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EDITORIAL

■ Variations on the Ten Commandments of Robert Van de Walle

Robert Van de Walle is a Belgian half-heavy-weight judoka who won the gold medal at the Olympic Games in 1980 and a bronze medal in 1988. During his career he also captured three European titles. When he retired as an active judoka he specialized in management development techniques. As such he was the right man to act as delegation leader and mentor of the Belgian team during the 2004 Olympic Games in Athens.

During that period he also published his ten commandments for Olympic athletes in the Olympic Newsletter *Athens News*. I have taken the liberty to transform his commandments into a version for scientists. I hope they will offer some inspiration and guidelines for the younger (and maybe also for the not-so-young).

1. Study the works of the best

"Information overload" is one of the buzz words of our time. So do not waste time by reading and studying just anything you can lay your hands on. Articles and books by the top scientists in your field must be your source of inspiration and constitute a challenge to become a better scientist.

2. Formulate goals

Formulate goals for yourself. These will force you to focus and to increase your technical (e.g. mathematical, statistical, linguistic) skills. These goals must be formulated in terms of observable

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changes in your behaviour, and in results you want to attain.

3. Leave the comfort zone

Your weak points should not be considered a threat but a challenge. A scientist who works on his/her weak points will make progress and move forward in his/her scientific development.

4. Concentrate on the work at hand

It is important to keep your (high) goals in mind, but these should not discourage you in taking the small everyday steps which are necessary to attain them. Especially if you have teaching obligations these must be performed with care and respect to those who have not yet reached your level (but, maybe, one day will surpass you).

5. Enjoy a challenge

Being a scientist is just a fantastic way of life. One should enjoy each moment of it. Solving a difficult scientific problem is what drives the real professional in the field.

6. Train the mental aspect

Being a scientist is not living an endless stream of successes. Sometimes problems cannot be solved, or articles must be revised, and occasionally too, will submissions for conferences be rejected. Being a mentally stable person is a necessity. This part of ones personality must be trained too.

7. Be prepared

When going to a job interview, or presenting a talk at an international conference, one must be prepared, not only for the expected, but also for the unexpected (What to answer to that question, what to do when the light goes out?).

8. Think positively

Remove negative thoughts and influences. "This is too difficult for me" will certainly not bring you any closer to the solution of a scientific problem, and "All those other candidates are much better suited for the job than I am" will not bring you any closer to the top of the list.

9. Be happy

Do not feel unhappy for what you do not have, but feel happy for all you have already accomplished. As said before: life as a teacher and scientist is actually a very enjoyable way of life.

10. Become a real Olympian, or more appropriately for scientists: be of Nobel class

An Olympian is an honourable person, with a high goal in life, mentally and technically strong and with impeccable ethical conduct.

These commandments are heavily oriented towards the single athlete, not as much to athletes who participate in team sports. They are also written from a perspective of competition among athletes. As science is more and more a team sport, i.e. a collaborative effort, these ten commandments must be supplemented by another set (another ten?) aimed at the collaborative aspect of science. I leave this as a challenge for another guest editorial writer. Competition and collaboration should then be seen as two sides of the same coin: the life of a professional scientist.

Ronald Rousseau
Catholic School for Higher Education Bruges-Ostend

CARTOON

H-INDEX FOR PRICE MEDALISTS REVISITED

By Judit Bar-Ilan

Introduction

In the last issue of the ISSI newsletter (vol. 1, no. 4, Dec, 2005), Wolfgang Glanzel and Olle Persson (2005) computed the *h*-index of Price medalists based on ISI data. According to Jorge E. Hirsch (2005) "a scientist has index *h* if *h* of his or her *Np* papers have at least *h* citations each and the other (*Np-h*) papers have ≤*h* citations each". This number is called *h*-index. In this article we re-compute the *h*-index of Price medalists, but this time we base the computations on data retrieved from Google Scholar (http://scholar.google.com). The aim of this exercise is to compare the results based on Google Scholar with those that were based on the Web of Science, as computed by Glanzel and Persson (2005).

