

Plagiarism, salami slicing, and Lobachevsky

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Who made me the genius I am today,
Who's the Professor that made me that way?
One man deserves the credit,
One man deserves the blame,
And Nicolai Ivanovich Lobachevsky is his name.
In one word he told me the secret of success:
Plagiarize! Plagiarize! Plagiarize!
Let no one else's work evade your eyes.
Only be sure always to call it please "Research."
Tom Lehrer, "Lobachevsky," 1953 [1]

A half century ago, then well-known humorist-songwriter Tom Lehrer composed and popularized a song parodying the subject of plagiarism. He named the song after Russian mathematician Lobachevsky (1793–1856), famous for his development of non-Euclidean geometry, not because Lobachevsky was a plagiarist but rather for "prosodic" reasons [1]. Why recall a 55-year-old song today? The answer is obvious: plagiarism has found its way into both the contemporary public news media and the scientific literature.

Democratic vice-presidential candidate Senator Joseph Biden has acknowledged plagiarizing a law review article

for a paper he wrote in his first year at Syracuse University College of Law, portions of a speech that had been delivered by British Labor Party leader Neil Kinnock, and portions of several speeches delivered by Robert Kennedy [2, 3]. Last year, the President of Southern Illinois University, Glenn Poshard, acknowledged that he had plagiarized portions of 19 works of 22 authors in his doctoral dissertation on linguistics that he had written 20 years earlier [4].

Earlier this year, one of Britain's best-known psychiatrists, Raj Persaud, admitted that he had plagiarized passages written by others in two articles on aspects of psychiatry that he had authored 3 years earlier [5]. Persaud was suspended from practice for "bringing the profession into disrepute with repeated acts of plagiarism."

Plagiarism among scientists is not new. So-called "original" descriptions of the ampulla of Vater in 1720, Cowper's glands in 1698, and the discovery of lymphatics by Rudbeck in 1652 were apparently plagiarized [6]. "Giants" such as Ptolemy, Galileo, Newton, Mendel, and Pythagoras have also been accused of plagiarism by modern scientists who had reexamined their data.

Definitions and causes

Plagiarism is defined as "using someone else's words, ideas or results without attribution" [7]. Plagiarism can occur in two forms: (a) self-plagiarism, when authors reuse portions of their own previous writings in a subsequent paper [8], i.e., redundant and duplicate publications; and (b) "salami slicing"—i.e., dividing reports of the outcome of a research project into as many papers as possible in order to

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maximize the number of potential scientific publications [9].

The causes of plagiarism lie on a spectrum. At one end, there is a clear intent to deceive. At the other end lies unintentional plagiarism, perhaps due to naiveté, ignorance, or “cryptomnesia,” a term defined as “memories that are hidden from consciousness and subjectively are not recognized as such” [10].

Prevalence of plagiarism

A careful survey of articles published during 1998 in the journals *Surgery*, *The British Journal of Surgery*, and *Archives of Surgery* revealed that 17% represented some form of redundancy [11]. The authors of the survey found that all of these articles exhibited one or more of the following “classic” characteristics of redundant publication:

- a) The list of authors was almost never identical, their names being added, dropped, or changed in position.
- b) Most redundant publications were submitted and published within a year of each other.
- c) Cross-referencing to the original version of the duplicate or to the other “slices of the salami” were rarely made or, if present, were usually hazy.

Other surveys revealed an 8.5% redundancy rate of articles published in the otolaryngology literature [12], 5.3% redundancy in the anesthesiology literature [13], and 8% redundancy in the orthopedic literature [14]. A survey this year reviewing articles published in *Radiology* during the year 2001 revealed that only two of 362 articles were redundant [15]. Still another survey published in early 2008 in the journal *Nature* found that as many as 200,000 of the 17 million articles in the Medline data base, which indexes 5,000 journals published in the USA and 80 published in other countries worldwide, are redundant publications [16]. In a survey conducted among career scientists based in the USA and funded by the National Institutes of Health, researchers reported that, although less than 2% admitted to falsifying data or outright plagiarism, 33% acknowledged that they had engaged in “less onerous ethical misconduct” regarding publications they had authored [17].

