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Gatekeeping patterns in nano-titled journals

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Activities on nanoscale research have seen a skyrocketting growth beginning during the nineties. This can be documented by the birth of no less than 16 science journals dedicated entirely to this field of science. The topics of these journals reflect the true interdisciplinary character of nanoscale research. In this paper the decision-makers on what and when appears in those journals, the gatekeepers, i.e., the editorial members of those journals and their national identity are analyzed and some conclusions are drawn on the decisional power of the countries these gatekeepers are located in.

It came out that although the United States is still the leading power in the nanoscale research field, the EU is strongly catching up and due to intensive efforts in this directions by some Far East countries as China and Japan but also of India, Asia is nearing and in some cases even overtaking the big powers.

Introduction

At a time when the skyrocketing growth and development of nanoscale research has been not as evident as it is today, in a pioneering paper published in 1997, Braun et al.[1] did bring eloquent evidence on the bright future of that interdisciplinary field of research by an original scientometric procedure involving the use of the nano-prefix in

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calculating the exponential growth rate of nanoscale research. In using Braun et al.'s methodology, Meyer and Persson,[2] Meyer,[3] Hullman and Meyer[4] and Schummer[5] revealed the interdisciplinary patterns,[2] patenting activities,[3,4] and research collaboration[5] in the field.

Further in 1999, Malsch[6] gave evidence on scientific trends and organizational dynamics of nanoscale research in Europe, a study extended by Meyer, Person and a nanotechnology expert group[7] to the mapping of excellence in nanotechnology.

Seemingly the abovementioned beginnings and the evidenced increase of professional literature of nanoscale research[8] were additional contributing factors to Michael Roco's efforts in the United States leading to President Clinton's famous National Nanotechnology Initiative (NNI), launched in 2000.[9]

"NNI funds research on fundamental science and engineering on targeted R&D on a set of nine 'grand challenges', and on the societal impact of nanotechnology. The initiative also supports 17 centers of excellence that conduct broad multidisciplinary research within a host institution and seven user centers for the development of infrastructure, instrumentation, standards, and computational capabilities that can be used by the research community." The notion of nanotechnology is emblematic for U.S. competitivness.[10]

As visible in Table 1, a follow-up has been implemented by the Bush administration in 2003.[11]

Table 1. The timeline of the National Nanotech Initiative (adapted from Ref. 12)

Date	Event
September, 1998	Interagency Working Group on Nanotechnology (IWGN) established under the National Science and Technology Council
March, 1999	Presentation by Mike Roco at the White House to presidential economic and science advisors
September, 1999	Publication of *Nanotech Science and Technology, A Worldwide Study* by IWGN
January, 2001	Bill Clinton formally announces the National Nanotech Initiative and included it as a federal initiative in the 2001 budget proposal
2001	IWGN replaced by Subcommittee on Nanoscale Science and Technology with Mike Roco as Chair
December 2003	21st Century Nanotechnology Research and Development Act passed by Congress and signed into law by George W. Bush

By sensing the worldwide professional enthusiasm and societal hopes in nanoscale achievements,[13] we became interested in the power structure of the research activity in this field. Our previous research has been shown that one of the way for having a more clearer view on this issue is to investigate the journal literature of this field via gatekeeping approaches.[14] A few words on our technique are in order.

For the satisfactory operation of the international system of basic research in the sciences, the screening activity of journal editorial boards, which guarantee the professional standard of science journals, is of paramount importance. It is considered,

that the critical mentality and decisions of journal editors have so far protected and will also warrant in the future the social and intellectual integrity of science. The members of the editorial and advisory boards of nano-titled journals are rightfully considered the gatekeepers of these journals. These gatekeepers in controlling the system of manuscript evaluation and selection, occupy powerful strategic positions in the collective activity of nanoscale research. Taking into account their vital strategic importance in the orchestration of the field, it seems strange that there is no database available which collects and stores the data of this powerful population of scientists.

The many studies on the growth and other scientometric aspects of nanoscale research[2-7] have not yet touched upon the gatekeeping aspects in this field. We have found that at this moment there are 16 journals which contain the prefix 'nano' in their title (we called them nano-titled journals).

We have compiled a database of the gatekeepers of these journals and have used it for finding some responses to the following questions.

1. What is the structure of the journal gatekeeper group of the nano-titled journals? This means that we were looking at the national and regional distribution of the editors-in-chiefs, and of the members of the editorial boards of these journals and at the frequency of multiple functions which some gatekeepers hold, i.e., are involved in gatekeeping activities in more than one nano-titled journal.

