

Discussing plagiarism in Latin American science

Brazilian researchers begin to address an ethical issue

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Most developed countries have extensive guidelines about research integrity, which reflects a global attempt to harmonize policies for handling research misconduct. For the editors and readers of English-language international journals, the question of plagiarism is of particular concern. Here, we look at the perception of plagiarism among Brazilian scientists. Our results suggest that the concept of plagiarism itself is not clear: although our participants unanimously regarded the use of the ideas and data of other researchers as wrong, they had mixed opinions about using passages of text. We also found that plagiarism is a sensitive issue, which is not yet appropriately addressed by formal institutional guidelines in all Latin American countries.

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Several countries, especially in Western Europe and the USA, have been paying increasing attention to research misconduct. The US Office of Research Integrity (ORI; Rockville, MD, USA), created in 1992, and the UK Research Integrity Office, created in 2006, are just two of several initiatives addressing this problem. In the USA, increased governmental scrutiny during the 1980s and 1990s led to congressional hearings and federal policies to foster research integrity (Dingell, 1993). In 1999, the US Office of Science and

Technology Policy (OSTP; Washington, DC, USA) determined that fabrication, falsification and plagiarism (FFP) should be the main focus of investigations into allegations of research misconduct (OSTP, 1999).

According to the OSTP definition, fabrication is “making up data or results and recording or reporting them”; falsification is “manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record”; and plagiarism is “the appropriation of another person’s ideas, processes, results, or words without giving appropriate credit” (OSTP, 2000). Although other questionable research practices are also considered to be a cause for concern (Swazey *et al*, 1993; De Vries *et al*, 2006), FFP represent practices that researchers worldwide find unacceptable. In addition to the USA and several European countries—including the UK, Germany, Denmark and France—some Asian countries, such as Japan and China, have also developed initiatives to tackle FFP (Xin, 2006).

So far, Latin American countries have not participated actively in this debate. In 2006, the European Science Foundation (ESF; Strasbourg, France) and the ORI held the first World Conference on Research Integrity in Lisbon, Portugal. Latin American professional societies, research administrators and policymakers did not take part in the forum, which the organizers considered disappointing (Steneck & Myer, 2007). Indeed, the lack of involvement of Latin American countries is reflected in the paucity of discussions on research integrity in Latin American science (Doxsey, 2002).

Our own focus is on Brazil, which has “the most sophisticated and diversified science, technology and innovation system” of all the Latin American countries (Foreign Affairs and International Trade Canada, 2008). Compared with its neighbours, Brazil invests the highest proportion of its gross domestic product in research and development (World Bank, 2007), and the Brazilian government recently announced a “US\$28 billion package for science and technology over the next 3 years” (Medeiros, 2007). Brazilian research accounts for a considerable fraction of publications in major scientific databases. In 2005, Brazilian authors produced almost 45% of the articles from Latin America that were published in journals indexed in the Thomson Reuters database (Brazilian Ministry of Science and Technology, 2006). Moreover, Brazil has more journals indexed in Medline than any other country in the region (Piccoli & Procianny, 2007).

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Nevertheless, in terms of engagement with international debates and policies addressing research misconduct, Brazil, as with the other Latin American countries, is lagging behind. Carlos Coimbra, Editor of the health-science journal *Cadernos de Saúde Pública*, commented that “[in Brazil]

plagiarism is an under-discussed problem, which has less to do with the lack of a problem than with the lack of initiatives to broaden the discussion on this issue" (Coimbra, 1996). All of the main scientific journals published in Brazil and in several other Latin American countries are listed in the Scientific Electronic Library Online (SciELO; www.scielo.org), and their contribution amounts to more than 190,700 articles from 594 journals. A search of SciELO using the term 'plagiarism' in July 2008 yielded only 10 documents that addressed FFP-related issues, three of which were from Brazil.