Google Scholar, a relatively new and free Google service still in its beta was launched in November 2004. "Google Scholar provides a simple way to broadly search for scholarly literature" (Google, 2005a). "Google Scholar covers peer-reviewed papers, theses, books, abstracts, and other scholarly literature from all broad areas of research" (Google, 2006). Google works "with publishers of scholarly information to index peer-reviewed papers, theses, preprints, abstracts, and technical reports from all disciplines of research and make them searchable on Google and Google Scholar" (Google, 2005b). The publishers must allow free access at least to complete abstracts. Access to the full text of the publications is usually fee or subscription based. One of the shortcomings of Google Scholar as a bibliographic tool is that the list of sources covered by it is unavailable and it is not planned to be published in the near future (Price, 2006).

Google Scholar's effectiveness has been tested and discussed in a number of studies (e.g., Bauer & Bakkalbasi, 2005; Jacso, 2005a & 2005b; Noruzzi, 2005) and is also one of the topics of interest at the forthcoming S&T Indicators Conference. (http://www.steunpuntoos.be/leuvenconference/).

Methods and results

Data was collected from Google Scholar on March 11, 2006 by submitting queries of the type *author:"J Doe"*. Google Scholar allows limiting dates; however date restrictions are not completely reliable, according to the Google Scholar help (Google, 2005c). In spite of its limitations, we chose this option and searched for publications since 1986, similarly to the searches conducted by Glanzel and Persson at the Web of Science in August 2005 (Glanzel & Persson, 2005). Google Scholar ranks the results by the number of times the publication was cited. The results were downloaded, and the first *h* publications of the Price Medal winner with at least *h* citations were identified. Slight difficulties were caused in case of multiple authors with the same surname and sharing some of the initials. In these cases we identified the scientometrics/bibliometrics related papers based on the title of the paper and the publication source. Thus if some of the Price Medalists published highly cited articles in other disciplines as well, we may have overlooked these publications. The selection of the relevant items was manual, what may have caused unintentional further errors. Diacritics are also somewhat problematic, for example for the publications of Wolfgang Glanzel, we had to conduct three searches: *author:"W Glanzel"*, *author:"W Glaenzel"*, *author:"W Glänzel"*.

Because of time limitations, for this paper publication lists of the Price Medalists were not consulted, even though when working with Google Scholar, the data has to be cleansed thoroughly. Currently, there are omissions, duplicate counts and incorrectly attributed publications in the database. Some mistakes are inevitable since the processes are totally automated. Consider, for example the query *author:"P Ingwersen"* that was carried out on March 11, 2006. The paper "Informetric analyses

on the World Wide Web" by Almind and Ingwersen (Journal of Documentation, 1997) is not to be found on the list. The explanation is simple: even though this paper received 166 citations according to Google Scholar, it is attributed to D Copenhagen (!) as of March 11, 2006 (see Figure 1). Is D. Copenhagen an ISSI member? Another example is Leo Egghe's and Ronald Rousseau's book "Introduction to informetrics", which appears twice when searching for their names, once with 135 and once with 79 citations (see Figure 2). If duplicates like these are not spotted, h-index is not computed correctly. We tried to identify duplicates, but missing or wrongly attributed publications were not checked for this paper. The Almind & Ingwersen paper is an example where the author is not identified correctly, at other times there are problems with the identification of the title, as can be seen in Figure 3. Even with these shortcomings, one has to keep in mind that Google Scholar is a freely available tool. With these reservations, the results of the current investigation are presented in Table 1.

As can be seen in Table 1, the *h*-indices are rather similar irrespective of the data source; the average *h*-index of the fourteen medalists is 13.5 and 13.86 for Google Scholar and Web of Science respectively. The *h*-index of Loet Leydesdorff is considerably higher when the calculations are based on Google Scholar. A possible explanation is that four out of the 23 items are books, and an additional seven publications appear in sources not indexed by ISI. An opposite trend can be observed for Tibor Braun, his *h*-index based on Google Scholar is much lower than the value based on ISI. A possible reason could be the relatively long titles of some of his highly cited paper, which may prevent the correct, automatic identification of citations to these works.