2. Which are the preferences of publishers toward the national distribution of the gatekeepers of their nano-titled journals?

3. What's the gender distribution of the gatekeepers of nano-titled journals?

4. Are the gatekeepers from a certain country or geopolitical region inclined to favor in certain way the publication of the papers of their own nationals?

One topic which we have not investigated in this paper is the mechanism of the process along with individual scientists are selected to be editors-in-chiefs and/or editorial board members of nano-titled journals. In some respect this question has been touched upon in a study of other journals in Ref. 14, and here we accept the working hypothesis that the selection of gatekeepers is based on their professional eminence.

Experimental

The investigated nano-titled journals are presented in Table 2. Nano-titled journals were considered "international" if their editorial board included scientists from eight countries at least, irrespective of the title of the journal in question. (The international label in the title of the journals may hide a truly national journal. On the contrary, in the editorial board of e.g., the *American Heart Journal* there are, in addition to North Americans, scientists from ten, mostly European countries.)

Table 2. Nano-titled journals, their publishers, and year of launching

Title	Publisher	Launched in
***Nano**technology*	Institute of Physics, UK	1990
*Journal of Vacuum Science and Technology. B. Microelectronics and **Nano**meter Structures*	American Vacuum Society through the American Institute of Physics, USA	1991
*Physica E. Low-dimensional Systems and **Nano**structures*	North-Holland/Elsevier, The Netherlands	1997
*Journal of **Nano**particle Research*	Springer (Kluwer), The Netherlands	1999
***Nano** Letters*	American Chemical Society, USA	2000
*Precision Engineering. Journal of the International Societies of Precision Engineering and **Nano**technology*	American Society of Precision Engineering through Elsevier, USA	2000
*Virtual Journal of **Nano**scale Science and Technology*	American Institute for Physics and American Physical Society, USA	2000
*Journal of **Nano**science and **Nano**technology*	American Scientific Publishers, USA	2001
*Fullerenes, **Nano**tubes and Carbon **Nano**structures*	Marcel Dekker, Inc., USA	2002
*IEEE Transactions of **Nano**technology*	Institute of Electrical and Electronics Engineers, Inc., USA	2002
*IEEE Transactions of **Nano**bioscience*	Institute of Electrical and Electronics Engineers, Inc., USA	2002
*International Journal of **Nano**science*	World Scientific Publishing Co.	2002
*Journal of **Nano**biotechnology*	BioMed Central Ltd., UK	2003
*Journal of Biomedical **Nano**technology*	American Scientific Publishers, USA	2004
*Journal of Computational and Theoretical **Nano**science*	American Scientific Publishers, USA	2004
***Nano**medicine: **Nano**technology, Biology and Medicine*	Elsevier, The Netherlands	2005

The data for the nationality of the gatekeepers and of the authors of the papers published in the issues of those journals were counted for 2005. As gatekeepers, scientists of following positions were taken into account: editor-in-chief, regional editor, senior editor, managing editor, coordinating editor, executive editor, co-editor, honorary editor, founding editor, editorial adviser, associate editor, advisory committee member, advisory board member, publication committee member. The 16 nano-titled journals* are using various combinations of some of these titles.

As visible in Table 2, with a few exceptions most of the nano-titled journals were first published in 2000, i.e., in the year of birth of the US, National Nanotechnology Initiative (NNI). In fact, individual scientists, rather than representatives of the nationalities are selected to be journal gatekeepers. However, a scientist's professional attitude and performance depends without doubt on his/her educational background and on the support and research environment provided by the country in which he/she works. The presence of scientists from a particular country or geographical region in the boards of nano-titled journals can be considered to reflect totally or partially the status of that country's professional tradition in science.

* During the preparation of this paper the publication plans for an additional new nano-titled journal entitled *Nature, Nano-Technology* has been announced to begin publication in April, 2006. Gatekeeping data for this journal are not included in this paper.

"The biggest problem in micro/nano technology today is that much of it is actually science, and rather basic and divorced from real applications. There is a plethora of papers showing molecular simulations of clusters and nanostructures that are essentially tests of the scientists' ingenuity in computation. This is matched by many atomic resolution pictures of quantum dots, nanoparticles, nanotubes and other structures accompanied by extravagant claims for what they might be used for! It is important in technology assessment to separate basic science from the more realistic engineering expectations".[18]

That's why we have to mention and deal with a nomenclatural question we consider of a certain importance in nanoscale research. In this sense we consider that the nanoscale research in science is or at least has to be approached as a true and real interdisciplinary issue.