Ghostwriting and industry influence on scientific publications

Although not the primary subject of this perspective and seemingly not common in the radiology literature, ghostwriting and the influence of industry (most commonly pharmaceutical companies, often involving payment to authors) should be briefly mentioned. According to the

editor-in-chief and executive deputy editor of the *Journal of the American Medical Association*, “honorary” authorship and ghost authorship occurs in as many as 39% of articles dealing with efficacy of pharmaceuticals [18]. British researchers found that 17% of published reports of randomized drug trials were covert duplicates [19]. These researchers warned that this kind of duplicate publication is of great concern, for it is misleading, usually exaggerating both the treatment efficacy and safety of a drug. As an illustration of this point, the researchers found that, because of redundant publication and ghostwriting, the efficacy of the antiemetic drug ondansetron was overestimated by 23%. “Duplication of data has major implications for the assessment of drug efficacy and safety,” concluded these researchers.

Attitudes of journal editors and authors

In 2002, researchers at the University of California San Francisco surveyed a group of journal editors and authors for their perspectives regarding plagiarism and redundant publication [20]. Seventy-five percent of the editors and 94% of authors agreed that redundant publication occurs because authors feel the “pressure” to publish, and journal editors “do not do enough” to curtail the practice by publicizing or punishing the offenders. Seventy percent of authors also opined that another reason for redundant publication is that academic leaders do not publicly condemn the practice. Interestingly, there was divergent opinion on the question of whether it is acceptable to concurrently submit the same or a similar article to both a peer-reviewed journal and a non-peer reviewed publication. While two thirds of the authors answered affirmatively, 69% of editors felt to the contrary. Notwithstanding these differences, a high percentage of all editors and authors agreed that, when submitting a manuscript, authors should disclose to the editor any potential overlap with articles they may have written on the same subject.

The attitudes regarding redundant publication among editors of radiology journals are quite consistent. Former editor of *Academic Radiology* Edmund Franken asserted that “If fraudulent publication is the medical authorship equivalent of murder, duplication of publications should be considered at least a serious misdemeanor” [21]. Former *American Journal of Roentgenology (AJR)* editor Lee Rogers has characterized duplicate publication as “unethical, dishonest, deceitful, and a violation of collegial trust;” and then added, “they should be discouraged, decried, and denied” [22]. Pointing out that “the entire system of scientific publication is based on trust, fairness, good faith, and honest endeavor,” Rogers emphasized the following: “Duplicate publications are indefensible,” and “authors and

publishers who are willing to exercise deceit...are to be exposed and denounced" [23]. On another occasion, Rogers made a distinction between plagiarism, which he considered to be "universally recognized as a clear violation of ethical standards," and "salami slicing in order to maximize the number of potential scientific publications garnered from a research effort," which he did not consider a violation of ethics [9]. Brian Lentle, then Chairman of the Radiological Society of North America Board of Directors, also concurred that "duplicate publication is an egregious and unethical practice" [24].

Condemnation of self-plagiarism, on the other hand, is not universal. Asking rhetorically whether self-plagiarism is "really a bad thing," the editor of *The Journal of Cognitive and Behavioral Psychotherapies* commented that:

A comprehensive ban of self-plagiarism is a fundamental error.... Ethical writing in relation to self-plagiarism should be defined by full disclosure and ensuring that there is no violation of copyright law. If duplication of content helps the author to reach a new or larger readership, or if a text recycling helps to present the same idea more accurately across several publications, they become legitimate conduct. Efforts to suppress the dissemination of scientific knowledge by over regulation calls to mind the Inquisition, which was established to prevent spiritual wrong-doing in the middle ages [25].

