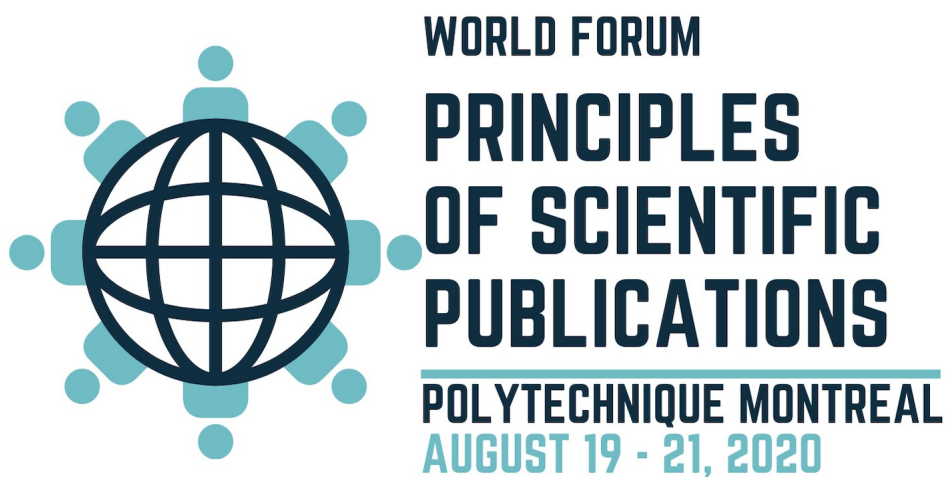


World Forum

Principles of Scientific Publication

Montreal, Canada—August 19, 20, 21



Book of Abstracts

Gregory S. Patience
Federico Galli
Yanet Villasana
Paul A. Patience
Daria C. Boffito

Scope

The world forum Principles of Scientific Publication addresses the mechanics and ethics of publishing research from all disciplines—philosophy and humanities to mathematics and theoretical physics. This meeting assembles scholars from around the globe and promotes vigorous discussions and debate between decision makers, professors, editors, governments, publishing houses, and students. We will address:

Session 1: Authorship Do current guidelines on authorship reflect how researchers assign credit for their contributions;

Demoting from author to acknowledgment

Guest author: effective but unethical?

How does one define the level of contribution?

PNAS authorship criteria: ICMJE on steroids

Authorship order

Session 2: Ethics What are the best policies to deal with recognizing contributions, plagiarism, retractions, and ethics in funding;

MeToo# in scientific publication

Are acknowledgements valuable?

How many self-citations becomes inappropriate

How to deal with conflict—subordinates to superiors and vice-versa

Session 3: Journals, reviewing, and metrics: How to improve the publishing process with respect to transparency, fairness, equity and inclusion that maintains the interests of the principal investigators while considering the collaborators;

Author ethos and journal selection process

Reviewer 2 must be stopped

Citations don't mean much anymore

Predatory journals

Selecting a journal

Session 4: Reporting data Improving how methods and procedures to treat data that ensures public trust (and reduces the medias potential to sensationalize or call into question research results); and,

CONSORT Statement

p-hacking

HARKing: Hypothesizing After the Results are Known

Credibility of science and media industry

Should authors be required to share all raw data

Session 5: Communication: Maddox (25 years as *Nature's* editor-in-chief) complained that researchers deliberately write obscurely.^[1]

Passive aggressive reception of the active voice

When is correcting grammar a contribution?

Social media: trivialize or promote science?

Deciding what to write in the article and in supplementary materials

Design Thinking To stimulate discussion, the conference will invite distinguished individuals for plenary lectures, but more importantly, we will also hold interactive discussions based on Design Thinking methodologies. This format concentrates on a human-centered strategy to explore and generate ideas to creatively solve challenges.

Dedicated work groups will address the essential questions of each theme—Authorship, Ethics, Journals and Metrics, Reporting Data, and Communication—through the design thinking steps, such as: empathize and define problems, and then conceive, prototype, and test possible solutions based on users experience in scientific publication.

Organizing Committee

Role	
Chair	Gregory S. Patience
Co-Chair	Daria C. Boffito
Secretary	Federico Galli
Co-Secretary	Olga Chub
Treasurer	Fabio Cicoira
Webmaster	Nadine Aboussouan
Websupport	Paul A. Patience
Workgroups	Yanet Villasana
Authorship	John R. Speakman
Ethics	Bryn Williams-Jones
Ethics	Chris R. Triggie
Ethics	Elise Smith
Ethics	Jackie Marchington
Ethics	Kimberly J. Vannest
Ethics	Michael J. O'Brien
Journals	Francesca Riboni
Journals	Gene P. Siegal
Journals	João B. P. Soares
Journals	Gisele M. Arruda
Data	George Pounis
Data	Jeff Dozier
Data	Lu Xinzheng
Data	Marco Conte
Data	Patrice Perreault
Data	Rahmat Sotudeh-Gharebagh
Data	Renan Moritz VR Almeida
Data	Carmen Galán-Marín
Communication	Vincent Larivière
Communication	Barry Wellman
Communication	Ayush Dogra
Communication	Shaoxiong (Brian) Xu

Contents

Scope	iii
Organizing Committee	iv
Contents	v
1 Authorship	1
Authorship: A Boon Or Bane	1
Different types of unethical publication activities	2
Pathology in Academic Authorship: To be or not to be Treated?	3
Ethics of Entitlement in Scientific Collaborations	4
Research Integrity and Publishing Ethics	5
Publish (in high impact journals) or perish from a Latin American perspective	6
Authors and their Order in Cardiothoracic Surgery Publications	8
Aristotle's Nicomachean Ethics Considerations for Authorship	9
Plagiarism crisis in Russia	10
2 Ethics	13
Varieties of Plagiarism	13
Understanding difficulties to communicate research results	14
A case study of research funding impact on ethics considerations around publications	16
Analytical Investigation of the Factors Affecting the Promotion of Ethical Commitment and Social Responsibility of the Authors of Scientific Articles	17
Truth or Dare: The journey of being a woman in science	18
Pictures don't lie	19
Plagiarism and Retractions	20

Whistleblowing and research publication: An applied ethics perspective	21
3 Journals, reviewing, and metrics	23
Understanding research metrics and open access publishing	23
The mechanics and ethics of more inclusive debates: Consensus and convergence in multicultural dialogue and knowledge systems of the 21st century transitions	24
Shared Situational Awareness in Information Security Incident Management	25
The benefits of youth participation in communication, contemporary debates and policy making in the 21st century transitions	26
Beyond interdisciplinary pretences: how may sustainability researchers' <i>trained incapacity</i> be overcome?	27
Good Citation Practice in Research Institutions	28
Transparent Peer Review: Publishing Peer Review Timelines and Reports	30
Ethical considerations in animal experimentation: What can we do as reviewers?	31
4 Data	33
Ethics in Radiology: Completeness, Accuracy and Justification of Requests	33
Randomised Controlled Trials and <i>Big Data</i> : who writes the papers and what can we trust?	34
The extinction of the experimental section: Can you reproduce another scientist's results?	35
Error and discrepancy in ultrasound reporting by sonographers: Inevitable or Negligence	37
Impact factor inflation	38
Silent screams of delirious patients: An Ethical Challenge	39
Is there real understanding regarding pseudoreplication? How does this impact publications?	40
Statistical practice in nutrition research: strengthening reproducibility in clinical trials	41
5 Communication	43
Finding consensus on sustainability: widening climate change conversations to advance the SDGs agenda	43
Publishing Advanced Materials Science—How to maximize your success!	45
The Elements of Academic Style	46
An example of a non-laboratory software experience in research laboratory data protection and communication	47

The Christian ethics from a reading of Hegel and Nietzsche	48
Communication and dissemination of principles, values, ethics, and good practices—The CSR role in raising the debate on principles of scientific publications	49
Beware the Shibboleth	51
Five Secrets from a Journal Editorial Office	52
6 Withdrawn	55
Principles of scientific publication in the conditions of scientific paradigm change	55
What can acknowledgements reveal about credit attribution in science?	57
Authorship in bioethics	58
Improving ethical standards in scientific peer—review process	59
Identifying with Numbers: A Philosophical and Psychoanalytical reading of Self-Identification	60
Impact Factor: Is it still relevant and if not then how do we, or should we, rank science?	61
Multifactorial standardized scores for scientific evaluation	62
Long Range Forecasting (LRF): a Pragmatic Step By Step guide to Statistical Modelling	63
Insights into Radiation Protection Elements-of-Competence	64
A Slippery Road of Fieldwork and Publication (A Conjunction of Anthropology and Theology)	65
Dominants in intercultural scientific communication and the related problems	66
Patent Literature and Intellectual Property	67
Academic Writing as Storytelling	69
Ethical principles of the modern scientific-educational discourse	70
Challenges and Future of Scientific publishing in developing countries: the Sri Lankan Experience	72
Director's leadership in the Portuguese educational context: Ethics and morality, what skills and trends	73
Bibliography	75
General Index	77
Author index	80

Session 1

Authorship

Everyone, at some point has felt their contribution to work has been unfairly recognized (or at least everyone knows someone that feels this way). Journals and the COPE are addressing these issues with guidelines on what constitutes an intellectual contribution for authorship. However, even though the International Committee of Journal Medical Editors (ICMJE) guidelines were developed in the mid 1980s, researchers either don't know they exist or ignore them. Recently, prominent journals joined the *PNAS* to examine the ICMJE standards and have made them more onerous. Authorship norms vary from country to country, from scientific field, experience, and perhaps the mood of the principal investigator. Andrea Armani attributes points to several activities and researchers must accumulate a threshold value to be considered an author. This is a quantitative methodology but can we apply it broadly to most fields of science and engineering.

Here are some issues that must be clarified:

- You write 80 % of the article but the PI puts themselves as first author. . .
- Someone writes 10 % to 40 % of an article then disappears—what are the PI obligations?
- Someone helped with revisions of a paper but was not an original contributor.
- Someone develops your idea but excludes you as an author.
- A researcher writes 2-3 paragraphs but not much else: Is this sufficient for authorship?
- Is time a good measure of contribution?
- How do you recognize student interns work?
- Does author order mean anything and how should it be determined (David B. Resnik, James Montoya—Forum Advisory Committee)?
- How to choose the best journal to publish in; how to decide between traditional journals vs.

open access vs. predatory journals; how to deal with feedback from the editors and how to deal with editors (Sarah Cuschieri—Forum Advisory Committee).

- Authorship criteria and acknowledgements (Priyanga Ranasinghe—Forum Advisory Committee).
- How do you account for authorship when you pay for services (writing, analytical support, access to facilities) and how to balance supervision by others vs. contribution (Frank Schaper).
- Contributor Roles Taxonomy—what impedes the implementation of this machine-readable readable classification system^[2]?

Authorship: A Boon Or Bane

Mishal Bansal*

Punjabi University, Patiala, India

Authorship is the respectable attribute which gives a person an opportunity to deliver their knowledge to society. It gives respect, recognition in the society. It takes person more towards education. Nowadays, people are buying writing to become authors. In this way, the original writer remains hidden which is not a good practice. This is also known as ghostwriting.

In some papers, many authors are associated with same paper but have not really contributed in writing. This is known as guest authorship, it suppresses the effectiveness of main author and recognition is given only to the known authors. This also results in demotion from author to acknowledgement.

Publication houses, educational institutions should set some major criteria to avoid ghostwriting, guest authorship or any unethical practice that suppresses the recognition of main writers and there should be some limit set on the number of authors that can be associated with manuscripts.

There should be some policies that encourage the main writers to take their writings forward. This will reduce ghostwriting and also original writers will get recognition.

All the unethical practices are impacting research writing and also keeping the publications disguised. Some evaluation criteria should be there so that the identity of main writer should be revealed.

New students always struggle to be an author because they don't get that level of guidance that is required at the initial stage. Institutions, publications houses should setup some proper knowledge transition plan for the students.

People first need to understand the characteristics of authorship then only a person can effectively contribute to the writings. Some published papers are so influential that other also get motivation to write.

Some people publish papers only to get acknowledgement. But authorship is something beyond acknowledgement. It always encourages the person to learn and explore. An author never stop exploring things.

Keywords:

ghostwriting; evaluation criteria; guest authorship

*Mishal Bansal: mishalbansal@gmail.com

Different types of unethical publication activities

Larisa Melikhova^{1*} Andrei Rostovtsev²

¹The Last Address Foundation

²Russian Academy of Sciences, Commission for Counteracting the Falsification of Scientific Research
Institute for Theoretical and Experimental Physics, Moscow

Since January 2013, the Russian voluntary network society Dissernet has been studying different types of unethical behavior of Russian scientists: starting from plagiarism in dissertations, we then proceeded to studying and publicly presenting the publication misconduct and people who practice such behavior.

First of all it's about plagiarism in publications, which involves the issues of self-plagiarism and gifted authorship. Such misconduct is exacerbated by forgery of empirical data (quite commonly used in such articles). There is also a special type of self-plagiarism that we call a grant report: when an old publication has been reused to report for work on a grant—for example, granted by Russian Foundation for Basic Research.

Our latest discovery is a special tool for detecting translated plagiarism, which now enables to find multiple papers of Russian scientists in foreign trash journals that are composed of articles translated from Russian into English. These studies are also based on our previous research of works provided by the authors from Iran, Tajikistan, Kyrgyzstan, and some other countries.

There are also markers of unethical behavior, when we cannot catch a person red-handed but have signs indicating a highly probably violation of ethics, for example, submitting articles from a public address, or publishing many papers in trash journals (many means dozens and even hundreds of papers)! Trash journal can be defined as a journal or collection of conferences excluded from the Russian Science Citation Index. This also includes rare cases of submitting falsified publication output data.

A separate type of a fake publication is a pseudo-scientific publication (which requires a professional judgment, or we can refer to the Memorandum of the Russian Academy of Sciences on homeopathy).

In addition to actually writing plagiarized or faked articles, there are other types of unethical activities related to publications in periodicals. We detect persons—members of Editorial Board/Council who are also members of the Dissernet black list, which means that they either defended a plagiarized dissertation or participated in multiple defenses of such dissertations as scientific advisers or opponents. We suppose that the role of such people in the Editorial Board is to service a Dissertation Council that works as a dissertation mill: to push publishing articles by request of VIP people who need publications for defending a thesis. An interesting subset of this circle of people are members of more than 10 (sometimes more than 30!) Editorial Boards / Councils. And finally we would like to mention people who have not been found in any own violations but fiercely defend others who had been caught in plagiarism or other types of unethical behavior.

We hope that such overview could help to understand why people do it, and thus – what measures could be taken to prevent.

Keywords:

Unethical behavior; plagiarism in publications; translated plagiarism, pseudo-scientific publications

*L Melikhova: mlarisa@mail.ru

Pathology in Academic Authorship: To be or not to be Treated?

Mohammad Tariqur Rahman,^{1*} Joe Mac Regenstein,² Noor Lide Abu Kassim,³ Muhammad M. Karim⁴

¹Faculty of Dentistry, University of Malaya, Malaysia

²Department of Food Science, Cornell University

³Faculty of Education, International Islamic University Malaysia

⁴Department of Microbiology, University of Dhaka, Bangladesh

Lack of a standard practice for assigning authorship and fair citation credit distribution amongst the authors of multi-authored papers (MAP) has been widely discussed but still remains unresolved. Intellectual contribution (IC) is imperative to become an author of a published academic work. A number of guidelines, including the most widely accepted one from the International Committee for Medical Journal Editors (ICJME) are in place to determine how to assign authorship to an individual. A large number of journals require open statements of each author's IC for the production of a paper, such as, who were involved in conducting the experiment, data analysis, and last but not least drafting the manuscript. In other cases, such as in FEBS Journal and PLOS journals, authors need to declare their contributions in a specified format. Notably, a number of measures such as quantitative measure of the IC has also been proposed earlier. Nonetheless, the global concern of assigning authorship without any IC is increasing with the increase in the number of authors in MAP, mostly in the field of Biomedical Science. That leads to a concern of crediting an individual as an author for his/her contributions. Using a systematic review, we have identified five major issues that are linked to some of the unethical practices for assigning authorship. We have also proposed an authorship categorization scheme which was then evaluated by an online opinion survey. The online opinion survey was done to evaluate the acceptance of the proposed categorization scheme. More than 80 % of the respondents ($n=204$) supported the proposed categorization and expressed a favorable opinion for a quantita-

tative approach to authorship contributions. Impact of the use of the proposed author categories were then evaluated using a new mathematical tool namely "Author Performance Index". The proposed categorization of authors, when used together with a robust mechanism for the calculation of relative intellectual contributions, would provide an accurate representation of the intellectual contribution of each author in the production of a MAP and properly credit their impact on scientific knowledge development.

The similar quantitative approach can be adopted for authorship categorization to assign credit as an author. Therefore to minimize, if not to completely eliminate, any false impact of authorship credit for employment, promotion and funding; or to prevent undue credit awarding to those with "skyrocketing" productivity, i.e., sudden inflation in their number of papers per year, the proposed authorship categorization scheme might be useful. Jointly, these might further minimize the global concern of unethical practices in authorship assignment. It is unlikely that the pathology of authorship assignment will be cured overnight. However, the implementation of quantitative measure of IC and authorship categorization might at least minimize the "fake" productivity in terms of number of publications reported by any author.

Acknowledgement: We acknowledge Fleurhelmina S. Ang's (Scopus Customer Support) invaluable guidance in how to extract data from the Scopus database.

Keywords: authorship criteria; corresponding author; multi-author paper; primary author; principal author; intellectual contribution

*M. Tariqur Rahman m.tariqur.rahman@gmail.com

Ethics of Entitlement in Scientific Collaborations

Ranjna C Dutta*

ExCel Matrix Biological Devices P Ltd., India

The interdisciplinary nature of research in present time demands frequent collaborations and teaming up. However, individual levels of work ethic and not so well defined expectations from each collaborator bring complexity of entitlement. And this happens due to different work culture and value system brought through the background of collaborators. This complexity is compounded when the parameters of assessment and allocation of funds by the agencies follow different criteria for each participant. Dependency on digital art and specialized softwares for statistical and other analyses for the sake of authenticity, validation and optimal dissemination of scientific data also compels more invitees and experts on one platform for accomplishing a publication. As a consequence decisions like sharing authorship and/or acknowledging small but critical contributions become all the more important.

We are living in the phase where quickly changing technologies have visible impacts on the whole universe. In an earnest quest to make the difference scholars sometime adopt dishonourable means. It is the responsibility of the group leaders and professors to demonstrate and pass on the ethical norms to their students and scholars in strict terms. Trust and respect for each others' capabilities are important for the success of any science and technology collaboration. Preventing and discouraging short term gains through unethical means is the duty of the mentors. It certainly would create a legacy of him/her eventually.

I would like to discuss the Academy-Industry collaboration and authorship entitlement in Indian context and also the role of government policies and mindset that has encouraged the unethical practices like plagiarism bringing disgrace to India. I wish the discussion to be extended to all aspects of ethics of collaboration at both the National-International levels.

Sharing research ideas, strategies and experimental outcomes have some common and unique challenges that need to be addressed. We certainly need a set of ethical guidelines universally implementable for collaborations under the present well connected "One Globe" scenario of Research and Development.

Keywords:

collaboration; ethical guidelines, "OneGlobe", technologies

*RC Dutta: ranjna_dutta@rediffmail.com

Research Integrity and Publishing Ethics

Francesca Riboni*

Wiley-VCH, Weinheim, DE

The strength of a journal is often directly related to the strength of its ethics. One of the most challenging yet rewarding jobs as editor is to be the guardian of a journal's ethics. As member of the Committee on Publication Ethics (COPE), at Wiley we believe that ethical publishing leads to a better science community, where everyone is valued and is responsible for the work they do.

According to the US Federal Policy on Research Misconduct, "Research misconduct is defined as fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results."

Members of journal publishing teams have clearly an important role to play in identifying and addressing potential cases of data fabrication, falsification, plagiarism, image manipulation, unethical research, biased reporting, authorship abuse, redundant or duplicate publication, and undeclared conflicts of interest.

This presentation will review and explain conflicts of interest that may arise at any stage of the publishing process; for example, when two researchers are competing, a reviewer is a collaborator of an author, a reviewer or an editor has a personal relationship with an author, etc.

We will highlight the responsibilities and roles of the different players on the publishing ground: editors, reviewers and authors. These include, for instance, ensuring efficient, fair, and timely manuscript processing; guaranteeing confidentiality; avoiding using work reported in a submitted manuscript for own research; judging a manuscript objectively; explaining and supporting recommendations with solid arguments; presenting data honestly and accurately; proper referencing; avoiding duplicate submissions and redundant publications.

We will show some case studies of ethical misconduct and how editors, reviewers and authors have counter-reacted, following COPE's best practice. Examples of fabrication, falsification and image manipulation will be shown—changes to images can indeed create misleading results when collecting and reporting research data. A second case study will explain what plagiarism, i.e., the substantial unattributed textual copying of another's work, is and how journals use the **iThenticate** software to detect instances of overlapping and similar text in submitted manuscripts.

Finally, we will give an overview on the possible sanctions (i.e., retractions, withdrawals, and expressions of concern) that a publisher may consider applying when a clear breach of ethics has been detected, in compliance with COPE guidelines and as mean to maintaining the integrity of the scholarly record.

