

But That Was My Idea!

Graduate students A and B are working on somewhat different but sometimes overlapping aspects of the same project at the same university. Their labs are side-by-side, and they share ideas often and compare data occasionally.

In one of their discussions and without realizing it, Student B suggests a novel experimental idea to Student A. A is immediately struck by the idea's value, but he does not relate his insight back to B. Instead and in secret, Student A implements the idea and begins a series of experiments and data collection. While this is happening and some weeks later, Student B realizes the same idea. She quickly discusses it with Student A, who, unbeknownst to B, is already well along in using it.

Student B is finishing up a group of experiments and cannot start anything new. That allows Student A to finish his data collection and write up the results. Student A presents a finished paper to his PI without any acknowledgement of Student B. Upon reading the paper, Student B is enraged and claims that Student A committed plagiarism by using a critical idea of hers without acknowledgment.

Please comment.

Expert Opinion

Disputes over assigning credit in science are common. Often they take the form of disagreements about "who was first" in making a finding of scientific importance. So, in 1876-77, Robert Koch and Louis Pasteur argued fiercely over who was the first to discover the cause of anthrax. In 2003, Robert Gallo and Jean-Luc Montagnier publicly announced they would stop arguing over who was first to discover the human immunodeficiency virus and that they would share the credit equally. In 1962 at their reception of the Nobel Prize, James Watson and Francis Crick committed the unforgivable indiscretion of failing to adequately acknowledge Rosalind Franklin's contribution to the discovery of DNA.^{1,2}

The overriding cause for disputes over who was first to make an important discovery is that most research doesn't occur in a social vacuum, but rather in the midst of a hard-working, global community whose member scientists are in intense competition with one another for prestige and awards.² As such, they pay extraordinarily close attention to each other's work by reading professional journals, attending conferences, and exchanging ideas through professional forums. They study and try out one another's ideas, vary and revise them, and test new hypotheses—all the while hoping to be first in announcing significant progress to the scientific community.

An intense concern about one's own productivity coupled with a close scrutiny of what one's competitors are doing can compound the credit allocation problem because it occasionally results in similar discoveries occurring virtually simultaneously—not unlike what happened in the above dilemma. To take a few historical examples (and there are many), Newton and Leibniz discovered the calculus at virtually the same time; Darwin and Alfred Russel Wallace both discovered evolution; sunspots were discovered

by four independent scientists (among them Galileo), all in 1611; and Carl Wilhelm Schelle discovered oxygen in 1773 while Joseph Priestly discovered it a year later.³

Just so, Students A and B are embroiled in a debate over credit—about who was first to hit upon the valued idea—because they work in intensely social environments; they have the opportunity to share, use, and test one another’s ideas, methods, and data; and they are explicitly aware that their institution expects them to excel. How, then, ought their dispute over receiving credit be resolved?

We might begin by attempting to determine as precisely as possible what B initially said to A. Because A is claiming that the idea is actually his, we would need to assess the degree to which A *elaborated and translated* whatever B said to him into the experiments he eventually conducted. Unfortunately, this may be extremely difficult to determine because of the likelihood that A and B will misremember their initial discussion. If the function of memory is essentially reconstructive as psychologists like to say, the chances are good that each will reconstruct the story he or she tells to suit his or her personal ends.⁴

Nevertheless, if we go by the dilemma itself, the idea whose originality is in dispute was not fully appreciated or well-formed in B’s mind during her initial conversation with A. What presumably happened is that B speculated, mused, or elliptically talked “around” something that then inspired a novel insight in A’s consciousness. (So, it is easy to imagine that at that point of original discussion, Student A understood the novel idea to be *his* by way of his extrapolation of B’s musings.) *The moral challenge, then, involves determining the degree of A’s originality or creativity in translating B’s intimations into a scientific deliverable.* If it turns out that A’s work entirely derived from or simply copied the content of B’s original conversation, we would be inclined to find him guilty of plagiarism (i.e., intellectual theft). But if his work showed striking originality and creativity, and he only used B’s conversation as a point of departure or inspiration leading to something strikingly original and important, we would be inclined to credit A.

Perhaps it would be useful, then, to construct an “originality continuum.” At one end or pole, we could place a morally unproblematic example of scientific originality, such as one that Alexander Graham Bell reportedly made in regard to what he called the “harmonious telegraph.”* As told by Malcolm Gladwell in a 2008 issue of the *New Yorker*, Bell was consumed by the problem of the telephone and was in fierce competition with other inventors.³ In 1874 he was spending the summer with his parents in Brantford, Ontario and one day, he went for a walk along the banks of the Grand River to muse over the problem. As he watched the currents of the river, Gladwell reports that Bell “knew the answer to the puzzle of the harmonic telegraph. Electric currents could convey sound along a wire if they undulated in accordance with the sound waves.”^{3,p.51} Let us suppose, then, that the Grand River metaphorically “suggested” the solution of the harmonic telegraph puzzle to Bell. But if the Grand River had human qualities such that it could speak and learn of Bell’s appropriation of its “suggested” idea of undulations, could it legitimately accuse Bell of stealing its “idea”?

Surely not. The “idea” that the Grand River suggested to Bell was extremely circumscribed and infinitely removed from the way Bell used it in his invention. We

credit Bell with the invention of the telephone because of the remarkable creativity with which he *recognized and translated* the idea of the Grand River's undulations into telephonic technology. Analogously, then, if Student B suggested the disputed idea to Student A in the way the Grand River suggested the solution of the harmonic telegraph to Bell, we would dismiss B's allegations of intellectual theft out of hand.