Curtailing plagiarism and redundant publication

The International Committee of Medical Journal Editors has published "Uniform Requirements for Manuscripts Submitted to Biomedical Journals" [26] guidelines to which virtually all scientific journals published in the USA adhere. Contained within this document is the following:

Redundant (or duplicate) publication is a paper that overlaps substantially with one already published. Readers of primary source periodicals deserve to be able to trust that what they are reading is original unless there is a clear statement that the article is being republished by the choice of the author and editor.... When submitting a paper, the author must always make a full statement to the editor about all submissions and previous reports that might be regarded as redundant or duplicate publication of the same or very similar work. The author must alert the editor if the manuscript includes subjects about which the authors have published a previous report or have submitted a related report to another publication. Any such report must be referred to and referenced in the new paper.

Lee Rogers has emphasized that "It is incumbent on the authors at the time of submission to fully inform the editors of the second journal of previous publication, detail the differences between the two articles, and cite the previous publication in the references so that there would be no question of intent" [27]. Thomas Berquist, current Editor-in-chief of the AJR, recently emphasized that the first bullet item in the AJR's Author Guidelines states, "Submitted manuscripts should not contain previously published material and must not be under consideration for publication elsewhere" [28].

A decade ago, the then-editor of the journal *Gut* lamented, "Our difficulty as editors is that there is no organization or agency to which we can refer cases [of redundant publication], and other than pointing out misconduct to the authors, we have no powers to take the matter further" [29]. Lee Rogers, as AJR Editor, saw it differently; he admonished, "All authors are hereby notified that any dual publications will be formally declared as duplicate publications and reported as such in the AJR" [30], and furthermore, "A moratorium of three years is imposed on accepting papers submitted by authors found to have submitted duplicate publications to AJR" [31].

Summary and conclusion

The blatant plagiarizing of the work product of another is universally considered to be unethical. The act of plagiarism can be initiated by a spectrum of reasons, ranging from intent to deceive at one end to inadvertent or unknowing at the other end. As one researcher has pointed out, the responsibility for maintaining high standards of peer-reviewed articles published in scientific journals is a shared one, involving journal editors and reviewers, heads of university departments, professional societies, and individual scientists and authors [7]. It is incumbent on editors of journals to publish comprehensive and specific guidelines for authors, and it is equally incumbent on authors to familiarize themselves with these guidelines and adhere to them.

Whereas outright plagiarism of the works of others is universally condemned, self-plagiarism lies in a grey area. Determining whether an incident of self-plagiarism is or is not ethical varies with and is dependent on the facts surrounding the specific situation. What does not vary, however, is the need for disclosure. It is the responsibility of the author to divulge the recycling of a previous work or portions thereof to the editor of the journal to which the work is being submitted, and it is the responsibility of the editor to examine all relevant information regarding the proposed submission in order to arrive at a fair determination of whether publication is ethical.

We must accept the reality that, although it would be ideal for all persons to voluntarily rise to the highest level of ethical conduct, such is not the case. Thus, society must develop guidelines and standards to assist us in adhering to this level and furthermore to develop appropriate forms of punishment for failure to do so. In the context of authorship of scientific publications, authors should be expected to adhere to the appropriate guidelines, and editors should be expected to ensure that the guidelines are reasonable and understandable and enforce them when required.

Two researchers referred to earlier [16] have pointed out that “The fear of having some transgression exposed in a public and embarrassing manner could be a very effective deterrent. Like Dickens’s Ebenezer Scrooge, the specter of being haunted by publications past may be enough to get unscrupulous scientists to change their ways.”

It is ironic that satirist Tom Lehrer chose as a subject to spoof plagiarism Lubachevsky, a luminary in mathematics, a discipline in which there is but one correct answer to a question and one correct solution to a puzzle, rather than the discipline of ethics, in which absolutes do not exist. In the final analysis, we must depend on our own conscience and our own personal sense of morality to guide us into doing what is right rather than what is wrong.

The opinions expressed herein are those of the author and do not necessarily represent those of the American College of Radiology or Radiological Society of North America.

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