Namely, the technological, i.e., the practical applications of the nanoscale issue is just one part of a larger range of aspects. That's why beside the examination of the whole nanoscale field together, we have distinguished within it three different orientations, namely basic nanoscience, nanotechnology and nanobio aspects. We tried also to categorize the 16 nano-titled journals accordingly.

Results and discussion

The results of our investigations are presented in Tables 3–20 and Figures 1a and 1b. As shown in Table 3, gatekeepers from 34 countries are represented in the editorial boards of the examined 16 nano-titled journals. The overwhelming dominance of gatekeepers from the USA is clearly visible. This was already revealed in our previous research re the gatekeeping of journals from other science fields.[14-16] Table 4 discloses a certain nearing of the EU-15, and Table 5 of Asia to the US but the USA dominance is still important.

In the experimental part we have given the definition of what we consider to be international nano-titled journals. However, it is to be mentioned that not all the nano-titled journals satisfy our premise of internationality. To have a more indicative view, we have divided the 16 nano-titled journals and their gatekeepers into two groups: those international ones and those which do not satisfy this condition. Tables 6 and 7 present the results. Although in the sense of dominance of the USA, the picture does not differ to much from that we have seen in Table 3, in the non-international ones, the USA dominance becomes here even more accentuated.

Table 3. Gatekeepers of all nano-titled journals

Rank	Country	Number	Percent	Rank	Country	Number	Percent
1	USA	329	51.57	17–18	Taiwan	6	0.94
2	UK	48	7.52	19	Denmark	5	0.78
3	Japan	47	7.37	20–22	Hongkong	4	0.63
4	Germany	31	4.86	20–22	Israel	4	0.63
5–6	Switzerland	17	2.66	20–22	Korea	4	0.63
5–6	PR China	17	2.66	23–25	Brasil	3	0.47
7	France	14	2.19	23–25	Greece	3	0.47
8	Australia	13	2.04	23–25	Irland	3	0.47
9	Italy	12	1.88	26–30	Belgium	2	0.31
10–11	Canada	10	1.57	26–30	Finland	2	0.31
10–11	The Netherlands	10	1.57	26–30	Hungary	2	0.31
12–14	India	8	1.25	26–30	Mexico	2	0.31
12–14	Russia	8	1.25	26–30	Romania	2	0.31
12–14	Spain	8	1.25	31–34	Norway	1	0.16
15–16	Sweden	7	1.10	31–34	New Zealand	1	0.16
15–16	Singapore	7	1.10	31–34	Portugal	1	0.16
17–18	Austria	6	0.94	31–34	Slovenia	1	0.16
					Total	*638*	*100*

Table 4. Gatekeepers of all nano-titled journals (with EU-15)

Rank	Geopolitical region	Number	Percent
1	USA	329	51.57
2	EU-15	153	23.98
3	Japan	47	7.37
4–5	Switzerland	17	2.66
4–5	PR China	17	2.66
6	Australia	13	2.04
7	Canada	10	1.57
8–9	India	8	1.25
8–9	Russia	8	1.25
10	Singapore	7	1.10
11	Taiwan	6	0.94
12–14	Hong Kong	4	0.63
12–14	Israel	4	0.63
12–14	Korea	4	0.63
15	Brazil	3	0.47
16–18	*Hungary*	2	0.31
16–18	Mexico	2	0.31
16–18	Romania	2	0.31
19–20	New Zealand	1	0.16
19–20	*Slovenia*	1	0.16
	Total	*638*	*100*

Table 5. Gatekeepers of all nano-titled journals (with EU-25)

Rank	Geopolitical region	Number	Percent
1	USA	329	51.57
2	EU-25	156	24.44
3	Asia	93	14.58
4	Switzerland	17	2.66
5	Australia	13	2.04
6	Canada	10	1.57
7	Russia	8	1.25
8	Israel	4	0.63
9	Brazil	3	0.47
10–11	Mexico	2	0.31
10–11	Romania	2	0.31
12	New Zealand	1	0.16
	Total	*638*	*100*

As already mentioned, by taking into account the vital strategic importance of the gatekeepers of the nano-titled journals in the orchestration of nanoscale research, we are hypothesizing that here is at work a mechanism which acts similarly although with some differences from that of the "invisible college" evidenced by Price.[17] This seems to indicate that in nanoscale research there is at work a loosely related eminent group of scientists selected by the self-organizing system of science, and most of the members of that group happens to be from the US and from a few European and Asian countries. There are, of course, differences between the members of the "invisible college" of scientists in general as "viewed" e.g., by Price[17] and that of the invisible college of nano-titled journal gatekeepers. The later ones form a by far more diffuse structure, a conglomerate in which the binding glue is the national characteristics of educational past of scientific views and this leaves its imprint in their decision-making behavior as journal gatekeepers of nano-titled journals.