As mentioned earlier, plagiarism is defined as "the appropriation of another person's ideas, processes, results, or words without giving appropriate credit". In practice, however, the concept is not so clear. Some consider the copying of as few as eight words to be unacceptable, whereas others allow the copying of up to 48 words (Skandalakis & Mirilas, 2004). The most recent ORI interpretation of the OSTP definition is that it should "apply to the theft or misappropriation of intellectual property and/or the substantial unattributed textual copying of another's work", meaning "the unattributed verbatim or nearly verbatim copying of sentences and paragraphs which materially mislead the ordinary reader regarding the contributions of the author" (ORI, 2007). In 2005, the ORI annual report stated that "[i]nstitutions received 71 allegations of falsification, 34 of plagiarism, 31 of fabrications, and 1 other" (ORI, 2006).

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In fact, plagiarism "occurs in research in all academic disciplines: the natural sciences, applied sciences, social sciences, humanities, fine arts, and professions" (Price, 1994). It is not a recent phenomenon: one of the first documented cases of 'intellectual theft' in the academic community was a thesis submitted to the University of Paris in 1804 (Triggle & Triggle, 2007). Today, plagiarism is a growing concern, especially among educators, as the Internet

makes copying much easier than it used to be (Park, 2003; Carroll, 2004; Breen & Maassen, 2005).

Funding agencies from developed countries and English-language international journals have therefore become more alert to the problem. During the past three years, many English-language international journals have implemented new policies about publication ethics (Anon, 2008). Some publishers, including Elsevier, Taylor & Francis, Wiley-Blackwell, the British Medical Journal (BMJ) Group and Nature Publishing Group, have implemented a process of checking the originality of submitted work using Crosscheck, a service that can be used to detect plagiarism. At present, however, its high cost and limited access prevent its widespread use by individuals.

As most international high-profile journals are published in English, they tend to set the ethical standards in that language. Consequently, many non-native English-speaking (NNEs) scientists feel that there is a demand for 'textual originality' from an anglophone perspective. To provide some insight into the perception of NNEs scientists from Brazil, we conducted focus-group interviews (Kitzinger, 1995) that addressed plagiarism in scientific publications and theses.

To our knowledge, this is the first time that a Brazilian research team has looked at plagiarism in academia from the point of view of scientists. Our results, which are qualitative in nature, cannot provide a comprehensive picture of the perceptions of plagiarism among Brazilian researchers and do not necessarily represent the views of other Latin American researchers. However, the comments made by our respondents represent an opportunity for NNEs scientists, especially those from developing countries, to reflect on a sensitive issue that has a direct influence on the process of communicating science in an anglophone setting.

We conducted two focus groups, each lasting approximately two hours, with active researchers and/or professors and thesis advisors, who were also preferably reviewers for international journals. A total of 16 scientists participated from the fields of biomedical science, engineering, chemistry, physics, computer science and medicine: ten in March 2008 and six in April 2008.

The focus groups addressed issues related to competence at writing in English,

the concept of plagiarism in academia—including among graduate students—and redundancy in science. Participants were also asked about research-integrity policies at their own institutes. The excerpts presented here were translated from Portuguese into English by one of the moderators, who is a native Portuguese speaker and has a formal background in the English language.

As mentioned earlier, the OSTP guidelines include clear definitions of what constitutes plagiarism in research. In practice, however, the definition of plagiarism is not clear. In a 2005 forum of the World Association of Medical Writers (WAME; Shiraz, Iran), editors commented that "for authors who are not native speakers of English, defining plagiarism can be extremely difficult" (WAME, 2005). Accordingly, the concept of plagiarism seemed to be relatively ill-defined among our respondents. Only two gave the full definition of plagiarism, which includes not only the use of the ideas and results of someone else without attribution, but also inappropriate textual borrowing.

In fact, most respondents considered textual plagiarism in science to be a less serious offence than copying data. The same view was expressed by a few Brazilian physicists who were accused of inappropriate textual borrowing in papers published in *Physical Review C*, some of whom considered this to be just an editorial problem and not plagiarism (Garcia, 2007). Our respondents expressed a similar attitude. One said: "Some words are instrumental sometimes [...] if an author is borrowing from another to say the same thing [...] this work lacks originality, but it is not plagiarism." He added that "[w]e have to master a language that is not ours and there are several historical reasons why we may not like it [...] but that's the way it is: we have to. On the other hand, excluding authors who have a contribution to make [because of their poor language skills] [...] that's another story."