Keywords:

COPE; research integrity; publishing ethics; plagiarism; retractions

*F Riboni: friboni@wiley.com

Publish (in high impact journals) or perish from a Latin American perspective

Tamara Rubilar^{23*} Augusto Crespi-Abril²³ Marcos López¹

¹Unión del Personal Civil de la Nación Argentina

²Laboratorio de Oceanografía Biológica (LOBio), Centro para el Estudio de Sistemas Marinos, Argentina

³Instituto Patagónico del Mar, Universidad Nacional de la Patagonia, Argentina

Without exaggeration, it can be said that research systems favours quantity over quality. A recent survey in the UK evidences alarming work conditions for researchers. In Argentina, the emphasis on quantity has been pushed to its full limits. A researcher must publish one paper per year to survive in the academic system and to have job security. Otherwise, there is punishment, such as no funding or no grad students. The nature or content of the research and its presentation is of, more or less, limited importance, including whether a good hypothesis has been produced or even whether the necessary supplies for the research have been available. Quite simply, researchers have to publish one paper a year. This applies without questioning or discussion. In fact, the publication should be in the journal of publication should have international SCIMAGO ranking (preferably in the first quartile) and you should be the first or final author in the publication).

This unfortunate situation has been in existence for more than two decades and has a major impact on the quality of published research and on the pressure placed on researchers. The so-called “salami” paper is often used to cope with this, generating disaggregated data on previously addressed issues and experiments which are difficult to replicate. This practice is not unique to Argentina. The pressure on researchers to publish is huge all around the globe, but when it is combined with a constant and major lack of funding, this pressure results in a personal and professional dilemma.

An open access journal presents additional pres-

sure. This is in spite of the fact that public accesses to research is, clearly, desirable and to be recommended, but somebody has to pay it.

Open access is not cheap and researchers have to wonder whether they should pay from their own salaries or publish elsewhere, more cheaply but with less impact. Research Gate, Sci-hub and other platforms, such as Facebook, save the dilemma of access to expensive papers in our country when one cannot find the paper in the Library of the Science Minister. However, one cannot use these platforms for publishing one’s own research. Available financial support will determine the final decision. What should a researcher do in facing this dilemma?

In addition, the peer review system is flawed; researchers undertake their reviews without compensation and there are, consequently, major amounts of time and effort being spent without economic reward. Publons it supposed to do the trick, however in Argentina, it doesn’t matter how many papers you have reviewed, the only thing that counts is the papers you, yourself, have published and in which journals. This can be seen both as an ethical and “practical” problem in the ultimate goal of ensuring dissemination of scientific knowledge. Furthermore, the majority of high impact journals publish with an emphasis on their “own trends” which often do not relate to, or can be seen to be directly associated with, the reality of developing countries. This refers to the equipment and tools available to the researcher, financial support and political factors. In this complicated scenario, what should researchers do? Ethical, economic and political issues all play a role. The research evaluation system needs to change worldwide. And it can.

*rubilar@cenpat-conicet.gob.ar

Here, the coronavirus case can help as an example. Researchers stopped focusing on publishing papers and, instead, began to work with stopping the dissemination of a serious disease. They interrupted their regular scientific activities to focus on helping people and getting results and social networks played a crucial part. We cannot help but wonder if, when their research is evaluated, these actions will be duly considered and recognised as a part of the researchers' scientific contributions.

Keywords:

errors; discrepancies; ultrasound reports; sonographers; malpractice; negligence

Authors and their Order in Cardiothoracic Surgery Publications

Tom Treasure*

Clinical Operational Research Unit CORU), University College London, UK

As medical specialisation developed rapidly in the second half of the twentieth century, the monthly journals of national and international associations became the principal means of reporting innovation and outcomes. Disseminating and sharing knowledge and opinions among members was the primary purpose of what were akin to *trade* magazines. A common observation was of progressive proliferation: over time there were more journals, with more article per issue, and more authors per article. The first is self-evident; I will test the other two perceptions with data and consider what influences the number and the order of authors. I will conclude by going back to the beginnings of heart surgery after the 2nd World War to get an historical perspective on what authorship signifies in surgery.

The American Association’s *Journal of Thoracic and Cardiovascular Surgery* carries the highest esteem and has an Impact Factor of 5.261. As a means of sampling, I have studied the contents of the first issue of the decade from 1970 to 2020. Although only 1/120 of the content is included it seems adequate for descriptive purposes. Prior beliefs were largely borne out: the journals became fatter and included more articles. The early long narrative papers of the 1970s paper were replaced by studies with more data and fewer words. As single institution clinical team reports were supplemented by prospective and collaborative studies, more authors had to be recognised. But look at 2020 in the table. By policy the journal enhanced the educational value of papers by inviting the reviewers and other selected experts, or those known to hold contrary opinions, to provide up to five additional 1–2 page commentaries. To incorporate that policy, I have included the additional pages and authors in the counts, to reflect that new improved model. Of course now e-publishing allows for almost limit-

Table 1.1: Number of articles (N_{art}), pages per article (N_{pg}), and number of authors (N_{au}) in Jan issue of each decade of *Journal of Thoracic and Cardiovascular Surgery* including the interquartile range (IQR) (the central 50 % of counts) and the maximum.

	$N_{art}/$ mo	N_{pg}	$N_{pg}/$ N_{art}	N_{au} 25 %	IQR 75 %	N_{au} max
1970	14	154	11	4	6	8
1980	21	150	7	3	6	9
1990	25	170	7	4	7	8
2000	33	188	6	3	7	14
2010	29	216	7	6	8	17
2020	24	357	15	10	13	22

less acceptance and copious searchable and citable publications exist in parallel to the paper journal.

In the early days the surgeons in training did the hands on work of animal experiments, or reporting clinical work, the extracting and collating of data from the case notes. Tradition gave them first authorship. Surgeons building their careers and playing an active role would tend to come next. Statistical presentation was unsophisticated and if statisticians were involved they generally were in the third tier. The senior is last by convention, sometimes as the originator and lynchpin of the work—but that last author slot may be a sinecure.

Thanks to discovery of a forgotten volume of minutes of research meetings at the very beginning of heart surgery (1947-1956) I have analysed authorship of 91 publications: 20 % were single author opinion leading papers; 55 % and 20 % had 2 or 3 three authors, typically a senior clinician writing with a fellow and/or a biological scientist.^[3]

Keywords:
author order; articles-per-issue; authors-per-article

*T Treasure: tom.treasure@gmail.com

Aristotle's Nicomachean Ethics Considerations for Authorship

Consolato M. Sergi*

University of Alberta, Lab. Med. Pathology, Stollery Children's Hospital

In antiquity, the concept of authorship in antiquity is complex because of the term authorship, as we consider it now, did not exist in Greek or Latin. The social, political, and professional engagements of the authors of texts were far more significant for the society than their writings. In many cases, writing activities were collective and participatory, as seen in the Acropolis of Athens and the Roman Senate. The Athenian Acropolis is considered the symbol of classical Greek culture, a powerful and persistent icon of democracy and freedom of thought, of philosophical inquiry and man's pursuit for earthly perfection. However, both the Greeks and Romans struggled with power and pride, which may have cooperated with the damage of some fundamental principles. Writing activities were mostly collective and partaking ranging from social determinations through legal practices and education. Here, I consider The Nicomachean Ethics, a book written by the Greek philosopher Aristotle, and apply his ethics principles to the concept of authorship. The Highest Good is centered and aimed in the Ethics inspiring people to reach happiness through a coordinated psychic activity under virtue (τὸ ἀνθρώπινον ἀγαθὸν ψυχῇ ἐνέργεια γίνεται κατ' ἀρετήν). Relevant and appropriate conditions of virtue must be cultivated by people who are well-informed about society and politics, because only in such a system can the virtuous man live and outshines. Thus, authorship is intimately linked to our community, our cooperation with peers, and dictated to reach a higher level of performance targeting the *Summum Bonum*.

Later, Thomas Aquinas synthesizes Aristotelianism and Christianity, defining the Highest Good as the life directed in unity with God and lived according to God's precepts, while Kant used this term to target the final singular and overriding end which human

beings must pursue. The way of living is crucial for Aristotle and not easily translated as *Happiness*, but probably adequately attached to the original word *εὐδαιμονία* (*Eudaemonia*), which may better correspond to a flowering of humanity and inviolability aiming to produce good chapters of a living anthology. Aristotle's taxonomy of virtues includes audacity (*andreia*), moderation (*sophrosyne*), generosity (*eleutheriotes*), philanthropy (*megaloprepeia*), altruism (*megalopsuchia*), gentleness (*praotes*), and legitimacy (*dikaiosyne*). While the intellectual virtues are knowledge (*episteme*), workmanship (*techne*), wisdom (*phronesis*), aptitude (*nous*), astuteness (*sophia*), understanding (*synesis*), and logic (*gnome*). Finally, it is important to emphasize that all these classes are in fact, inseparable from each other and need to be amalgamated in the *ζῶον πολιτικόν* to reach the *Eudaemonia*. All these virtues may be considered an integral part of authorship. Substantially, integrity is intimately related to authorship and is backboned by audacity in starting a project, moderating its development, criticisms, analyses and deb Nicomachean Ethicsates. Integrity is intimately linked to the full partaking and responsibility of the single authors of the project or scientific production.

Keywords:

authorship; Aristotle; ethics; Nicomachean Ethics; integrity

*Consolato Sergi: sergi@ualberta.ca

Plagiarism crisis in Russia

Andrey Zayakin*

Russian Academy of Sciences, Commission for Counteracting the Falsification of Scientific Research
Institute for Theoretical and Experimental Physics, Moscow
Novaya Gazeta, data journalism department editor

I review the recent findings of the Dissernet network volunteer community on plagiarism in Russian doctoral theses and journal publications. The ongoing studies have uncovered 10,000 cases of plagiarism in dissertations, more than 5,000 cases of plagiarism in scholarly papers. Ca. 23,000 academics have participated in buying and selling fake PhD degrees. Some of the PhD mills (the PhD boards) had produced up to 300 fake PhDs while operating.

Awarding fake PhDs at Russian universities became possible due to patronage of “dissertation-mongers” in the Highest Attestation Commission (VAK) of Russia that supervises all the dissertation boards in the country. We demonstrate by our data that the crucial positions at VAK have been for decades held by those who owned the PhD mills.

Current Russian legislation governing revocation of fraudulently obtained degrees is absurd, since appeals against dissertation fraud are to be considered by exactly the same persons who have awarded the false degree, provided the dissertation board is still in operation. Closing the dissertation board down requires revocation of at least two fraudulent degrees awarded by them—which revocation has to be performed by the same board, creating thus a *circulus vitiosus*. Statistical data strongly advise against such practice, as well as the legal principle *nemo iudex in sua causa*, yet despite many years of public advocacy, the law remains unchanged. We report, despite the ridiculous legislation and hard resistance of the PhD mill owners, several hundreds of successful degree revocations conducted in 2014-2019.

Recent appointments to VAK of persons who were evidently related to the worst dissertation mills indi-

cate that the efforts by the scientific community, in particular, by the Russian Academy of Sciences, to undermine the fake PhD system have been effectively sabotaged by the Ministry of Science and Higher Education of Russia.

The most essential factor in retaining the corrupt system of PhD mills is expiration statute for degree revocations claims. Legally a claim can be raised against a fraudulent thesis only if awarded before January 1st, 2011. This legal protection extensively used by the owners of prominent PhD mills to avoid academic responsibility.

On this background it is good news that Russian journals have recently retracted at least 869 scholarly papers with plagiarism, obscure authorship and self-duplicating papers. The campaign for retraction was started by the Russian Academy of Sciences and was quite successful. The Academy addressed ca. 500 journals requiring to retract ca. 2500 papers. By 01/01/2020, 263 journals have fully complied, and only 8 refused to collaborate completely; the rest are in the process of considering retraction requests.

Keywords:

plagiarism; fake PhD; fraud; retraction

*A Zayakin: a.zayakin@gmail.com

Session 2

Ethics

The ICMJE guidelines require that all authors take responsibility for the work. (What exactly does this mean?) When there are dozens of authors based working on an interdisciplinary subject, everyone may not appreciate exactly what the others are doing and this may lead to orphan papers. Should they be held responsible for the ethics of these individuals? COPE has guidelines and procedures to evaluate complaints from individuals, but some researchers feel hostage to the whims of subordinates that threaten action if they are removed from the author list. What are the action that a PI or an author could or should take if there is an ethical issue?

For most of universities one of the promotion criteria for professor is based on their scientific productivity and their h-index. Self-citations demonstrates that the authors have a background knowledge on the subject but at the same time boost their indexes. This spawns multiple papers and improper self-citations. How many self-citations are defined as excessive/inappropriate? What are the duties of Publishers, editors, reviewers and authors?

An interdisciplinary well recognized ethical issue is plagiarism. Is it defined in the same way across all disciplines? Any written sentence constitutes a property of who written it (until the copyrights are transferred to the publisher). If someone contributes with a text to an article and his/her name is removed for any reason from the list of authors, shall the written text be modified or deleted to avoid copyright infringement?

Here are issues voiced from our Advisory Committee:

- How to deal with ethics in publishing—plagiarism, dual submission, fabricated data,

falsifying data, and retraction. (Gene Siegal, Priyanga Ranasinghe—Organizing/Advisory Committee).

- Peer review and conflict of interest, age, gender bias (Karen Robinson).
- Systematic research fraud and associated permissive factors (Jennifer Byrne—Organizing/Advisory Committee).
- Open access is also becoming an ethical problem. Should publicly funded research really be open-access to all? Ethical problems of pay-to-publish. (Frank Schaper)
- conflict of interest (e.g. funds for research),
- objectivity, collegiality,
- trust, power dynamics,
- mentorship

Varieties of Plagiarism

Isaac Nevo*

Ben-Gurion University

In this paper, I explore plagiarism as an ethical, not merely a legal concern—a matter of credit owed to original authors, not merely one of intellectual property owned by them. As commonly understood, plagiarism is a form of theft and dishonesty that takes place when one person puts his or her name to the already expressed ideas of another and claims them, falsely, to be originally his or her own. The theft is of a non-tangible good—credit, and the dishonesty consists in misrepresentation of original authorship to third parties, including University authorities, professional colleagues, or the public at large. Of these two components—theft and misrepresentation—the former is sufficient but not necessary (commercial plagiarism; self-plagiarism), and the latter, while necessary, may not be sufficient (unintentional lapses). Nevertheless, some combination of the two components is typical of the “family” of cases that constitute plagiarism, and accounts for much of the opprobrium surrounding plagiary. On this “family resemblance” account of the term, there are varieties of plagiarism, including some varieties that others might segregate under a different category such as the generalized “academic misconduct”. These include not just plagiarism by copy/paste, without quotation marks or attribution (or insufficient ones), but also plagiarism by fake authorship, by excessive paraphrasing, by pre-empting another person’s results, by suppressing co-authorship, by self-plagiarizing, by commercial transactions, and more. In so far as these are all forms of dishonesty relating to authorship and originality, rather than, for example, fabrication or falsification of data, they fall conveniently under the designation of “plagiarism”. In many of these cases, plagiarism involves two kinds of victims, direct and indirect, namely, those whose ideas have been plagiarized and whose credit for them had been embezzled, and those

who suffer the consequences of a degraded practice resulting from crediting the undeserving.

Focusing on plagiarism in the academic setting (both student and faculty plagiarism), I point out these varieties of plagiarism, highlight the meritocratic assumptions that go into the concept of plagiarism as credit-theft, and discuss the consequences for both direct and indirect victims of the offense. I argue that confronting plagiarism is not merely a matter of maximizing academic utility, by restoring the reward system academic meritocracy depends on, but also a question of justice, of treating equals equally irrespective of consequences, where the plagiarized are concerned. As suggested by the Latin etymology of the term (*plagium*, or “kidnapping”) the stealing of credit runs deeper than the theft of property. Being more akin to identity-theft, it touches upon the creative identity of its victim with life-altering potential. Unfortunately, the vast literature of plagiarism does not focus on the plight of the plagiarized, even where serious consequences ensue. I end with defending these claims against some radical views which proceed by questioning such notions as originality and authorship.

Keywords:

plagiarism; intellectual property; authorship; originality; academic meritocracy

*Isaac Nevo: yanni@bgu.ac.il

Understanding difficulties to communicate research results

Florent Ymele Fouelifack^{1*} Marie Joseph Dongmo² Jeanne Hortence Fouedjio³

¹Higher Institute of Medical Technology of Nkolondom-Yaounde, Cameroon

²Regional Delegation of Basic Education of Centre Region, Yaounde, Cameroon

³Faculty of Medicine and Biomedical Sciences of University of Yaounde I, Cameroon

Many factors influence the diffusion of research results. One of the major obstacles to the knowledge and the exploitation of the efforts of researchers in certain context is the absence of a policy of vulgarization of research results by the researchers themselves or by their institutions. Researchers are often limited by insufficiency of financial means, and many do not know how to seek funding, which means that they are often reduced to communicate locally their results. In addition, some research organizations have difficulties with the internet connection, while the income of students and teachers does not allow them to afford the internet personally. Spending on the internet in developing countries is less than that on developed countries. For example, in our setting, there are many universities and teaching hospitals without internet connection. There's sometimes delay in dissemination of results. For example the results of Demographic and health survey, and the general census of the population of Cameroon, are sometimes published partially, and often 2 or 3 years later when the next launch is already planned. With regard to global communication It is often astonishing to note that the results of the most recent searches published on the site of research companies sometimes date from more than 10 years (no updating of websites. . .). This gives the impression that researchers at these institutions have produced nothing for 10 years. Indeed, in the era of global communication, when an institution does not communicate, it is as if it did not exist.

As for intellectual independence, the cumbersome procedures often imposed by authorization from a hierarchy more concerned with political and/or per-

sonal rather than academic considerations, often lead to a lack of intellectual independence which, moreover, makes the difference elsewhere.

This fact, in the 21st century, is the self-destruction attitude that plunges the researcher and the company into anonymity, depriving companies and decision-makers of the precious indicators needed to make good decisions. There are also in some contexts, difficulties in making certain scientific results accepted by political decision-makers, especially when this goes against their expectations or their political interests. This can prevent or hinder the objective exploitation of research results.

What can we propose to solve or to decrease the communication linked problems? Researchers can improve their communication methods by adapting the language used to the intellectual level and the social class of their interlocutors: the documents for political decision-makers are well drawn from scientific production, but these documents are more streamlined, digestible, and easily exploitable. . . Messages drawn from scientific research must be designed and adapted to the target population. Government members and senior officials are mostly non-scientists. Therefore scientists must explain the meaning of their work and present the expected results to create a climate of support. It is inevitable, and desirable, that research carried out in developing countries is applied or practical, since the fundamental research is very expensive and cannot be immediately used.

Although short visits are invaluable for maintaining contacts and information, longer internships (whatever the level) provide new knowledge and more experience. An expanded and systematic scholarship program can achieve very significant cumulative results^[4].

*F. Fouelifack: yfouelifack@gmail.com

Keywords:

research results ; communication; intellectual independence; internships; internet

A case study of research funding impact on ethics considerations around publications

Raimonds Lozda*

Rīga Stradiņš University, Rīga, Latvia

As there is no unified definition of authorship, a varying interpretation would lead to publication ethics concerns. It is usually decided that the author should have made a significant contribution to the intellectual content, including the formulation and design of the research, data acquisition, analysis, or interpretation. Whereas the International Committee of Medical Journal Editors (ICMJE) names four criteria to qualify for authorship, each of them could be a matter of misinterpretation. For example, three criteria, such as drafting, final approval of the version to be published, and accountability do not require any involvement in the study process itself but might be highly attributed to the subordination schemes within an institution. Sometimes all three criteria assume a simple signature of superiors below a text mimicking quality management flow rather than personal involvement in an idea or data generation. Even the substantial contributions to the conception or design might encounter bureaucratic decisions crucial for research. Also, so-called political reasons related to labor relations at the research organization might lead to sharing the authorship as a present to some superior avoiding potential conflicts and ensuring good relationships, even if the beneficiary has not contributed to the article.

The present case study analyses the topic of how and why it was possible to make several single to two author publications in different fields of science. The work is based on participant-observation.

The author was filling a real-life role in the case being studied. The research draws on the lead author's experience preparing manuscripts for publication in the field of Medical informatics (MI) as well as Pharmacology and Pharmacy (PP). The issues and

concerns resulting from own observation are revealed. The approaches how these were dealt with in the case studied are discussed.

In total, 6 publications are analyzed. Two of them concern publications in WoS cited journal under the field of MI and two of PP. One was a book chapter from WoS listed publisher. The last publication was a Scopus cited publication under the topic Marketing. The study covers the 5-year period from 2014 till 2019. Authorship issues based on the contribution provided by each author are analyzed, taking into account ICMJE authorship criteria such as contribution to the study conception and design, drafting or revising the articles, approval of the final version, agreement of the accountability. The impact of research funding on the publication process is evaluated, and local peculiarities that were leading to decisions revealed.

In summary, it was concluded that the significant role is played by funding opportunities taking into account significant expenditures on the research itself and publication. Also, local tradition and regulatory factors have another crucial role in defining authorship. All mentioned matters influencing the cases are discussed.

