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Leadership in publishing

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ABSTRACTS

Evidence-based oral health care requires a robust base of data that can be trusted, is applicable to the specific clinical scenarios and results in better health outcomes. Scientific publishing is a key aspect as it bridges innovation to clinical application and provides rigorous peer review and quality control to the process. Publishing has been the subject of dramatic changes and innovation and not all of them have contributed in a positive way. This paper discusses few of the critical changes related to readership, content, competitive environment, interrelationship between oral health and the broader areas of science, the shift from Journal ranking to single article bibliometrics and the current measures of social impact of research. The picture shows a rapidly changing and challenging environment for all stakeholders as well as opportunities to provide new levels of impactful leadership.

Scientific publishing is a key step in the communication of new knowledge and credible high quality research is an essential prerequisite for evidence-based medicine. The introduction of disruptive technologies and practices, including literature searching (Medline), electronic publishing, and open access, has changed scientific communication forever. The positive aspect is that today we have instantaneous access to an unprecedented volume of knowledge through an ever-expanding series of channels and modes. The adverse event of this revolution is the tremendous increase of the “noise” in the system characterized by an exponential increase in the source items (articles) retrieved by any search [1]. The emergence of new titles, new means to communicate scientific findings, new channels is an ongoing process that seems to have no end. Anything new today is old news within a year. Users are frequently faced with the need to screen dozens of items to find relevant, high quality and credible sources. As Editor of one of the leading titles in oral health sciences, I have struggled with how to differentiate my journal from the rest: how to make the articles I accept for publication relevant for and trusted by our readers. Some key aspects are worth discussing.

1. Readers

Just a few decades ago, scientific publications – even in a clinical discipline – were read by a relatively small group of scientists, trainers and trainees. With the increased speed of innovation and the expanding knowledge base needed for safe and effective practice a broader group of practitioners needs access to scientific information that can no longer be found in textbooks or manuals. Since the availability of internet resources, scientific databases have been constantly searched by practitioners with varying degrees of expertise in the assessment of the quality, integrity and appropriateness of the articles. The rather recent link of individual research papers with Internet search engines without the need to use specific databases like Pubmed has opened this world to a new type of reader: the layperson. The key seems to be the difficulty to link the question this broader audience is trying to address with an appropriate and valid source that can contribute to a useful answer. Noise is an overwhelming problem – and more so for less experienced or trained users. Attention of readers is an important commodity with economic value. Strong competition through advertisement is common on non-institutional platforms and the recent use of social media to promote research articles has added a new dimension in this fight for the reader.

2. Content

The key feature of a good scientific journal has been high quality, relevant, innovative content. An unbiased vigorous and constructive peer review by experts willing to donate their time has been the gatekeeper of quality. Choice by the authors to bring their best research to the leading journals in the field has been the foundation of relevance, while the Editors of the leading Journals have been looking for innovation. In the past, content seamlessly found its way to the most appropriate journal and to the attention of the appropriate experts. Today external pressures distort the process and frequently papers are submitted to journals outside the core area of expertise in the quest of inter-disciplinary recognition or fields with higher impact factors. This

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makes retrieval of relevant papers by specialists more cumbersome and indeed evidence suggests that papers published outside the core specialist Journals receive less attention in terms of both reads, downloads and citations. A paradox need to be emphasized: in the quest for better university rankings and higher research assessment scores, higher education institutions encourage academicians to publish in mainstream journals; whenever an investigator succeeds, his work is less likely to be cited or produce impact.

3. Broader competitive environment

Today there are an ever-increasing number of scientific journals titles. Ulrich's global series directory lists more than 260,000 scholarly and academic Journals [2]. A simple keyword search for [dent]OR [periodont]OR[implant]OR[oral] in this directory reveals 847 titles and the actual number can be estimated at a multiple of this figure. The advent of open access has led to a revolution: from journal access paid for by readers (and institutional libraries) characterised by relatively few titles towards an environment in which the author pays publishers a submission or a handling fee and an endless list of titles. Research has indicated that variations of the same computer fabricated paper sent to a large sample of journals were accepted for publication in an uncomfortably high proportion of cases. This emphasises that today almost anything can and will be published. The noise created by many of these papers is becoming the single most pressing issue in science, and in clinical science in particular.

The scientific publication industry has been living a revolution characterized by: 1) consolidation of more and more titles into traditional publishers who are competing through economy of scale; 2) increased collaboration between journal titles and reputable professional associations or research organizations; and 3) emergence of new publishers who rely on open access, aggressive marketing and submission fees. Every day, each academic receives multiple emails soliciting submissions, offering discounts, editorial board membership or editorships in new titles.

4. Dentistry oral surgery and medicine

A graphic representation of the scientific publishing space by Scimago is illustrated in Fig. 1. Dental journals are clearly at the periphery of science and at the interface between medicine, material science and engineering. The location well represents the highly specialised nature of the science that is published in this group of journals and highlights the bigger challenge that dental journal editors face: how to grow the relevance of the field as a key element for the support of the development, funding and academic viability of oral health research.

