



Purging plagiarism: Why authors plagiarise and how to fix it

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One of the most difficult situations for an editor to deal with is finding plagiarism in a client's work. The initial reaction is often shock or disbelief, which is the result of the editor's knowledge and understanding of the legal and ethical issues surrounding plagiarism. This understanding is not always shared by our clients. Regardless of culture, or author awareness of the ethics of plagiarism, both native and non-native English speakers may struggle to identify plagiarism in their own work, and so it is good practice to never assume that plagiarism has been maliciously done or was intentional. There are numerous methods for finding plagiarism in text, including relying on the editor's own ear in picking up sudden changes in language, finding hotlinks in text and using commercial plagiarism-checking software. There are also different categories of plagiarism, including self-plagiarism, patch-writing and copy-paste writing. Despite the reason for plagiarism, understanding the different categories of plagiarism and how it comes about will assist editors in better managing plagiarism when it appears in text and in being able to confidently and knowledgeably assist their clients to understand plagiarism and how to avoid it in the future.

Most editors have come across plagiarism at least once in their editing careers. Sometimes it presents as a single line of copied text without attribution, and sometimes as sets of words of a particular tone and voice, not matching that of the author, scattered across a paragraph or two. On the rare occasion plagiarism may present itself as large volumes of text copied word for word, with and without attribution, throughout the text.

As editors, we are likely to understand the simple definition of what plagiarism is and why it should not be done. Some editors may have a more in-depth understanding of how plagiarism occurs and how to correct it. But even experienced editors may be at a loss as to how to explain plagiarism to a client in a way that will facilitate a deeper understanding of why they may have plagiarised and how to change their writing practices in order to avoid it in the future.

There are numerous ways of identifying plagiarism in written text. A more detailed understanding of what plagiarism is and the different types of plagiarism will enable the editor to refine and improve their ability to identify plagiarism in text. Understanding why plagiarism occurs gives the editor further information for discussing with the author their particular instance of plagiarism and to work out why it occurred. Understanding how and why are important elements in assisting an author to avoid plagiarising in the future.

What is plagiarism?

The term *plagiarism* can have several definitions, depending on whether you are looking at it from a legal, historical or ethical standpoint. The term comes from the Latin term *plagiarius*, meaning 'kidnapper'. Thus, the simplest definition implies the stealing of something belonging to another.

The *Macquarie dictionary online* defines plagiarism as follows:

noun 1. the appropriation or imitation of another's ideas and manner of expressing them, as in art, literature, etc., to be passed off as one's own. 2. a piece of writing, music, art, etc., appropriated or commissioned from another and passed off as one's own.

Plagiarism refers not just to arrogating text but also ideas and expressions of ideas.

The concept, in legal terms, overlaps with the concept of copyright. Because the expression of ideas, such as writing, music and art, is protected by copyright, passing off those expressions as your own is not only plagiarism but is also likely to infringe upon someone else's copyright. In Australia, copyright is generally for the life of the creator plus 70 years, and there is no requirement to register for copyright. In the United States, copyright is a bit more complicated; it is for the life of the creator plus 70 years, but only for works created since 1977, with other timeframes for works created before 1978. It is not necessary to register for copyright in the United States, but registration provides additional protections.

Understanding the concept of copyright helps to explain the interesting term *self-plagiarism*, which is explained later in this article in more depth but is essentially the passing off of an author's previous works as a new body of work. If an author has passed on the copyright of that work to a publisher, as is usually the case with a journal paper, then reusing that text will infringe on the publisher's copyright of the original material.

There are many misconceptions about what constitutes plagiarism, such as the commonly held belief that it is okay to copy up to 10% of a body of work. Under Australian copyright law, that 10% pertains only to special circumstances for educational purposes, not to all educational uses. Many people also do not realise that you can plagiarise whether or not you credit the source. Even misattributing a quoted passage constitutes plagiarism.

Sometimes material is so commonly known that it is believed to be a part of a shared culture or common history and is so ingrained in cultural memory that it is not obvious that plagiarism has occurred. One iconic case, where copyright infringement was suspected, is regarding Men at Work's song 'Down under'. Only 2 to 5 bars of the 93 bars that constitute the song were in question (some reports say only 2 bars; some 5). These bars were from the 1932 song 'Kookaburra sits in the old gum tree', written by a schoolteacher in Melbourne and used for a Girl Guides Jamboree in 1934. The copyright was sold from her estate after her death to Larrikin Music Publishing, where it is still under copyright under US copyright provisions. Larrikin Music won the court case.

