

On the Developing World of Copyrights

As I mentioned in my February 2018 column, one of my goals in writing these messages is to provide useful ideas to young scientists. In this column, I focus on the rapidly developing world of intellectual property and copyrights in scientific publishing.

Before continuing, it is useful to clarify the scope of this writing. First, this column provides an incomplete list of concepts, resources, and references for further reading. Please do not rely solely on my informal summary, and carefully read all relevant copyright forms. I would be thankful for any comments you may have.

Second, let me clarify that copyright matters are separate from, and unrelated to, the ethical problems that may arise from the reuse of previously published material. The IEEE Control Systems Society (CSS) has been very engaged in the topic of ethics in publishing over the years. See the April 2015 "President's Column" [1] for a useful review of the important concepts of "added value" and "transparency" in scholarly publications.

Third, copyright policies and practices are closely related to financial matters. While this topic is beyond the scope of this column, I will just say that publications in CSS journals and conference proceedings provide financial support for CSS activities, covering costs to run the Society, the journals, the conferences, member activities, the awards program, and more. As CSS president, I am thankful for your continued support and endorsement; choosing to publish in an IEEE venue helps support a not-for-profit organization that aims to serve its



Hikers at the top of the Rattlesnake Canyon Trail in the Los Padres National Forest, north of Santa Barbara (from left): Guosong Yang, Brady Gilg, Saber Jafarpour, Sean Wan, Francesco Bullo, Ye Tian, and Xiaoming Duan. Picture courtesy of Sharad Shankar.

members and society at large. For a broad discussion about the financial aspects of scientific publishing, I refer interested readers to the informative article [2].

COPYRIGHT TRENDS IN SCIENTIFIC PUBLISHING

Copyright policies and practices are rapidly evolving because of many important trends in scientific publishing, academia, and industry. For example, we all have noticed rising publication rates (such as increasing yearly page counts) of a growing worldwide scientific community in a rising number and typology of publication venues (such as new journals and conferences).

Enabled by Internet technologies, there is increasing interest in open access articles, that is, articles with very minimal copyright restrictions. Open access works are typically free to download and use (even though they may have some restrictions on their reuse). Paraphrasing from [3]:

1) "Green" open access refers to the practice of depositing a version of

an article on the authors' website or a free online repository. Example repositories include arxiv.org and PubMed Central.

2) "Gold" open access refers to articles that are freely available in their final form. Gold open access articles are typically supported by article processing charges, rather than through subscriptions. Certain journals are exclusively gold open access, such as *IEEE Access* and the journals published by the Public Library of Science (PLOS, www.plos.org), and other journals are hybrid, such as all wholly owned IEEE journals.

Note that gold open access publishing is neither free nor not-for-profit. Regarding costs, publishing an article in the open access PLOS journals costs anywhere between US\$1,495 to US\$2,900, IEEE gold open access costs typically US\$1,950, and even arxiv.org requires a yearly budget to run. Regarding not-for-profit versus for profit, it is a fact that numerous for-profit publishers are investing in open access journals

with clear profit purposes; the open access fee for a *Nature Communication* article is US\$5,700. A detailed description of open access is given at the *Wikipedia* page [4].

Another notable trend is that copyright-related technology and practices are evolving. With the collaboration of most publishers, CrossCheck is growing a database of published works. Based on the CrossCheck database, the iThenticate software is now routinely used to identify the overlap of a newly submitted manuscript against previously published works. In 2012, the IEEE devised a plan to require all submissions to IEEE venues to be examined for possible plagiarism.

Finally, copyright policies are changing. In general, copyright transfer requirements by publishers are becoming increasingly extensive. In response, reuse and author-friendly licenses have been recently developed and are gaining acceptance, such as the Creative Commons effort at [5]. The awareness of producers and consumers of copyrighted content is hopefully increasing.

WHAT'S YOURS (THANKS TO COPYRIGHT LAW) AND WHAT'S NOT YOURS ANYMORE (ONCE YOU SIGN A COPYRIGHT TRANSFER FORM)

Here is a (paraphrased) question I received recently: "Dear Friend, starting from my earlier CDC paper, I wrote an expanded journal article for submission to *Journal on Marvelous Breakthroughs*. The journal article includes some text and figures from the conference article. The author instructions for the journal say that I need permission for any figures that originally appeared elsewhere. What should I do?"

This question and all the issues surrounding it are increasingly important for content creators. Indeed, in response to the question above (and to a vast range of similar inquiries), the IEEE has developed "guidelines and policies on all aspects of IEEE intellectual property rights for authors, readers, researchers, and volunteers"; see [6]. Here is my synopsis of copyright/publishing policies and

practices, focusing on the IEEE and articles for which no open access fee is paid.

When an author creates scientific (but also literary, artistic, or musical) material, the author automatically owns the complete exclusive copyright to it, that is, the legal right to use and distribute the material in any way. Indeed, it is a wonderful academic tradition and widespread policy that scholars own the copyright to their scientific works. So, an author may certainly publish any preprints anywhere they wish.

Next, after acceptance and before publication, most publishers, including the IEEE, require a transfer of copyright. When an author signs a traditional agreement (that is, not gold open access) to transfer his copyright to a publisher, he is typically left with minimal rights to the material. It is often the case that one does not read the details of the copyright transfer form, but please trust me when I say that some publishers have exceedingly broad copyright forms and leave the author with truly minimal rights.

After transferring the copyright to IEEE, the author retains the following rights: the author may maintain a "green open access" version of the material on their websites, on their employer's website, on their funding agencies' website, or on a "preprint server such as arXiv." (The right to post a green open access document on the arXiv is documented in [7]). Authors may not post the final "gold" version of their articles, unless they pay the open access fee. This "green open access" right is conditioned upon an important requirement: the document must contain a notice clarifying that the IEEE owns the copyright, and, after publication, the notice should be updated to include the full citation with DOI information.

ADVICE FOR AN INEXPERIENCED AUTHOR

In summary, as parting thoughts, here are some bits of advice.

- » Find out if your institution claims the copyright for your creations or allows you to own it.
- » Be informed about a publisher's copyright transfer requirements,

and read carefully any copyright transfer form before signing it.

- » While you still own the copyright of your material from submission to acceptance, be informed that you do give the right to IEEE to perform a technical and ethical review.
- » Once you transfer the copyright, you do not own the material anymore and, in my reading of many copyright transfer forms, you may not reuse it without explicit permission from the publisher.
- » Regenerate your own images and diagrams fresh for any new work and consider editing your text from document to document (even when transitioning conference to journal paper).
- » Do not use text or images downloaded from the Internet whose copyright status is unknown; as always, ignorance of the law is no excuse.
- » Post a green open access version of your work on your website and/or on a public repository such as arxiv.org with proper IEEE copyright attribution and DOI information.
- » Consider adopting a reuse-friendly copyright license for your creations, including your own figures before submitting them to a publisher.

REFERENCES

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Francesco Bullo