From the broader horizon of titles in this field, particular attention is frequently paid to the relatively small list of journals with an impact factor [3,4]: currently a total of 90 titles. Over the last 20 years, the major developments can be summarised as a generalised increase in citations and a shortening of the time to citation parameters. This represents well the development of oral health research and the impact of new technologies such as electronic submission and electronic publishing. A degree of disparity between the scores of different disciplines is still apparent and represents one of the most formidable challenges to foster academic development in those areas: disciplines with lower impact factor journals may be disadvantaged in funding, academic promotion and tenure, public visibility and impact of their research on society. Indeed, dentistry as a whole is a disadvantaged discipline that is characterized by a relatively small scientific basis and generally low impact factors.

5. Journal ranking and bibliometrics

In parallel with the explosion of titles and citation items, there has been an increasing attention to measures of research quality and impact. Citation indices and journal rankings were developed to seek quantitative measures of quality and impact of a single research article. Key was the development of the journal citation report in the 1960s by Eugene Garfield and Irving Sher as a journal selection tool for inclusion in the Science Citation Index [3]. This index, based on impact factor (IF) as a key metric, measures how frequently articles in a core collection of journals are cited in articles in the same core collection during the first two years after publication. The tool was developed for publishers and librarians and was aimed at title selection. In the absence of better estimates, this metric has unintentionally evolved as a proxy for assessing the impact or influence of published work of an author in the late 1990s and early 2000s. This has led to the introduction of poorly informed institutional guidelines that pressured authors to publish their work in higher impact factor Journals. The limitations of impact factor were apparent: they provided information on the overall quality of the journal (in reality about a small subset of journals included in the ISI web of science) but did not provide direct information of an individual article. The applicability of journal IF scores to measure the achievement of individual researchers is limited and it can be argued that IF may provide a better estimate of the prestige achieved by an investigator in a field rather than about the quality of the individual articles [5–7]. This is well reflected by the call from the 2013 San Francisco Declaration on Research Assessment (DORA) or the Leiden Manifesto urging funding bodies and institutions to avoid the use of IF scores as a means of assessing research impact or research quality [8].

Developments in technology allowed a key step forward in bibliometrics: the shift from journal citation to citations of an individual article or author and the introduction of measures like the H-Factor [9]. Introduction of this newer technology solved some problems but created new ones. The number of citations suffers from inherent flaws: older publications have more time to accumulate citations, recognised investigators within a field may have a higher chance to be cited, self citation by prolific authors may bias the results along with the number of authors and the number of articles in the reference list. Nonetheless the possibility to accurately assess the total number of citations of an article or of an author provides a better insight into impact.

A further development has been the development of metrics that go beyond simple citation counts and incorporate additional analytical aspects: a funding body may map the breadth of the publications acknowledging support from a specific grant to measure efficiency, reach beyond the primary area of focus of the grant and cost-effectiveness (e.g. by measuring the number of citations obtained based on the total monetary support granted). These metrics can be used for a single investigator, an institution or a whole country.

6. Social impact

As decision makers increasingly view academic research funding as an investment that should return a dividend also in terms of economic growth and development, funders of academic research are keen to assess non-traditional measures of impact of the financial resources they invest at the individual, institution and country level. This has generated a shift in emphasis and tools have become available that incorporate additional dimensions like social and traditional media attention, intellectual property generation, and discussions in blogs. An examples of these approaches is altmetrics, it aims to capture both qualitative and quantitative aspects in a composite index: a record of attention (how many people have been exposed and engaged with a research article), a measure of dissemination (where and why a piece of research is being discussed and shared) and an indicator of influence and impact (for example reference in public policy documents) [10,11].

Use of altmetrics in oral health are in their infancy and negatively affected by a relatively small interest that oral health research findings bring mostly in the dissemination component of the index with both social and conventional media outlets. Critical is also the lack of