In the results presented in Tables 3–5 we have included all the gatekeepers of the 16 nano-titled journals. As mentioned in the introduction, the approach is the real differentiation of national participation in gatekeeping, and the criterion of internationality is defined by the presence of scientists of at least 8 nations in the editorial board of the nano-titled journals. Although we have to accentuate that there is no truly national nano-titled journal between the 16 ones examined, we were interested to see the results in case we divide the 16 nano-titled journals into two groups: one with scientists from at least 8 countries and a second group with journals having scientists from less than 8 countries in their boards.

The results are shown in Tables 6 and 7. The results are difficult to compare due to difference of the number of journals in the two groups.

Table 6. Gatekeepers of 10 international nano-titled journals

Rank	Geopolitical region	Number	Percent
1	USA	268	50.38
2	EU-25	135	25.38
3	Asia	74	13.91
4	Switzerland	15	2.82
5	Australia	13	2.44
6	Russia	8	1.50
7	Canada	7	1.32
8	Israel	4	0.75
9	Brazil	3	0.56
10–11	Mexico	2	0.38
10–11	Romania	2	0.38
12	New Zealand	1	0.19
	Total	*532*	*100*

The journals: *Fullerenes Nanotubes and Carbon Nanostructures*
IEEE Transactions of Nanoscience
International Journal of Nanoscience
Journal of Biomedical Nanotechnology
Journal of Computational and Theoretical Nanoscience
Journal of Nanobiotechnology
Journal of Nanoscience and Nanotechnology
Journal of Nanoparticle Research
Nanomedicine: Nanotechnology, Biology and Medicine
Nanotechnology

Table 7. Gatekeepers of 6 non-international nano-titled journals

Rank	Geopolitical region	Number	Percent
1	USA	61	57.55
2	EU-25	21	19.81
3	Asia	19	17.92
4	Canada	3	2.83
5	Switzerland	2	1.89
	Total	*106*	*100*

The journals: *IEEE Transactions of Nanotechnology*
Nanoletters
Journal of Vacuum Science and Technology B
Physica E: Low Dimensional Systems and Nanostructures
Precision Engineering. Journal of the International Societies of Precision Engineering and Nanotechnology

Table 8–10 present our results on the national distribution of the gatekeepers of the nano-titled journals as classified in the three subfields of nanostructure research. These show a somewhat different situation when compared to the data for all the whole nanoscale journals as taken together. The situation of the USA is quite characteristic as its gradually increases weight when going from the basic nanoscience subfield (relatively lowest presence) to nanotechnolgy, up to the nanobio subfield which is the perhaps newest subfield of nanoscale research (with the relatively highest presence of

US gatekeepers). In spite of these differences the worldwide dominance of the US is in all three subfields of nanoscale research without doubt.

However, the by far non-negligible second and third rank positions of the two regional conglomerates (EU-25 and Asia) are obvious. Although the EU-25 supersedes in all three subfields Asia, we consider that the impressive position of this later one is worth to be mentioned.

Table 8. Gatekeepers of nano-titled journals (Basic Nanoscience subfield)

Rank	Geopolitical region	Percent
1	USA	42.03
2	EU-25	28.02
3	Asia	18.38
4	Russia	3.38
5	Australia	2.42
6–7	Canada	1.93
6–7	Switzerland	1.93
8–9	Brazil	0.97
8–9	Romania	0.97
	Total	*100*

The journals:
FNCN *Fullerenes, Nanotubes and Carbon Nanostructures*
IJN *International Journal of Nanoscience*
JNN *Journal of Nanoscience and Nanotechnology*
JNR *Journal of Nanoparticle Research*
NL *Nano Letters*
PhE *Physica E: Low-Dimensional Systems and Nanostructures*

Table 9. Gatekeepers of nano-titled journals (Nanotechnology subfield)

