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The problem of plagiarism

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Abstract

Plagiarism is a form of research misconduct and a serious violation of the norms of science. It is the misrepresentation of another's ideas or words as one's own, without proper acknowledgement of the original source. Certain aspects of plagiarism make it less straightforward than this definition suggests. Over the past 30 years, the U.S. Federal Government has developed and refined its policies on misconduct, and Federal agencies, as well as research institutions, have established approaches to responding to allegations and instances of plagiarism. At present, efforts to avert plagiarism focus on plagiarism-detection software and instructional strategies.

Keywords: Plagiarism; Research misconduct; Scientific misconduct; Self-plagiarism; Federal definition of plagiarism

Introduction

Researchers' careers are built on their ideas and their contributions to the research record. It should be no surprise, then, that plagiarism is viewed by the research community as a serious violation of the norms of research. It constitutes tampering with the system by which researchers' work is recognized and rewarded, and it is a personal affront and act of disrespect to the individual who wrote the original words or expressed the original idea.

Plagiarism is the presentation of another person's words, work, or ideas as one's own. It has two components: (1) the taking of the words, work, or ideas from a source, and (2) the lack of acknowledgement of the source in the use of the words, work, or ideas. The first of these components often leads commentators (even some in this issue) to claim that plagiarism is stealing, but it is not. The act of reading or listening to a lecture is essentially a matter of taking words and ideas from another author into one's own mind, which certainly does not qualify as stealing. Plagiarism rests in the subsequent component: representing those words or ideas as one's own, usually by failing to acknowledge the source. This misrepresentation is fraudulent (in the general though not necessarily legal use of this term). It creates the false impression that another's words or ideas originated with oneself.

Aspects of plagiarism

Plagiarism is included, along with fabrication and falsification, in the U.S. Federal definition of misconduct, which states, "Research misconduct is defined as fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results" [1]. The definition further specifies that "Plagiarism is appropriation of another person's ideas, processes, results, or words without giving appropriate credit" [1]. This definition, the development of which is described below, clearly associates plagiarism with the misappropriation of intellectual contributions beyond specific words. It also extends the context of plagiarism beyond publication to the prior stages of proposing, performing, and reviewing research.

The definition does not, however, provide a foolproof standard for deciding when an act of plagiarism has been committed. It would seem that a passage taken from an earlier source and repeated verbatim and without acknowledgement in a later publication would be clear evidence of plagiarism, and, in fact, it usually is. Such proof of plagiarism does not need the test of intent to deceive; it is demonstrably wrong as it is. Other aspects of plagiarism are not quite so clear-cut.

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Proper attribution

The gold standard, so to speak, of proper attribution is the use of citations and references, along with quotation marks in the case of direct quotations. A citation is an in-text link to the source, whose format depends on the journal's style or other protocols. It may require nothing more than a number that references an endnote (as in this journal), or it may require the source's author and date of publication. References in footnotes, endnotes, or reference lists provide full bibliographic information on the original source. Citations and references together should provide complete and accurate information by which readers can locate the original source. The information should be specific enough that the reader will be able to connect the words in the article with the passage in the original source. It is inappropriate to attach a set of citations to a string of ideas in a paper, without specifically identifying which idea is associated with which citation. It is also improper to cite an entire book or other long work if the idea cited appears only in a specific passage of the book; instead, the reader should be directed to the passage in question. It is also the author's responsibility to track down and clearly cite the original source of an idea, instead of relying on secondary sources that may be inaccurate.

Variations in attribution

Standards for proper attribution vary by disciplinary fields and, to some extent, by context. Terms or concepts that are considered common knowledge in a particular field may be used frequently and appropriately without attribution, though they may require citations when used in a broader context. Approaches to paraphrasing may differ by field. It is never appropriate to transform a quotation into a paraphrase by changing a word or two, but the exact standards of acceptable paraphrasing need to be learned in the context of a field's norms.

Self-plagiarism

In general, repeating one's own text without proper citation constitutes inappropriate self-plagiarism, whose most egregiously inappropriate form is duplicate publication of entire articles. There is, however, no overall consensus on whether self-plagiarism is, in fact, a form of plagiarism. If, for example, a brief passage explains a method used and if a subsequent paper presents further results based on the same method, it may be more appropriate to repeat the original passage than to introduce ambiguity by paraphrasing the passage in the second publication.