In fact, precluding authors from contributing original data to science based on textual plagiarism, which in many cases is associated with linguistic shortcomings, is a complex issue, not least because scientists from different cultures might have different perceptions of plagiarism. In a 2004 meeting, Martin Blume, Editor-in-Chief of the *Journal of the American Physical Society*, expressed reservations about how

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In comparing various authors with one another, I have discovered that some of the gravest and latest writers have transcribed, word for word from former works, without making acknowledgment.

Pliny the Elder (23–79)
Roman naturalist and natural philosopher

Ctrl **C**

Your manuscript is both good and original; but the part that is good is not original, and the part that is original is not good.

Samuel Johnson (1709–1784)
English poet, essayist, moralist, novelist, literary critic, biographer, and editor

Ctrl **C**

The way to get things done is not to mind who gets the credit for doing them.

Benjamin Jowett (1817–1893)
British philologist and theologian at the University of Oxford

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When a thing has been said and well, have no scruple. Take it and copy it.

Anatole France (1844–1924)
French poet, journalist, and novelist (Nobel Prize for Literature in 1921)

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Writing is not necessarily something to be ashamed of, but do it in private and wash your hands afterwards.

Robert Heinlein (1907–1988)
American novelist and Science Fiction writer

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to handle this issue: “non-native-English-speaking authors writing in English might lift passages wholesale from previously published work; the authors may view their action as a way of learning the language, or it may be in part attributable to cultural differences [...] APS [the American Physical Society] tries to refer cases to the offenders’ institutions, but standards may be different in different countries” (Ancker, 2003).

One respondent commented that textual plagiarism is a problem prevalent among students but not among faculty: “we should discuss [textual plagiarism] at the educational level because it has become a serious problem among students [...] ‘googling’ [...] copying and pasting, yes, that’s a serious problem [...] Plagiarism in science? Sure: results that were already published should be appropriately cited [...] but concerning the text [...] I think it is not the issue, as it is secondary to other aspects we find more relevant.” This comment echoes the beliefs

of many of our respondents that, when it comes to research, ideas, data and results are more relevant than words.

Although plagiarism seems to be on the increase among graduate students (Rimer, 2003; Tongyan, 2004; Derby, 2008), the participants of the focus groups reported relatively relaxed attitudes to this problem at their institutions. “A student asked me to review her thesis”, one commented. “It came to a point where I thought ‘I know this style’ [...] and I went on reading [...] five or six pages from my own thesis! [...] I’ve never encountered a situation like that; the really strange thing is that I talked to her thesis advisor, who considered the whole issue trivial.” Another one said “[if a student copies] not the whole thesis [...] but some paragraphs, I don’t care [...] Materials and methods? [Students] always copy and paste from other students.”

The participants felt that plagiarism among graduate students might be associated with

poor communication skills, which reflects the observations made by others (Shaw *et al*, 2007; Bretag, 2007; Diezmann, 2005). In addition, most of the participants expressed concerns that this might underlie plagiarism practices in higher education.

Interestingly, most of the scientists in the focus groups reported that they were not aware of any formal guidance or policies on research integrity, including textual borrowing, for graduate students and researchers at the institutional level in Brazil. We find that this corresponds with the lack of concern about putting limits on borrowing words from another writer. One scientist, however, mentioned that their institution had just formalized a declaration of originality of data and text to be signed by graduate students as a requirement for their thesis. According to this professor, the policy was triggered by previous cases of plagiarism among graduate students.

Some respondents were doubtful about whether policies against plagiarism in research would be taken seriously

in Brazil, stating that, “[o]ur culture is extremely permissive, in several aspects [...] it will be the same for plagiarism” or “[w]e [Brazilians] tend to be rather tolerant [...] [of] any infringement [...] it takes time for us to take action.”