Rank	Geopolitical region	Percent
1	USA	54.43
2	EU-25	19.41
3	Asia	16.46
4	Switzerland	3.80
5	Australia	2.95
6–7	Canada	0.84
6–7	Brasil	0.84
8–10	New Zealand	0.42
8–10	Mexico	0.42
8–10	Israel	0.42
	Total	*100*

The journals:
IEEEN *IEEE Transactions on Nanobiotechnology*
JCTN *Journal of Computational and Theoretical Nanoscience*
JNN *Journal of Nanoscience and Nanotechnology*
JVSTB *Journal of Vacuum Science and Technology B*
Nt *Nanotechnology*
PE *Precision Engineering*
VJN *Virtual Journal of Nanoscale Science & Technology*

Table 10. Gatekeepers of nano-titled journals (Nanobio subfield)

Rank	Geopolitical region	Percent
1	USA	63.86
2	EU-25	22.32
3	Asia	5.96
4	Australia	1.98
5–7	Switzerland	1.49
5–7	Israel	1.49
5–7	Canada	1.49
8–10	Russia	0.50
8–10	Mexico	0.50
8–10	Brazil	0.50
	Total	*100*

The journals:
IEEESC *IEEE Transactions on Nanobioscience*
JBN *Journal of Biomedical Nanotechnology*
JNB *Journal of Nanobiotechnology*
JNN *Journal of Nanoscience and Nanotechnology*
NNB *Nanomedicine: Nanotechnology, Biology and Medicine*

As to the position of the weight of the rest of nations (at least as shown by the gatekeeping indicator used in this paper), Tables 6–8 show that the intensity of nanoscale research in these countries is somewhat isotropic in some of them, e.g., Australia, Canada, Brazil, Switzerland, but there are nations e.g., Romania, Russia, Israel, seemingly concentrating their efforts on only one or two subfields.

Although as already mentioned in the introduction, the gatekeepers on the different hierarchical positions in the editorial boards of the nano-titled journals are important players in the orchestration of the whole field, the real conductors of that orchestra are the editors-in-chiefs of these journals.