The 'Down under' case may also be an example of cryptomnesia, where one thinks of something that they believe to be an original thought but it was actually pulled from what is referred to as 'forgotten memory' (Roig 2015). The term *cryptomnesia* was penned by psychiatrist Théodore Flournoy and is a popular concept amongst cognitive psychiatrists such as Jung and Nietzsche. Miguel Roig called cryptomnesia 'unconscious plagiarism' because the person who is plagiarising does not realise they are doing it and they honestly believe the idea or thought to be their own.

Delegation is not a defence in plagiarism, as in a more senior researcher delegating writing or summarising to a novice team member. Rules of authorship mean that all authors should be aware of what is written in the paper and take equal responsibility for the content of the paper, regardless of which author wrote which section. This has been upheld, for example, in the well-publicised case of Kenneth Melmon at Stanford University where a professor resigned from his role as department head after it was found that 24% of a chapter of a medical textbook he had authored was plagiarised. In this case he was not found guilty of fraud because he had not intended to deceive. The plagiarism occurred when Melmon left responsibility for obtaining the correct permissions to the book's editor, who had died during the publication process. Melmon had also not checked the book's galley proofs prior to publication (Blakeslee 1984).

Plagiarism is not necessarily well covered in style guides. The *Australian Style manual*, 6th edition, does not have a section on plagiarism, or seem to mention the word, but it does discuss

copyright and attribution. The *Chicago manual of style* (CMOS), 16th edition, does not have a section on plagiarism, but does discuss copyright and attribution and mention plagiarism in those sections. However, the *Publication manual of the American Psychological Association* (APA), 6th edition, includes a new section on publication ethics and includes information on plagiarism and self-plagiarism (APA 2019).

As this all shows, plagiarism can be a confusing subject to understand, particularly when it overlaps with the legal implications of copyright. But the editor, in simple terms, needs to look for plagiarism that, in most cases, follows one or more patterns:

- use of ‘exact’ text or material (including data and figures) that is not the author’s own and has not been placed in quotations and given attribution
- paraphrased material without attribution
- use of ‘exact’ text or material (including data and figures) that has been published previously by that author and not acknowledged.

The influence of culture on plagiarism

Culture is often blamed for the prevalence of plagiarism, but not many understand the basis for those cultural beliefs and why those beliefs may result in plagiarism. At a simple level, a particular culture or set of beliefs may result in the normalisation of plagiarism within a country (Heitman & Litewka 2011). This could be because of differences in beliefs regarding ownership of intellectual property and originality (Heitman & Litewka 2011).

Zhang (2010) explained that in Chinese culture, particularly ancient culture, it was not only acceptable but encouraged for students to plagiarise or copy text written by their teachers.

As an example, in China, verbatim quotes from mentors or supervisors are seen as respectful and no citation is used because it is expected one would know where the material comes from (Wheatley 2014). Heitman and Litewka (2011) acknowledge that in certain cultures it is expected that the reader will be informed enough to be able to recognise where the text they are reading comes from and who wrote it. It is an insult to the original author to include the citation because it suggests that the source author is not well known or well respected in the field (Wheatley 2014), and it is an insult to the reader because it suggests that they are not knowledgeable enough to know who the original author was. In fact, it could be seen as arrogant that a student would believe that their own ‘lesser educated’ explanation of content would be better to use in a paper than that of their ‘learned’ mentor or teacher (Cameron et al. 2012). Therefore, copying is a common approach to teaching and an acceptable practice in learning (Pessin & Benson 2012), where imitation of writing is seen as complimentary (as a form of flattery or admiration).

This concept can be better explained by looking in a bit more depth at how different cultures communicate.

One of the most commonly cited papers on the cultural differences in communication was written by Edward Hall in 1976. Hall is cited as being the originator of the idea that cultures can be differentiated between by *high-context* and *low-context* communication styles. Hall’s ideas were explained in an extensive explanatory paper on verbal communication styles by Meina Liu (2016).

Liu states that high-context communication styles emphasise the collective society and that communication assumes a certain level of understanding prior to the idea being communicated. The onus is on the receiver of the message to interpret or understand what is being communicated. Liu explained that this style may use nonverbal cues to communicate meaning,

such as facial expressions, or setting, and that high-context cultures include Latin America, Africa and Asia (Liu 2016).

Liu then explained that low-context communication styles emphasise the individual, that communication is explicit and that the onus is on the communicator to ensure that the message being communicated is clear. There is usually no assumption of pre-existing knowledge, and so there may be a lot of detail or specific information provided in the communication. Low-context cultures include the United States, Australia, New Zealand, South Africa and many European countries (Liu 2016).