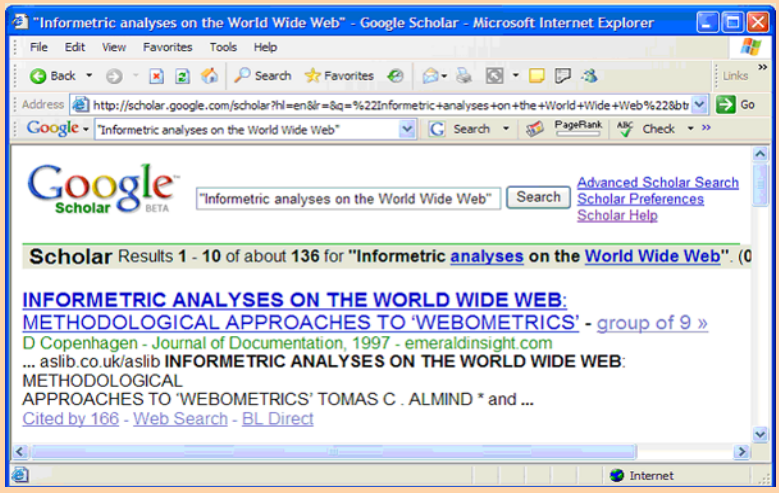

Fig. 1: The Almind & Ingwersen paper is attributed to D. Copenhagen

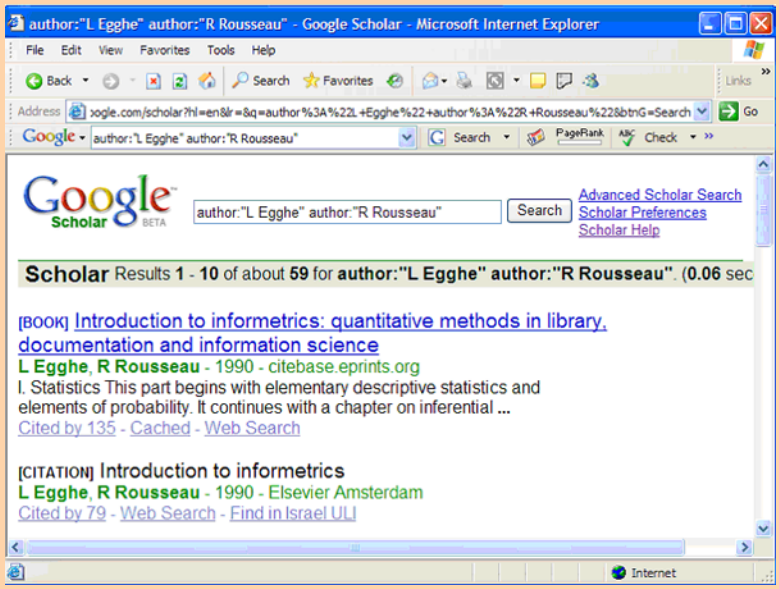

Fig. 2: The same item (the book "Introduction to informetrics") appears twice

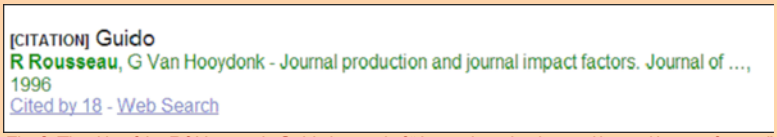

Fig. 3: The title of the R&H paper is Guido instead of "Journal production and journal impact factors"

Price medalist	*h*-index based on data from Google Scholar	*h*-index based on data from the Web of Science
E Garfield	14	15
T Braun	**10**	17
H Small	7	8
AFJ van Raan	16	18
BR Martin	11	11
F Narin	17	16
A Schubert	12	17
W Glanzel	15	18
HF Moed	14	16
L Leydesdorff	**23**	13
L Egghe	11	13
R Rousseau	14	12
P Ingwersen	14	10
HD White	11	10
Average h-index	**13.5**	**13.86**

Table 1: *h*-index of Price medalists based on Google Scholar and WoS data (publ. since 1986)

Concluding remarks

The results of this small study indicate that on the average for Price medalists, computations of the *h*-index based on Google Scholar give similar values compared with the ISI-based computations. Further and more careful evaluations of Google Scholar are needed to assess its value as a bibliometric tool.