Keywords:

authorship criteria; ICMJE; publication ethics

*Raimonds Lozda: raimonds@farma.lv

Analytical Investigation of the Factors Affecting the Promotion of Ethical Commitment and Social Responsibility of the Authors of Scientific Articles

Nasser Delghoshrmeh, ^{1*} Ozra Hassanzadedizaji ²

¹Islamic Azad University, Tehran Research and Science, ¹Islamic Azad University, Masshad

Nowadays, some of the problems facing writers and scholars in various scientific fields with the expansion of scientific research that sometimes lead to scientific decline are often lack of commitment of researchers towards the ethics of authorship and especially their social irresponsibility. This causes them to exploit the research of others without the consent of those who have devoted their lives to research. This anomaly is more pronounced in developing countries, which generally include Islamic countries, as opposed to the prophetic tradition. This is in contrast to the purity of human beings and Islamic religious cultures and teachings. Not only all human beings all over the world pay particular attention to the integrity and covenant of the researcher and regard these qualities as virtuous and consider lack of commitment to be among the ugly and inappropriate traits of morals, but the result of this lack of ethical commitment and social responsibility of the authors is scientific degeneration. Although there has been some research on the ethics of authorship, especially for authors of scholarly articles, this issue should be addressed further because of its importance. Therefore, it seems necessary for researchers to provide effective strategies for improving and enhancing the ethical commitment and sense of social responsibility of the authors of the scientific paper.

In this regard, everyone should endeavor to take a step since lack of commitment is also a moral reversal in social ethics. What is meant by the obligation of ethical commitment is that researchers are bound by the obligation to commitment, and in fact, it is a religious obligation upon them to perform the subject of commitment. The duty is correlated with the

commitment.

Accordingly, some of the most important contributors to enhancing researchers' ethical commitment and social responsibility in scientific articles are reinforcing research morale, improving quality of life, promoting normative identity styles, paying attention to researchers' demands, structure evolution of personality and psychological empowerment, and ultimately, the strengthening of ethical norms and the intervention of governments with a sound and stable justice system.

The purpose of this study is to study and analyze the factors contributing to the improvement of social responsibility of the authors of scientific articles. Therefore, according to the results of the present study, practical suggestions have been made to improve the sense of responsibility by applying these strategies to the community of scientific authors. Accordingly, they can improve the quality of research in various fields of science in their specialties. Nevertheless, scholars should obey ethical commitment rules as one of the important moral principles and foundations emphasized in both the Qur'an and in the traditions and sayings of all monotheistic religions, and recommend it to all. In the Holy Quran, God says "And fulfil (every) covenant. Verily, the covenant, will be questioned about." Considering its effects is a great human characteristic that promotes humanity to the highest level of humanity.

Keywords:

ethics; responsibility, social; articles; promotion; authorship

*N. Delgoshamehr: delgoshamehr@gmail.com

Truth or Dare: The journey of being a woman in science

Yanet Villasana*

Biomass to Resources Group, Universidad Regional Amazónica Ikiam, Ecuador

The passion for discovery and curiosity had driven the advancement of science in our world, even for women whose passion for science overcame the hostility of their contemporary male peers.^[5] The beginning of women's journey in science started with Peseshet, which is believed to be the world's earliest known woman physician (2500 BC).^[6] At the time that universities were established as centers of knowledge, women were not allowed to graduate in the late 11th century until 1920.^[7] Consequently, it is not surprising that women around the world are significantly under-represented in STEM fields, as researchers and at the highest echelons of the academic career, decision-making positions or scientific boards and even as PhD graduates.^[8] Those disparities do not happen by chance. Girls are being discouraged to pursue STEM careers by discrimination, biases, social norms and expectations leading to under-representation of women in this fields. Efforts have been made to understand the drivers of this gap and propose tackle actions.^[9] According to The Gender Snapshot 2019 of the UN Women, female researchers and innovators represent less than a third of the world's job positions, driving the transformation towards the *knowledge economy*, continue to be dominated by men. The Researcher Journey Through a Gender Lens published by Elsevier in 2020, reported that Argentina had the highest women participation in research. On average, women publish fewer research papers and there is no evidence of gender bias towards citations or downloading. International collaboration and mobility are less frequent in women than in men.^[10]

UNESCO SAGA project reported that the gender gap in science amplifies significantly when increasing academic level (from Bachelor's to postgraduate levels) and entering the research work force.^[11]

Widespread stereotypes that stands for STEM field to be male domain can have a negative effect on women's and girls' interest and engagement in such careers which consequently discourage them from choosing to study in this area.^[9] Fortunately, not all girls are frightened by those stereotypes, especially those with strong abilities for math or science which are more likely to choose STEM-related careers.^[9]

Fulfilling the right for gender equity will help us face the most pressing challenges of our time in economy, health, environment, and climate change. Only by ensuring the rights of women and girls across all the sustainable development goals will we be able to live in a just and inclusive society and economy, protecting our environment and biodiversity. Equity promotes excellence in academia enhancing quality of STEM products since diversity promotes creativity and innovation, decrease biases towards strong solutions.^[12,9]

In this contribution, data from around the world of the UNESCO Institute of Statistics (UIS) is analyzed in terms of percentage of women graduated from STEM fields and female researchers in countries with different incomes and from different UIS regions, to open up the discussion about gender gap in ethics session.

Acknowledgment

This contribution is made as an acknowledgment to all women around the world that have worked tirelessly for closing the gender gap in STEM fields. A special mention to those from the developing world, that despite of all the obstacles and stereotypes, keep pursuing their dreams and passion for science and knowledge.

Keywords:

women; STEM; discrimination; biases

*Y Villasana: yanet.villasana@ikiam.edu.ec

Pictures don't lie

Adrian Bejan*

Duke University, Durham, NC 27708-0300, USA

Original ideas are hard to come by. It is much easier to take an existing idea, change a few lines in a figure and words in the text, and publish the same idea as new. The idea, not the exact figure and text.

The National Science Foundation (U.S.) defined this kind of academic misconduct this way (NSF-CFR-689): "Plagiarism means the appropriation of another person's ideas, processes, results or words without giving appropriate credit."

Plagiarius means kidnapper in Latin, a person who gave his name to the child he stole. Roman poet Martial coined the name when he became fed up with the stealing of his poems. In modern times, "plagiarist" means literary thief. This meaning is sharply accurate. The parent recognizes his child's face in the crowd, and suffers. The victim of plagiarism recognizes his creation from oceans away, and suffers.

Publishers and research funding agencies use software to detect pieces of text imported identically and without credit from other sources. That's wishful thinking. Science writing is not poetry and prose. In science one does not *copy*; one steals the idea by looking. The eyes steal—*oculi furantur*! Publishers playact as enemies of plagiarism when they accuse the true author of *self-plagiarism*. This is nonsense. One does not steal from oneself; one owns what one creates. Accusing the creative author of self-plagiarism is like accusing Picasso, Matisse and Brancusi of thievery because they sold many pieces of art that looked like their own from a few years back.

One day, maybe, *Artificial Intelligence* will become intelligent enough to detect the unoriginal idea in a new publication. Until then, the detectives must have human eyes and brains. I showed how in a new book about the predictive science of form,^[13] and in the present lecture I show pictorially how to use images to distinguish the remake of the idea from the original:

how?, open your eyes! Pictures don't lie. The images that I will display are anonymous. I am not accusing anybody of plagiarism, personally. That must be done by publishers, editors, funding agencies (NSF, above), universities and national academies.^[13,14,15] The cheaters get away with it because administrators of our institutions (universities, journal editors, funding bodies) are not affected: why, because plagiarists do not steal from individuals who published nothing worth stealing. What is to be done? The answer is obvious: Expose the cheaters, punish them, stop publishing and sponsoring falsehoods, teach the disciplines correctly, and clean up the misdeeds and bad actors that crop up during the evolutionary design of science.^[13]

Keywords:

plagiarism, self-; cheaters; NSF; academic misconduct

* A Bejan: abejan@duke.edu

Plagiarism and Retractions

Renan Moritz V R Almeida ^{1 *}

¹Programa de Engenharia Biomédica COPPE/UFRJ, Rio de Janeiro, Brazil

Retractions, that is, the withdrawal of scientific papers after their publication, has been on the rise during the last few decades, with an estimated increase by a factor of one order of magnitude.

Due to the extreme character of these events and to their connection with deeper ethical problems, a growing number of studies is concerned with their characterization and analysis. Among those factors that have been pointed out as their causes, fraud and authorship conflicts are frequently cited, and problems on the communication or publication of scientific reports (e.g. plagiarism and duplication) also seem to have a role in this increase.

On the other hand, plagiarism is, many times, caused by a lack of knowledge on the proper mechanics of citation and authorship attribution, particularly among students and young researchers in countries with lower-impact scientific research. This is an unfortunate state of affairs, since fatal career consequences could be prevented if relatively simple mentoring, teaching and training procedures had been adopted early.

The results below provide an overview of the extent of the plagiarism and duplication problem in what concerns its relation with retractions occurrence and increase in the last decade.

Methods Surveys directly reporting plagiarism/duplication rates of retractions, published during the last 10 years, were identified and analysed with the help of the Google Scholar, Web of Science and Pubmed databases. Surveys were also identified with the help of other articles on the subject and from the retraction watch website.

Results Most studies concerned the health sciences, with proportions for retractions due to plagiarism and duplicate publication in the range 8 % to 27 % and 8 % to 42 %, respectively, depending on research

areas (e.g. psychology, pharmacology, dentistry), time frames and journal subsets. Overall, PubMed (health area) retractions for plagiarism/duplication had rates of 16 % to 18 %, and similar results were obtained by the most comprehensive study to date, with more than 4000 items. Retractions due to plagiarism/duplication were almost unknown prior to the 00s.

Geographical areas: Two studies identified that countries with lower income or lower-impact scientific research had higher rates of plagiarism retractions. In the latter, 3 out of 4 retractions in General Medicine in these countries were due plagiarism or duplication. Also, a survey of Latin American publications reported that 12 out of 14 retractions in “local” journals (non-Web of Science indexed) were due to plagiarism, and a recent study based on retraction watch data found that plagiarism rates were the highest (above 20 %) in India and Iran. Finally, a study from China reported a large degree of retractions due to plagiarism among authors from that country.

Conclusion Plagiarism (and its cousin problem, duplication, which also implies in a lack of originality) is consistently pointed out as a very important cause for retractions, particularly in countries still in the process of developing a strong scientific tradition. This result stresses the importance of teaching proper scientific writing and communication methods for students and young researchers in an international context.

Keywords:

plagiarism; retractions; duplication; ethics

*RMVR Almeida renan.m.v.r.almeida@gmail.com

Whistleblowing and research publication: An applied ethics perspective

Michel Bergeron*

Research Ethics Board Member, Polytechnique Montréal,

Article 2.01 of the Quebec's Code of Ethics of Engineers states: "In all aspects of his work, the engineer must respect his obligations towards man and take into account the consequences of the performance of his work on the environment and on the life, health and property of every person." Later on, when speaking about *Integrity*, the Code states: "An engineer shall not resort nor lend himself to nor tolerate dishonest or doubtful practices in the performance of his professional activities." As such, the requirements placed on engineers are not so different from the ones of chemists, physicians, agronomists or other researchers. But when considering a situation, perspectives of various actors might differ. Such was the case in the Fabrikant (engineering), Olivieri (clinical research) and Louis Robert (agronomist) affairs in Canada. It is often in such a context that whistleblowing appears, and that ethics, whistleblowing and publication meet.

Even if the topic of whistleblowing was brought forward by Ralph Nader, Peter Pelkas, and Kate Blackwell in a book entitled *Whistle Blowing: The Report of the Conference on Professional Responsibility* (1972).^[16] Even if some examples are provided in the Broad and Wade one entitled *Betrayers of the Truth* (1982) and that some situations directly linked to publication were disclosed in the 80's, the ethical reflexion and the knowledge development on the issue of whistleblowing appears to be in its early days.^[17] As such, the word is absent from the Canadian framework on the responsible conduct in research. And when mentioned in the Quebec's one, it is to indicate that whistleblowers must be protected.

During this presentation, I will put forward some building blocks that may constitute the basis for a

reflexion and a discussion in applied ethics about whistleblowing and publication. I will delineate the field we will be entering in, bring some historical facts and put forward the values underlying them. I will then look at ethical dilemmas we are facing when it comes to publication by examining the conflicting values brought forward when whistleblowing is happening. I will conclude with some considerations related to the impact of whistleblowing on the ones that use it, its link to the value of human dignity as well as some considerations related to social implications.

In the *Forward* section of the *International Handbook on Whistleblowing Research* (2014), T.M. Dworkin asks a question: How should we give a voice to these human beings and should we meet the challenge they encounter?^[18] This is toward some steps coming from applied ethics that we will propose a few considerations about whistleblowing and publication in the light of the aim of research, i.e. improving common good.

Keywords:

whistleblowing; ethics; common good

*M. Bergeron: miberg.ethics@gmail.com

Session 3

Journals, reviewing, and metrics

This session will explore the publishing process and the impact of journals. We will discuss the peer-review process and try to identify pitfalls and improvements to suggest.

Peer review distinguishes science from journalism and assures the sound quality of every paper published. However reviewers are researchers as well and need to publish and to get cited. Review reports in which the reviewer asks to insert his own citation or incompetent reviewers are frequent, how do we limit these phenomena?

How do authors select which journal suits the most for their paper? The selection criterion of the journal impact factor (IF) may not be the best, as IF inflation exists and various unethical expedients boost journal IF.

The number of citations a journal receives determines the IF, therefore do citations still have a role? IF affects as well the careers of researchers, as well as their *h*-index. Is there a more pertinent index or set of indexes to rank a journal and an individual?

The publishing industry never experienced the economic crisis, and the birth of predatory journals—whose titles and websites resemble the ones of well-known recognized journals—confirms the trend. We will discuss the aspect of business related to scientific publishing and if and how it affects the work of researchers and:

- Should reviews be published together with the manuscript? Should reviewers get more recognition (“RSC top 100 reviewer”)? (Franck Schafer)

Understanding research metrics and open access publishing

Sarah Cuschieri*

University of Malta

Academics, researchers and post-graduate students have a duty to publish their work in a continuous manner in order to establish personal academic success and attain research grants.

Research metrics are quantitative measurements that identify and acknowledge research output while enhancing article, author and journal impact within the scientific community. Research metrics are becoming very popular and have also been incorporated as part of the modern curricular vitae (CV). The crux of these metrics depends on the number of times the author's article is cited by other authors. Meanwhile an author's impact (defined as the *h*-index) depends on the number of citations received on the total number of published articles by the same author. The higher the *h*-index the higher is the author's impact in the scientific world. Hence in the current publish or perish era, academics and researcher are in a constant battle to not only publish their work but increase visibility and citations of their work.

Up till recently publishing of articles was available only through traditional journals. These journals offer free publication of articles following a rigorous peer-review process. Authors have a long publishing wait until their work is published or rejected. Successful authors would have their research article published in these journals freely however readers have to pay to access the full article. Hence hindering the accessibility of the author's work and impacting negatively on the author's research metrics. However, this dilemma has been overcome with the introduction of open access publishing journals.

Publishing in open access journals increases the visibility of authors' published articles by enabling every reader across the world to access freely the article. Hence enhancing the author's research metrics. However open access publishing comes with a price

tag for the author through article processing charges (APCs). There is also a question on the journal's credibility within the academic world particularly with the growing epidemic of predatory journals roaming the internet. These predatory journals scam the researcher out of their time, money, and research since they offer rapid publication without any peer review or scientific editorial board. Publishing in such journals is visualized by academic bodies as trying to buy your way into the academic and researcher's world. It is however difficult to identify predatory journals from real peer-reviewed open access journals unless you are aware of their existence and the different metrics that an author should look out for. Hence, although publishing in open access journals (if the author has grants to cover the article processing fees) enhances the author's metrics and impact, it is important not to fall into the predatory trap.

For these reasons, authors need to rigorously weigh the pros and cons of publishing in open access journals while striving to enhance their research metrics.

Keywords:

open access; metrics; predatory journals; *h*-index

*Sarah Cuschieri: sarah.cuschieri@um.edu.mt

The mechanics and ethics of more inclusive debates: Consensus and convergence in multicultural dialogue and knowledge systems of the 21st century transitions

Gisele M. Arruda*

Anvivo Polar Research, UK

The Arctic presents a natural stage for intercultural knowledge and information. Contemporary information technology has revealed to be an important facilitator to multicultural dialogue and engagement. Indigenous communities are no longer understood in solely geographical terms. Although new information technologies may reinforce the existing structures of power (creating a digital divide), indigenous groups can use the same technologies to their advantage and challenge the mainstream representation and narratives. Indigenous and non-indigenous people in the academy have realized the limitations of a mono-cultural education system. Indigenous educators and students have realized the importance of learning about science (chemistry, biology, physics, energy and scientific theories) while non-indigenous scientists/academics started valuing Traditional Knowledge in science and education in adaptive initiatives to start a process of conscientization. These rich knowledge encounters between indigenous methodology and Western science have the capacity to stimulate and amplify a range of important contemporary conversations on transitional fundamental issues and create convergence about very polarized contemporary debates. This process would be benefited by rethinking the current nature of our information and knowledge system(s) as well as the alignments of different leadership systems in world leading economies to various processes of transition faced by societies currently.

The so-called climate emergency faces the crucial challenge materialized by the difficulty to achieve consensus, but how will the climate crisis wait for

consensus? The complexity around sustainability serves as an intellectual impulse for the improvement of communication, dissemination and learning processes and the continuous search for sustainability presents an opportunity to develop a more inclusive and democratic debate. The mechanics and ethics of more inclusive debate patterns encouraging a participative process of knowledge communication involving scholars from different ethnicities, backgrounds and knowledge systems would certainly stimulate an open dialogue and convergence among decision-makers and policymakers. The new ways of seeing knowledge and dealing with knowledge creation, communication and dissemination will certainly give space to unheard voices and it will contribute to convergence in knowledge fields in urgent need of rapid consensus, but for this to happen a new approach need to be discussed, designed and shared by different audiences under different perspectives and with the potential to enrich the debate and promote the progress we need to experience in academy, policy-making and in our daily praxis. The editorial and publication systems of the 21st century transitions should be discussed in the academic arena and inspire new inputs to make the process more transparent and aligned to the interests of multicultural investigators.

Keywords:

transitions; knowledge systems; multicultural dialogue; communication; dissemination

*GM Arruda: garruda@anvivo.org

Shared Situational Awareness in Information Security Incident Management

Elias Worku^{1*}, Keshene Padayachee^{2*}

¹Addis Ababa University

²UNISA (University of South Africa)

Cyber security has been one of the greatest challenges that the contemporary global world is facing. It has been witnessed that many organizations, corporations and individuals have lost many fortune and assets due to the occurrence of such attacks. Such kinds of attacks could be either intentional or unintentional. Although the occurrence of such cyber attack is relatively lower in developing countries, it is equally and potentially vulnerable to face the threat of attack.

The role of effective communication pathways and awareness in the process of Information Security Incident Management (ISIM) has been identified as a critical means of enhancing information security protection in organizations. This paper aims to assess the collaborative and proactive nature of organizational information security with respect to communication and awareness among stakeholders towards achieving a shared, interactive, and participatory ISIM.

It has been argued that the incident communication strategy must cover compliance-related issues, media communications and internal communications. And, it must strike a balance between openness and protection. According to ISO 27035, the communication of incident information among users of organizations should be assisted by emerging technologies in order to enhance proactive safeguarding.

The participation of stakeholders (managers, end-users, ICT, decision makers) is important not only in the sharing of information but also in analyzing and learning from incidents. Moreover the aspects of awareness and reporting in an integrated approach have been provided insignificant focus from organizational information security perspective.

Despite the fact that many organizations have implemented technical information security mechanisms in their system, much has not been done on preventive and human communication and awareness aspects of information security issues. When an incident response team is faced with a potential security breach or data loss, there are myriad concerns to address. Many incident management plans address technical issues such as investigation, containment and recovery. But, it is essential that each phase of the plan also covers communication – a key requirement for effective incident response.

According to the findings of the study in the studied organizations, it has been identified that aspects of reporting, communication and awareness lacked coordination and structure. Consequently, the study proposes a conceptual framework by applying situational awareness for effective incident management in information security.

Therefore, this paper presents a review and discussion of the concept of IMC (Integrated Model of Communication) and Situational Awareness for enhancing proactive Information security in organizations.

Keywords:

information security; situational awareness; incident management

*Elias Worku elias.worku@aau.edu.et

The benefits of youth participation in communication, contemporary debates and policy making in the 21st century transitions

Teena Gaya*

Anvivo Polar Research—Young Climate Leaders Working Group

Effective youth participation encompasses several areas including the involvement of young leaders in decision making, the use of appropriate frameworks to monitor their participation and collaboration as well as a serious consideration of their ideas and suggestions as part of policy development. There are several benefits to be derived from the constructive encouragement of young leaders and young scientists for participation in debates throughout different sectors including a broader range of representation of social groups, the positive impact on their self-development and a close-knit relationship between the youth and the community. In 1992, Hart developed the youth ladder of participation with the highest rung of the ladder proposing that young people and adults share decision making and work as equal partners. The benefit of this model is that it enables us to determine when the level of participation is not fully effective including at the manipulation and tokenism level. Her pathway to participation further provides five levels of participation and highlights the importance of adult facilitators in the involvement of the youth in decision making and the development of policies. The participation of young leaders in discussion and debates can only be ensured by providing them with the assurance that their ideas are being heard and are truly taken into consideration. Through the two models listed above governments and institutions around the world can improve their attitudes and capabilities by providing better conditions and opportunities to young people. As a result, young people will feel empowered and will be willing to come forward with their ideas to participate in building a more sustainable future.