Self-plagiarism violates a journal's expectation (and usually explicit requirement) that all material be original and previously unpublished. It also takes up valuable journal space for redundant text, and it falsely inflates the publication record of the author. If an author has assigned copyright to the publisher of the original publication, subsequent use of the work without explicit permission, even by the author, may violate the copyright agreement.

Instead, subsequent publications should cite and reference the original text, just as if another author wrote the passage. Duplicate publication of entire articles is inappropriate, unless it is done intentionally (as in a compilation of previously published works on a given topic) and with full disclosure, both in the reprinted work and on the author's curriculum vitae.

Translation plagiarism

Translation is the means by which results can be shared with a wider research audience. There is usually no problem when the original authors are fully acknowledged and the translators take responsibility only for their translation. Recent cases, however, have shown that sometimes researchers translate work and submit it for publication under their own names, without giving credit to the original authors. (See, for example, the case of Pattium Chiranjeevi [2,3]). This practice is a form of plagiarism.

Unpublished plagiarism

One of the most insidious forms of plagiarism is unattributed use of material to which one has acquired confidential access in a review process. The academic grapevine bears stories of people who have plagiarized others' work that appeared in grant proposals or manuscripts under review. Such plagiarism can be difficult to prove when the original work is not only unpublished but secured under the provisions of confidentiality.

The U.S. Federal definition of plagiarism includes misappropriation of another's ideas. Ideas shared in hallway conversations or at research conferences (as, for example, in poster sessions) may seem fair game for competitive appropriation. If, however, a researcher knows that someone else appropriated the idea and used it without acknowledgement, the incident will seem more a matter of plagiarism than gamesmanship. It will, unfortunately, be difficult to prove, and so such cases are not usually investigated as misconduct.

Harmfulness of plagiarism

Authorship signifies both credit and responsibility for the processes and outcomes of research. Plagiarism breaks the connection between a researcher's ideas and the credit justly deserved for those ideas, but it also distorts the record as to who is responsible for those ideas. It introduces false infor-

mation into the scientific system, which is fundamentally based on truth.

Plagiarism increases the strain on the system of research publication. Previous cases lead wary editors and reviewers to check not only the scientific value but also the originality of manuscripts and proposals submitted. Plagiarized findings that are republished more or less intact take up valuable publication space that could otherwise be used for original research. They also skew the research record by appearing to show further evidence of already published results, thereby distorting meta-analyses. Small changes that plagiarizers make to escape detection may also introduce errors or inaccuracies.

Researchers who discover that their work has been plagiarized often react with anger at what they see as a personal offense. The effects on the research system, however, are the basis for the Federal Government's attention to this problem. The past 30 years have seen the evolution of a regulatory response to plagiarism.

Development of a U.S. Federal definition of plagiarism

Research misconduct first came to public attention in the late 1970s as a direct consequence of a number of serious and widely reported cases. One case involving misconduct by Alias Alsabti included extensive plagiarism [4]. This and other similar cases that emerged over the 1980s [5] left little doubt that as research misconduct policies took shape, they would have to include plagiarism. However, research funders and institutions were initially given time by Congressional oversight committees to demonstrate that self-regulation could be effective.

During the wait-and-see period, a few research institutions, often those that suffered the impact of misconduct cases, took steps to define responsible and irresponsible behavior in research. As they did, plagiarism invariably made it onto the list of practices said to constitute "fraud" or "misconduct" in research. (Both terms were commonly used throughout the 1980s.) The definitions provided for "plagiarism" in early reports and policies differed little from standard dictionary definitions, e.g.,"Plagiarism. Taking credit for someone else's work and ideas, stealing others' results or methods, copying the writing of others without acknowledgement, or otherwise taking credit falsely" [6]. Plagiarism has been included in almost every research misconduct policy written since the early 1980s.