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NEWS, ANNOUNCEMENTS

The 9th International Conference on Science and Technology Indicators

"New Challenges in Quantitative Science and Technology Research"
Leuven, Belgium, 7–9 September 2006

The 2006 S&T Indicators Conference to be organised by the Katholieke Universiteit Leuven is the ninth conference in a successful series of international scientific meetings on policy relevant aspects of quantitative S&T research and its applications. Previous conferences have been held in Leiden (1988), Bielefeld (1990), Leiden (1991), Antwerp (1995), Cambridge (1998), Leiden (2000), Karlsruhe (2002) and Leiden (2004).

The 9th International Conference on S&T Indicators organised by the Katholieke Univesiteit Leuven will focus on new challenges in quantitative science and technology research. Electronic communication, the worldwide emphasis on the knowledge-

based society, increasing internationalisation and globalisation, on one hand, and the strengthened role of regions, on the other hand, result in more complex and dynamic S&T systems with the demand for more sophisticated instruments of measurement. Taking into account these latest developments, the S&T Indicators conference 2006 will be focussing on the following main themes:

- Trends and challenges in the development of novel, advanced S&T Indicators;
- Use and limitations of advanced S&T Indicators in a policy relevant context;
- Web Indicators and S&T Indicators in the electronic environment;
- Combining quantitative and qualitative methods;
- The challenge of EU extension;
- Repercussions of policy use of S&T Indicators;

In order to achieve these objectives, the conference programme will offer:

- Invited papers to be presented in plenary sessions;
- Special sessions on new challenges in S&T Indicators research and application;
- Contributed papers of high quality to be delivered in parallel sessions;
- Poster sessions with "short communications" of high quality;

The conference will be of interest to:

- Policy makers and politicians concerned with the design and implementation of national and international S&T policy;
- R&D managers in funding agencies, in universities and research institutes, and in the business sector;
- Researchers in the field of S&T studies;
- Information scientists and statisticians interested in S&T data;
- Science publishers and editors, writers and journalists.

The conference language will be English.
Please, visit the conference website for more information:
http://www.steunpuntoos.be/leuvenconference/

Welcome to ISSI 2007 - Madrid!

11th ISSI Conference, Madrid, 25-27 June 2007

(First Announcement)

We are happy to invite you to the 11th International Conference of the International Society for Scientometrics and Informetrics, which will be held on June 25-27, 2007 at the Central Campus of the CSIC in Madrid. This is a major event with participants from all over the World in our field.

The Conference is organised by the Centre for Scientific Information and Documentation (CINDOC) of the Spanish Research Council (CSIC) in cooperation with several Information Science Departments of Spanish universities and under the auspices of the International Society for Scientometrics and Informetrics (ISSI).

Previous ISSI conferences took place in Belgium (1987), Canada (1989), India (1991), Germany (1993), USA (1995), Israel (1997), Mexico (1999), Australia (2001), China (2003) and Sweden (2005).

More info on the website of the conference:
http://issi2007.cindoc.csic.es/

International Workshop on Webometrics, Informetrics and Scientometrics & Seventh COLLNET Meeting

in conjunction with the

Extra Session on Information Visualization for Webometrics, Informetrics and Scientometrics

(Special information below)

10-12 May, 2006
LORIA-INIST Nancy, France

Scope:

Quantitative aspects of science of science. Collaboration and communication in science and in technology. Science policy. Combination and integration of qualitative and quantitative approaches.

Theoretical, methodological and applied aspects, for example:

- Emerging issues in scientometrics/informetrics/webometrics and history
- Quantitative analysis of S&T innovations
- Informetric laws and distributions, mathematical models of communication or collaboration
- Information retrieval
- Nature and growth of science and its relation with technological output
- Evaluation indicators
- Collaboration in science and in technology from both quantitative and qualitative points of view
- Information visualization for webometrics, informetrics and scientometrics (Special information below)

Please, note that these examples listed above give a broad outline of the scope of the workshop theme but do not limit it.