According to the United Nations Framework Convention on Climate Change (UNFCCC), climate change refers to an alteration of the global atmosphere in addition to the natural variability of natural climate observed over time. Mauritius, like other Small Island Developing States (SIDS) is at the greatest risk of facing the grave consequences of climate change and the government has recognised that the island has to be more resilient in the face of this issue, proposing a range of policies throughout different sectors to promote sustainability and greener operations. The effects of climate change have been reflected in the rising of sea levels, decrease in annual rainfall, rise in average temperature, increased occurrence of flash floods, more serious droughts and a higher frequency in extreme weather, including heavy rains and cyclones. All this resonates in serious impacts for the environment, wildlife and exposure to infectious and vector borne illnesses. The youth represent the biggest agent of change when it comes to fighting against climate change. They are suited with the tools to make an impact, including being well versed with technology, having the energy to take part in local movements, and being effective communicators in their localities. This paper analyses the benefits of youth participation in communication and policies across different sectors and provides insights for youth inclusion in debates and policy making.

Keywords:

youth leadership; communication; climate change

*T Gaya: teenag@anvivo.org

Beyond interdisciplinary pretences: how may sustainability researchers' *trained incapacity* be overcome?

Marie-Luc Arpin* Corinne Gendron

École des sciences de la gestion Université du Québec à Montréal

In October of 2017, after initial rejection and two review rounds by six distinct evaluators, a paper entitled *Science-fiction literature as inspiration for social theorizing within sustainability research* was published in *Journal of Cleaner Production*, and subsequently indexed by Web of Science in the category *Green & Sustainable Science & Technology*.^[19] As of February 2020, this paper had gathered but 3 citations.

As two among its four original authors, we acknowledge that this paper's title, publication context and indexing category may altogether strike as unusual and perhaps even suspicious to some, within the sustainability research community, thereby relating strongly to the general theme of the world forum **Principles of Scientific Publication**. Indeed, the publication process we have experienced illustrates how opinions on who deserves to be an author varies strongly among reviewers, even within a single field—although this is perhaps less surprising in a field as interdisciplinary as that of sustainability research (or *cleaner production*). What is much less conspicuous, however, and allegedly much more surprising, is how this great disciplinary diversity and portrayed epistemological openness continues to rest upon norms and standards of knowledge quality that can hardly be questioned, and whereby certain types of insights hardly stand the chance of being considered worthy of even being sent to reviewers.

The interest of our contribution to the Forum therefore is twofold. First, the story of how we managed to convince the editor and enough of the reviewers that the article actually stemmed from a rigorous process of knowledge production is in itself insightful. But also, on the other hand, we argue that the field of sustainability research itself may be plagued with

a *trained incapacity* to perceive the value of such an alternate rigour-type. In other words, it may well be that in spite of all its calls and efforts toward more interdisciplinary endeavours, the field's epistemic dynamics end up fostering an incapacity among its own community members to think beyond a narrow definition Science, spelled with a big S and in the singular: i.e. a trained incapacity whereby a debate on what might constitute good and socially relevant standards of knowledge production today, in the 21st century, is hindered.

As a case in point, we show how the hitherto unresolved issue of *scientification* in the field of life cycle assessment (LCA)—also known as the *value debate*—may also be construed as a form of *trained incapacity* that inhibits the radical creativity and theoretical imagination which is recognized to be needed facing environmental urgency.

Keywords:

standards; knowledge production; sustainability sciences; trained incapacity; review process

*ML Arpin : marie-luc.arpin@polymtl.ca

Good Citation Practice in Research Institutions

Rahmat Sotudeh-Gharebagh,^{1*} Jamal Chaouki²

¹College of Engineering, University of Tehran, Iran,

²Chemical Engineering, Polytechnique Montréal, Canada

Citation data of a scientist's publications, generated by indexing databases such as Web of Science, Scopus, and Google Scholar, are the input to calculate the h -index. In general, the h -index, which measures the productivity and citation impact of the publications, has a significant influence on the promotion process and resource allocation of faculty members. Today, this index is calculated at micro-scale for individuals, meso-scale for institutions or scientific disciplines, and macro-scale for a country.

The micro h -index may affect the career of faculty members or their promotion in the organizational hierarchy; for instance, $h \approx 12$ may be the typical value for a promotion to the rank of associate professor, while $h \approx 18$ could mean a full professorship rank. Typically, there is a correlation between the years of service and h -index. According to Hirsch, after 20 years of service, a successful scientist could achieve an h -index of 20, an outstanding one 40, and an exceptional one 60.^[20] The meso h -index can affect research institutions in different ways, such as in recruiting high-quality students and faculty, the ranking system as well as funding. Meanwhile, the macro h -index could reflect a country's quality of scientific research. The impact of a high macro h -index can be observed in a country's Gross Domestic Product (GDP).

The h -index is calculated from the citation data of individuals. Therefore, care should be exercised to ensure its diffusive nature (diffusive citation). However, sometimes, the citation is abused by some scientists, who use their administrative power to manipulate the data to make them convective in nature (convective citation). The convective citation, which leads to a significant increase in the number of citations, is considered completely unprofessional. However, this

malpractice should be identified through different tools and prevented and discouraged by imposing high penalties on those committing this deceit. Nature reported that a highly cited scientist, who had asked authors to cite from a long list of his own publications, has been excluded from the editorial board of a journal.^[21]

Today, Good Citation Practice (GCP) is necessary to eliminate convective citations. We propose two major elements for GCP in this paper: 1) validation and 2) transparency.

1) Validation: The validation of the citation data through software and applications would greatly facilitate the identification of convective citations and hold those responsible accountable with evidence. However, we are still far from achieving this due to the complexity of the problem and the need for global agreements on the terms and conditions of convective citations.

2) Transparency: Transparency in submission to publication (STP) would be the appropriate response to minimize the citation abuse as proposed by some publishers. For example, Nature decided to give authors of new submissions the option to have anonymous peer reviews be made public by publishing referee reports and authors' responses.^[22] The STP would facilitate deep discussion between authors and known reviewers, minimize convective citation, and shed light on science's real evolution.

In conclusion, by putting high cost on convective citations, those intended to fabricate the h -index would choose GCP rather than manipulating the data. This would allow us to have in place a more accurate reflection of people's and institutions' scientific achievements and merit.

Keywords:

citation; validation; transparency; good citation prac-

*R Sotudeh: sotudeh@ut.ac.ir

tice, GCP; submission to publication, STP

Transparent Peer Review: Publishing Peer Review Timelines and Reports

Alberto Pepe,^{123*} Matteo Cavalleri³

¹ Authorea, Brooklyn, NY,

² Atypion Systems, Santa Clara, CA,

³ Wiley, Hoboken, NJ

We present the results of a pilot conducted on Wiley's *International Journal of Quantum Chemistry* aimed at boosting transparency and openness of the journal's peer review process. In 2019, the journal embarked on a collaboration program with the Open Research Publishing platform Authorea to achieve a number of technological and cultural changes to its processes, including:

- (1) allowing journal authors to contribute data, code, computational notebooks, and interactive web-based visualizations to their manuscripts;
- (2) enabling authors to post their submitted manuscript as an open pre-review preprint;
- (3) facilitating open participation through collaborative commenting and annotation on the preprint while the manuscript undergoes traditional peer review;
- (4) displaying the peer review timeline of the manuscript, i.e. the live status and history of the submission in the peer review workflow (e.g. *awaiting review from two anonymous reviewers*); and
- (5) publishing peer review reports in the scholarly record, with a DOI, upon document publication.

In this talk, we will briefly discuss the technical setup for the pilot and we will then report specifically on the implementation and results of initiatives (4) and (5) above.

As for point (4), we will discuss how the open display of peer review timelines on posted manuscripts increases accountability for editors and reviewers alike, thus accelerating peer review processing times. Also, peer review timelines allow authors and the public to be up to date with the journey of a manuscript,

understanding the steps necessary to complete peer review, and the relationship between the preprint and the version of record.

As for point (5), we will discuss the technical implementation that allows peer review reports under this initiative to be fully self-subsistent scholarly resources. Peer review reports can be anonymous or signed.

While peer review reports are associated with their master manuscript, they are registered with a DOI, and are thus fully discoverable and citeable on their own. This feature allows peer reviewers to get credit (citations) for their review work.

Keywords:

peer review, open; peer review, reports; peer review, credit; transparency; accountability

*A. Pepe: alberto.pepe@gmail.com

Ethical considerations in animal experimentation: What can we do as reviewers?

Augusto Crespi-Abril^{12*} Tamara Rubilar¹²

²Laboratorio de Oceanografía Biológica (LOBio), Centro para el Estudio de Sistemas Marinos, Argentina

¹Instituto Patagónico del Mar, Universidad Nacional de la Patagonia, Argentina

Animals have been used in experiments during a very long period of time, basically, to generate knowledge of the species, itself (i.e. ecological research) or as models of other species (i.e. medical research). The number of individuals used exceeds 126 million per year, but estimations include only vertebrates. The total number of animals used in research is overwhelming and has huge ethical implications. The starting point of the ethical debate on the use of animals in research can be dated from the end of seventeenth century and was focused on the issue of accepting or avoiding animal suffering. The level of social concern regarding this matter increased and forced the research community to address this issue and to review laboratory practices. In the first half of the twentieth Century, the principle of the 3R's (replacement, reduction and refinement) was postulated and since that time has become the major framework for ethical consideration when using animals in experiments.

Although this principle was a major breakthrough in the ethical treatment of animals, it comprised just a guideline. The original intention of the principle has been to promote the replacement of "superior" animals in experiments with "inferior" ones. As this replacement process takes place only gradually, it is necessary to implement the reduction in the number of individuals used and in the refinement of the methods applied during experimentation whenever possible.

The 3Rs principle is a cautious one as there is the possibility to implement no change at all in experimental practices based on the argument that *it is,*

simply, not possible. As a result, the successful implementation of the 3Rs principle is highly dependent on individual researcher commitment and responsibility. This responsibility is crucial in terms of two different aspects of the scientific practice. On one hand, and probably the most evident, there is our role as researchers. To act responsibly, we must make a real effort to implement the principle in our own experiments. On the other hand, and often ignored or left out of the discussion, there is our role as reviewers. In this role, and in the sake of scientific integrity, the reviewer stretches the principle to its full limit, perhaps failing to accept (at least not easily) new insights aimed at replacing the use of animals. Even more, the reviewer actually demands a higher number of individuals or replicates in order to reduce statistical uncertainty.

In this presentation, we discuss in detail the arguments presented in this area and hope that our reflections will change research practices to move towards an ethical paradigm in which the well-being of animals is fully taken into account.

Keywords:

ethics; 3Rs; experimentation

*crespi@cenpat-conicet.gob.ar

Session 4

Data

Data are at the centre on any scientific publication. It is based on data, both on their availability and data analysis that we draw our conclusions on a set of experiments, either to pave the way to a new scientific discovery, to confirm or confute a theory, reject an hypothesis, or to build a statistical analysis.

Data are assumed –often in a dogmatic way– to be factual evidence. A solid basement on top of which we can firmly stand our conclusions. However, data need to be meaningful and representative of what we want to prove (or disprove). They need to be statistically robust and reproducible. In this session, we will discuss an array of topics ranging from: the possibility to reproduce other scientist results to the assessment on the significance and how representative statistical samples are or can be. As well as if new statistical models can be implemented or better interpret our data and in turn our results.

Furthermore, as we are now fully in a digital age, we will also discuss how to focus and extract significant, useful and meaningful information from apparently endless databases and literature, as well as how to carry out a sort of transition from what we could define a from background noise to meaningful impact.

We will examine and debate on the efficacy of the p -value as a good indicator of our statistical evaluation. Eventually, workshops will consider and tackle the phenomena of p -hacking and HARKing—**Hypothesizing After the Results are Known**.

Other issues that we will discuss include:

- Inclusion of raw data: Journals start to encourage or even request the deposition of raw data together with the research article and in supplementary information files. Does this really advances science or does this ignore the fact that

not all data is necessarily reliable/information? At one point is a discovery which can be found in the raw data, but was not found by the authors, actually a discovery? Do we abandon the element of trust in scientific publication completely when we enforce the inclusion of raw data? (Frank Schaper)

Ethics in Radiology: Completeness, Accuracy and Justification of Requests

Lidion Sibanda* Florence Davidson Penelope Engel-Hills

Professional Education Research Institute (PERI), Cape Peninsula University of Technology

Judging the quality of data requires an evaluation of data characteristics against data application(s) and fundamental principles of the trade. Three fundamental characteristics that define data quality for radiology requests are completeness, accuracy and justification. Pertinent is that while the use of ionising radiation is generally beneficial, it is also carcinogenic and teratogenic. However, global statistics reveal that there is overutilization and up to 77 % inappropriate exposures. We know that fundamental principles of radiology dictate that both the referrer and the radiology clinician have an ethical obligation of diligence and duty of care in protecting patients from undue exposures. However, there is a paucity of basic research to establish where in the radiology care pathway the system of data quality may be elaborately compromised to impact significantly on the justification process.

The objective of this study was to establish the completeness, accuracy and justification of radiology requests in order to recommend remedies towards judicious use of radiation.

A two centre prospective document review of quota sampled radiological request forms was conducted using a data collection instrument designed drawing from the International Atomic Energy Agency (IAEA) minimum prescribed request data published in 2010. Generally, referrers for the two examinations would provide 40.2(5) % overall examination request information and the samples' means for the two examinations and centres were significantly ($p=0.00$ Sig.) below expectation. Up to 5 % requests were specific in so far as information documented on request forms could unambiguously identify the area to be imaged. Up to 22.5 % examination requests were indicated and

therefore justified. Generally, referrers to these sites tend to provide incomplete and inaccurate request data which compromises the review of justification for radiological requests. This had medico-legal implications. Further research to establish causes for this non-compliance with practice ethics is recommended.

Keywords:

radiation protection; radiological request; complete request; accurate request; justified request

*L Sibanda: lidionsibanda@gmail.com

Randomised Controlled Trials and *Big Data*: who writes the papers and what can we trust?

Tom Treasure*

Clinical Operational Research Unit (CORU), University College London, UK

A great deal of the practice of medicine is based on insecure evidence. The history of medicine is a catalogue of ineffective remedies. Reports of surgeons' results include unconscious biases resulting in inflated claims for effectiveness. When Randomised Controlled Trials (RCTs) are done, benefits are often not as large as has been assumed^[23] but it is very difficult for true believing surgeons, and the trusting and hopeful sick, to accept 50:50 chance that the treatment they receive will be a *best alternative* rather than the new *breakthrough*. There is a growing belief that the answers we need about relative effectiveness of interventions will come from *Big Data*. It is believed that because the data are entered impartially and analysed dispassionately without vested interest, reliable conclusions will emerge.

The Surveillance, Epidemiology, and End Results (SEER) programme is promoted as an authoritative source for cancer statistics in the United States. In 2019 there were 255 publications from it in the National Library of Medicine data base. In 2020 by early February there were 34 publications from which I extracted the data for size and authorship. I then took the first 32 RCTs for 2020 (a comparable sample size, decided ahead, lending itself to quartile analysis) and extracted the same information.

The data sets in SEERS are huge. Half of the studies contain information on more than 10 000 people. The half way point for N of RCTs is just over 100. The source of the SEERS studies was USA 17, China 15 and Canada and Italy one each. For RCTs it was Australia 5, France and UK 4, Japan and India 2. There was one each from Brazil, Canada, Denmark, Egypt, Germany, Holland, Malawi, South Africa, Spain, Sweden, Uganda, and USA; 3 were international. Half

of the SEER studies had six or fewer authors. RCTs have more authors because there are necessarily more people planning and carrying out protracted and difficult data retrieval. So with Big Data you appear to get more *bang for your buck* and there is a striking difference in the countries' contributions.

There is a vital piece of missing information. SEER contains data only on the chosen treatments of cancer specialists. There are no controlled comparisons between or without treatments. Another limitation is the MD/PhD divide. Clinicians come to the data base with prior beliefs, expounded in the Introduction of the IMR&D format; analysts write the Methods and Results; the medics can select what suits their prior beliefs because it is they who interpret the findings in the Discussion. As a reviewer of many submissions, I know how it works. I have published Big Data ($N = 68\,350$)^[24] but I place more trust in my much smaller but rigorous randomised trials.^[25,26] What I present here is not exhaustive or conclusive but illustrates the need for caution and scepticism.

Keywords:

randomised control trials; Surveillance, Epidemiology, and End Results; SEER; Big Data, scepticism

Table 4.1: SEER vs RCT titles (National Library of Medicine titles, 2020) *Individuals* are counts of patients in each case and all data are presented as quartiles of the distribution of counts.

SEER $N = 34$	Min	25 %	75 %	Max
$N_{\text{individual}}$	246	906	14 877	132 438
N_{au}	3	5	9	14
RCTs $N = 32$				
$N_{\text{individual}}$	30	89	640	74 836
N_{au}	2	6	16	24

*T Treasure: tom.treasure@gmail.com

The extinction of the experimental section: Can you reproduce another scientist's results?

James Railton, Marco Conte*

Department of Chemistry, University of Sheffield

A set of recent high-profile reports attempted to ascertain if the scientific community is on the brink of a “reproducibility crisis.”^[27,28] A survey including researchers from physical, biological and social sciences, as well as engineering, revealed that about 70 % of researchers have tried and failed to reproduce another scientist's experiments.^[27] Whereas some researchers are pragmatic on this commenting *disappointing but not surprising*, others seem to be more sympathetic “failing to reproduce results is a rite of passage”, or even blaming themselves for “lack of skills in reproducing original results.”^[27] Whatever the justification, the consequences of a large-scale lack of reproducibility are wide ranging and long standing. These span from skepticism from the general public (especially in the medical sector), derailing talented early career scientists from pursuing a career in science. And wasting large amounts of time and money to reproduce results at clinical trial or industrial scale up stages.

Based on our own experience of not being able to reproduce a set of published results in the area of the synthesis of microporous materials in catalysis—despite multiple repeated tests in our group, over a long period of time, by different synthetic chemists—we set out to systematically analyse the reasons of this lack of reproducibility of another researcher's work.

The first reason appears to be a paper's experimental section itself. Let's face it: when reading, or even revising a paper, this section—although practically the most important section to reproduce another scientist's research—is often considered the dullest, boring or even irrelevant.

We identified a large number of interconnected reasons to explain what we could call an extinction on

the reproducibility of the experimental section, and these can be divided into two major classes: statistics and publication record. For the statistics part the factors in play are:

- (i) gross errors in the original experiments,
- (ii) data not sufficiently repeated in the original study, and in turn synthetic methods not sufficiently robust,
- (iii) an increasing complexity in methodological approaches with many variables often erroneously neglected.

Effects induced by publication record are much more insidious, and include:

- (i) a misguided attempt to obtain a competitive advantage,
- (ii) enormous pressure to publish and competition for funding,
- (iii) during a revision, authors are mostly asked to prove that their findings are novel or interesting, eye-catching, even implausible^[28], but strictly speaking they are not asked if the findings are true.

This may well lead to a large number of citations, but ultimately it is the experimental section and the ability to reproduce a research work that will dictate if a paper will stand the test of time.

Keywords:

experimental section; statistics; reproducibility; error; methodology

*M. Conte: m.conte@sheffield.ac.uk

Error and discrepancy in ultrasound reporting by sonographers: Inevitable or Negligence

Dikano Masopa^{12*} Lidion Sibanda¹³

¹Radiology Department, Sir Seretse Khama Barracks Hospital, Gaborone, Botswana

²Radiography Department, National University of Science and Technology, Bulawayo, Zimbabwe

³Faculty of Health and Wellness Sciences, Cape Peninsula University of Technology, Cape Town, South Africa

Ultrasound imaging has become a global modality of choice. This has been associated with its availability, affordability and safety. Traditionally, sonography has been the preserve of Radiologist and Sonographers (Radiographers included). It is known that Radiologists are equipped with a higher level of knowledge and skills than Sonographers when it comes to ultrasound imaging yet their “errors and discrepancies” are reportedly uncomfortably common. Radiologists’ have come a long way to establishing a position paper separating medical negligence from inevitable errors based on their competence skills. However, there is a paucity of research pertaining to inevitable errors by Sonographers that is based on their competence skills. The objective of this study was to establish and classify common errors and discrepancies made by sonographers in order to inform the drawing up of a position paper on when negligence conclusions can be proffered on the Sonographer. A systematic review of studies published between 2010 and 2020 accessed on science direct, proquest, web of science, Medical Literature Analysis and Retrieval System Online (MEDLINE), CINAHL and COCHRANE was conducted. The review showed that the incidence of such events were significantly higher than reported for radiologists’ and that the proposed classification framework can potentially aid understanding of possible strategies of dealing with perceived underperformance whenever they are identified.

We conclude that a paucity of such research suggests incoherencies in litigating perceived negligence

by sonographers. Further research to validate the framework in the Botswana setup is recommended.

Keywords:

errors; discrepancies; ultrasound reports; sonographers; malpractice; negligence ⁴Mechanical Engineering, McGill University, Montréal, Canada

*D Masopa: dikanomasopa@yahoo.com

Impact factor inflation

David Milton,¹ Christian A. Patience,² David Rattray,¹ Edoardo Filippi-Mazzola,³ Gregory S. Patience,^{4*}

¹Philosophy, McGill University, Montréal, Canada

²Università Cattolica del Sacro Cuore, Milano, Italy

³Chemical Engineering, Polytechnique Montréal, Canada

Impact factor, N_{IF} , is a metric that assumes that the quality of scientific journals is related to how frequently researchers cite articles they publish. It is widely criticized. Some argue that it is easily corruptible through dubious journal practices.^[29] Others note that since impact factors vary widely across scientific disciplines and that reviews accrue many more citations than primary research, it is inappropriate to compare or rank journals.^[30] Alternative metrics have been proposed in light of these criticisms, such as h -index, eigen factors, fractional counting, SNIP, immediacy index.^[31] However, despite these widespread concerns and the increasing popularity of other metrics, N_{IF} remains the most influential metric in the scientific community (Nature Publishing Group, Nature, 2017).