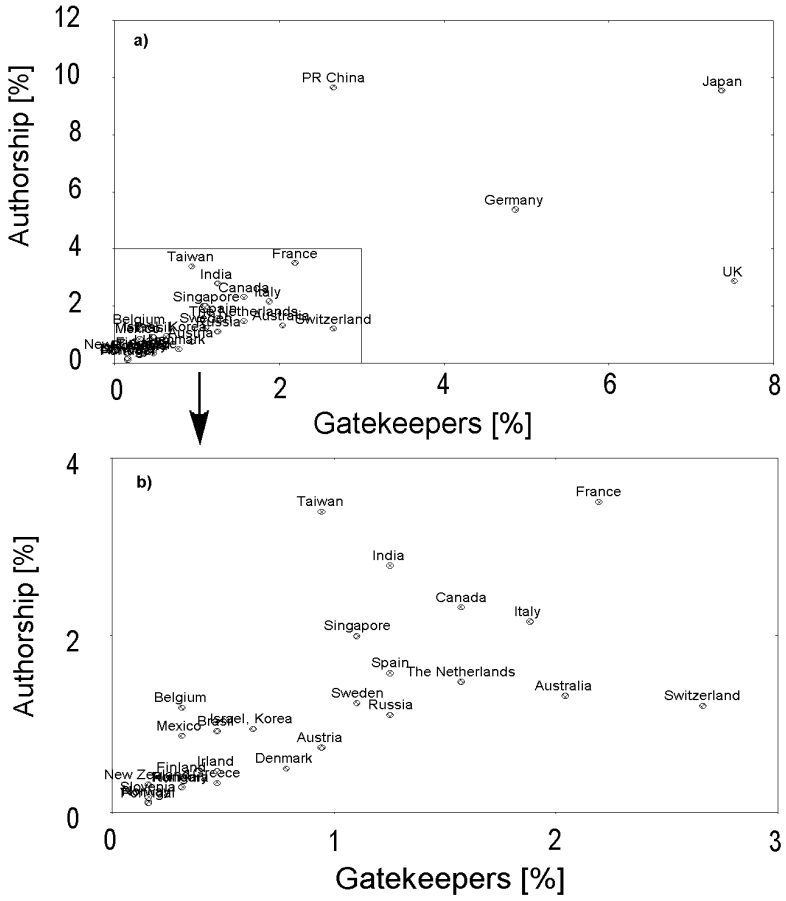

Figure 1. Correlation of gatekeepers and authors in all nano-titled journals

The results on their national distribution are presented in Tables 11–15. As a first step of evaluation it is interesting to compare data in Tables 3 and 11, and to observe that as the editors-in-chiefs are concerned, the dominance of the US is less pronounced than in the case of all gatekeepers as taken together. However, the true surprise springs out from Table 12, in which we see that the EU-15 takes over worldwide the US. The surprise intensifies in Tables 13 and 15, where we see the same situation more pronouncedly, i.e., both the EU-25 and Asia supersedes the USA in the subfields of basic nano-science and in the nanobio subfields, the US keeping its worldwide leading position only in the nanotechnology subfield.

Table 11. Editors-in-Chiefs of all nano-titled journals

Rank	Country	Number	Percent
1	USA	15	23.81
2	Japan	11	17.46
3	UK	9	14.29
4	Germany	6	9.52
5	PR China	5	7.94
6	Switzerland	3	4.76
7–9	Austria	2	3.17
7–9	Canada	2	3.17
7–9	France	2	3.17
10–17	Hungary	1	1.59
10–17	Italy	1	1.59
10–17	India	1	1.59
10–17	Mexico	1	1.59
10–17	The Netherlands	1	1.59
10–17	Sweden	1	1.59
10–17	Singapore	1	1.59
10–17	Spain	1	1.59
	Total	*63*	*100*

Table 12. Editors-in-Chief of all nano-titled journals (with EU-15)

Rank	Geopolitical region	Number	Percent
1	EU-15	23	35.48
2	USA	15	24.19
3	Japan	11	17.74
4	PR China	5	6.45
5	Switzerland	3	4.84
6	Canada	2	3.23
7–10	*Hungary*	1	1.61
7–10	India	1	1.61
7–10	Mexico	1	1.61
7–10	Singapore	1	1.61
	Total	*63*	*100*

Note: For EU-25 the number of editors-in-chief and the percentage are 23 and 37.09, respectively.
(The country in italics is a member of EU-25)

Table 13. Editors-in-Chiefs of nano-titled journals (Basic Nanoscience subfield)

Rank	Geopolitical region	Percent
1	EU-25	33.31
2	Asia	29.63
3	USA	22.22
4	Switzerland	7.41
5–6	Canada	3.70
5–6	Mexico	3.70
	Total	*100*

Table 14. Editors-in-chiefs of nano-titled journals (Nanotechnology subfield)

Rank	Geopolitical region	Percent
1	USA	42.86
2–3	EU-25	28.57
2–3	Asia	28.57
	Total	*100*

Table 15. Editor-in-Chief of nano-titled journals (Nanobio subfield)

Rank	Geopolitical region	Percent
1	EU-25	54.85
2	Asia	25.81
3	USA	12.90
4–5	Canada	3.23
4–5	Switzerland	3.23
	Total	*100*

The next question we have investigated was the preferences of the publishers of nano-titled journals towards gatekeepers of certain countries. The results are shown in Table 16. As expected e.g., the US publishers prefer to invite to the board of their journals mainly scientists from the US, EU-25, and Asia. These represent approx. 85% of all the gatekeepers but at a lower extent gatekeepers from a few other countries are also represented. Although it's quite difficult to align a multinational publisher to a certain country or geopolitical region we have examined the preferences of Elsevier toward the selection of the gatekeepers of their journals. The results are collected in Table 17. Here we see that most of the gatekeepers are coming from the US and the same main geopolitical regions as seen in Table 16 (EU-25, Asia), the US is represented by an overwhelming majority. This is once more supporting the dominance of scientists from the US in the boards of nano-titled journals as already indicated in some previous tables.