Liu's 2016 paper described how other cultural qualities can influence communication style on the basis of comparison of values and ways of thinking. One interesting theory is that *individualistic* versus *collectivist* societies are the result of challenges brought on by geography. For example, cultures where agriculture was important (flat areas) would be more collaborative because members of society needed to work together to ensure success, and in building infrastructure for agriculture such as irrigation systems and buildings, whereas cultures that favoured individualistic means of obtaining nutrition (mountains) with activities such as fishing, hunting and herding, would have less emphasis on collaboration and more emphasis on the success of the individual (Liu 2016). As interesting a theory as that is, it is probably less useful for us as editors than some of the other cultural qualities that may influence communication style.

Liu (2016) explained *direct* and *indirect* communication styles as the idea that some societies value courtesy and will communicate in ways to encourage social harmony, whereas others will communicate in such a way to clearly identify their thoughts and message, regardless of whether it might cause discomfort or disagreement.

Liu also described *self-enhancement* and *self-effacement* styles. For example, self-enhancement freely communicates their message, values and achievements, whereas self-effacement may deliver those but be more modest or self-effacing regarding the message (Liu 2016).

In addition, Liu (2016) described the difference between *elaborate* or *understated* communication styles. An elaborate style uses language to explain, providing examples and embellishing the story to provide a message, as opposed to using fewer words, downplaying the message and using nonverbal clues such as silences as is done in the understated communication style (Liu 2016).

Liu's paper is only one of many that describe different communication styles, which researchers in the fields of communication and sociology are describing more and more of all the time. Thus, it is no wonder there can be conflict between different cultures in understanding plagiarism, its implications and the ethics surrounding it.

The influence of ethics on plagiarism

Heitman and Litewka (2011) describe cultural factors as influencing whether plagiarism occurs and at what rate, and they mention that a country or institution of origin may not have a code of conduct, or may not have any repercussions for proven misconduct. How could that be?

Heitman and Litewka (2011) state: 'One of the deleterious effects of pervasive corruption is the distortion of ethical reasoning'. They are talking about the issue of corruption in some research institutions and countries being so pervasive that when authors are surrounded by it, it is difficult to clearly discern the unethical behaviour because it is so common as to be normal. Although Heitman and Litewka refer to some countries in particular, their main point is that even within a small ecosystem, such as a university department, corrupt behaviour may become

normalised if members of that ecosystem, particularly those in positions of leadership or respect, practise questionable behaviours themselves (Kerans & de Jager 2010).

It is worthwhile to look at what countries may fit into the above conditions, and where Australia sits in comparison with other countries. The Corruption Perception Index (CPI) by Transparency International (2018) ranks countries according to public sector corruption (Figure 1).

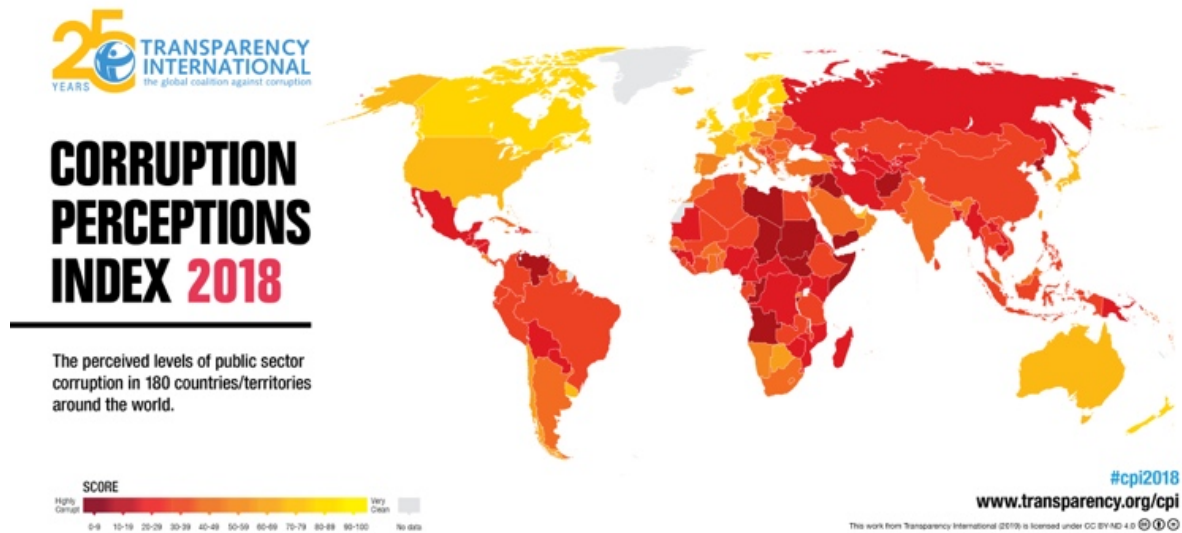


Figure 1: Perceived levels of public sector corruption in 2018 for 180 countries and territories around the world. (From Transparency International [2019], under a CC BY-ND 4.0 Creative Commons licence.)

