

# Current Comments

## From Citation Amnesia to Bibliographic Plagiarism

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You know the feeling—while reading an article on a topic related to your own research, you gradually become aware of a strong similarity between the ideas expressed and those you published some time ago. A quick glance at the references cited shows you that your article isn't mentioned. If the author is known to you, and you are confident that he or she knows about your work, then you have to decide whether the omission was deliberate or whether it was just forgetfulness. However, if the author is not known to you, it is possible that he or she is not familiar with your work. This can happen when the paper is from a different field.

I've read *dozens* of papers on citation analysis that couldn't have been written without using data compiled at ISI® and/or published in the *Science Citation Index® (SCI®)*. That ISI isn't mentioned or credited with an appropriate citation is admittedly annoying but not entirely unexpected. When an author commits a bibliographic oversight of one kind or another I usually send him a reprint. This happens to me occasionally after I've written an essay in *Current Contents®*, unaware of a particular relevant paper.

However, it's a much more serious matter when an author *intentionally* omits relevant citations. Refusing to cite one's sources, strictly speaking, is a form of plagiarism: the source isn't *used* but rather is *appropriated* by the non-citing author. *Black's Law Dictionary* defines plagiarism (and its equivalent

term *plagiary*) as: "The act of appropriating the literary composition of another, or parts and passages of his writings, or the ideas or language of the same, and passing them off as the product of one's own mind."<sup>1</sup> (p. 1035) So if you intentionally don't attribute an idea, method, or fact to someone else's effort, you imply that it is your own—and that's bibliographic plagiarism.

The Latin root of plagiarism, *plagiarius*, refers to the theft of one's slave or child—kidnapping, really.<sup>2</sup> Over the centuries, the word was used to indicate literary theft as well as kidnapping. Since the 1700s, plagiarism has come to mean only the theft of ideas. Phyllis Greenacre, a New York psychoanalyst, believes the history of the word plagiarism "indicates the intrinsic feeling-relation between biological and artistic creativity: the physically begotten child and the brain child."<sup>2</sup> The typically outraged reaction of the plagiarized author may well be explained in terms of a paternal or maternal instinct of possession toward one's brain child! Scientists are no less sensitive or possessive about their creations than parents or artists.

Fortunately, plagiarism and other forms of deviant behavior in science, such as forgery, "fudging" data, and withholding or concealing data, are relatively rare. Harriet Zuckerman, Columbia University sociologist, points out that known cases of deviant scientific behavior only "number perhaps

several hundred in a cumulative population of research scientists which, over the generations, number something on the order of more than a million, each at work over a span of years."<sup>3</sup>

However rare, plagiarism does occur in science. A large part of the problem is related to the culture of science itself, which puts a very high premium on originality. Progress in science depends on new and creative discoveries, and the original thinker is recognized and encouraged by his or her peers. But creative thinking isn't something everyone picks up in graduate or professional schools! Robert K. Merton, Columbia University sociologist, believes plagiarism, like other forms of deviant behavior, is one way in which a few scientists adapt (or maladapt) to the tension between the demand for originality and their actual ability as researchers.<sup>4</sup> (p. 323)

Jerry Gaston, Southern Illinois University sociologist, says that scientists not only have to be original, they also have to be *first* before their peers credit their contributions.<sup>5</sup> The independent discovery of something that is already known to scientists may indicate original thinking, but it isn't rewarded by recognition or acknowledgment. In fact, priority disputes over who discovered what first can lead to the refusal of one of the scientists to cite the other's work<sup>6</sup> (p. 114) or even to unfounded accusations of plagiarism.<sup>4</sup> (p. 312)

There are really two types of plagiarism in science. "Grand larceny" plagiarism<sup>7</sup> involves the outright copying of entire texts. "Petty larceny" plagiarism<sup>7</sup> involves the use of ideas without explicit citation of the source. It's easier to find examples of grand larceny plagiarism because the texts provide indisputable evidence.