Special Information about the:
Extra Session on Information Visualization for Webometrics, Informetrics and Scientometrics

Information visualization involves the visual representation and exploration of abstract information. Non-physical information can advantageously be represented in a visual form, but such information has no obvious spatial property by itself. Information visualization is thus a computer-supported process which transforms data, information and knowledge into a form that relies on the human system to perceive the embedded meaning. It focuses on creating rich visual interfaces to help users navigate through complex information spaces and analyse abstract data.

The development of this domain creates innovative graphical representations of information. This workshop aims at exploring and discussing the application of these methods and techniques for visualizing quantitative aspects of science, collaboration and communication in the domains of science and technology.

Scope

Contributions should focus on one or more of the following topics:

Methods and techniques such as:

- Hyperbolic geometry
- Graphs and networks as visual display
- Clustering visualization
- Using neural networks for visualization
- Models for navigation and interactivity

Applications of these methods and techniques for:

- Visualizing subspaces of the Web
- Web log data visualization
- Graphic representation of informetrics distributions
- Maps of science

The Workshop will start with a specific tutorial on XML and Metadata engineering, and their specific use in the context of Webometrics.

This call for papers will be made available at the address: http://collnet.inist.fr.

Invited speakers

- Donald deB. Beaver
  Williams College, Williamstown, MA., USA
  http://www.williams.edu/HistSci/department.html
- Bernard Dousset
  IRIT, Université Paul Sabatier, Toulouse
  http://www.irit.fr/
- Peter Ingwersen
  http://www.db.dk/pi/
- Mike Thelwall
  http://www.scit.wlv.ac.uk/~cm1993/mycvhtml
- Ed Noyons
  http://www.cwts.nl/ed/edhmpg.html
- Michel Zitt
  http://www.nantes.inra.fr/presentation_de_l_inra_de_nantes/les_unites/etudes...

Program Chairs:

- Jacques Ducloy, France
- Claire François, France
- Jean-Charles Lamirel, France
- Hildrun Kretschmer, Germany

Organizing Secretary:

- Claire François, INIST France
- Patricia Gautier, INIST France
- Sabah Khalfa, LORIA France
- Jean-Charles Lamirel, LORIA France

Programme Committee:

COLLNET Members from 22 countries

LORIA and INIST

Conducting research in the domain of Information and Communication Technologies, LORIA (Lorraine Laboratory in Computer Science and its Applications) is a joint research unit – UMR 7503 common to several establishments: CNRS (Centre National de Recherche Scientifique) National Center of Scientific Research, INPL (Institut National Polytechnique de Lorraine) National Polytechnic Institute of Lorraine, INRIA (Institut National de Recherche en Informatique et en Automatique) National Research Institute for Computer Science and Automation, UHP (Université Henri Poincaré, Nancy 1) Henri Poincaré, University, Nancy 1, Nancy 2 (Université Nancy 2) Nancy 2 University.
LORIA is a laboratory of more than 450 persons including 150 scientific staff (full-time researchers or university professors or assistant professors), 150 doctoral students and post-docs and engineers, technical and administrative support staff, intern and visitors organized in research teams and supporting services.
The main mission of LORIA is the fundamental and supplied research in the field of information and communication technologies. LORIA plays also a strategic role in the training of young researchers, in partnership with Universities and in the technology transfer via partnerships with industry and support in the creation of start-up companies
The institute for Scientific and Technical Information (INIST) is a service unit of the French National Center for Scientific Research (CNRS). Its mission is to collect, analyze and disseminate the results and findings of worldwide research in science, technology, medicine, humanities, economics and social sciences. Please have a view at LORIA website at the address: http://www.loria.fr.
INIST is the leading integrated scientific and technical information center in Europe and provides the major public research and academic institutions as well as the socio-economic sector with resources and services designed to improve dissemination of and access to international scientific and technical information (STI).
Committed to the new information and communication technologies, INIST offers a whole range of access services to scientific and technical information on the Internet. INIST is not only the leading scientific and technical document supplier in France, but it is also the producer of two multilingual, multi-disciplinary bibliographic databases containing over 17 million bibliographic records covering the core worldwide scientific literature. Please have a view at INIST website at http://www.inist.fr.