The highest possible CPI score is 100, with the lowest numbers representing the most corrupt and the highest numbers representing the least corrupt. Somalia (10), Syria (13) and South Sudan (13) are ranked as the worst and are placed at 178 to 189 on the list. Australia has a score of 77 and is 13th on the list. The United States is ranked 22nd on the list, with a score of 71, and the United Kingdom has a score of 80, above both Australia and the United States. China has a score of 39, and India has a score of 41.

These data are important only from the perspective of gaining insight into where plagiarism might be considered normalised so that, as editors, we can keep a sharp lookout, but the data in no way suggest that all authors from those countries plagiarise or are unethical.

These data are also interesting when looked at through the lens of where some of our Australian clients may have formed their ideas of ethical writing.

Australian Government data (2017a) on the extent of international participation in Australian undergraduate and postgraduate study show that almost 30% (439,479) of undergraduate and postgraduate students across Australia are from overseas (Australian Government 2017a). Of those international students, 33% are from China, 12% are from India, 7% are from Malaysia, and 5% each are from Singapore, Vietnam and Nepal. This is over half of international students. In comparison, 2% are from the United States and 2% are from all of northwest Europe, including the United Kingdom and Germany (Australian Government 2017b).

Aside from the larger cultural differences that may influence the perception of what plagiarism is, Schroter et al. (2018) found in their research review that belief in what constitutes plagiarism

may also vary by area of research or discipline, suggesting that some areas of research may have a higher tolerance of plagiarism than others.

Regardless of the reason or incentive, or whether it was intended or not, plagiarism is almost always seen as a serious ethical issue and, in some cases, is treated as scientific misconduct (Shashok 2011).

The scale of plagiarism in academic writing

A number of studies since the early 2000s have attempted to quantify the scale of plagiarism in academic writing. Zhang (2010) reported in 'Correspondence' in the journal *Nature* that 31% of papers submitted to the *Journal of Zhejiang University-Science* contained plagiarised text. This study lasted 18 months after the journal began using Crossref to scan for plagiarism.

Of the 134 retractions between 2000 and 2015 from BioMed Central journals, 16% of those (22 articles) were because of plagiarism, which was the second most common reason for retraction of articles, behind compromised peer review (Moylan & Kowalczyk 2016).

Of the total of 2,047 articles ever retracted by PubMed, 9.8% were due to plagiarism and 14.2% were due to duplicate publication (Fang et al. 2012). Their first plagiarism retraction was 1977, but most retractions because of plagiarism have occurred since 2005 (Fang et al. 2012). The retractions due to plagiarism were greatest from the United States, China and India (where countries were identified other than 'other'), although those from China and India together outnumbered those from the United States (Fang et al. 2012).

Martinson et al. (2005) conducted a survey of 3,600 mid-career scientists (1,768 responses) and 4,160 early-career scientists (1,479 responses), drawn from two databases of the National Institutes of Health Office of Extramural Research. They found that 1.0% of early-career and 1.7% of mid-career scientists had plagiarised 'another's ideas without obtaining permission or giving due credit'. They also found that 3.4% of early-career and 5.9% of mid-career scientists had participated in duplicate publication of data. The authors suggest that these percentages are underreported, and thus they ask whether scientists would self-report questionable behaviours even in an anonymous study (Martinson et al. 2005).

Editage (2018), an English and academic editing service, conducted a survey of more than 7,000 researchers from their database. Twenty-four percent disagreed with the statement that 'using others' text without rephrasing or enclosing within quotation marks is plagiarism'. Twenty-seven percent disagreed with the statement that 'rewording others' ideas without citing a source is plagiarism'.

Bretag and Carapiet (2007) conducted a preliminary study (with a very small sample size) to identify self-plagiarism in journal papers by Australian authors. They randomly selected 10 authors from the Web of Science database, and then examined all of the journal articles they had authored that were in that database (269 published). They found that 60% of the authors self-plagiarised.