One of the factors behind research misconduct, including plagiarism, is the pressure to publish in a competitive environment. Skandalakis & Mirilas (2004) attribute “dishonest attitudes such as plagiarism” to the “publish-or-perish hysteria”. In a letter published in the *Bulletin of the Brazilian Physics Society*, a Brazilian scientist expressed his concern about the effects of the mechanics of ‘counting papers’ on the Brazilian research environment (Oliveira, 2006). In his view, the current assessment of research on a purely numerical basis might have detrimental effects for the Brazilian scientific community and could encourage unethical behaviour. We noted the same feeling in our focus groups: “we’re overwhelmed by the mechanics of being productive; it’s something mechanical, and we end up [...] accepting things that used to be unethical.”

Although publication has always been an integral part of the culture of science (Meadows, 1977; Day, 1995), “the intense competition among scientists over ever-shrinking research funds, on one hand, and the great rewards that the successful few are reaping, on the other” (Roig *et al*, 2004) are relevant constraints in the present research environment. In addition, the monolingualism of most scientific publications changed “publish or perish” into “publish in English-language international journals or perish”. Cargill & O’Connor (2006) report that this “pressure is being felt increasingly in China as a result of top-down policy initiatives [...] inducements have been put in place to encourage scientists to pursue publication of their results in English.” As a result of this additional requirement, researchers from any cultural or linguistic background might be prone to unethical practices, particularly if originality of the publication is not only about the results, but also about the written research record.

Our respondents noted—as have many other reports—that a lack of writing skills is identified as one of the reasons for plagiarism by NNES authors (Xiguang & Lei, 1996; Garbisu & Alcorta, 2003; Yilmaz, 2007; Williams 2007). We

therefore asked participants to assess their English proficiency. Among the 16 researchers, only four did not express a positive opinion about their writing competence in English. One participant stated: “My linguistic competence is horrible; I’ve never studied English. I started to study English when I was at university [...] I would use a dictionary to check everything and wasted a lot of time [...] [When writing manuscripts] I transfer the job to my collaborators. I give them an outline of the main points and they give me some feedback [...] I’m an experimentalist, my time is in the lab and I don’t like wasting time writing.”

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Overall, however, the participants responded that command of the English language was not an issue. This is an expected outcome, given that most of these scientists are experienced authors and act as reviewers for English-language international journals. When asked about the quality of their manuscripts in terms of writing, the respondents asserted that they usually do not have problems with reviewers.

By contrast, many respondents mentioned that they felt a type of ‘address bias’ (Gannon, 2007). As one participant said: “I don’t see prejudice on the part of reviewers in relation to [our] writing [...] [I see] signs of bias because we’re from a developing country [...] a paper from Brazil submitted with international collaboration is clearly read in a different way compared to one submitted only by Brazilian authors.”

Two other respondents also reported similar experiences: “We had been trying to publish a paper with a novel idea for a long time [...] [but it was only after US researchers] improved the discussion [...] and we included their names [...] [that] the work was accepted, with compliments”. Another respondent said that after he submitted groundbreaking research on protein sequencing to a high-profile journal, the editor asked him to send the journal further details together with copies of 45 chromatograms. This respondent argued that “if this work were from Harvard, [the editor] wouldn’t have asked for this material.”

However, some reports suggest that the language itself might also send a positive or negative message to reviewers (Curry & Lillis, 2004; Flowerdew, 2008): “articles that are poorly prepared, with misspellings and unacceptable grammar, but with apparently excellent data sets and conclusions, may trigger an alert as to the origin of the data” (Trevors & Saier, 2006).

For developed countries, the estimated number of cases of FFP is usually less than 1% (Steneck, 2000). In a 2005 survey of 3,247 researchers in the USA, Martinson *et al* (2005) found that the estimates for reported cases of “using another’s ideas without obtaining permission or giving due credit” were less than 2%. Nevertheless, some researchers remain sceptical and argue that many cases go unreported (St James-Roberts, 1976; Smith, 2008; Titus *et al*, 2008). Yet, the number of alleged instances of plagiarism in English-language journals is found to be increasing, especially, it seems, among authors from NNES countries (Roig, 2006).