A journal's impact factor is the ratio of the number of citations articles published in years $x - 1$ and $x - 2$ accrue in year x and the number of articles published in $x - 1$ and $x - 2$. Journal rank varies from the most cited journal $r = 1$ to the journal with the least number of citations $r = N_{jnl}$ (where N_{jnl} = number of journals) and is often mentioned in infometrics. Lavalette proposed an extension of Zipf's law empirical rank-frequency relationship (developed for linguistics expressed as a power law) to model the N_{IF} rank order distribution. Popescu and Campanario^[32,33] refined the model to fit the data better. Mansilla et al.^[34] changed the equation from a one-exponent power law to a two-exponent beta law.^[33]

Since there is a high correlation between the citation indicators of journals, (including N_{IF}) across databases, impact factor can be studied using either

Scopus or Web of Science's journal citation report (JCR).^[35,36] The impact factor of established journals increase year over year—impact factor inflation. Studies on small subsets of the databases account for this phenomenon on the increase in number of references published per article.^[37,38]

Althouse et al.^[39] considered the possibility that the increase in N_{jnl} contributes to inflation. We have developed independent relationships for both the Scopus and Web of Science databases. For the JCR, the expression $N_{IF} = \gamma \left(\frac{N_{jnl}}{r} - 1 \right)^{0.5}$ explains more than 99 % of the variance, where $\gamma = f(N_{jnl})$

This expression is in keeping with Lavalette's law but is incapable of correlating the metrics reported by Scopus-CiteScore, SNIP, and SJR. Even though these three metrics are reported for the same database a linear model accounts for less than 75 % of the variance.^[40]

Keywords:

impact factor; journal citation report; multi-author paper; primary author; principal author; intellectual contribution

*G. S. Patience gregory-s.patience@polymtl.ca

Silent screams of delirious patients: An Ethical Challenge

Mohamed Toufic El Hussein*

Nursing, Mount Royal University & University of Calgary,
Nurse practitioner Cardiology, Rockyview Hospital

Data collection in qualitative research entails a process of interactions with participants to gather relevant information during an interview or while conducting an observation. The researcher must obtain the participants' voluntary consent before commencing a study, thus it is an expectation that participants should be cognitively competent to render a consent. It is well-known that patients with cognitive disorders such as delirium would be ideal informants to talk about their experiences while in delirium. However because of the prevalence of delirium under-recognition among health care workers, where 60 % to 70 % of patients with delirium are often misdiagnosed with depression or dementia, resulting in missing opportunities to hear their voices.

Given that delirium is a kind of acute brain failure that is manifested by fluctuation of attention, high distractibility, rambling, inconsistent answers, and disordered consciousness, it would be a challenge to obtain consent from delirious patients. Delirious patients are trapped in their own world, in a world of confusion and sometimes horror, they scream in wordless voices, screams often transformed into gestures, actions, and reactions. These patients live incomprehensible experiences, characterized by detachment and loneliness yet they can be a great source of rich data if we can obtain ethical approval to interview them.

Data in the form of transcribed transcripts from interviews, and documented interactions from observations will be interpreted using one of the qualitative traditions, such as Grounded theory, Phenomenology, Thematic analysis, Narrative inquiry or Ethnography. The selection of the method is driven or determined by the research question. The plethora of qualitative interpretive approaches create another ethical

dilemma due to the nature each approach and the ethical requirement associated with each. The purpose of this presentation is to discuss the ethical challenges encountered by researchers when trying to conduct studies with patients suffering from cognitive impairment and to highlight issues related to ethics specific challenges related to the qualitative method adopted.

Keywords:

ethics; grounded theory; thematic analysis; ethnography; narrative inquiry

*Mohamed El Hussein: melhussein@mtroyal.ca

Is there real understanding regarding pseudoreplication? How does this impact publications?

Tamara Rubilar^{12*} Augusto Crespi-Abril¹²

²Laboratorio de Oceanografía Biológica (LOBio), Centro para el Estudio de Sistemas Marinos, Argentina

¹Instituto Patagónico del Mar, Universidad Nacional de la Patagonia, Argentina

Hulbert is considered to be “the father” of the pseudoreplication issue in ecological studies has become one of the most influential and discussed methodological doctrines. Biologists and ecologists all around the world are taught that pseudoreplication should be avoided and reviewers use this concept to constantly reject papers, good science, and data. In literature, one finds a lot of discussion about pseudoreplication. These discussions have been taking place for over 30 years and Hulbert to almost every paper criticizing his approach. However, these discussions are not advertised and there is no, or very limited, classroom learning about this topic.

Even though the discussions are open and there are, obviously, no “winners”, pseudoreplication is often used as a dogma in rejecting papers.

Various authors have suggested that “reviewers and editors should not use the term pseudoreplication as a criterion for evaluating experimental research”. It might be more important to consider the biological conclusions of a given study, and also assess whether the pseudoreplicate issue actually affects those conclusions. In addition, the use of different statistical analyses, for example, in the case of temporal or spatial pseudoreplication, could be recommended.

As statistics is a science advancing all the time, it could be desirable to analyse the data on the basis of varying approaches to see if the use of different analyses produce the same conclusions. As there are no real or universal criteria for reviewing a paper and as reviewers are, themselves, researchers, it is important to be aware of the knowledge researchers have about pseudoreplication.

We conducted a survey amongst Latin American experimental biologists in order to see how they dealt with this, if they had faced this important consideration in publishing their experiments and if they were aware of the discussions taking place concerning pseudoreplication.

In this presentation, we present and discuss in detail the results of the survey and analyze its impact in publish a paper.

Keywords:

Pseudoreplicate; Reviewer 2; Latin America

*rubilar@cenpat-conicet.gob.ar

Statistical practice in nutrition research: strengthening reproducibility in clinical trials

Kathryn Barger*

Jean Mayer USDA Human Nutrition Research Center on Aging, Tufts University, Boston MA, USA

Scientific replicability has been defined in a report by the National Academies of Sciences, Engineering, and Medicine as *obtaining consistent results across studies aimed at answering the same scientific question*. The failure to replicate study findings, coined the reproducibility crisis, is relevant across diverse fields of science. Irreproducibility has contributed to the loss of billions of wasted research dollars. For example, a PLoS Biology report in 2015 reported that economic cost due to irreproducible research in biology in the U.S. was estimated at \$28 billion per year.

Solutions to enhance replicability have been offered, one of which is enhanced reproducibility. Scientific reproducibility has been defined in the National Academies report as *obtaining consistent results using the same input data; computational steps, methods, and code; and conditions of analysis*. Reproducibility can be evaluated by applying the reported analytical methods to the original study data. This application highlights the importance of transparent reporting and data sharing. The ability to properly assess the results of an analysis has become an important standard for reporting in scientific journals. For example, in 2014 *Nature* and the *Nature* research journals created systematic checks for better transparency of methodological details and increased space allowances for methods sections.

The wasted research money due to irreproducible research has been attributed in large part to failings in statistical methods with study design and data analysis having been reported as two of the largest contributors. Errors made in previous nutrition studies can provide a tool to identify areas of improvement, so I will present some recent publicized stories in nu-

trition studies to demonstrate examples of how errors arise and are corrected.

My role as a research statistician involves training of statistical methods and providing statistical peer-review. In human nutrition clinical trials, statistical challenges appear in both the experimental design and the analysis. My work involves developing best practices that address statistical issues encountered in nutrition research, such as selecting appropriate control groups, measuring adherence to diet, addressing measurement error in dietary assessment, accounting for nonlinear (U-shaped) associations from diet, and correctly analyzing data from cross-over designs. Statistical challenges such as providing appropriate sample size calculations, addressing biological variables, emphasis on multiple comparison considerations, and proper use of *p*-values apply both to human studies in nutrition and generally in biomedical clinical research. Additionally, my role in statistical review within the peer-review process, as part of the newly created statistical review board for the American Society for Nutrition journals, has opened new discussions on improving standards in statistical review. Increasing rigor of statistical methods are being promoted through best practice training and, in combination with rigorous statistical peer-review, will continue to strengthen both statistical practice and scientific reproducibility.

Keywords:

Statistical methods; nutrition studies; reproducibility

*K Barger: kathryn.barger@tufts.edu

Session 5

Communication

John Maddox was the Editor-in-Chief of *Nature* for 25 years and in his last editorial (1995) he commented that the English language had become a casualty of the competition to publish.^[1] Further, he asked if researchers deliberately write obscurely.

Both *Nature* and *Science* now insist that their authors write in the active voice (agent before patient) rather than the passive voice (patient before agent) and that they use the personal pronoun **we**. Despite this strong endorsement, researchers continue to advocate the old school of thought that the passive voice is more formal and authoritative. This advocacy translates to criticism from reviewers and eventually articles are rejected based on grammar and communication instead of technical content.

The general dissatisfaction of the review process and seemingly arbitrary comments from editors and referees has spawned social media groups like **Reviewer 2 Must be Stopped** on *Facebook* with 27 000 members. The group describes *Reviewer 2* who rejects papers for dubious unsubstantiated comments like: nothing new has been disclosed, not enough references (particularly to the reviewer's own research), and methodology lacks clarity (although the reviewer misread the section). Together with the cursory examination of the manuscript, they add derogatory and offensive remarks that impact authors, and particularly those "belonging to marginalized groups."^[41] Targets include non-native English speakers and so called tear-2 schools: "The author's last name sounds Spanish. I didn't read the manuscript because I'm sure it's full of bad English" and "This is obviously written by a group from a lower standardized institution based on the quality of the work". Communicating the names of the reviewers to the authors only marginally

changes the tone (but must certainly reduce the abusive language).^[42]

Language certainly affects the reviewer's perception of the work and quality of the writing correlates with how much time and attention the authors have dedicated to it. Web based tools and programs like *Writer's Diet* and *Antidote* do help improve the English grammar. Despite these tools, the scientific writing style is heavy with an excessive reliance on meta-discourse (hedges, signposting, and boosting), vague and redundant text, and self-conscious and narcissistic reflections.

How much weight should publishers and editors place on communication—style, grammar, images, SI units, and structure? Do ghost authors and professional writers have a place beyond acknowledgements to reach high impact journals? Does the writing style vary versus document type: scientific article, patent, grant application, or thesis.

Many is a word that only leaves you guessing
Guessing 'bout a thing you really ought to know

Led Zeppelin, Over the Hills and Far Away,
1973.

Finding consensus on sustainability: widening climate change conversations to advance the SDGs agenda

Gisele M Arruda, Sebastian Krutkowski*
University of Roehampton

The task of extending the scientific consensus on climate change into a social and political consensus is not an easy one. The difficulty in promoting climate and sustainability communication is because 'sustainability' seems to have lost its intended meaning over time. These are politically polarised times in which information flows are increasingly tailored to our individual preferences. Therefore, it is important to communicate climate change consensus to different audiences and break through this alternative and misleading understanding of the current climate crisis that impedes the sustainability agenda. This research provides evidence that it is possible to pre-emptively "protect" public attitudes about climate change against real-world misinformation.

Climate change is less about the environmental damage observed today that can be linked to carbon emissions; it is about addressing wider social and political issues such as prosperity, peace, public health, and posterity. The intensive exploitation of non-renewable energy sources, mineral extraction from indigenous lands, proposals to acquire Arctic areas like Greenland to address the global demand for rare metals, or the current levels of deforestation in the Amazon forest all continue to undermine the Sustainable Development Goals (SDGs) agenda. Conserving and sustainably using natural resources and achieving sustainable growth cannot be met by current trajectories. Players advocate the 'co-benefits' of

climate change mitigation arguing that climate change should not be treated as a standalone problem but could instead benefit from being linked to other topics many people care more about. In other words, the sort of climate change communications required to build wider social support should explain how decarbonising the economy can produce health benefits, reduce inequalities, and improve people's wellbeing.

To effectively tackle the industry discourse, it is necessary to change the conversation about sustainability. Science alone can be confusing and alienating. It is easy to distract and obscure the scientific consensus and the body of technical evidence. It will be more difficult to ignore a wide-ranging social consensus that climate action is needed based on co-benefits that can be experienced on the ground in the daily lives. If science is denied and the scientific knowledge generated in the last 40 years is contested and ignored by a culture of climate scepticism and vested interests at several layers of the administrative and judicial structure, the statute's does not fit its intent and purpose. Consequently, the best available science will not be enough to avoid species and habitats to be extinct as governmental agencies' decision-making continues to be based on economic sensitive sectors. This is the legalist style discourse aligned to the maximization of profits philosophical approach in line with the well-known and old-fashioned patterns of production and consumption that brought us all to the point where we are now.

Societies have not addressed these patterns yet.

*Krutkowski: sebastian.krutkowski@roehampton.ac.uk

The same ideas of economic supremacy and dependency related to natural resources exploitation continue to be the mainstream of the 21st century mindset. The efficient climate change communication involves building more inclusive climate change conversations, by turning climate change from a scientific reality, to a social reality and injecting narratives that resonate with the values of people across the socio-political spectrum. **Keywords:**

Climate change; communication; resource extraction; carbon lock-in; Sustainable Development Goals (SDGs)

Publishing Advanced Materials Science—How to maximize your success!

Francesca Riboni*

Wiley-VCH, Weinheim, DE

“Why publish at all?” is what a researcher may think in front of the dreaded first blank page of his/her future published article. An answer to the question may be one (or more) of these options: as a researcher, you may want to publish your research for

- (i) fame—recognition from your community;
- (ii) fortune, for grant applications and your next career promotion;
- (iii) responsibility, to society and taxpayers;
- (iv) contribution to progress; etc.

A main reason that should however motivate researchers, at any stage of their career, to embark on the route to publication is to make their research public. Unpublished research, which remains confined to the bench of your lab, the notes on your desk or to your mind, is lost research.

According to experienced researchers, the writing process starts at the earliest stage of conceiving a research project. A good advice is also to think about the target journal as early as possible, i.e., to identify a journal with a scope that fits the research, with appropriate visibility, quality and audience of readership.

Bearing in mind all the obstacles and hurdles that a researcher must face to have his/her research published, and that among others include

- (i) how to prepare an article;
- (ii) where to submit it;
- (iii) how to make it to; and
- (iv) through peer-review, the all-important route to publication seems all but an easy ride.

Key aspects that will be discussed in this presentation are

- (i) structuring one's research work well and assembling a convincing manuscript, that is, a manuscript that clearly communicates the science and is a pleasure to read;
- (ii) understanding the editorial workflow and decision processes in editorial offices;
- (iii) choosing a journal and knowing what to put in the cover letter, and what to avoid.

In addition, the talk will also explain the peer review process, provide an overview on the post-acceptance workflow, give suggestions on how to maximize the impact of published research, as well as possibilities for open access.

The presentation will be mainly steered toward materials science, which is a multidisciplinary field of research with many different scientists and engineers with various backgrounds.

The literature landscape consequently is populated by a wide range of journals which greatly differ in purpose, scope, quality, and readership. Wiley's materials science portfolio boasts some of the top journals in this interdisciplinary field, including *Advanced Materials*, *Advanced Energy Materials* and *Advanced Functional Materials*. Our in-house editorial staff are dedicated full time to handling papers and providing high quality author services. This presentation will cover what we can offer, as well as sharing some of our selection criteria to help you publish with us and maximize your success.

Keywords:

Manuscript preparation; peer-review; editorial workflow; communication

*F Riboni: friboni@wiley.com

The Elements of Academic Style

G. Scott Erickson*

Ithaca College

Strunk & White, considered by any number of great writers to be the go-to source for simple, practical advice on writing well, emphasized usage and composition.^[43] Each contributes to effective writing, but composition, in particular, has to do with style. If one takes technically correct grammar as a given, the composition rules are what separate competence from panache.

Two of the more specific and frequently cited rules suggested by Strunk & White^[43] are *use the active voice* and *omit needless words*. In some ways, these rules are related as active voice invariably employs less unnecessary verbiage. With active voice, the subject and verb are clear, with the former explicitly driving the action: *we conducted a study on ham sandwiches*. The alternative, passive voice, is wordier and clumsier: *a study on ham sandwiches was conducted (by the authors)*. Within a passive voice construction, there's a choice of whether to include the actor (in parens). If included, the sentence tends to be longer and more awkward. If not included, the identity of the actor isn't always clear.

In academic writing, authors are often encouraged, sometimes even required, to use passive constructions. A variety of reasons exist, sometimes writers just believe it to be the scientific way to write or perceive it as more sophisticated. Another justification asserts that passive voice is more objective because active voice is often used with personal pronouns (I, we). These personal pronouns can be inferred as subjective to the point of implying bias. Yet another line of thought suggests that passive constructions em-

phasize the study rather than the studiers. All in all, however, authors are likely in trouble if sentence construction is necessary to focus readers on the work or convince them of unbiased intentions.

Passive voice does have its uses. Indeed, another strength of good writing is sentence variety, so different constructions, different lengths, and so forth can help keep the reader engaged. The problem in scholarly writing is that some reviewers and editors are enamored with passive voice. Passive is so widely used in academic studies and government reports, it is often viewed as a required standard. More than once, I've received reviewer comments to change a manuscript over to a more scholarly style. Specific comments have included direction to eliminate personal pronouns entirely.

Things don't have to be that way. Go outside familiar academic disciplines to learn something about what skilled writers consider to be effective styles. Clarity, brevity, variety, and similar aspects of writing are all thought to be more engaging for the reader. Active voice, in particular, is seen as more vigorous, more forceful. Scholarly writing doesn't need to be bad, it's just the way many of us were trained. Whether to be a good writer or a bad writer should be a personal choice, not something foisted upon writers who might otherwise be clearer communicators.

Keywords:

Active voice; passive voice; academic writing

*GS Erickson: gerickson@ithaca.edu

An example of a non-laboratory software experience in research laboratory data protection and communication

Claure N. Lunardi^{1*} Fellipy S. Rocha^{1,2} Anderson J. Gomes¹

¹Laboratory of Photochemistry and Nanobiotechnology, University of Brasília, Brasília, Brasil

²Chemical Engineering, Polytechnique Montréal, Canada

All theoretical and non-theoretical research activities to acquire knowledge for any specific circumstance or application generate data. When legitimately required, original content should be protected by nondisclosure agreement involving project sponsors, researchers, and employers. Many aspects of scientific research involve something apparently simple, keep the confidentiality of data. Social networks influenced the contemporary living habits and new exposure tools changed the learning and tutoring processes. Applications as Telegram, Facebook, WhatsApp among other seems interesting to facilitate and speed up the communication in the laboratory environment, but conventional information technology exhibits a risk to keep confidential data as it banalize the information.

The supervisor position is central to stimulated critical thinking, generate collective knowledge and create new connections. However, monitor the data exchange from a large research group to limit the exposure can be very demanding. On-line platform integrated software represents an alternative to manage and mediate all communications between professors, research associates, interns and undergraduate/graduate students. In our laboratory, for the last 4 years we had been using non-laboratorial management software to deal with all group communication.

The Bitrix24 software is a powerful and flexible tool that expands project management in

the organization, improving team productivity, as it enables the planning of activities, rationalization of operations and compliance with goals and deadlines. With the platform we improved the personnel distribution, the decision-making about individual's projects and laboratory management, the reports edition efficiency in an integrated way and, more importantly, the information access control. Lastly, the software minimizes operational errors as it is possible to list the existing standardized operational proceedings, update and create new files. The user must fill a form after reading the document to demonstrate knowledge before operating any equipment. **Keywords:**

confidentiality; non-laboratory software; social media

*CN Lunardi: clunardi@unb.br

The Christian ethics from a reading of Hegel and Nietzsche

Adilson Felicio Feiler*

Universidade do Vale do Rio dos Sinos - UNISINOS

We intend to show some fundamental coincidence in the way of judging the Christian ethos, among the philosophical positions which, apart from being far from the chronological point of view, seem to represent two profoundly antithetical ways of understanding not only the truth, but philosophy itself and its task: the positions of Hegel and Nietzsche. The means we use to assert the existence of both a certain coincidence and not just opposition and divergence will consist in a brief examination of the writings in which the respective authors deliberate on the same subject: Christianity, Christian doctrine, the life and historical significance of its founder, Jesus of Nazareth. In the Introduction we present the purpose of the research and its methodological designs and, in the Conclusion, we appreciate the systematic unity of the different parts in the form of a general summary of the results obtained. The main body of the investigation is divided into three major parts designed to show how, in the light of Hegel's and Nietzsche's reflections, the *Lebenshöhepunkte* culminating vital points of the Christian ethos express themselves in a successive and diverse manner, first as *Leistungsfähigkeit* potentiality, in particular, followed as reciprocity *Vielfältigkeit* and finally as reciprocity *Gegenseitigkeit*. For their part, each of these three concepts are examined and exposed in relation to a particular way of knowing: the first, potentiality, with phenomenology; the second, diversity, with logic; and the third, reciprocity, with politics. This systemic articulation, which reveals the subject of our investigation, according to the nature of an order that philosophy has cultivated for centuries as proper to intelligence. This order communicates through the three articulating parts, that is, in a triadic way. The first chapter is determined by the idea of immediacy; the second is the idea of opposition that makes possible the work of mediation and, with it, the dialectical overcoming of the initial immediacy; whereas in the third and last chapter a result is conceived in a speculative sense, as truth and opposition, a truth which both Hegel's and Nietzsche's writings present in the form of a reconciliation, is linked to both the notion of Destiny as with the notion of love. In the course of our investigation we follow the methodological steps of dialectics, beginning with immediacy, mediating, and merging into a reconciliation of these two earlier moments: a reconciliation open to fullness and new reconciliations. All these moments constitute a fabric of three chapters: phenomenology, beginning with the descriptive dimension of the phenomenon of the Christian ethos; logic to systematize and critique the Christian ethos; and politics to culminate in the application of the Christian ethos in its social dimension. Every attempt rests on the effort to set up a unit of logical character. This formal aspect, therefore, far from being merely secondary, reflects one of our most original moments. Finally, the subdivision of each of the three chapters within each section is reflected in the triadic macrostructure of the ensemble.