The selection of studies above does not assist us with understanding the numbers behind plagiarism, nor necessarily its frequency. It does point out that plagiarism does occur, and in some cases it may be quite common. This leads to the question of why an author would plagiarise to start with.

Why plagiarise?

There are myriad reasons why plagiarism occurs, either intentionally or unintentionally. A lack of time, a large workload, and the expectation or pressure to publish may result in the act of plagiarism.

A poor understanding (ignorance) of what plagiarism is and of proper publication ethics may also lead to plagiarism. This may be due to a lack of training or through a lack of scientific discipline. Schroter et al. (2018), after surveying more than 4,000 researchers across 100 countries, suggested that the increase in pressure for researchers to publish 'has not been matched' with appropriate training and education about plagiarism, ethics and academic integrity. They found that the level of researcher experience (seniority) and whether the researcher was male or female made no difference in the ratings they gave for level of seriousness of ethical breaches such as plagiarism, self-plagiarism, questionable authorship and author conflicts of interest (Schroter et al. 2018).

As discussed earlier, cultural differences may contribute to the prevalence of plagiarism.

Mistakes, errors or omissions in citations and referencing are another cause of plagiarism. When there is a lack of writing discipline, authors may cite the secondary source rather than the primary source in describing original research. Authors should determine the original source wherever possible, because citing a source that they themselves did not read is in itself a form of questionable research ethics and standards (Roig 2015). A risk of citing a secondary source and not reading the primary is that further detail in the primary source may conflict with the point the author is trying to make (Roig 2015).

However, one of the most likely reasons for plagiarism in academic writing may be that the author is unable to express the idea in their own words or paraphrase because they do not have the vocabulary, do not understand the concept, or do not have the depth of knowledge in the field to be able to paraphrase into their own words (Yeoman 2017; Vieyra et al. 2013; Shashok 2011; Gough 2018; Howard 1992; Jamieson 2013; Howard & Jamieson 2014; Roig 2015).

Vieyra et al. (2013) found that 28% of the research proposals they surveyed (out of 115) written by science and engineering graduate students had at least one sentence affected by plagiarism. The Vieyra study suggested that plagiarism may not be an issue just because an author may be inexperienced in writing and with the conventions of scientific writing, but it may be the case that the author is unable to describe their research and others' research because of a lack of comprehension and/or lack of appropriate language skills (whether that is English, or scientific or technical language). Their study also showed that plagiarism is more prevalent amongst students who did not speak English as their primary language.

Jamieson (2013) supported the premise that students often have not yet learned the language skills required to write in a specific discipline of study and so use shortcuts like patch-writing and summarising. Jamieson found in the 'Citation Project' there may be a connection between student comprehension and the depth to which they are using their sources. Almost half (46.3%) of students' citations were from the first page of the source they were citing, and 23.2% were from the second page. This suggests that students are not reading the research reports that they cite in enough depth to understand the detail of the content, and also that they are not reading far enough into the articles to embrace the arguments, reflections and nuances discussed within, and so they are likely to have trouble paraphrasing and summarising because they simply do not understand the content they are writing about (Howard & Jamieson 2014).

The study also looked at the number of times sources were cited, with 56.5% of sources being cited only once and 76.4% cited only twice, suggesting that students may be unable to differentiate between the quality and level of the sources whose publications they are reading

(such as a primary source versus a secondary source, or a source with a high impact factor or from a highly respected publisher) (Howard & Jamieson 2014) and that they are simply including papers for the sake of demonstrating they have fulfilled the research component of the assignment.

Sandra Jamieson (2013) says, ‘At least some degree of understanding and reflection is essential before a writer can summarize or paraphrase a source...’. This study suggests that it may not necessarily be language or culture encouraging plagiarism, but instead a ‘laziness’ of a cohort of students to read more than the beginning of any piece of work, and so not taking the time to read and digest the entire source to the extent required to understand and engage with the ideas contained therein.

Academically this reason for plagiarism is of great concern because it suggests that the author does not understand the concepts being read about well enough, and is therefore unable to judge the validity of the article they are plagiarising because they do not understand it; it may also indicate potential for further lack of scholastic integrity within the author’s work (Gough 2018).

Categories of plagiarism

There are several ways of categorising plagiarism. For example, the Committee on Publication Ethics (COPE) categorises plagiarism on the basis of its severity (Wager 2011; COPE n.d.), from least to most severe. For the purposes of the discussion here, the types of plagiarism are categorised according to how they occur: self-plagiarism, patch-writing and copy-paste writing.