COLLNET and ISSI

COLLNET is a global interdisciplinary research network of scholars who are concerned to study aspects of collaboration in science and in technology (see COLLNET web site at: collnet.de). This network of interdisciplinary scholars from 22 countries was established in January 2000 in Berlin with Hildrun Kretschmer (http://www.h-kretschmer.de) as co-ordinator. Since that time there have been 6 meetings: the first in Berlin, September 2000, the 2nd in New Delhi, February 2001 and the 3rd in Sydney (in association with the 8th ISSI Conference), July 2001. The former ISSI President Mari Davis has mentioned in the Newsletter, July 2003: Importantly, ISSI needs alliance with other groups, such as COLLNET, for broader reach among a range of interdisciplinary researchers and to encourage new thinking and perspectives on investigations in science and in technology. The 4th COLLNET Meeting took place on August 29th in 2003 in Beijing in conjunction with the 9th International ISSI Conference. The International Workshop on Webometrics, Informetrics and Scientometrics and 5th COLLNET Meeting took place in Roorkee, India, in May 2004 and the 6th COLLNET Meeting in association with the 10th ISSI Conference in Stockholm, Sweden, in July 2005. A high percentage of the COLLNET Members are ISSI Members too.
More details about the international workshop in: http://collnet.inist.fr

InSciT2006 – I. International Conference on Multidisciplinary Information Sciences and Technology

Merida, 25-28 October, 2006

The I International Conference on Multidisciplinary Information Sciences and Technology, InSciT2006, will be held at Merida's Conference Hall, Spain, from October 25 to 28, 2006.

InSciT2006 seeks to integrate the technological, mathematical, linguistic and cognitive aspects of information, as well as those concerning to Artificial Intelligence, Natural Language Processing, Human-Computer Interaction and to organisational aspects and Social Networks applied to the development of complex and heterogeneous information systems. IS can be considered as the interface of such number of approaches to the "information problem", this reflection drives to InSciT2006 at creating a space where researchers and practitioners from the widest range of disciplines can inspire each other new perspectives and work directions. InSciT2006 will count with plenary lectures delivered by Donald H. Kraft, Wolfgang Glänzel, Félix de Moya Anegón and Chaomei Chen.

Major conference topics cover:

Information Retrieval ▪ Digital Libraries ▪ Hypertext and Hypermedia Systems ▪ Metadata ▪ Electronic Publishing ▪ Knowledge and Information Management ▪ Science and Information Mapping ▪ Data Mining ▪ Human-Computer interaction ▪ Artificial Intelligence ▪ Natural Language Processing ▪ Information Visualization ▪ Social Networks ▪ Databases ▪
Further details about InSciT2006 can be consulted on:
http://www.instac.es/inscit2006

AN IMPROVEMENT OF THE H-INDEX: THE G-INDEX[1]

by L. Egghe

Universiteit Hasselt, Campus Diepenbeek, Agoralaan, B-3590 Diepenbeek, Belgium
Universiteit Antwerpen, Campus Drie Eiken, Universiteitsplein 1, B-2610 Wilrijk, Belgium
e-mail: leo.egghe@uhasselt.be

For a set of papers, ranked in decreasing order of the number of citations that they received, the h-index is the (unique) highest number of papers that received h or more citations. In the references [1,2,7,9] one describes some advantages of this new scientometric indicator: It is a simple single number incorporating both publication (quantitiy) and citation (quality or visibility) scores and hence has an advantage over these single separate measures and over measures such as "number of significant papers" (which is arbitrary) or "number of citations to each of the (say) q most cited papers" (which again is not a single number). The h-index is also robust in the sense that it is insensitive to an accidental set of uncited (or lowly cited) papers and also to one or several outstandingly highly cited papers.

This last point is the subject of my criticism on this measure: although I certainly agree that the insensitivity to the "tail" of lowly cited papers is an advantage for the h-index, it should be sensitive to the level of the highly cited papers. Indeed, as the h-index is defined now, once an article belongs to the h top class (defining h) it is totally unimportant whether or not these papers continue to be cited or not and, if cited, it is unimportant whether these papers receive 10, 100 or 1000 more citations! We feel that a measure which should indicate the overall quality of a scientist or of a journal should deal with the performance of the top articles and hence their number of citations should be counted, even when they are declared to be in the top class. This can be accomplished by modifying the h-index a little bit (called the g-index) so that the above described disadvantage has disappeared while keeping all advantages of the h-index and, at the same time, the calculation of the new index is as simple as the one of the h-index.