The analysis of our focus-group discussions, together with the literature, point to at least two reasons for the increasing rates of alleged cases of plagiarism by authors from NNES developing countries: a lack of formal guidance on research integrity, which includes publication ethics, and a lack of training in English writing skills, by which we do not mean linguistic competence based on grammar and syntax, but rather the ability to communicate science and ideas effectively in that language. As some authors have pointed out, although a grammatical knowledge of English is essential, it is not sufficient to enable researchers to write abstracts, research papers or even cover letters effectively (Jordan, 1977; Swales, 1990; Swales & Feak, 1994); rather, this is linked to knowing “the unwritten rules of the game” (Aluisio *et al*, 2001) of writing science in English. These rules define what makes a piece of writing coherent and what makes a text sound stylistically from an anglophone perspective (Ammon, 2001; Flowerdew, 2008).

According to a document that Elsevier produced for its editors, “the scientific convention is that you should identify and credit your sources but, while it’s inappropriate to pass off someone else’s ideas as your own, that shouldn’t preclude discussion of those ideas” (Anon, 2005). In scientific writing, authors should build

their ideas upon those of others by proper attribution. Discussing the ideas of others requires that authors be able to summarize and paraphrase them in their own words—or quote them, which is not common in scientific papers. However, as Myers (1998) has pointed out, “paraphrasing is arguably the highest and most synthetic language skill of all.”

Complying with ethical publication guidelines, including writing manuscripts without inappropriate textual borrowing, requires more than a keen sense of ethics. For NNES authors in particular, it requires demonstrating a level of competence in writing that only a few achieve. Of the 52,223 Brazilian researchers who have inserted their *curriculum vitae* into the Lattes national online database (the Lattes Platform; <http://lattes.cnpq.br>), only 34.8% have evaluated their English skills in reading, listening, speaking and writing as ‘good’ (Vasconcelos *et al*, 2008). On the basis of the feedback from the focus groups, those 34.8% might not necessarily share the anglophone perception of what constitutes textual plagiarism, for example. Although plagiarism is a problem not just in NNES countries, linguistic competence to write in English in these countries is a crucial factor and deserves close attention if we want to address the problem effectively.

We therefore doubt that the increasing number of retraction letters, owing to plagiarized texts, reveals generally unethical behaviour by scientists. Rather, many of these letters reveal the extent to which the demands of producing science in an international language affect the writing productivity of scientists. This is a delicate issue, particularly because writing research in English is, *per se*, a hurdle for many NNES authors, especially those from developing countries (Freeman & Robbins, 2006; Victora & Moreira, 2006; Vasconcelos *et al*, 2007; Meneghini & Packer, 2007). These authors have already had to face biases to get published. Floyd E. Bloom, former Editor-in-Chief of *Science*, has written: “If you see people making multiple mistakes in spelling, syntax and semantics, you have to wonder whether when they did their science they weren’t also making similar errors of inattention” (Gibbs, 1995; Myers, 1998). We wonder what editors might think when they see multiple mistakes in spelling, syntax and semantics—and, in addition, inappropriate borrowing.

The outcome of our focus-group discussions shows a need for the wider dissemination of publication ethics among scientists in NNES developing countries. As we have pointed out, however, this alone is not enough. Latin American countries, even with an understanding of internationally agreed ethics, would still lag behind in addressing the problem of plagiarism, especially textual plagiarism, in academia. It is therefore of crucial importance to invest in the competence of these NNES scientists at writing in scientific English. For Brazil, we suggest that workshops and debates on publication ethics be included in national conferences and that special attention should be given to plagiarism. In addition, graduate programmes in the sciences should raise student awareness not only of what constitutes plagiarism in science, but also of the constraints imposed by writing science in an anglophone setting. This initiative could then be combined with policies for formal training in writing scientific English. It will take time for these initiatives to have an effect; however, a concerted proactive approach would benefit the whole scientific community.

Finally, we argue that the international scientific community, as clearly noted in our focus-group discussions, universally disapproves of the plagiarism of ideas and data. However, when it comes to plagiarism of words—that is, textual plagiarism in science—there seems to be not only a lack of awareness, but also a lack of consensus about the appropriate limits of borrowing from the literature. Defining these limits, however, should not be the task of only anglophone scientists; NNES scientists also need to participate in the international debate on this topic.

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