Self-plagiarism is using material that the author(s) have already published in another paper. One of the issues with self-plagiarism has to do with copyright, because using already published (copyrighted) material is illegal in many countries. The other issue is to do with research and publication ethics, that the author is passing off their work as new when it is not.

Roig (2015) wrote about different types of self-plagiarism and addressed them in items 10 through 13 in his well-respected guide written for the Office of Research Integrity at the US Department of Human Services:

- redundant and duplicate publications (same data used for more than one paper)
- salami-slicing (breaking up a study [or data] into two different papers)
- data augmentation (where additional data are used to augment previous data and to republish previous findings as a new study)
- double-dipping (submitting the entirety of or a substantial part of a previous paper as a new paper).

Patch-writing, another category of plagiarism, is usually the result of an attempt to paraphrase that has been poorly done, as a result of ‘patching together’ different sentences or parts of sentences from the works being paraphrased and replacing some of the key words, rearranging the sentence order or structure, and deleting some of the words. The resulting text is too close to the original text to be considered original writing. Even if sources are cited, this may be considered plagiarism because the wording is so close to the original wording that it should be in quotations.

The term *patch-writing* is usually attributed to Howard (1992), who used it in her paper ‘A plagiarism pentimento’, where she described her findings as a lecturer in writing at Colgate University. She compared the quality and writing styles in her students’ papers, especially those who struggled to understand the material in the references being used as sources, which resulted in poor paraphrasing and patch-writing.

Howard supports the theory that patch-writing is a learning stage used by those who are developing their skills in writing, whether they are writing in a language they are unfamiliar with (such as English learning) or in a language particular to an area of science (technical jargon and phrasing).

Howard (1992) says, ‘Rather, they [the students] were “patchwriting”, a composing phenomenon that may signal neither a willing violation of academic ethics nor ignorance of them, but rather a healthy effort to gain membership in a new culture. That this effort involves a transgression in the values of that culture is indeed an irony, for patchwriters, far from being unethical plagiarists, often strive to observe proper academic conventions.’

Howard (1992) also surmised, on the basis of her own observations and of other literature, that students may have some basic level of proficiency in writing but that the extra challenges inherent in higher-level language comprehension and more technical text may result in a failure of the student to show that proficiency as they flounder over the advanced concepts and language.

Howard and Jamieson (2014) provide the most accessible definition of patch-writing: It is ‘attempted, unsuccessful paraphrase’ (Howard & Jamieson 2014).

Patch-writing is often seen as an ‘educational scaffold’ on which to build language skills (Yeoman 2017), where sections of plagiarised material form the framework for the writing, and it is interspersed with the writer’s own words. From an educational perspective, patch-writing indicates that writer may not understand the content being written about or the material that was read and cited and/or plagiarised (Yeoman 2017).

The last category of plagiarism is *copy-paste writing*, where text from original sources has been copied and pasted into the author’s writing. The pasted material may be a series of words, entire sentences or entire paragraphs. As opposed to patch-writing, very little attempt has been made to paraphrase in copy-paste writing; instead the focus has been to patch together text from sources to create meaningful text.

A hallmark of copy-paste writing is that it is usually done without attribution because the author is attempting to pass off the writing as their own.

Finding plagiarism

Editors often discuss how they detect plagiarism in writing. One common way is that the editor picks up changes to the language style, syntax, grammar and length of words in the text. Sometimes different spellings can give it away (e.g. *burned/burnt*, *kilometre/kilometer*) as well as the mixing of British and American English between sentences or paragraphs (e.g., *centre/center*, *organise/organize*).

Microsoft Word itself can show clues, such as hotlinks in the text and changes in fonts. Adrienne Montgomerie (2019) wrote about the ‘Ten Signs of “Lifted” Text’ in the online newsletter for ACES: The Society for Editing, many of which are clues that Word can give.

The ten signs of ‘lifted’ text as quoted from Montgomerie (2019) are:

1. non-breaking spaces, which result in erratic line breaks
2. manual line breaks, which may look random
3. straight quote marks and apostrophes
4. embedded hyperlinks (often leading back to the source)
5. font size, type or color changes

6. margin width or line spacing changes
7. running text set in a table
8. language setting changes (in spellcheck preferences)
9. tone, voice or style changes
10. particularly polished prose.

Since about 2000, software has become available that can compare text to already-published materials. Some plagiarism-checking software is free, some is pay per use, and some is by subscription, including these:

- Crossref Similarity Check
- CrossCheck
- Turnitin iThenticate
- Viper
- Plagium
- Grammarly
- PaperRater
- Plagiarisma
- PlagTracker
- Copyleaks
- Duplichecker
- Quetext
- SafeAssign
- HelioBLAST
- Google.

