized texts, only one metaphorical model was identified. The Hirsch index as the main tool of modern scientometrics was the target area in this context. The physiological metaphor, in which the Hirsch index is considered as one of the physiological indicators was the most popular, moreover, in relation to a woman, this indicator may vary, while in relation to men, the productivity of the metaphor tends to zero and is often reduced to a sexual image.

Sixth, a minimal degree of expressiveness was noted as part of the analysis of the results of the free associative experiment.

Seventh, during the analysis of the results recorded by us we noted that 1. 12% of the responses were written in English (journal, impact) or using the Latin alphabet (Scopus / WOS), while mentions of Russian databases (RSCI, map of science) were isolated and did not get into the core, and the respondents with a Hirsch Index (RSCI data for October-November 2020) above 10 - recorded the reactions of groups 1 and 5 (science and scientific qualifications), respondents with index below 5 - called the most "terrible" tool of scientometrics – Hirsch.

The research will be continued and it will allow noting and describing all stages of the adoption of applied scientometrics. The results of these studies can be used as a tool to increase scientometric awareness and literacy.

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