Table 16. Gatekeepers of nano-titled journals (US publishers)

Rank	Geopolitical region	Number	Percent
1	USA	108	48.87
2	EU-25	54	24.43
3	Asia	34	15.38
4	Australia	8	3.62
5	Switzerland	5	2.26
6	Israel	4	1.81
7–8	Canada	3	1.36
7–8	Brazil	3	1.36
9–10	New Zealand	1	0.45
9–10	Mexico	1	0.45
	Total	*221*	*100*

The journals: *Journal of Biomedical Nanotechnology*
Journal of Nanoscience and Nanotechnology
Journal of Computational and Theoretical Nanoscience

Table 17. Gatekeepers of nano-titled journals (Elsevier)

Rank	Geopolitical region	Number	Percent
1	USA	93	70.99
2	Asia	21	16.03
3	EU-25	12	9.16
4	Canada	3	2.29
5	Switzerland	2	1.53
	Total	*131*	*100*

The journals: *Physica E*
Precision Engineering
Nanomedicine: Nanotechnology, Biology and Medicine

Table 18. Gatekeepers in positions in several nano-titled journals

Name	Position	No of journals	Journal (acronym)	Country	Affiliation
Besenbacher, F	E	4	Nt,IJN,NL,JNN	Denmark	U
Avouris, P	E	4	Nt,NL,JCTN,IJN	USA	O
Craighead, HG	E	4	Nt, IEEESC,NL,JNN	USA	U
Lieber, CM	Ch-3E	4	JCTN,FNCN,NL,JNN	USA	U
Sleytr, UB	Ch-2E	3	JNN,NNB,JBN	Austria	U
Bai, C	E-2Ch	3	JNR,NNB,FNCN	PR China	R
Dai, H	E	3	Nt, IJN, NL	USA	U
Guo, P	E	3	NNB, JNN,JBN	USA	U
Montemagno, CD	Ch-2E	3	NNB, Nt, JBN	USA	U
Seeman, NC	E	3	NL,JNN,JBN	USA	U
Lu, GQM	E	2	IJN, JNN	Australia	U
Schalkhammer, T	E-Ch	2	JNN,JBN	Austria & Netherlands	U
Baraton, MI	E	2	JNR,JNN	France	U
Joachim, C	Ch-E	2	Nt, IJN	France	R
Fuchs, H	E	2	JNR,JNN	Germany	U
Rao, CNR	E	2	FNCN, JNN	India	R
Aono, M	E	2	Nt, IJN	Japan	U
He, N	E	2	JNN,JBN	PR China	U
Chow, GM	E	2	JNR,JNN	Singapore	U
Samuelson, L	E	2	Nt, NL	Sweden	U
Gerber, Ch	E	2	Nt, IJN	Switzerland	U
Alivisatos, AP	E-Ch	2	JNR,NL	USA	U
Bonnell, DA	E	2	Nt, JNR	USA	U
DiVentra, M	E	2	IJN,JCTN	USA	U
Freitas Jr, RA	E	2	JCTN, NNB	USA	O
Gupta, RB	E	2	NNB,JBN	USA	U
Lin, Y	E	2	JNN,JBN	USA	R
Meyyappan, M	E	2	Nt, JNN	USA	O
Sinnott, SB	E-Ch	2	NL,JNN	USA	U
Teague, EC	E	2	Nt, NNB	USA	O
Wang, ZL	E	2	NL,NNB	USA	U
Whitesides, GM	E	2	Nt, JVST	USA	U
Yang, PD	E	2	NL, IJN	USA	U

Legends:
E Editor
Ch Editor-in-Chief
U University
O Others
R Research institute

Table 19. Editors-in-chiefs of all nano-titled journals by gender

Gender	Number	Percent
Male*	59	95.16
Female**	3	4.84
Total	*62*	*100*

* All of the Chinese and Japanese editors-in-chief were taken as males
**1 Italian, 1 Swedish and 1 of the USA

Table 20. Gatekeepers with positions in more than one nano-titled journal by gender

Gender	Number	Percent
Male	27	81.52
Female	5	15.15
Unknown	1	3.03
Total	*33*	*100*

All our results presented above are shading some light on the gatekeeper's power structures and decision influences on what, when and where from the results of worldwide nanoscale research gets published.

We have also shown that beside the national concentration of power in the field, there is present a concentration of influence and power at the personal and individual level, as clearly visible in Table 18. As seen, this is manifested by the fact that there is a certain hard core of scientists being gatekeepers simultaneously in 2–4 nano-titled journals. Although out of that core of very influential 33 scientists 25 percent comes from the US demonstrating once more the US dominance in the field, there remains influence also in the hands of scientists from about 12 other nations. It is also interesting to notice that most of the hard core gatekeepers are coming from the higher educational environment.

We were also interested to see whether the gender discrimination present in most of the aspects of science and research in general is present also in the power structure of nanoscale journals. The results are given in Tables 19 and 20.

As seen in Table 19, a very accentuated machoist mechanism is present in the abovementioned structure. A somewhat less pronounced but identical dominance can be noticed at the highest hierarchical level of nano-titled journal gatekeeping as visible in Table 20.