There are some known weaknesses with the software (Cochran 2012), such as being unable to check text in tables and figures, unable to check foreign-language text and unable to differentiate between spelling options in words (such as American versus British English and hyphenated versus unhyphenated words). Because the software compares the text in question against a database of other texts, the software is only ever as good as the corpus being checked against.

It is important to differentiate between replication of text and plagiarism. One way to do this is to look at context. For example, is the replication in the highly technical ‘Materials and methods’ section of a paper composed of so few words that no matter how it is written there will be a lot of replication (Wheatley 2014; Gough 2018; Wager 2011)? Baždarić (2013) calls this ‘technical replication’. There may be only so many ways to say something that is highly technical. An example of technical replication is demonstrated below:

Version 1

The water-holding capacity of the soil was determined by filling a small Buchner funnel, approximately 50 mm in diameter and 25 mm deep, with the sieved soil to overflowing.

Version 2

To determine the water-holding capacity of the soil, a small Buchner funnel (50 mm diameter × 25 mm deep) was filled to overflowing with the sieved soil.

Technical replication is often found in reports on case studies and clinical trials, or in a series of studies in which the published reports must follow specific guidelines for content and structure, leading to similarities between different articles. In these cases, technical replication is both a good and a bad thing because it allows the reports to be comparable but may lead to

suspicion of plagiarism between text sections discussing them (Gough 2018; Arumugam & Aldhafiri 2016; Wager 2011).

Some good questions to ask when reviewing replication of text, to judge whether plagiarism has occurred, are as follows:

- Has the text been cited somewhere (in a large block of text that has been paraphrased), and has the author neglected to add citation or quote marks?
- Are large blocks of text replicated with no effort toward citation and quoting?
- Does the style of the writing in the section in question sound markedly different from that of the rest of the text?
- Does a small section of the text appear word for word in a quick online search?

Using human review of the findings of the software or human review using other tools is imperative to understand whether plagiarism did in fact occur. Even Springer, in their 'Publishing ethics for journals: a guide for editors-in-chief, associate editors, and managing editors' differentiates between severity of plagiarism depending on a number of factors, including extent, frequency and material type (Springer 2013). They also consider the seniority of the offender and the offender's cultural background. These variables are also taken into consideration with the COPE flowcharts (Wager 2011).

How to resolve plagiarism

Resolving plagiarism with an author is a multi-stage process and must be done taking into consideration each individual circumstance. There is no 'one solution fits all' for resolving plagiarism.

For journal editors, depending on who the client is, following the published protocols is necessary as part of the publisher's process. Many publishers subscribe to COPE, and the COPE guidelines for journal editors (Wager 2011; COPE n.d.) supply a flowchart of what to do if one suspects plagiarism. There is now a call for standardisation of protocols or methods of dealing with plagiarism (e.g., Committee on Publication Ethics, Springer, European Code of Conduct for Research Integrity by the European Federation of Academies of Science and Humanities).

The first step for a freelance editor would usually be to explain to the author that plagiarism has been found and then to explain the issue of plagiarism. It may help to point out to the author that manuscript and journal editors are now commonly running submitted manuscripts through plagiarism-detection software, so there is a high likelihood that any plagiarism will be found. Giving the author the opportunity to make revisions once this has been explained will often resolve the issue, and many authors are surprised themselves when plagiarism is found in their documents and are very keen to immediately fix the issue. If these steps fail, freelancers should stop working on the manuscript until the issues are resolved. Freelancers should also consider reporting the issue to the author's target journal or other client.

It helps, when discussing possible plagiarism with an author, for editors to be careful with their language. Keep the discussion as neutral as possible, and avoid blaming. Authors who feel that their personal integrity is being attacked are likely to resist resolution of the problem.

Kerans and de Jager (2010) provide a six-step guide for handling plagiarism by manuscript editors. After checking the manuscript to determine the probability for plagiarism: 1) the amount of plagiarised material is determined; 2) original sources are sought out; 3) type and seriousness of plagiarism is assessed; 4) the editor rewrites the less-serious passages as a means of correcting the plagiarism but also to provide samples for the authors of how to correct it; 5) the manuscript is sent to the authors for further re-writing and to correct passages that have not

yet been corrected; 6) the editor then re-edits and continues to re-write passages where necessary.