For example, French mathematician Maurice de Duffahel published in his own name a variety of papers originally written by acknowledged masters of mathematics. Although he made no at-

tempt to reword the classic papers, Duffahel's plagiarism went unnoticed until a reviewer recognized the true identity of a paper submitted by Duffahel in 1936. The original paper was published 24 years earlier by Charles-Emile Picard.<sup>8</sup>

Gaston cites an instance of "unambiguous theft" in which an article written by a British physicist was published in its entirety, including graphs, under someone else's name in the late 1960s. A friend of the plagiarized author discovered the article in *Proceedings of the Japanese Physical Society* and brought it to his attention. When, not surprisingly, the victimized physicist wrote the offending "author" for a reprint, he never received a reply.<sup>5</sup>

In 1961, *Science* published an article<sup>9</sup> that included several "original" photos illustrating relevant parts of the text. As it turned out, one of the photos appeared in an article published previously in another journal by a different author.<sup>10</sup> The only difference between the two photos was the caption. *Science's* editors published an apology to its readers for "this unfortunate event."<sup>11</sup>

Some petty larceny cases of plagiarism allegedly involve respected scientists whose reputations are firmly established. No less a scientific giant than Charles Darwin has been accused of failing to acknowledge his intellectual debts to researchers who preceded him.<sup>12</sup> Loren Eiseley, professor of anthropology and history of science at the University of Pennsylvania until his death in 1977, came across the work of Edward Blyth, a British zoologist and contemporary of Darwin. Eiseley argues that Blyth wrote on natural selection and species evolution in two separate papers published in 1835 and 1837, years before Darwin's *Origin of Species* was published in 1859. Eiseley details similarities in phrasing, the use of rare words, and the choice of examples between Blyth's and Darwin's work. While Darwin quotes Blyth on a number of

points, he doesn't reference Blyth's papers that directly discussed natural selection. However, Stephen Jay Gould, Harvard biologist, disagrees with Eiseley on every point and concludes, "Eiseley's...claims for direct influence of Blyth's articles on Darwin founder upon indefiniteness and inaccuracy."<sup>13</sup>

It's difficult to decide whether a scientific author is the victim of plagiarism unless the theft is of the unambiguous, grand larceny type. Unlike literary compositions,<sup>14</sup> whole passages from copyrighted scientific publications can be used in the exact wording of the original text without infringing. The ambiguous "property rights" of scientific authors create a paradox, in Merton's view. He explains, "The more freely the scientist gives his intellectual property away, the more securely it becomes his property.... Only when he has...made it part of the public domain of science [by publishing] can he truly lay claim to it as his. For his claim resides only in the recognition accorded his work by peers in the social system of science through reference to his work."<sup>15</sup> (p. 47)

Scientific authors are rewarded for their creative efforts by various forms of peer recognition. Not the least of these, of course, is explicit reference citation by colleagues. But there is no "citation court of appeals" to hear cases charging infringement or misappropriation or neglect of ideas! If such a formal court existed, it wouldn't be burdened by the grand larceny type of plagiarism—most of the cases would be the petty larceny type.

A few studies indicate that many scientists feel they've been the victims of either intentional non-citation or unintentional oversight. Warren Hagstrom, University of Wisconsin sociologist, surveyed 1,309 biologists, chemists, physicists, mathematicians, and statisticians on competition in science. When asked, "Have you ever found that another scientist has published results you

published earlier without referring to your work?" 52% answered positively. Significantly, half of these respondents (25% of the total sample) felt the non-citing scientist "probably knew" of the earlier research.<sup>16</sup>

Working with a smaller sample, Gaston interviewed 203 British high energy physicists about their experience with bibliographic omissions. Half of the 203 scientists felt that other researchers failed to cite their articles when a reference was "clearly called for."<sup>15</sup> Only a quarter of the offended physicists—about 13% of the total interview sample—believed the failure to cite their work was intentional.