Keywords:
Christianism; ethics; morals; love; fate

*A. Feiler: afeiler@unisinisinos.br

Communication and dissemination of principles, values, ethics, and good practices—The CSR role in raising the debate on principles of scientific publications

Gisele M. Arruda*, Teena Gaya†

Anvivo Polar Research—Young Climate Leaders Working Group

In times when information is volatile and credible means of communication and dissemination are vital for consolidating good practices, good governance, and democratic processes for the wellbeing of societies and economies, clear communication, and dissemination of business ethics have a vital role to play in local and global contexts. Not only because there is a climate emergency in course and values, principles and ethics are in check around the world, but because the divergent discourses of our times make it more difficult to establish a common dialogue about balanced practices in relation to corporate social responsibility and sustainability. In practical terms, the patterns of western corporate sustainability appear to be different from the patterns experienced in developing and emerging nations, consequently the standards for corporate sustainability performance in emerging and developing countries present different characteristics and trends with adverse effects on sectors of society and economy. Empirical studies and observations based on international audiences approached as part of the methodology of this reflection showed that these differences also have huge implications on levels of governance, communication, knowledge application and decision-making when comparing practices and performance indexes in the developed, developing, and emerging economies, because several local

contexts have been dragged down by corruption, environmental negligence, and the current systems of business ethics, corporate governance, and global governance do not discuss the causes but only the consequences when events already happened.

The challenges to understand business ethics in the developing world are higher than those in the developed world. The principles, values and ethics are different and the citizens from developing economies see CSR in a different way because the values, ethics, and principles are not embedded in their local systems. These components simply are not embedded in the reality of several countries and their respective societies. The role of communication and dissemination of knowledge and information about the local dynamics from developing and emerging economies and business practices can raise important points for shared global debate at the level of professionals and students. In some of these countries the debate is suppressed by the few or inexistent sources of communication and publications reflecting the low stimulus for an ample debate about local contexts. Ethics and corporate sustainability are not considered as part of the culture in some jurisdictions, because it is not part of the local debate and there are very few or, sometimes, no organization engaged in discussing these issues locally.

If scholars from developing and emerging nations are given the opportunity of communicat-

*GM Arruda: garruda@anvivo.org

†T Gaya: teenag@anvivo.org

ing their ideas, contexts, experiences, and realities in terms of business ethics and corporate sustainability as the western world's scholars are given, this debate will come to a balance where local goals will become embedded into organizations and these more sustainable practices and patterns will have a better chance to influence and, possibly, transform governmental policies and governance systems.

Keywords:

communication; dissemination; business ethics; corporate sustainability

Beware the Shibboleth

Gregory S. Patience,^{1*} Nicolas A. Patience,¹ Paul A. Patience²

¹Chemical Engineering, Polytechnique Montréal, Canada

²SITA, Montréal, Canada

Shibboleths distort language by hiding meaning with ambiguous sentences and phrases. Historically, they were nonsense words and phrases designed to identify outsiders. Here, we associate this concept with circumlocution and equivocation as a crutch by writers that have little to say or wish to artificially inflate their arguments. Politicians have perfected this form of rhetoric, and Maddox, in his last *Nature* editorial, complained that researchers ostensibly and willfully compose equivocally.^[1] Pinker advocates that we write like we are talking to our readers and assume they are competent and understand that science is messy. We need not remind them in every sentence (with hedges) that experiments and analysis have uncertainty.^[44,45] Rather, we show the uncertainty explicitly with, for example, error bars in graphs and standard deviation.^[46]

Common forms of metadiscourse and phraseology that encumber articles include:^[47]

1. **hedging** appear to indicate, could be due to;
2. **boosting** extremely often, very unique, relatively weak;
3. **signposting** In the last section we mentioned that;
4. **self-conscious** This experiment was particularly difficult. . . ;
5. **narcissism** Researchers have paid considerable attention to. . . ;
6. **redundant** Delexical verbs, nominalization (zombie nouns—converting a verb to a noun); and,
7. **periphrasis** Sentences longer than 30 words.

Metaconcepts are concepts about concepts, and they clutter text. Examples include: strategy, model, level, understanding, challenges, opportunities. These words are appropriate when writers explicitly define what they mean or the context is clear. However, when the subject is less well-defined, metaconcepts are feeble constructs that obscure rather than clarify, and adding metadiscourse, like boosting and hedging, makes it worse:

- a very deep understanding of future uncertain challenges;
- the new forms aim to shed light on the evaluation process;
- leverage synergies across multiple projects;
- is widely considered as a promising solution;
- to improve the effect; and,
- have conducted a significant amount of high-level research.

Metaconcepts are one of several types of shibboleth most prominent in abstracts and introductions.

Keywords:

metadiscourse; metaconcept; doublespeak; communication, shibboleth

*GS Patience: gregory-s.patience@polymtl.ca

Five Secrets from a Journal Editorial Office

Gene P Siegal*

Editor-in-Chief & Catherine Ketcham, Managing Editor, *Laboratory Investigation*

We understand the effort committed to creating a body of experimental work. However, if one does not publish the discovery, the information is lost. If you understand how manuscripts are managed, you can avoid mistakes that may lead to delay or worse, rejection. The advice offered applies to almost any scientific journal but builds on experience as authors, reviewers and editors.

1—Choose the right journal. About 25 % of the manuscripts that are submitted to *Laboratory Investigation* are rejected because they are out of scope. If you put effort into choosing the most appropriate journal for your paper you will save time and resources. This lecture offers advice on how to determine the best fit for your paper.

2—Read the instructions for authors. If you follow the instructions, your submission will proceed through the review process faster and, if accepted, will be published more quickly.

3—The abstract is vitally important. Make a good first impression by writing an abstract that represents your paper accurately. The merits of your abstract often determine whether or not the editors send your paper out for review. Potential reviewers often receive only the abstract to decide whether they are interested in evaluating your work. Once published, readers typically decide whether to read your paper based on the abstract. This talk outlines the elements and style of an effective abstract.

4—A picture is worth 1000 words. Prepare high-quality figures with concise, informa-

tive legends. After the abstract, the editors look at the figures to assess the suitability of a manuscript. Good illustrations convey the central message of a paper at a glance.

5—Be thoughtful in your correspondence.

When contacting the editors be polite. If you want them to agree to publish your paper, you will not increase the probability of acceptance if you question their ability and motives. This presentation discusses effective communication with journal staff, editors and reviewers.

The goal is simple and universal. Have your scientific discovery seen by your colleagues with minimal delay and have it understood by the readership.

Keywords:

abstract; communication; writing; journal instructions

*GP Siegal: ccummings@uabmc.edu

Session 6

Withdrawn

Unfortunately, the COVID-19 has affected the scheduling of the forum and so many individuals have been forced to withdraw. Furthermore, we have changed the format so that every presentation is 15 min. Let's hope the next time around we will have more success and we all will be able to meet in person!

Principles of scientific publication in the conditions of scientific paradigm change

Irina Alekseevna Gataullina*

Department of sociology, political science, and management,
Kazan National Research Technical University named after A.N. Tupolev, Russia

Despite the seemingly trivial name, the theme of the forum is more than relevant for the Russian academic community and above all for scientists of humanitarian orientation.

The demand for scientific publications in the cited journal SCOPUS and Web of Science since 2014 has come as a shock to them. The development of a new approach in the creation of a scientific text reveal not only the need for a clear understanding and clear formulation of the studied problems, knowledge equally of both domestic and foreign research experience, but also the recognition of the contribution of the author in the relevant field of science. The solution of these complex problems for almost five years has formed a certain idea of how the principles of scientific publication are implemented in the conditions of forced integration of Russian scientists into the international rankings of publication activity, citation and increase in scientometric indices.

Let me make some observations in this regard. The experience of this work has revealed both positive and negative sides of this process. The first should include the unconditional focus of international publications on the most popular research topics of fundamental nature. This means that publications should reflect the conceptual universality and spatiotemporal generality of research, determining not only effective ways to solve practical problems, but the mentality, moral attitudes, world view of future generations. The latter is particularly important, because the speed of technological development of the modern world, it seems, does not leave a person the opportunity for full reflection and understanding of its results. But it is this planetary force majeure that forces us

to look for such ways of solving problems where humanity and its activities act as one object, as one developing system in the context of historical time. Only this perspective, which allows, according to Karl Jaspers, to give a scale for understanding what is happening at the moment, becomes a fundamental research principle. A striking example of this is the work of the famous scientist Sergey Kapitsa, called *Paradoxes of Growth*. In it, the author, based on the artifacts of the Olduvai cultural cycle and the number of people who lived about 1.6 million years BC, gives a forecast of the planetary demographic situation, indicates the deep transition that humanity has to go through. The use of the methodological tool *longue durée* allowed to challenged conventional science, *achechaletski*(?:2m45.6s).

Plunging into space and beyond history, or the Neolithic Era, according to modern ideas, the author of the theory of the Earth's rotation pull(?:2m54.7s), as well as the concept of the wave universe, wave astrodynamics, and cosmogenome(?:2m59.1s), raised the question of prehistory, which today, without exaggeration, tests the strength of scientific knowledge in a rapidly changing world.

It should be noted that both authors are Soviet physicists who showed that the pursuit of truth is a fundamental principle, following which leads the researcher out of the framework of traditional interpretation, from a narrow specialization in the field of interdisciplinarity and provides unlimited opportunities for scientific research.

Moving deeper into history became for them a way of understanding the causality of phenomena, a demonstration of recognition and respect for the independence of the past-day circumstance that acted

*I.A. Gataullina: gataullina.irina2010@yandex.ru

not only as a new conceptual argument, but also as a necessary ethical attitude. Their hypotheses are confirmed by modern realities. Focused on clarifying the genesis and development of the modern world, these publications are aimed at overcoming the positivist paradigm of the twentieth century and reflect the true authorship. This means that all knowledge is relative and only by testing the strength of established ideas, by proposing a new idea, can the next step be taken towards the attainment of true knowledge, which is always open to critical analysis and subsequent reflection.

The facts of unethical behavior of publishing structures, which I want to draw attention to, do not agree with this highly moral research attitude. Their offers of agency services in the form of turnkey publications have given rise to such an ugly phenomenon as the sale of coauthorship, which undermines the essence of the concept of authorship as an institution of recognition of individual contribution, and turns the search for truth into a game of dreams. Today, an urgent search for coauthors a month before someone's article is published, when you just need to not miss the choice of scientific direction, is an open practice of publishers. It is, in fact, recruiting, imitating the promotion of scientists. It is this circumstance that has given rise to fraudulent groups, or, perhaps, even organizations, that trade easy prey in the field of scientific research.

I consider it possible to speak publicly about this because I became a victim of the global publishing business process in 2018. I would like to take advantage of the opportunities of this forum not only to find the ends(?) of scammers, but also, finally, to eradicate the conditions that contribute to their appearance. Undoubtedly, the implementation of the principles of scientific publication in the conditions of forced integration of Russian scientists in the international rankings of publication activity feeds the environment of unethical behavior of institutions. In addition, different ways of manipulation with citation, excessive self-citation, as well as friendly citation, are all signs of a certain degradation of the modern community of scientists, undermining the essence and purpose of science. It seems that only the change of a highly specialized, unprecedented in the history of the type of scientist of the XX century, by a new generation of theorists and practitioners of the era of globalization, will finally change its paradigm,

determine the ethical attitudes of intellectuals, their value aspirations and new world view orientations in science as a special kind of cognitive activity aimed at developing objective knowledge about the world.

(sentence?:5m51s) **Keywords:**

scientometric indices; citation; ethics; interdisciplinarity; ranking

What can acknowledgements reveal about credit attribution in science?

Adèle Paul-Hus,* Nadine Desrochers[†]

École de bibliothéconomie et des sciences de l'information, Université de Montréal

In the scientific community, authorship is associated with recognition and credibility and thus plays a central role in decisions relating to hiring and promoting a researcher, and in the attribution of prizes and funding. However, in scholarly publications, it is common practice to acknowledge individuals, institutions, and funding organizations that contributed in various ways to a research project.

Even though they can be considered as simple scholar's courtesy, acknowledgements can also be perceived as a form of scientific credit for a contribution. Acknowledgements shed light on extremely diverse contributions, of cognitive, technical and social nature, that generally do not meet authorship criteria.

As such, acknowledgements allow for better understanding of the role played by individuals and organizations that contribute to research. In this context, our research aims to describe acknowledgements' functions within the reward system of science to better understand their value, in terms of scientific credit, and to explore factors that can influence their characteristics in the context of credit attribution practices. Our study addresses scientific credit distribution among all contributors of a research project, authors and acknowledgees.

Our analyses of the number of contributors per paper show that the important disciplinary differences, which traditionally characterize collaboration, are greatly reduced when considering acknowledgees as contributors.

Our analyses of acknowledgees' sociodemographic characteristics show that gender disparities, repeatedly demonstrated in terms of authorship, are also present in acknowledgements. Moreover, women

tend to acknowledge a higher proportion of women, than men do. Regarding academic status, our results show that acknowledgees who have already published tend to have a higher position in the academic hierarchy than the rest of authors.

Our comparative analysis of acknowledgements' content highlights important disciplinary trends in terms of types of contributions. Our results constitute the first large-scale empirical demonstration of disciplinary variations in the content of acknowledgements. Finally, our qualitative analysis of acknowledgements' content emphasises three main functions of acknowledgements: the description of contributions, the responsibilities disclaimer, and the expression of the authorial voice.

Keywords:

acknowledgements; authorship; collaboration; scientific credit

*A. Paul-Hus: adele.paul-hus@umontreal.ca

[†]M. Desrochers: nadine.desrochers@umontreal.ca

Authorship in bioethics

Deborah Mascalzoni*

Centre for Research Ethics & Bioethics (CRB), Uppsala Universitet

Authorship and merit are often elements that encounter and sometimes clashes with political aspects and not always get recognition.

Empirical bioethics, for instance, often relies on the possibility to access patients cohorts and research projects. The design of an ethical work or the development of a policy may be entirely detached from the research project that is the object of that reflection. On the other hand when it comes to authorships those do reflect a lot a price to be able to access a cohort, than real intellectual input to the ethical work.

Other aspects related to problematic authorship in ethics are more on the political side: publishing may be problematic when your reflections or ethical concerns, do not match editors views or do not support mainstream scientific approaches. Many influential ethical pieces published in “big journals” reflect more the range of influential authors that sign a piece that ensures conformity and does not challenge the status quo. SO to be able to publish “big” a collection of big names can ease the path to it, without reflecting actual intellectual contribution.

Authorship and publication issues in the ethics field are especially relevant because they may impact heavily not only research integrity but also the very same core of the ethical reflection.

Keywords:

authorship; bioethics, empirical; journals, big; intellectual input

*Deborah Mascalzoni: deborah.mascalzoni@crb.uu.se

Improving ethical standards in scientific peer—review process

Govindasamy Agoramoorthy,^{1*} Minna J Hsu ²

¹College of Pharmacy and Health Care, Tajen University, Yanpu, Pingtung 907, Taiwan

²Department of Biological Sciences, National Sun Yat-sen University, Kaohsiung 804, Taiwan

Science place a major role in shaping the human society and it has been in practice rather informally for millennia. The actual roots of scientific publishing can be traced back to 1665, when the British Royal Society established the Philosophical Transactions of the Royal Society. Since then, the scientific publication practice has evolved radically by refining professional standards. The operation and management of scientific publications were initially led by professionally qualified and dedicated volunteers in scientific societies. In recent decades, majority of the popular and high impact science publications are largely owned by cutthroat business enterprises that manage the lucrative publishing industry. The archives of one leading publisher, the Elsevier has over 16 million documents and 30,000 e-books and it makes over 1 billion US\$ in the annual downloads of papers alone. In 2018, Elsevier's profit margin reached 37 %. But, critiques question the publisher's dubious copyright practices.

This paper highlights the growing unethical acts in the scientific publication industry that ranges from authorship conflict to outright plagiarism and from data manipulation to problematic peer review. The peer review per se is an essential process to assess the logical and ethical sense of publication since science journals play a key role to synthesize scientific evidence to society.

When the open access platform came into existence in recent decades, publishers globally started to take an aggressive tactic to boost marketing so that they can retain maximum profit. Scientists started to receive numerous emails from online journals, be it the high ranking *Nature*, *Science*, *Lancet*, or *New England Journal of Medicine* registered in the West or

the low-ranking journals from the East, all of them are equally goal-oriented to exploit the publication market.

All journals rely on the anonymous peer review to validate the logic and data presented in manuscripts to judge quality. Without peer review by subject specialists, journals cannot survive. The identities of reviewers remain anonymous to keep confidentiality. But authors can appeal to editors by outlining ethical allegations and request alternate reviewers. Anyway, decision depends on editors' wish. Hence editors and reviewers play a role like the judge and jury in the judiciary.

The issue of fake peer review originates when journals ask authors to provide names of potential reviewers. Authors who lack ethics and integrity use the opportunity to either give names of friends or fake names of experts, and that's how the ripple effect spreads like cancer. All reputed journals including *Nature*, *Science*, *Lancet*, etc., continue to ask authors to provide potential reviewers since the subject matter of manuscripts at times exceeds the expertise of the editorial board.

Therefore the only viable option is to eradicate the ethical loophole by bringing total transparency to the peer review process by abolishing the anonymity once and for all. Open access will dominate the journal publication industry in future and when the identities of handling editors, reviewers and authors are known to each other, it will certainly minimize ethical red flags.

Keywords:

peer review; ethics; open access; anonymous reviewers indexethics indexanonymous reviewers

*G. Agoramoorthy: agoram@tajen.edu.tw

Identifying with Numbers: A Philosophical and Psychoanalytical reading of Self-Identification

Maia I. Nichols*

University of California, San Diego

This interdisciplinary forum provides the opportunity for important questions about how researchers in different fields assign credit for the varying levels of investment that inform a final publication. The inherited ways of elevating ones lineage and methodology involve carefully including, explaining and departing from similar scholarship or theories, or citing specific studies. Being attuned the venn diagrams of research that overlap but do not encompass entirely one's research process involves a process of evaluating and valuing information based on personal and shared beliefs. External references also function as numbers that are coded into a system that allow your paper to be found in reference to an amalgam of other papers, each paper having a relationship to the citations it references in a particular arrangement that is unique and never repeated exactly. This leaves room for considering whether the value of ones work matches or is surpassed by what it references or if no such calculations matter.

The need to identify, name, count and categorize predates the rise of technology. With the wearable device, our relationship to numbers is far more complex: data flows back and forth amongst devices, consumers, companies, institutions, and networks. One might purchase a self-monitoring device for self-control or self-enhancing under the allure of the ability to self-manage. On the other hand, for self-care, to be the doctor of one's own ailments. Nonetheless, measurements associated with insights on the self do not end at self-improvement goals.

In the quest for anything providing the possibility for self-guidance, numbers are attributed mythological weight, carrying the promise of embodying one's own divine authority. Is this tied to an underlying

dream to prolong life and master death? This essay presents a wide-ranging review of literature on self-tracking device, in terms of running and shame to explore how behavior tied to technology plays out moral or ethical constraints, dilemmas and fear of dying. Data doubles are examined in relation to Lacanian psychoanalysis and the mirror stage as formative of self-identity, which is presently little acknowledged in relation to self-tracking. The contributions of Etienne-Jules Marey to the concepts of the body in relation to time are also brought to the fore. The aim is to raise questions about the philosophical and psychoanalytic causes that drive habits of self-quantification beyond identity, including internal obligations to divinity, knowledge and reality.

Keywords:

data double; ethics; biometrics; self-tracking; quantified self; knowledge

*Maia I. Nichols: minichol@ucsd.edu

Impact Factor: Is it still relevant and if not then how do we, or should we, rank science?