At the other pole of the originality continuum, however, we could posit a frank instance of plagiarism. For example, the March 12, 2007 issue of *Chemical and Engineering News* reported that Stockholm University in Sweden had sanctioned an associate professor of chemistry, Armando Cordova, for misconduct.⁴ Cordova was accused of taking research ideas he had heard at professional conferences and seminars back to his lab, conducting (often poorly designed) experiments around them, and then quickly gathering and publishing data without giving due credit. The gist of all the accusations boiled down to a single complaint: Cordova committed plagiarism by failing to acknowledge others in his publications as the originators of the critical ideas that informed and directed his work.

The elements of Cordova's case smack of Student B's complaint against A. B claims that like the presenters from whom Cordova stole ideas, she presented an idea to A, which he then evolved into an experiment, proceeded to collect data, and then took assumed the credit without acknowledging B's critical contribution. Like Cordova's accusers, B is enraged, claims that A stole her idea, and accuses him of plagiarism.

With the Bell and Cordova cases serving as the two poles of our originality continuum, we would then attempt to locate the originality of A's appropriation of B's original discourse somewhere along it. If the findings turn out to be nearer to the Bell end of originality or creativity, we would be inclined to exonerate A and dismiss B's complaint; if nearer to the Cordova end of outright intellectual pilfering, we'd be inclined to give B the credit and penalize A. If the findings are somewhere in between, we might resolve the dilemma by giving equal credit to both.

Note, too, that we would have to deal with B's claim of eventually hitting upon the idea herself. But according to the dilemma, this presumably occurred some time after B's original conversation with A, who claims to have had the idea from the start. In order to substantiate A's claim that he was first with the idea, we would have to check his lab notebook, observe the dates of his experiments, and determine if they actually antedated B's hitting upon the idea. Again, questionable or unreliable memories along with insufficient documentation might complicate this.

At any rate, an approach using these strategies might go some way to resolving the credit assignment problem of our dilemma. It does not, however, address another troubling aspect of this case. Students A and B are working at the same institution on overlapping research projects. While the competition in science as to "who gets there first" is admittedly intense, it is very disquieting when investigators from virtually the same laboratory cannot trust one another in allocating credit fairly. And it is not only disquieting from a principled perspective—i.e., one should receive credit proportional to the temporal priority of her discovery and the merit of her contribution—it is disquieting from a purely pragmatic perspective: Investigators from the same institution who fear that a co-worker will take credit for their ideas will, by that very

fact, be inclined to conceal their ideas from one another. That concealment might then retard the productivity of their labs and the accumulation of knowledge that would ordinarily result from a collective, institutional effort.

One wonders why A was so reluctant to share his insight with B. Did he fear or profoundly dislike her? Was he convinced that if he disclosed the insight to B, its credit would be lost to him forever? Did he lack certain skills in moral analysis such that he was unable to articulate why the idea, as well-formed, belonged to him? Did he lack negotiation skills that would enable him to describe the insight to B and then propose that they work on the idea together, with him as the primary investigator? One is reminded of so many authorship disputes that attest to communication failures among the investigators to decide such issues before a paper is begun. Once the paper is written, however, investigators emerge from the lab's woodwork, claiming authorship credits for the flimsiest of reasons.

Labs confronted with these kinds of issues, and we suspect they occur relatively often, should consider communication skill building among their personnel, especially involving negotiation and conflict resolution strategies. While it can be somewhat unpleasant, anticipating how conflicts and disagreements can arise and deploying preventive strategies before quarrels get started is obviously the best approach. Good lab directors, then, should be acutely sensitive to the problem of allocating credit for discovery as discussed here. When investigators fail to appreciate the intensely social ways that scientific discovery proceeds and the moral problems that can result, nasty problems over assigning credit should be expected.

All of this bears on the moral formation of Students A and B. If the lab director simply dismisses Student B's accusations and complaints without any response, what effect will this have? Stockholm University was itself criticized for letting Armando Cordova off lightly. His sanction consisted of his attending an ethics course and having to present all his papers intended for public consumption to his dean for review before he submitted them to journals. Yet, the report on Cordova's misconduct indicates that he continues to take credit for work that is not his.⁵ His professional trajectory is obviously threatened by these events and to the extent that he is a talented and hard-working scientist, his misbehaviors can end an otherwise promising career.

Typical penalties for plagiarism include disgrace, humiliation, ostracism and other "shaming penalties."^{6,p. 35} Because it is obviously preferable to never have to call upon these interventions, laboratory leadership has the responsibility to be keenly vigilant about and responsive to alleged improprieties about misconduct; to include ethics seminars and case discussions in the curriculum; to initiate skill building exercises focusing on communication and negotiation as mentioned above; and, when they occur, to adjudicate disputes with Solomonic wisdom. These are considerable expectations. But universities cannot disavow their responsibility to graduate scientists who are not only technically competent but who are adept at exercising moral sensitivity and insight.

*We are aware, incidentally, that some historians might fault our using the Bell example as one of morally unblemished originality. They might point out that Bell sometimes visited the Patent Office in Washington, DC, whereupon after one such visit, he made a sketch in his notebook of a transmitter that was identical to the one his arch rival, Elisha Gray, had just filed in the Office. Did Bell, as Seth Shulman contends in his revisionist account of the invention of the telephone, *The Telephone Gambit*, steal a critical idea in the telephone's invention from Gray?³ Was he as morally above reproach as we are making him to be? Perhaps not. In the essay above, though, we are only assuming that his ideas on sound wave undulations, as suggested by the Grand River example, were clearly his and not a competitor's.

References:

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