Sociologists of science describe a number of situations contributing to the unintentional oversight of relevant sources. Unconscious plagiarism, or "cryptomnesia," as Freud called it,<sup>17</sup> occurs when a scientist mistakes an old, unrecalled idea which he had encountered before for a new, creative thought.<sup>4</sup> (p. 403) Informal communications bring scientists in contact with many ideas more or less directly related to their particular area of research. An idea may later "occur" to the scientist, who is no longer aware that it was read in a journal or monograph, or heard at a departmental meeting, seminar, or in casual conversation. Scientists with long and active research careers may even be cryptomnesic about their own ideas! Merton cites the example of Otto Loewi, a Nobel physiologist, who excitedly proved the chemical transmission of nervous impulse without realizing he'd written on it 18 years before.<sup>4</sup> (p. 406)

Pitirim Sorokin, Harvard sociologist, described another kind of "amnesia."<sup>18</sup> (p. 3) Sorokin points out that young sociologists and psychologists often believe the scientific era in their own fields began only in the last few decades. As a result, they forget that important achievements and discoveries were made in the previous generations

of research. This type of amnesia is recognized from the symptoms of "discoverer's complex"—the amnesic researcher claims to present an idea, method, or theory "for the first time in the whole history" of sociology or psychology.

Scientists may also mistakenly attribute an idea to the person who first made them aware of it, even though that person presents it as only a reformulation of still another author's idea. This is called the "palimpsestic syndrome."<sup>19</sup> (p. 218-19) A palimpsest is an ancient parchment on which an inscription has been made over an older one that has been erased. Thus, an idea may be so well known in a given field that the author doesn't feel the need to explicitly cite the original source. The source becomes obliterated when it is incorporated into the canonical knowledge of a field.<sup>20,21</sup>

Ideas, theories, or formulas can become so much a part of *popular* knowledge, as well as the knowledge of a given field, that no explicit citation is required when referring to them. The idea or theory is closely identified with the *scientist* who discovered it and the source paper describing it again becomes obliterated in references. In these cases, the laws or ideas are often "eponymized" or named after the scientists who discovered them<sup>3</sup>—the Heisenberg uncertainty principle, Einstein's theory of relativity, Schrödinger's wave equations, Boyle's ideal gas laws, etc.

Whether intentional or unintentional, the omission of appropriate references should concern us all. It robs the individual author of the recognition he or she deserves for having made an original contribution to science. Bibliographic plagiarism perverts our understanding of the history and development of science and who was responsible for particular advances and innovations. As importantly, by overlooking or refusing to cite relevant material, other researchers are deprived of the informa-

tion and knowledge contained in those sources. This leads to the unnecessary duplication of research.

A 1964 survey by John Martyn, Aslib Research Department, showed how unintentional duplication of research is related to missed references.<sup>22</sup> He asked 647 British chemists, physicists, biologists, psychologists, and mathematicians if they "discovered in the literature information which you wish you had at the beginning of your [current] project." Twenty-two percent answered positively, and 245 specific instances were reported. Forty-three of these 245 instances (18%) involved unwitting duplication of published research. Significantly, the researchers felt that time, money, or work was lost in 106 (43%) of these instances.

The refereeing process is supposed to discourage the unfair appropriation of ideas in the scientific press. Among their other critical functions, journal editors and referees are supposed to check whether the relevant sources are cited in a paper submitted for publication. In spite of this moral imperative it is remarkable, if not at times discouraging, how often errors of omission occur.

In fact, the presumption that these omissions occur led many people to believe that citation indexes would be unreliable retrieval tools. However, this notion totally disregards the redundancy implicit in bibliographic coupling. Thus, while one particular relevant reference may be omitted by one author, he or she does cite others who are usually connected to the omitted reference by one link or another.

The solution to the problem of bibliographic plagiarism is to require authors to complete adequate literature searches. Journal editors and referees, as well as authors, should raise their citation standards to guarantee their readers thorough access to useful information. Of course, I'm not encouraging unnecessarily inflated bibliographies or the inclusion of spurious references. In-

stead, I'm advocating the preparation of bibliographies that are as informative and succinct as the articles to which they are attached. Arnold Relman, editor of the *New England Journal of Medicine*, points out that scientific publication primarily communicates new information or ideas, and it is the "collective record of individual scholarly achievement."<sup>23</sup>

Plagiarism, in one or more of its many forms, will never be completely elimi-

nated. But the more obvious duplications can be avoided not only by newer and better mechanisms of communication but by the development of a proper respect for history and the special pleasure in rediscovering and acknowledging some predecessor's ideas.

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