Chris R. Triggler,^{1*} Ross MacDonald,¹ Donald Grierson,² David J Triggler³

¹Weill Cornell Medicine – Qatar, Doha, Qatar

²School of Biosciences, University of Nottingham, Sutton Bonington Campus UK

³State University of New York at Buffalo

Impact Factor (IF) and Journal Impact Factor (JIF)—it is now more than 50-years since Eugene Garfield introduced IF as a metric to serve as a criterion for inclusion of journals in Current Contents and also to assist libraries as to how best to spend their budgets when acquiring journal subscriptions^[48]. In 2015 the question was raised: *Are we today becoming too obsessed with metrics as a measure of the quality of science and too focused on whether the paper is published in a so-called high impact journal?* This then raised the question: *What does (J)IF really mean*^[49]? These questions are still valid in 2020 as JIFs are frequently used to judge the candidacy of an individual for promotion or whether an applicant for a research grant is not qualified because *he or she has not published in journals with a high IF*. Although, JIF is a readily available metric it can easily be misinterpreted or misused. Should such important and potentially career damaging decisions be based solely on publishing in so-called high impact journals and is placing too high an emphasis on publishing in a high impact journal damaging science? High impact journals frequently achieve their status as a result of a comparatively few published papers with very high citations while the majority of the remaining papers achieve only modest citations^[50]. It follows that the citation performance of individual papers cannot be inferred from the JIF as citations are not direct indicators of the value of a scientific contribution and, furthermore, do not distinguish between positive and negative citations. In fact, the relationship between the impact of any publication and JIF has further weakened in the digital age^[51]. For instance, there is a current trend to limit the

number of citations and use reviews or other widely cited papers to introduce or summarise key aspects of a field thus obscuring the value or significance of many important primary papers. In the digital age this can consign important papers to obscurity. Numerous other concerns can be raised about the (lack of) value of the JIF as a measure of the impact of an individual manuscript and for that matter the contributions and impact of individual authors on multi-authored publications as well as the financial profit to publishers. Alternative and fairer measures of a scientist's achievements and future potential are clearly required.

Keywords:

impact factor; Journal Impact Factor; citations; metrics

*C.R. Triggler: cht2011@qatar-med.cornell.edu

Multifactorial standardized scores for scientific evaluation

Nabil Semmar* Asma Hammami

BioInfo-Math-Stat. Lab (BIMS), IPT, University of Tunis El Manar, Tunisia.

Scientific research is associated with continuously increasing numbers and diversity of researchers who publish according to different ways, efforts and innovation levels. Such a variability offers a wide research field in matters of evaluations, classifications, pattern determinations/recognitions, dynamical trend shaping and causal-effect link formulations of the authors from their published works. Until now, the number of cited papers has represented a major additive evaluation criterion of authors independently from many multiplicative (interactive) criteria including merit, relative contributions and productivity. These questions could be considered as eigenvectors to make deeper evaluations of authors and identification of different publication strategies opposing expertise and deep cooperation to relational agreements and asymmetrical/opportunistic implications of authors. This calls for statistical analyses aiming for the development of several standardized parameters helping for conditional, multiscale, multifactorial and integrative evaluations of researchers. Several statistical scores should be developed by weighting the states and ranks of the authors in published papers by reference to several key factors including total numbers of publications and co-authors, authors' ranks and status/roles, etc.

Such standardized scores will provide open list of meaning (interpretable) elementary values serving to define productivity, expertise and merit patterns of individual authors. Such patterns could be used to obtain big datasets that will be subjected to multivariate analyses leading to classify authors by considering their scores both between and within their published papers. Also, multivariate analyses can usefully provide hierarchical, multiscale, multifactorial and integrative characterizations of researcher patterns from several types of standardized scores.

Moreover, such analyses could be sequentially applied on datasets associated with enclosed identity factors including specialty, disciplines and research fields. This helps to highlight different resiliency levels, exploration capacities and development ways of researchers within and between research systems. By such multifactorial and multiscale analysis ways, authors can be flexibly classified leading to extract backbone and background information on them.

Beyond evaluations and classifications, standardized scores could be used to identify outlier authors showing atypical or original aspects.

Relative evaluations of authors by standardized scores can be usefully completed by dynamical analyses based on different variation aspects of bibliometric scores with time (years, decades). Regression, autocorrelation and chronological analyses can be applied to highlight different types of stationary and progression trajectories in scientific production and productivity with time: constancy, periodicity, cyclicity, and monotonicity with different levels and rates could be defined for better characterization of scientific productivity and expertise evolutions in authors.

Further understanding of authors' status and levels could be reached by modeling standardized scores in relation to social, politic and economic covariates. Linear and nonlinear predictive causal-effect models could be developed using determinist and/or probabilistic tools. Developing standardized evaluation scores under multifactorial and multiscale aspects should be subject to future international scientific research project aiming for (i) more reliable classification of productivity and (ii) potential identification of expertise trends and dynamical levels in authors.

Keywords:

standardized evaluations; multifactorial scores; multiscale analyses; classification; expertise

*N. Semmar: nabilsemmar5@gmail.com

Long Range Forecasting (LRF): a Pragmatic Step By Step guide to Statistical Modelling

Lidion Sibanda* Penelope Engel-Hills

Professional Education Research Institute (PERI), Cape Peninsula University of Technology

Pertinent in resource acquisition, deployment, re-deployment and general management are alternative futures and the stochastic chances of these occurring. In the absence of evidence to the contrary, resource managers often perceive queues and long waiting times as an indication that current capacity can not suffice future demand. Discrepancies and errors in this regard are quite common and generally manifest as over capacitation, with demand to capacity ratios significantly less than one in the production or care pathway. This is a problem because the scenario represents suboptimal utilisation of resources.

The objective of this study was to establish a pragmatic step-by-step illustration of long range forecasting using the example of plain radiology utilisation. The aim was to prepare healthcare policy makers for the future demands in radiology by offering evidence to allow for the modification of current variables so as to improve service. Future, plain radiology utilisation was stochastically estimated by systematically combining and casting forward historical data of past utilisation. Missing data analysis and preliminary analysis to rule out any significant violations of assumptions of normality, linearity and homoscedasticity was performed.

The relationship among variables was investigated using Pearson product-moment correlation coefficient. Long range forecasting involved endogenous and exogenous modeling techniques. The identified predictor variables statistically significantly predicted the total number of patients, $F(3, 128) = 175.422$, $p < 0.0005$, $R^2 = 0.804$. All three variables (number of skull, chest and lumbar spine examinations) added statistically significantly to the prediction, $p < 0.05$. A marginal growth in plain radiology utilisation was

concluded. In the short to medium term, it is recommended that policy changes be focused on capacity utilisation.

Keywords:

data, missing; forecasting; utilisation; capacity demand

*L Sibanda: lidionsibanda@gmail.com

Insights into Radiation Protection Elements-of-Competence

Lidion Sibanda* Christine Winberg Penelope Engel-Hills

Professional Education Research Institute (PERI), Cape Peninsula University of Technology

The use of ionising radiation has many benefits, yet it is also a well-known carcinogen and teratogen with risks proportional to dose. Recent evolution into digital technologies has brought with it new radiation protection challenges that are mostly but not limited to the ethical obligation of diligence and duty of care. These challenges must be addressed towards judicious use of radiation.

The objective of this study was to inform the creation of reliable and valid digital age competencies to guide fitness-of-purpose with regard to the justification, optimisation and application of dose limits in aggregated domains where radiation protection is essential. A systematic review of recent empirical research published between 2014-2019 in EBSCO-host, Medline, CINAHL, Academic Search Premier, Cambridge core and Sabinet databases identified 460 records which were filtered to 37 peer reviewed articles pertaining to radiation protection in medicine, industry or agriculture. A check-list of radiobiology skills guided the thematisation process. Forty-six competencies were established. Of the 37 articles reviewed, 15 (43 %) examined the three principles of radiation protection and competence while 3 (9 %) discussed the three principles but not competence. A total of 18 (51 %) discussed the three principles collectively while 19 (49 %) discussed them in isolation. However, there is a paucity of evidence on curricular and scope of practice dynamics thereby warranting further research. We conclude that incoherencies in the application of radiation protection principles result in exposure objectives that can be unethically when achieved at the expense of radiation safety.

Keywords:

radiation protection; competence; fitness-of-purpose; curricular; education

*L Sibanda: lidionsibanda@gmail.com

A Slippery Road of Fieldwork and Publication (A Conjunction of Anthropology and Theology)

Suwarto Adi*

Sociology of Religion Department, Satya Wacana Christian University, Indonesia

A social research is a collective project that engage some parties, i.e. researcher, the researched-subject, community where the research is conducting, education or research institution, and some people move around the researcher, such as, enumerator and research assistant, and publishing organization. This paper is seeking to argue the ethical dilemma the researcher facing when doing theological research, that is going inside to the area of the resource person or the subject personally. In the Javanese context or Indonesia in general, social action is lensed in the theological or religious framework. It is therefore, combining two or more approaches in a social research is very essential and a mutual strengthening one.

The problem is how to engage and make a conjunction between personal experience or faith-related experience with social transformation? In this paper that based on the fieldwork, I am finding and developing that self-reflection is an arena which both *social field* are fulfilling each other: religious experiences and social transformation. Self-reflection, and in some cases are called as feeling, should be considered as a source of data for theological research or social research in general.

Furthermore, my analysis shows the difficulties in finding a point of meeting between both disciplines, theology and anthropology, and it could have a solution by doing philosophical exercise. In Rahnerian philosophy both theological and anthropological questions are getting a best answer.

It is reason why I am developing an eclectic tool that I am calling an ethical anthropology. By doing such a kind of tool, it is empowering me to digging out more personal or faith-related experiences of my resource

person and then discuss it with the problem they're facing as a leader of organization (pastor) as well as a personal, in the context of rural Java, Indonesia.

Located in such a context, the further analysis of ethical anthropology is developing, in the scientific perspective, and eventually it brings about an inter-disciplinary research and publication. In the conclusion, I am thinking that this approach is very helpful to continue develop a theology that is scientific one and in the same time is supporting to social science in general i.e. social science that is committed to brings about a social transformation for the better life.

Keywords:

Christianity; ethical anthropology; ethics, social; rural Java

*S Adi: suwarto@uksw.edu

Dominants in intercultural scientific communication and the related problems

Nikolay N. Boldyrev*

Derzhavin Tambov State University, Russia

Sharing research data world-wide meets common challenges of intercultural communication, either written or oral. They are posed by the cognitive dominants that the authors, on the one hand, and the reviewers or publishers, on the other, bear in mind. Some of these dominants (technical requirements) are usually stated in the style sheets and templates, while the other (matters of content) are rarely identified. It may result in the wrong choice of journals or reviewers with interdisciplinary or intercultural misunderstanding following. To avoid this misunderstanding on both sides the journal's editorial policy needs to be clearly expressed in the editor's statement: thematic boundaries, framework restrictions, intended audience, etc. Otherwise the common reason for rejecting the article that "will not be interesting to our readers" sounds too obscure.

Journals differ in their focus either on the empirical data or on theoretical issues, or both—that a sound theory should be augmented by the profound empirical research. The same is true with reviewers. It is well known from experience that article selection largely depends upon the reviewers and their what we would call author-friendly policy.

The problems arise when the reviewers' opinions differ depending on their general knowledge and capability to read author's ideas correctly especially when the author(s) do not take much pain to render them within the universally acknowledged frameworks. The use of new nationally specific terms and concepts that do not comply with international practice (as well as evaluation strictly within nationally bounded framework), particularly in Arts and Humanities, may ill affect the reviewing process and even cause a denial for publication.

The related problem concerns the "blind" double peer-reviewing. It is our strong belief that one "blind" reviewer, who is officially affiliated with the journal by the editorial board and whose opinion therefore reveres, is quite enough for evaluation of the article if he/she is positively certain that it should be accepted for publication. If the first reviewer is not certain about the value of the article or inclined to reject it then and only then the second reviewer must be summoned.

According to the author-friendly policy giving opportunity of publication to a wide range of researchers the second reviewer's positive opinion should prevail and be final. The article may be accepted and the author be advised to consider the amendments recommended by the first reviewer.

The author-friendly editorial policy does not easily accord with evaluation of journals by their metrics. Nowadays a similar tendency is seen throughout the whole range of journals with high impact factor to primarily publish papers by well-known authors to keep up high metrics of the journal. This policy must also be abolished together with the practice of evaluating researcher's results by such like metrics.

This research is financially supported by the Russian Science Foundation, project No. 18-18-00267

Keywords:

dominants; inter-cultural communication; author-friendly editorial policy; peer review

*N Boldyrev: boldyrev@tsutmb.ru

Patent Literature and Intellectual Property

Mahmood Sabahi*

School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, GA, USA

Intellectual property generation through research and development (R&D) is the engine of growth for countries and private enterprises. Technological breakthroughs and intellectual properties are captured in patent applications that are generally published after 18-months from the priority date, although they may be published earlier if requested by the applicant. Inventorship assignment follows specific rules and guidelines by corresponding patents offices and sometimes by courts. Inventor is the person who first conceived the idea of the subject matter of the patent's claims. Any other person who contributed to at least one of the claims of the patent will be a co-inventor on the patent. Reducing the concept to practice but not contributing to any claims does not lead to inventorship. In other words, following the steps known to the people skilled in the art in demonstrating the inventions does not lead to inventorship. In industry, idea generators record their new ideas and concepts (inventions) in databases and generally file a signed legal copy which gives them the priority date as well as inventorship rights. These documents determine the inventorship in patent applications. Co-inventors are people who build on the original idea and concept leading to new claims in the patent application. The author of patent application is generally a patent lawyer who follows legal guidelines in writing the application based on the technical document(s) written by the inventor(s). These are clear guidelines that separate inventorship of patents from authorship in academic papers as discussed by other contributing authors.

As such, the application, which is written in legal language, covers not only the demonstrated technical details of the invention but also expands to areas perceived by the inventor(s) but not demonstrated.

For example, for protecting the composition of a novel active pharmaceutical ingredient, the applicant attempts to cover many other derivatives as well as many uses and formulations. In case of process patents, the applicant attempts to protect not only the demonstrated process but also many potential variations in process parameters. However, in order to protect the core invention, the applicant must disclose it in detail with examples in the patent application. Thus, the examples in the patent provide a clear picture of the subject matter of the invention.

Patent application review process is carried out by professional examiners at corresponding patent offices and the inventor is responsible for convincing the patent office of the novelty of the subject matter. The response by patent office, known as "office action", generally consists of references that may indicate prior art in any publicly available source that may invalidate all or parts of patent claims. Proving the novelty of claims is the responsibility of the applicant. Issued patents may be legally challenged and patents could be invalidated by the patent office or courts. As such, patent literature is the only resource available in public domain for understanding and assessing novel products and technologies under development as well as commercial products. Unfortunately, the unique structure and legal language of patent literature has prevented academia in understanding and mining this technologically rich publicly available resource.

The majority of chemistry and chemical engineering graduates find careers in the chemical enterprise and they are the main contributors to the invention of new products, processes, and formulations. They usually work in teams where each member of the team contributes to achieving the desired goals. However, students are not educated about patenting process

*M. Sabahi: sabahims@gmail.com

and the use of patent literature in assessing existing commercial products and processes or novel products and technologies which are under development. We designed a course for senior undergraduate and graduate students in the School of Chemical and Biomolecular Engineering at the Georgia Institute of Technology to better prepare them for understanding the grand sustainability challenges of the chemical enterprise. The main thrust of the course was the use of Life Cycle Inventory assessment methodology for assessing the sustainability of an existing product in the market or under development. Student teams used process data obtained from patents to design a virtual manufacturing process and the corresponding mass flows. By applying mass metrics and GC&E principles, they assessed the sustainability of the manufacturing process and offered recommendations for rendering the processes more sustainable. In this presentation, we will discuss patents and patenting process, the utilization of patent literature in developing virtual manufacturing processes, and the sustainability assessment of commercial products and technologies as well as those under development.

Keywords:

patents; inventorship; claims

Academic Writing as Storytelling

Aida Milena Montenegro Mantilla*

Department for Social Sciences, University of Bonn, Germany

The quality of academic writing is determined by the researcher's contribution to knowledge through an innovative spirit and a good story. Even though storytelling is related to good writing, it has not been sufficiently incorporated in scientific writing.

Academic writing as storytelling is particularly challenging in qualitative studies that incorporate quantitative data or complex hypothesis. Likewise, storytelling in qualitative studies is also a demanding task since readers may become lost in detailed descriptions of context and repetitive arguments (usually with lots of examples). This panorama can be even more problematic when cumulative dissertations present research developments through different articles.

In this presentation, breakers and facilitators of flow in storytelling are presented based on personal research experience and examples from studies in education and sociology. Breakers of flow include extensive details and descriptions (often without enough background or examples) and disconnected combinations of voices (i.e. literal translation or different writing styles among co-authors). On the other hand, facilitators of flow are explained through the concept of the *craft attitude*.

Incorporating the craft attitude into the research process means considering uncertainty, nonlinearity, and storytelling.^[52] The craft attitude enables the researcher to determine which methods are most accurate and how research findings are best presented.

The ability to demonstrate the importance of findings (with qualitative and quantitative data or a combination of both) is the mark of good academic writing. Applying the concept of storytelling to academic writing allows the researcher to increase readers' understanding, interest, and attention. In doing so, particular writing and visual strategies as well as

cross-discipline support may strengthen the quality of the article and its impact on academia.

This presentation finalizes with examples to illustrate how brief author biographies (often included in articles) are connected to the concept of storytelling. This added self-representation in publications changes as researchers grow as writers and scientists.

Keywords:

storytelling; scientific writing; craft attitude; communication

*A Montenegro: s5aimont@uni-bonn.de

Ethical principles of the modern scientific-educational discourse

Konstantin M. Levitan, Maria A. Yugova*

Ural State Law University, Ekaterinburg, Russia

On the basis of the methodological concept of pedagogical hermeneutics and from the position of the ethical pedagogics, the authors consider the comprehension and interpretation problem of the pedagogical reality in the modern educational discourse. The basic concepts of the professional communication in the higher education, vital questions of the moral education influenced by authoritarian and humanistic ethics are analyzed in detail. We focus on ways and principles of developing a professional linguistic personality of law students on the basis of synergetic approach at a tertiary institution of professional education in Russia. The development of a professional linguistic personality of a lawyer involves acquisition of a professional language of legal discourse, which in its turn implies acquisition of the professional thesaurus and target competencies. Now that the modern international legal education is facing challenges caused by internationalization and integration of legal systems, the conception of developing professional linguistic personality of law students—with the use of axiological, competency-based and learner-centered approaches—seems to be of major significance.

In our opinion, the greatest danger awaiting modern society today lies not in the crisis-like phenomena of economics, ecology, and politics, but in the destruction of the human personality, and their humanistic moral and spiritual values. This is facilitated by the dominance of material value orientations of the vast majority of citizens in a successfully developing consumer society, which leads to an increasing income inequality of the population, social tension, political confrontation, ethnic and religious conflicts, and various behavioral deviations of people. In this context, the role of moral and legal education and self-

education of young people, primarily law students, is rising exponentially.

The essence of the legal education of young people consists in developing high moral and legal culture of citizens with pro-active attitude to life. Legal education is directly connected with legal training. The line between these two notions can be drawn in terms of impact but it is nominal; education mainly affects the axiological and emotional-volitional spheres of consciousness, and training affects the cognitive sphere and exerts a rational influence on the person. At the same time, the goal-oriented teacher's activity must always be combined with the active self-education of students in order to ensure the development of moral and legal qualities of young people both at the level of consciousness and at the levels of relations and behavior (for example, the volunteer movement). The most important conditions are the acquisition of knowledge and critical discussions, as well as the freedom of scientific research principle. Legal and ethical principles of scientific research are constantly tested for destruction in the course of social development and relevant discussions. In the market-oriented times of "fake news" and false information, everything that makes a profit becomes attractive, and loyalty to the principles of humanistic ethics only reduces this profit.

The current socio-economic conditions stimulate commercialization and criminalization of education and science that can be found in the lexical increments of scientific and educational discourse, e.g. "profitable", "remunerable", "having monetary value". Pragmatization entails the deestheticization of the ideological insight and the marginalization of idealism. Within such attitudes, the mental content of the concepts "idea", "moral ideal", "self-education of the individual", "scientific ethics" is nullified.

At the same time, the basic freedom of the scientific

*M Yugova mayugova@mail.ru

research subject is the achievement of a free democratic society that must be preserved for the sake of diversity and creativity. It is the freedom of scientific research that strengthens the ability of science and society to innovations. It is absolutely necessary to actively exchange opinions and to practice high-quality scientific communication based on the search for expedient language accuracy of integrating meanings aimed at overcoming ideological cynicism and pragmatism.

The authoritarian pedagogical position of the teacher in the educational process and the authoritarian model used by them in the interaction with the students do not allow the latter to develop in the atmosphere of humanism and spirituality and to assimilate the corresponding norms of behavior.

Ethical pedagogics, on the contrary, creates conditions for the individual to be fully self-actualized in meaningful communication and socially useful activity. The fundamental principles of ethical pedagogics such as freedom and trust are the basis for the development of innovative professional personality of students.

Keywords:

professional communication; educational discourse; authoritarian and humanistic ethics; foreign language discourse teaching; linguistic personality

Challenges and Future of Scientific publishing in developing countries: the Sri Lankan Experience

Priyanga Ranasinghe*

Department of Pharmacology, Faculty of Medicine, University of Colombo, Sri Lanka

It is widely acknowledged that there is a global divide on health care and health research. For example, studies have shown that less than 10 % of the world's research resources are earmarked for 90 % of the health problems (10/90 divide). Sri Lanka is a developing country in the South Asian region, that has achieved higher levels of health statistics, comparable to most developed countries. Sri Lanka is recognized internationally for its good health indicators at a quite low level of GDP and is at the forefront in the South Asian region in providing quality health services.