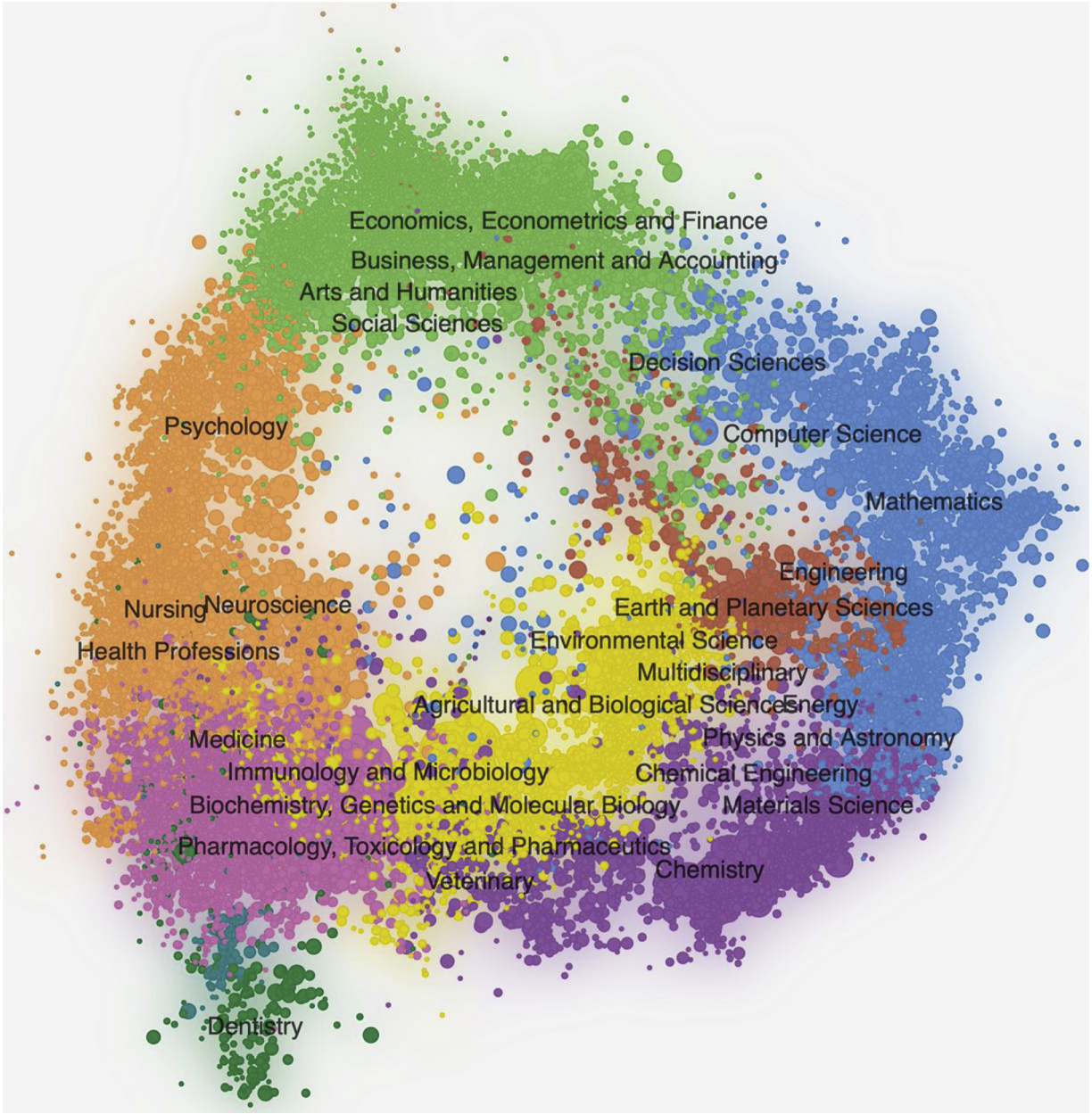

Fig. 1. This figure illustrates the Scimago shape of science diagram and illustrates broadly the space and interconnections of different scientific areas. Different color depict different areas of science and their interrelationship. Dentistry and oral health journals – illustrated in dark green in the bottom left of the figure – are clearly peripheral and located in proximity of bio-medicine, chemistry and material sciences. https://www.scimagojr.com/shapeofscience/.

citation of oral health research in public policy documents. More attention needs to be paid in this very important area.

7. Strategic implications

Leadership in publishing needs to change perspective from a narrow focus on IF to a broader focus of providing the best possible avenue for researchers to make impact. Journal availability and usage – especially in the developing areas of the world – is key. Journals need to provide authors with the widest possible and relevant audience. Strategic partnership with a relevant learned society is a mutually advantageous asset.

Editors and journals need to foster a positive experience by the authors through: 1) process - a reasonably short turnaround time, high quality and constructive peer reviewing; 2) access - promotion of the best articles through news outlets or institutional communication via the associated learned society; and 3) integrity - ensuring an environment free from conflict of interest, prejudice or any other form of bias [12].

Journals need to be trusted by readers as a source of high quality, relevant research and need to provide value. At a time in which we are overwhelmed by the quantity of available free access information, first tier scientific Journals must position themselves as a trusted and relevant source worth their cost.

After more than 20 years of experience as Editor and Editor in Chief of prime dental journals, I have come to consider evolution and revolution in technology and business model as the norm of the industry, and I have had to learn to live with change and accept the components that cannot be influenced. In this constantly changing landscape my personal approach to express leadership has been through: 1) the relentless and uncompromised practice of core values: inclusiveness, independence, honesty, transparency, integrity, excellence, team spirit

and honest appreciation for the hard work and amazement for the brilliant ideas of the many researchers that trust us with publishing their work; and 2) the constant tuning of a clear vision based on the experience and insight of the evolution, the economic and business model pressures that are shaping the industry combined with a sense of service for my group of disciplines.

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