Referring authors to the instructions for authors for the journal may be useful. Some instructions explain what is expected of authors and what scientific misconduct is, but some instructions omit detailed information about this, which may make it difficult for authors to understand the standards expected of them (Baynes et al. 2012).

Sometimes plagiarism is due to poor research or note-taking hygiene. In these cases, advise authors that when writing notes and drafts, they should do the following:

- Put quotes around verbatim text and note the citation or reference.
- Put in citations or references for ideas and concepts that are not the author's original ideas.
- Work on paraphrasing where possible in order to avoid copying and pasting from another author's work.
- Reduce the frequency of mistakes and omissions by using citations and referencing.

Improving note-taking hygiene will reduce the frequency of mistakes and omissions with citations and referencing.

For 'Materials and methods' sections, the author can always resort to using 'as previously described' and citing the source article for the methodology, but increasingly this is frowned upon because journals encourage articles to work as 'stand-alone' pieces without requiring the reader to source further journal articles in order to understand the one they have published (Gough 2018; Arumugam & Aldhafiri 2016).

If in doubt, make it a direct quote. Do help the author to avoid using too many quotes, though, because this may suggest a lack of understanding about the text or may be frowned upon in some areas of research (Roig 2015; Jamieson 2013). As Jamieson (2013) says, 'Quotation is a legitimate, important strategy of source use, yet when it is the dominant or sole strategy, it reveals little about the writer's understanding of and engagement with the source'.

In citing and referencing, if text is copied verbatim (even small sections), it must have quotes around it and a citation and reference. If text is paraphrased, it must have a citation and reference. Attempt to differentiate between the words and the concept. If the concept is not the author's own but has come from someone else, then the source of the concept must be cited and referenced. In addition, ensure that authors have cited the primary source where the concept was published rather than a secondary or tertiary source in which the original report is cited or paraphrased (Howard & Jamieson 2014).

Referring the author to Roig (2015) for guidance might also be useful. This document was created for the Office of Research Integrity, US Department of Human Services, to provide guidance in identifying and avoiding plagiarism. Roig, through a series of guidelines, gives a detailed analysis of what plagiarism is, the different types of plagiarism and steps to take to avoid it. He covers acknowledgement of ideas, contributions and sources; paraphrasing and quoting; attribution and citations; and a range of other concepts. Roig's guide is respected as a primary go-to for helping editors and writers identify and resolve plagiarism in scientific writing. Roig provides exemplars of as well as poor examples of paraphrasing. He also includes exercises at the end of the guide so that authors can practice paraphrasing.

Attempting to address the underlying issue may help the author not only with the current work but in the future. As Howard (1992) notes in her pivotal paper 'A plagiarism pentimento', it is not enough just to teach students what plagiarism is and why it is wrong. One must also look at the underlying reasons why the student is plagiarising and then address those. For example, if

it is the case that the author does not understand the articles that they are attempting to paraphrase, suggest that they seek help from a supervisor to understand the subject area they are studying. If they are poorly skilled at paraphrasing or summarising, suggest ways they can practise those skills (Cameron et al. 2012).

Running the paper through a plagiarism checker is always a good exercise. Even checking suspect sentences by copying and pasting into a search engine provides a base level of checking.

Summary

In an increasingly digitised world, with exponential growth in publications, in this case scientific publications, preventing plagiarism becomes a larger and more complex issue. In addition, English may be the international language of science, but increasingly non-native English speakers are contributing to science by writing journal papers. *It is the role of the international research community to ensure that the privilege of native English speakers does not stand in the way of the continued unification and dissemination of good research by researchers across the globe.*

The continued emphasis by universities, research institutions and publishers on publication ethics and the avoidance of plagiarism will reinforce the expected ethical standards. But this must be backed up by an understanding that there are various reasons why plagiarism occurs.

Continued opportunities for educating writers should be made available, not just regarding plagiarism and what it is, but also for increasing writing skills, particularly with an emphasis on the type of writing that authors are expected to produce (scientific, technical, use of jargon and terminology). Thus professors, supervisors and editors should identify writers who are struggling not because of writing skills but because they are failing to understand the material with which they are working (reading, researching, writing).

Authors should respect the culture and ethical norms of the universities, publishers and fellow researchers in the spaces in which they wish to publish, regardless of where their cultural and ethical beliefs were formed. The publication of clear guidelines by publishers will facilitate this understanding, as will continued education in numerous forums, which will assist in normalising the prevention of plagiarism.

In dealing with plagiarism, the editor's roles are to identify it, often to teach authors about it, and then to deal with it on a case-by-case basis according to the guidelines of the publisher or other client.

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