Note that it is a consequence of the definition of the h-index that the top-h papers have at least h^2 citations but that the actual number can be much higher (this is what is missing in the h-index). We therefore define the g-index as the highest number g of papers that together received g^2 or more citations. From this definition it is already clear that $g \geq h$. So for all authors or journals, the g-score will be higher than the h-score but, what is interesting in this, the higher the number of citations in the top-class (in other words, the skewer the citation distribution) the higher the g-score will be. Let us give two real author examples: the comparison of L. Egghe and H. Small. In the Tables below, TC denotes the total number of citations to a paper on rank r and Σ TC denotes the cumulative TC scores up to rank r.

Table A: L. Egghe data

TC	r	Σ TC	r^2
47	1	47	1
42	2	89	4
37	3	126	9
36	4	162	16
21	5	183	25
18	6	201	36
17	7	218	49
16	8	234	64
16	9	250	81
16	10	266	100
15	11	281	121
13	12	294	144
13	**13**	307	169
13	14	320	196
13	15	333	225
12	16	345	256
12	17	357	289
12	18	369	324
12	**19**	**381**	**361**
11	20	392	400
.	.	.	.

This text is based on the article [3], to be published in Scientometrics.

Table B: H. Small data

TC	r	Σ TC	r²
305	1	305	1
239	2	544	4
127	3	671	9
109	4	780	16
86	5	866	25
80	6	946	36
77	7	1023	49
75	8	1098	64
67	9	1165	81
49	10	1214	100
44	11	1258	121
36	12	1294	144
26	13	1320	169
26	14	1346	196
25	15	1371	225
22	16	1393	256
22	17	1415	289
18	**18**	1433	324
18	19	1451	361
15	20	1466	400
12	21	1478	441
10	22	1488	484
9	23	1497	529
8	24	1505	576
8	25	1513	625
7	26	1520	676
6	27	1526	729
5	28	1531	784
5	29	1536	841
5	30	1541	900
3	31	1544	961
3	32	1547	1024
2	33	1549	1089
2	34	1551	1156
2	35	1553	1225
1	36	1554	1296
1	37	1555	1369
1	38	1556	1444
1	**39**	**1557**	**1521**
1	40	1558	1600
.	.	.	.

The bold face numbers indicate how the h-index and g-index is calculated. L. Egghe has h=13 since this is the last rank where all the papers have at least 13 citations. For H. Small this is h=18, higher but not so high as one would expect from the citation data of the highest cited papers of both authors. But L. Egghe has g=19 since this is the last rank for which $\Sigma TC \blacktriangleright g^2$. For H. Small this is g=39. Hence the difference between L. Egghe and H. Small becomes more apparent using the g-index than with the h-index. In general, in a group of authors (say of the same field) the variance of the g-indexes will be much higher than the one of the h-indexes which makes a comparison between authors concerning their visibility in the world more apparent.

Both indexes are simple to calculate based on the same table of data. We therefore hope that this new g-index will be further studied and used in practical assessments.

For a thorough study of the g-index, incl. the scores of the active De Solla Price winners we refer to [3].

In [6,8] a formula for the h-index is presented in case the data follow a Lotka power law with

$$h = T^{\frac{1}{\alpha}}$$

exponent α in the denominator. The formula is where T denotes the total number of articles. In [3] the analogous formula for the g-index has been proved to be

$$g = \left(\frac{\alpha - 1}{\alpha - 2}\right)^{\frac{\alpha-1}{\alpha}} T^{\frac{1}{\alpha}}$$

In [4,5] a theory is presented to calculate the evolution of the h- and g-index in function of time.

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Aparna Basu: basu.aparna@rediffmail.com
Balázs Schlemmer: balazs.schlemmer@econ.kuleuven.be
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