Finally, we have tried to find a response to question no. 4 in the introduction. The results are shown in Figures 1a and 1b. Although as visible in the figures, a slight but non-significant correlation can be seen between the percentage of national authorship and of gatekeepers of nano-titled journals, one can consider that the gatekeepers from a certain country do not favor preferentially the publication tendencies of scientists from the same country.

Conclusions

As already demonstrated in our previous investigations,[14–16] in the power structure of professional influence of the gatekeeping of nano-titled journals, there is an overwhelming dominance of scientists from the US. Beside this aspect manifested at national level, a somewhat lesser dominance can be noticed at personal and individual level. This is in a certain extent in contradiction with complaints revealed by some authors that the US world leading position in science is narrowing as shown by publications and citations.

Perhaps the most interesting aspects of our results are those which show a clear and impressive appearance of Asia on the world map of nanoscale research. The main player in this respect being China[19] but Japan and India contribute also substantially to the abovementioned. Less surprising but also convincing as evidence of power is the presence of EU-25 on the playfield of nanoscale research.

The concentration of individual decision-making power in the hands of about 33 core gatekeepers is also new and impressive.

References

1. T. BRAUN, A. SCHUBERT, S. ZSINDELY, Nanoscience and nanotechnology on the balance, *Scientometrics*, 38 (1997) 321–325.
2. M. MEYER, O. PERSSON, Nanotechnology: interdisciplinarity, patterns of collaboration and differences in application, *Scientometrics*, 42 (1998) 195–205.
3. M. S. MEYER, Patent citation analysis in a novel field of technology: an exploration of nanoscience and nanotechnology, *Scientometrics*, 51 (2001) 163–183.
4. A. HULLMANN, M. MEYER, Publications and patents in nanotechnology. An overview of previous studies and the state of art, *Scientometrics*, 58 (2003) 507–527.
5. J. SCHUMMER, Multidisciplinary, interdisciplinarity, and patterns of research collaboration in nanoscience and nanotechnology, *Scientometrics*, 59 (2004) 425–465.
6. I. MALSCH, Nanotechnology in Europe: Scientific trends and organizational dynamics, *Nanotechnology*, 10 (1999) 1–7.
7. M. MEYER, O. PERSSON, Y. POWER, *Mapping Excellence in Nanotechnologies*, EU Report, December, 2001
8. R. N. KOSTOFF, J. S. MURDAY, C. G. Y. LAN, W. M. TOLLES, The seminal literature of nanotechnology research, *J. Nanopart. Res.*, 8 (2006) 193–213.
9. NSTC, *National Nanotechnology Iniative: The Initiative and Its Implementation Plan*, Washington D.C., 2000. http://www.nano.gov/nni2.pdf
10. S. R. MORRISEY, Harnessing Nanotechnology, *Chem. Engn. News*, April 19, 2001, p. 30
11. S. A. EDWARDS, *The Nanotech Pioneers*, Wiley-VCH, Weinheim, 2006
12. *21st Century Nanotechnology and Development Act*, 108th Congress, 1st session, Dec. 3, 2003. Public Law 108–153, 15 USC 7501, page 117, Stat. 1923, Washington, US Government Printing Office, 2003
13. M. C. ROCCO, Broader societal issues of nanotechnology, *Nanopart. Res.*, 5 (2003) 181.
14. T. BRAUN, Keeping the gates of sciences journals, In: H.F. MOED, W. GLÄNZEL, U. SMOCH (Eds) *Handbook of Quantitative Science and Technology Research*, Kluwer Academic Publishers, Dordrecht, 2004, pp. 95–114

15. T. BRAUN, I. DIÓSPATONYI, The counting of core journal gatekeepers as science indicators really counts. The scientific scope of action and strengths of nations, *Scientometrics*, 62 (2005) 297–319.
16. T. BRAUN, I. DIÓSPATONYI, The journal gatekeepers of major publishing houses of core science journals, *Scientometrics*, 64 (2005) 113–120.
17. D. J. DE SOLLA PRICE, *Little Science, Big Science*, Columbia Univ. Press, New York, 1963.
18. P. J. DOBSON, Factors in developing micro/nanotechnology business, *mst news*, 2/06 (2006) 36.
19. HAO XIN, GONG YIDONG, *China Bets Big on Big Science*, 311 (2006) 48.