The Congressional wait-and-see period came to an end in with passage of the 1985 Health Research Extension Act [7]. Among other provisions, this Act required the U.S. National Institutes of Health (NIH) to develop a definition of and procedures for responding to misconduct in research. A year later, the NIH published the first Federal definition of misconduct, which not surprisingly included plagiarism: "'Misconduct' is defined as (1) serious deviation, such as fabrication, falsification, or plagiarism, from accepted practices in carrying out research or in reporting the results of research; or (2) material failure to comply with Federal requirements affecting specific aspects of the conduct of research . . .." [8].

Over the next two years, NIH and the National Science Foundation's Office of the Inspector General (NSF-IG) issued new policies, both of which made "fabrication, falsification, and plagiarism" (FFP) the primary elements of the definition of research misconduct and tacked on "serious deviations" to presumably catch other misbehavior [9]. Neither policy clarified exactly what "plagiarism" meant nor how the term would be interpreted when judging research behavior.

Through the 1990s, most discussions of research misconduct policy focused on the "serious deviations" clause. A few researchers and research organizations objected strenuously to the ambiguity of this clause and lobbied hard for its removal from the definition of misconduct [10]. In the process, they failed to recognize and did little to clarify the ambiguity implicit in the term or concept of "plagiarism." In calling for a focused, narrow definition of research misconduct, the influential 1992 National Academies of Science [NAS] report, Responsible Science: Ensuring the Integrity of the Research Process, simply noted that "plagiarism is using the ideas or words of another person without giving appropriate credit" [11]. This definition was slightly expanded later in the report by adding: "Plagiarism includes the unacknowledged use of text and ideas from published work, as well as the misuse of privileged information obtained through confidential review of research proposals and manuscripts" [11].

Later in the report, the NAS panel criticized the fact that the Federal definition of misconduct "does not further define fabrication, falsification, plagiarism, or other serious deviations from commonly accepted research practices," adding that the "ambiguous scope of this last category [i.e., 'serious deviations'] is a topic of major concern to the research community because of the perception that it could be applied inappropriately in cases of disputed scientific judgment" [11]. The fact that similar ambiguity was associated with the term plagiarism went unnoticed by the NAS panel and others engaged in the debate over the definition of research misconduct.

The one exception to this last generalization came with the 1995 report from a commission mandated by Congress to provide advice to the Department of Health and Human Services on the definition of research misconduct and other issues. In a sharply worded critique of prior work, this commission, which became known as the Ryan Commission after its chair Kenneth Ryan, argued that "the constituent elements of FFP are variously interpreted because they are not defined within the current [Public Health Service] definition" [12]. They further suggested that "the breadth and vagueness of the definition are not widely understood in the scientific community, which takes false comfort from the presumed precision and narrowness of the terms" [12].

In an effort to provide more clarity and better standards for judging misconduct, the Commission proposed a new approach, focusing more on outcomes: improperly appropriating intellectual property, impeding progress, corrupting the scientific record, and so on [12]. In line with this approach, "plagiarism" became a subcategory of "misappropriation" and was defined by the Commission as: "The presentation of the documented words or ideas of another as his or her own, without attribution appropriate for the medium of presentation" [12]. Misappropriation also included the "use of any information in breach of any duty of confidentiality associated with the review of any manuscript or grant application" [12]. Under this broader conception of plagiarism as "misappropriation", the Commission went on to recommend that the Office of Research Integrity (ORI) "address as research misconduct those cases that it previously would have dismissed as mere 'authorship disputes' or 'collaborative disputes,' namely, serious cases of alleged plagiarism (which under the proposed definition would be considered 'significant misappropriation') among and between collaborators" [12].

Fortunately or unfortunately, depending on your point of view, this portion of the Ryan Commission's recommendations on the definition of research misconduct was not accepted. In the end and several committees later, the Office of Science and Technology Policy issued a new Federal Definition of Research Misconduct in 2000 [1]. The new policy stayed with the traditional FFP, adding short explanations of what each meant, and moved the "serious deviations" clause from a category of misconduct to a standard for judging whether the narrow categories of FFP should be considered misconduct. Hence plagiarism, which is now briefly defined as "the appropriation of another person's ideas, processes, results, or words without giving appropriate credit" [1] remains a firm but largely unclarified standard for judging proper and improper behavior in research.