However, the national research output remains fairly low, with scarcity in research targeted towards local health problems. For example, the Sri Lankan medical research output during the decade of 2000-2009 was only a small fraction of the global research output (0.086 %), with only 9.1 % annual growth in research publications. Gaps remain in local evidence required to develop guidelines to address nationally important health problems such as dengue viral infection, diabetes, ischaemic heart disease and injuries due to road traffic accidents. Sri Lanka, has 44 solely medical journals, of which 28 were in print at present. However, only one journal (Ceylon Medical Journal) is indexed in PubMed, Web of Science, Scopus and other popular medical databases. Furthermore, medical research output from Sri Lanka during last decade is much lower than from other South Asian countries such as India (49 064), Pakistan (7362) and Bangladesh (2640).

Furthermore, the global impact of Sri Lankan medical research also seems to be relatively low. A majority of the publication had less than ten citations of which over 30 % had zero citations. The Sri Lankan medical research output during the last decade has been

mainly focused on nationally important diseases such as; malaria, diabetes mellitus, dengue, and accidental injuries. The publications trends have also reflected on changes in national disease patterns as evident by the high growth rates of publications on accidental injuries, Dengue, diabetes mellitus, and chronic kidney disease, which are important national health concerns at present.

In order to improve the scientific research output, national level strategies have been introduced by successive governments since 2010. However, there it is a further necessity to setup an enabling environment for research, with a proper vision, support, funds, and training. In addition, collaborations across the region need to be strengthened to face common regional health challenges.

Keywords:

publication; challenges; developing country

*P Ranasinghe: priyanga.ranasinghe@gmail.com

Director's leadership in the Portuguese educational context: Ethics and morality, what skills and trends

María de Lurdes Gomes Neves¹ *
Joaquim Luís Coimbra¹

¹Faculty of Psychology and Educational Sciences of the University of Porto, Portugal

The theme of ethics is decisive in leadership of any context or organization and especially in the leadership of Portuguese educational context. Ethics and moral value codes determine leadership behaviors since they influence all the processes of decision making in the educational context and it is becoming increasingly relevant in the literature, given all the current changes at the legislative and social levels.

The school, as the basic unit and a space for the achievement of objectives and goals of the education system, is constantly being renovated, thus becoming a major challenge for the directors, as it demands them new skills, knowledge, abilities and attitudes that converge into the need of skill development for participatory and fair decision making.

In the current Portuguese context educational policies emerge seeking the quality and transparency of education in a quasi-market educational scenario that is based on school's growing choice that can offer quality. Indeed, the management of Portuguese public schools has been presenting significant changes in recent years, which should be noted and studied. On the one hand, there was an increase in the physical, geographical and social dimensions of schools, which were grouped and, in some cases, later aggregated. On the other hand, the competencies of managing strategic and pedagogical changes have also been changing.

The concept of transformational leadership was first introduced by Burns (1978), referring to certain political leaders who motivated followers reach higher levels of morality and motivation. Corresponding author mentions of schools, which were grouped and, Bass (1985) expanded this formulating a model in

which transformational leadership involves the active influence by the leader in motivating followers at the level of their attitudes, inspiring them to reach their goals.

The concept of ethical leadership refers to leader's behaviors that meet the organization's beliefs and moral values, particularly in the ethical organizations that guide their mission in accordance with morals and act in a socially responsible manner^[53]. Moral intelligence has been defined as the ability to distinguish the right from wrong, to have strong moral convictions and adjusted behaviors. Moral intelligence refers to how universal principles are applied to our values, goals and performance^[54]. This study goal is to identify in 30 educational directors of school groups their leadership perceptions and practices. To achieve this goal, a mix study has been conducted using semi-structured interviews and three leadership scales (ethical, moral and transformational).

Regarding the perception of the type of leadership, it was possible to verify that the participants presented levels above midpoint in all types of leadership evaluated. However, participants' perception of their practices as leaders and their kind of leadership focused more on transformational leadership and transactional, which presented the highest frequency. It was found that the leadership perceptions varied between transactional and transformational and that some leadership skills were predictors of the type of leadership exercised.

Keywords:
directors; education; leadership

*María Neves: pdpsi11006@fpce.up.pt

Bibliography

- [1] J. Maddox, *Nat.* **1995**, 378, 521.
- [2] A. Holcombe, *Nat.* **2019**, 571, 147.
- [3] T. Treasure, The Heart Club, Clink Street, London **2017**.
- [4] J. Vose, A. Cervellini, *AIEA Bull.* **1983**, 25, 37.
- [5] A. M. Páez, A. Garritz, *Educ. Química* **2013**, 24, 2.
- [6] W. B. Harer, Z. el Dawakhly, *Obstet. & Gynecol.* **1989**, 74, 960.
- [7] Oxford University, First woman graduate **2018**, accessed 16 August 2020 <https://www.ox.ac.uk/about/oxford-people/women-at-oxford>.
- [8] European Commission, She Figures 2018 **2019**, accessed 14 August 2020 <https://doi.org/10.2777/936>.
- [9] UNESCO, Cracking the code: Girls' and women's education in science, technology, engineering and mathematics (STEM). In Index on Censorship **2017**, accessed 16 August 2020 <https://doi.org/10.1080/03064229508535979> Vol. 24.
- [10] Elsevier, The researcher journey through a gender lens **2020**, accessed 16 August 2020 www.elsevier.com/research-intelligence/resource-library/gender-report-2020.
- [11] UNESCO, Measuring Gender Equality in Science and Engineering: the SAGA Toolkit. In SAGA Working Paper 2 **2017**, accessed 16 August 2020 <http://unesdoc.unesco.org/images/0025/002597/259766.pdf>.
- [12] M. Caprile, E. Addis, C. Castaño, I. Klinge, M. Larios, D. M. S. Vázquez-Cupeiro, The Researcher Journey Through a Gender Lens **2012**, accessed 16 August 2020 <https://ec.europa.eu/research/>.
- [13] A. Bejan, FREEDOM AND EVOLUTION—Hierarchy in Nature, Society and Science, Springer Nature **2020**.
- [14] A. Bejan, *PRISM Am. Soc. Eng. Educ.* **2019**, 28, 52.
- [15] E. Chiscop, Research integrity interview series: If you cheat, there should be a referee who blows the whistle against you, Duke University, School of Medicine **2019**.
- [16] R. Nader, P. J. Petkas, K. Blackwel, Whistle blowing: the report of the Conference on Professional Responsibility, Bantam Books, New York **1972**.
- [17] W. Broad, N. Wade, Betrayers of the Truth: Fraud and Deceit in the Halls of Science, Simon & Schuster, New York **1982**.
- [18] A. J. Brown, D. Lewis, R. E. Moberly, W. Vandekerckhove, Forward by T.M. Dworkin: International Hand-book on Whistleblowing Research, Edward Elgar Publishing **2014**.
- [19] C. Gendron, S. Ivanaj, B. Girard, M.-L. Arpin, *J. Clean. Prod.* **2017**, 164, 1553.
- [20] J. E. Hirsch, *Proc. Natl. Acad. Sci.* **2005**, 102, 16569.
- [21] R. V. Noorden, *Nat.* **2020**, 578, 200.
- [22] Editorial, *Nat.* **2020**, 578, 8.
- [23] V. Prasad, A. Cifu, Ending Medical Reversal: Improving Outcomes, Saving Lives, Johns Hopkins University Press, Baltimore, MD **2015**.

- [24] S. Paul, A. Isaacs, T. Treasure, N. Altorki, A. Se-drakyan, *Br. Med. J.* **2014**, 349, g5575.
- [25] T. Treasure, L. Lang-Lazdunski, D. Waller, J. M. Bliss, C. Tan, J. Entwisle, M. Snee, M. O'Brien, G. Thomas, S. Senan, K. O'Byrne, L. Kilburn, J. Spicer, D. Landau, J. Edwards, G. Coombes, L. Darlison, J. Peto, *Lancet Oncol.* **2011**, 12, 763.
- [26] T. Treasure, V. Farewell, F. Macbeth, K. M. N. Williams, C. Brew-Graves, B. Lees, O. Grigg, L. Fallowfield, *Trials* **2019**, 20, 718.
- [27] M. Baker, *Nat.* **2016**, 533, 452.
- [28] E. Yong, *Nat.* **2012**, 485, 298.
- [29] A. A. Agrawal, *Trends Ecol. Evol.* **2005**, 20, 157.
- [30] J. Gowrishankar, P. Divakar, *Nat.* **1999**, 401, 321.
- [31] L. Waltman, *J. Informetrics* **2016**, 10, 365.
- [32] I.-I. Popescu, *Glottometrics* **2003**, 6, 83.
- [33] J.-M. Campanario, *Sci.* **2010**, 84, 35.
- [34] R. Mansilla, E. Koppen, G. Cocho, P. Miramontes, *J. Informetrics* **2007**, 1, 155.
- [35] E. Archambault, D. Campbell, Y. Gingras, V. Larivière, *J. Am. Soc. for Inf. Sci. Technol.* **2009**, 60, 1320.
- [36] P. Mongeon, A. Paul-Hus, *Sci.* **2016**, 106, 213.
- [37] M. E. Falagas, G. M. Zouglakis, P. A. Papastamataki, *Mayo Clin. Proc.* **2006**, 81, 1401.
- [38] B. D. Neff, J. D. Olden, *BioScience* **2010**, 60, 455.
- [39] B. M. Althouse, J. D. West, C. T. Bergstrom, T. Bergstrom, *J. Am. Soc. for Inf. Sci. Technol.* **2009**, 60, 27.
- [40] G. S. Patience, F. Galli, P. A. Patience, D. C. Boffito, *PLOS ONE* **2019**, 14, 1.
- [41] C. Wilcox, *Sci.* **2019**, 366, 1433.
- [42] E. Walsh, M. Rooney, L. Appleby, G. Wilkinson, *Br. J. Psychiatry* **2000**, 176, 47.
- [43] W. Strunk, B. White, *The Elements of style*, Allyn and Bacon: Longman, Boston, MA **1999**.
- [44] S. Pinker, *The Sense of Style: The Thinking Person's Guide to Writing in the 21st Century*, Penguin, New York **2014**.
- [45] G. S. Patience, D. C. Boffito, P. A. Patience, *The Can. J. Chem. Eng.* **2015**, 93, 1693.
- [46] G. S. Patience, B. Srinivisan, M. Perrier, D. C. Boffito, P. A. Patience, *The Can. J. Chem. Eng.* **2016**, 94, 1221.
- [47] G. S. Patience, D. C. Boffito, P. A. Patience, *The Can. J. Chem. Eng.* **2016**, 94, 205.
- [48] E. Garfield, *J. Am. Med. Assoc.* **2006**, 295, 90.
- [49] C. R. Triggle, *Biochem. Pharmacol.* **2015**, 98, 327.
- [50] V. Larivière, V. Kiermer, C. J. MacCallum, M. McNutt, M. Patterson, B. Pulverer, S. Swaminathan, S. Taylor, S. Curry, *bioRxiv* **2016**.
- [51] G. A. Lozano, V. Larivière, Y. Gingras, *J. Am. Soc. for Inf. Sci. Technol.* **2012**, 63, 2140.
- [52] R. L. Daft, *Acad. Manag. Rev.* **1983**, 8, 539.
- [53] M. E. Brown, L. K. Treviño, D. A. Harrison, *Organ. Behav. Hum. Decis. Process.* **2005**, 97, 117.
- [54] D. Lennick, F. Kiel, K. Jordan, *Moral Intelligence 2.0. Enhancing Business Performance and Leadership Success in Turbulent Times*, Prentice Hall **2011**.

General Index

3Rs, 32

abstract, 53

academic meritocracy, 14

academic misconduct, 20

academic writing, 47

accountability, 31

acknowledgements, 58

active voice, 47

Aristotle, 10

articles, 18

articles-per-issue, 9

author order, 9

author, corresponding, 4, 39

author, primary, 4, 39

author, principal, 4, 39

authors-per-article, 9

authorship, 9, 10, 14, 17, 18, 58, 59

authorship criteria, 4, 39

authorship, criteria, 17

biases, 19

Big Data, 35

bioethics, empirical, 59

biometrics, 61

business ethics, 51

capacity, 64

carbon lock-in, 45

challenges, 73

cheaters, 20

Christianism, 49

Christianity, 66

citation, 30

citations, 62

claims, 69

classification, flexible, 63

climate change, 27, 45

collaboration, 5, 58

common good, 22

communication, 16, 25, 27, 45, 46, 48, 51–53, 70

communication, inter-cultural, 67

communication, professional, 72

competence, 65

confidentiality, 48

COPE, 6

copyright, 58

corporate sustainability, 51

craft attitude, 70

credit, scientific, 3, 58

curricular, 65

data double, 61

data, missing, 64

demand, 64

developing country, 66, 73

dialogue, 25

directors, 74

discourse, educational, 72

discourse, teaching, 72

discrepancies, 8, 38

discrimination, 19

dissemination, 25, 27, 51

dominants, 67

doublespeak, 52

duplication, 21

editorial policy, 67

editorial workflow, 46

education, 65, 74

entitlement, 5

error, 37, 42

errors, 8, 38

ethical anthropology, 66

ethics, 10, 18, 21, 32, 40, 41, 49, 57, 61

ethics, authoritarian, 72

ethics, guidelines, 5

ethics, humanistic, 72

ethics, Nicomachean, 10

ethics, publication, 17

ethics, publishing, 6

ethics, social, 66

ethnography, 40

evaluation criteria, 2, 22

evaluations, standardized, 63

experimental section, 37

experimentation, 32

expertise, 63

fake PhD, 11

fate, 49

fitness-of-purpose, 65

forecasting, 64

fraud, 11

ghostwriting, 2
 good citation practice, GCP, 30
 grants, 41
 grounded theory, 40
 guest authorship, 2
 h-index, 24
 ICJME, 4, 39
 ICMJE, 17
 impact factor, 62
 IMRD, 35
 incident management, 26
 information security, 26
 integrity, 10
 intellectual contribution, 4, 39
 intellectual independence, 16
 intellectual input, 59
 intellectual property, 14
 interdisciplinarity, 57
 internet, 16
 internships, 16
 inventorship, 69
 journal impact factor, 62
 journal instructions, 53
 journals, big, 59
 knowledge, 61
 knowledge production, 28
 knowledge systems, 25
 leadership, 74
 linguistic personality, 26, 72
 love, 49
 malpractice, 8, 38
 Manuscript preparation, 46
 metaconcept, 52
 metadiscourse, 52
 methodology, 37
 metrics, 24, 62
 morals, 49
 multi-author paper, 4, 39
 multicultural dialogue, 25
 multifactorial scores, 63
 multiscale analyses, 63
 narrative inquiry, 40
 negligence, 8, 38
 NSF, 20

nutrition studies, 42
 open access, 24
 originality, 14
 p-value, 42
 passive voice, 47
 patents, 69
 peer review, 67
 peer review, credit, 31
 peer review, open, 31
 peer review, reports, 31
 peer-review, 46
 plagiarism, 3, 6, 11, 14, 21
 plagiarism, self-, 20
 plagiarism, translated, 3
 predatory journals, 24
 promotion, 18, 30
 pseudo-scientific publications, 3
 Pseudoreplicate, 41
 publications, 73
 Publons, 41
 radiation protection, 34, 65
 randomised control trials, 35
 ranking, 57
 reduction, 32
 refinement, 32
 replacement, 32
 reproducibility, 37, 42
 request, accurate, 34
 request, complete, 34
 request, justified, 34
 request, radiological, 34
 Research Gate, 41
 research integrity, 6
 research results, 16
 resource extraction, 45
 responsibility, social, 18
 retractions, 6, 21
 review process, 28
 Reviewer 2, 41
 rural Java, 66
 scepticism, 35
 scholarship, 16
 Sci-Hub, 41
 scientific writing, 70
 scientometric indices, 57
 SEER, 35

self, quantified, 61
self-tracking, 61
shibboleth, 52
situational awareness, 26
social media, 48
software, non-laboratory, 48
sonographers, 8, 38
standards, 28
statistical methods, 42
statistics, 37
STEM, 19
storytelling, 70
submission to publication, STP, 30
Surveillance, Epidemiology, and End Results, 35
sustainability sciences, 28
Sustainable Development Goals, 45

thematic analysis, 40
trained incapacity, 28
transitions, 25
transparency, 30, 31

ultrasound reports, 8, 38
uncertainty, statistical, 32
unethical behaviour, 3
UNFCCC, 27
utilisation, 64

validation, 30

whistleblowing, 22
women, 19
writing, 53

youth leadership, 27

Author index

- Adi, Suwanto: Satya Wacana Christian University, Indonesia, 65
- Almeida, Renan: COPPE/UFRJ, Brazil, 21
- Arpin, Marie-Luc: Université du Québec à Montréal, 27
- Arruda, Gisele M.: Anvivo Polar Research, UK, 24, 49
- Arruda, Gisele M.: ANVIVO Polar Research University, 43
- Bansal, Mishal: Punjabi University, 1
- Barger, Kathryn: Tufts University, 41
- Bejan, Adrian: Duke University, 19
- Bergeron, Michel: Polytechnique Montréal, 21
- Boldyrev, Nikolay: Derzhavin Tambov State Univ, 66
- Cavalleri, Matteo: Wiley-VCH, 30
- Chaouki, Jamal: Polytechnique Montreal, 28
- Coimbra, Joaquim Luís: University of Porto, 73
- Conte, Marco: University of Sheffield, 36
- Crespi-Abril, Augusto: Universidad Nacional de la Patagonia, 6, 31, 40
- Cuschieri, Sarah: University of Malta, 23
- Davidson, Florence : Cape Peninsula University of Technology, 33
- Delghoshrmehar, Nasser: Islamic Azad Univ, 17
- Desrochers, Nadine: Université de Montréal, 58
- Dongmo, Marie Joseph: Regional Delegation of Basic Education, 14
- Dutta, Ranjna: ExCel Matrix Biol. Devices, 5
- El Hussein, Md Toufic: University of Calgary, 39
- Engel-Hills, Penelope: Cape Peninsula University of Technology, 33, 63, 64
- Erickson, Scott: Ithaca College, 46
- Feiler, Adilson Konstantin: UNISINOS, Brazil, 48
- Filippi-Mazzola, E: Univ. Cattolica del Sacro Cuore, 38
- Fouedjio, Jeanne: University of Yaounde I, 14
- Fouelifack, Florent: Med Tech of Nkolondom-Yaounde, 14
- Gataullina, Irina: Kazan Nat'l Res Tech Univ, 55
- Gaya, Teena: Anvivo Polar Research, UK, 26, 49
- Gendron, Corrine: Université du Québec à Montréal, 27
- Gomes, Anderson J.: University of Brasília, 47
- Grierson, Donald: University of Nottingham, 61
- Hassanzadedizaji, Ozra: Islamic Azad Univ, 17
- Karim, Muhammad M: University of Dhaka, 4
- Krutkowski, Sebastian: University of Roehampton, 43
- López, Marcos: CESIMAR-CONICET, Argentina, 6
- Levitani, Konstantin: Ural State Law University, 70
- Lide, Noor: Int'l Islamic University Malaysia, 4
- Lozda, Raimonds: Riga Stradiņš University, 16
- Lunardi, Claire N.: University of Brasília, 47
- MacDonald, Ross: Cornell, Doha, 61
- Mascalzoni, Deborah: Uppsala Universitet, 59
- Masopa, Dikano: National University of Science and Technology, Zimbabwe, 37
- Melikhova, Larisa: Last Address Foundation, Russia, 2
- Milton, David: McGill University, 38
- Montenegro, Aida: University of Bonn, 69
- Neves, María: University of Porto, 73
- Nevo, Isaac: Ben-Gurion University, 13
- Nichols, Maia: Univ of California, San Diego, 60
- Padayachee, Keshene: University of S Africa, 25
- Patience, Christian A.: McGill University, 38
- Patience, Gregory S.: Polytechnique Montréal, 51
- Patience, Gregory S.: Polytechnique Montreal, 38
- Patience, Nicolas A.: Polytechnique Montréal, 51
- Patience, Paul A.: Polytechnique Montréal, 51
- Paul-Hus, Adèle: Université de Montréal, 58
- Pepe, Alberto: Authorea, Wiley-VCH, 30
- Rahman, Md Tariqur: University of Malaya, 4
- Railton, James: University of Sheffield, 36
- Ranasinghe, Priyanga: University of Colombo, Sri Lanka, 72
- Rattray, David: Ural State Law University, 38
- Regenstein, Joe Mac: Cornell University, 4
- Riboni, Francesca: Wiley-VCH, 5, 45
- Rocha, Fellipy S.: Polytechnique Montréal, 47

- Rostovtsev, A: Russian Academy of Sciences, 2
Rubilar, Tamara: Unión del Personal Civil de la
Nación, 6, 31, 40
Sabahi, Mahmood: Georgia Institute of Technol,
69
Semmar, Nabil: University of Tunis El Manar, 62
Sergi, Consolato M: University of Alberta, 10
Sibanda, Lidion: Cape Peninsula University of
Technology, 33, 37, 63, 64
Siegal, Gene: Laboratory Investigation, 52
Sotudeh-Gharebagh, Rahmat: University of
Tehran, 28
Treasure, Tom: University College London, 8, 34
Triggle, Chris: Cornell, Doha, 61
Villasana, Yanet: Universidad Regional Amazónica
Ikiam, 18
Winberg, Christine: Cape Peninsula University of
Technology, 64
Worku, Elias: Addis Ababa University, 25
Yugova, Maria A.: Ural State Law University, 70
Zayakin, Andrey: Russian Academy of Sciences,
10