Federal response to plagiarism

The impact of the lack of a clear, workable definition of plagiarism can be seen in the way it is handled by the two Federal agencies that report the most research misconduct, ORI, and the NSF-IG. ORI does not investigate "authorship or credit disputes" [13] or "minor plagiarism" [14]. Of the 187 cases of misconduct confirmed by ORI since it was established as an independent office in 1993, only 16 (9%) have involved plagiarism, and of these, only 8 (4%) have been plagiarism alone [14,15]. Since 2003, ORI has not had a finding of misconduct based solely on plagiarism.

By contrast, the NSF-IG investigates and reports many more cases involving plagiarism. A summary of "findings of misconduct as of April 2001," reported 11% falsification, 17% fabrication, 61% plagiarism, and 11% other [16]. While NSF-IG does not regularly report findings by category of misconduct, the impression gained from the NSF-IG Semiannual Reports is that the same high percentage of plagiarism cases continues, with over half of the findings based either exclusively or partially on plagiarism [17]. The NSF-IG is also much more explicit about how it judges cases of plagiarism, using what it calls "QRC factors," which are described as: "... whether the copied text is quoted (Q); whether a citation (C) to the source appears in the text; and whether the citation directs the reader to a source listed in the document's reference (R) bibliography" [17].

It is possible that the different levels of reporting cases of plagiarism could be due to differences between the physical/social sciences (NSF-IG) and the biomedical sciences (ORI). This seems unlikely, however. In one study, biomedical researchers self-reported engaging in plagiarism at much higher rates than either fabrication or falsification [18]. In another study of misconduct observed by biomedical researchers, about one-third of the cases reported were "plagiarism only" [19]. The latter study specifically excluded cases that did not meet the Federal definition of research misconduct and, therefore, should provide a reasonable estimate of cases that should come to ORI's attention.

In sum, despite over 20 years of trying to develop clear, uniform policies on research misconduct, the current Federal policy on plagiarism is far from clear and is not uniformly enforced. The NSF-IG is the only agency that has made an effort to explain how it makes judgments in plagiarism cases. It also is apparently more aggressive in pursuing plagiarism cases than ORI. How other agencies handle plagiarism cases is largely unknown, since most either do not report or have very little misconduct activity. Researchers are thus left knowing that they should not plagiarize, but where the line is drawn between using common words and phrases and improperly claiming ownership for someone else's words and ideas remains vague.

Approaches to averting plagiarism

Plagiarized text that appears in print has always been susceptible to exposure by someone with a good memory. Researchers inhabit small worlds defined by very specific interests and problems. Over time, they become familiar with each others' research programs and writing styles. Members of research teams make collective efforts to keep up with relevant literature, and they may well remember earlier passages or results that appear verbatim in a later publication. Indeed, not more than a week ago as of this writing, a research assistant working with one of us (MSA) discovered such an instance: passages from a book that appear verbatim and without acknowledgement in an article published in an international journal.

Now, however, attention has shifted to other approaches to averting plagiarism, as the remaining three articles in this seminar series demonstrate. H. R. Garner describes software

designed to catch instances of plagiarism; such tools are increasingly used by journals and other publication outlets, as well as by instructors at all levels of the educational system. Instruction in the responsible conduct of research, now widely mandated by the Federal Government and research institutions, shows students and other researchers how to handle citations properly and avoid plagiarism, as Beth Fischer and Michael Zigmond illustrate. Finally, misunderstandings that may be due to cultural or national differences in research customs are addressed here by Elizabeth Heitman and Sergio Litewka.

Plagiarism, recognized as a form of scientific misconduct by the U.S. Federal Government and affirmed as such by virtually all research institutions, is a grave matter. Researchers need to take all possible precautions to make sure that they have adequately acknowledged others' work and have not inadvertently neglected to include a citation. They must be attentive to acknowledgments in all papers on which their names appear as authors, even in the sections that others wrote. As members of the research community, they must also be alert to plagiarized writing, catching it before publication, if possible, and reporting it when it appears in print. By doing so, they help to protect the integrity of the research system.

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