

# Writing abstracts—A basic approach

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I am writing this article in a state of irritation. I am irritated because I just read a GEOPHYSICS manuscript that left me (and fellow reviewers) with the unhappy feeling that the abstract was insufficient and needed to be redone. We gave specific suggestions and guidelines, which included Landes' useful and often-reprinted article (1951, 1966, 1990 *AAPG Bulletin*) and my more pedestrian *TLE* article (1993). I have reread those articles and, frankly, I cannot understand how after reading them, authors continue to miss the point about abstracts. What's the problem? Abstract writing is not a mystery!

Why should you care about abstracts? After all, if an abstract is weak, the article is right behind, making up for the abstract's deficiencies and filling in the blanks. No, no, and a thousand times no! Abstracts should not be written to be propped up by the article; abstracts are standalones. Their initial stop is at the front of the article, but later they journey, alone to many other stops, specifically databases. With the advances of databases, the Internet, the '80s, etc. we can search these databases instantly and decide if whole articles are worth getting. We base that decision solely on the standalone abstracts. Making that decision means spending time, money, and resources, which are frequently in short supply. So that who-cares philosophy of abstracting doesn't hold water! Abstracts are very important.

As I said, I have read Landes' and my own article about abstracts many times. They seem so obvious as to be a bit condescending, and yet I have to assume they are failing; they don't seem to be conveying the message. Perhaps this is because both articles have strong foundations in the negative: what not to do. For example, avoid the passive voice. As I might say to my 12-year-old son Ryan, "What part of avoid isn't clear? I advised you to avoid and you ignored my advice. Surely, something isn't clear." Too many authors are like Ryan. Avoid the passive must not be clear; I still see revised abstracts in the passive voice, which is the cause of their inability to "stand alone." Passive voice abstracts make promises of what you'll find in the paper (e.g., "an investigation was done"). Like a hook on TV news, it is a "stay tuned, more after this break" statement. So, my thinking has changed. Instead of being negative, which doesn't seem to be working, I am going to try and be positive. I am skeptical—too many authors have already shown reluctance to follow suggestions—but let's give it a try.

Here's what you should put into your abstract, nothing more, nothing less! Answer the following three questions in the order presented. Do not add anything else; do not stray, do not embellish, just the questions in a straightforward manner:

1. What did you do?
2. How did you do it?
3. What did you learn that was not known before?

That's it. Answer those three questions, in order, and you will have an acceptable abstract. Now be careful; answering may not be as easy as first appears. First, to answer them you will be using active voice, because passive voice statements (like "A field investigation using TDEM over a UXO site was performed,") don't answer any of these questions. It is not what you did, it's what someone did. Stay focused on the three questions!

One of the downfalls of abstracts is including background, setting, justification, motivation, consequences, and other similar information. By answering and focusing on the three questions, this unnecessary information is avoided. Background, setting, justification, motivation, consequences and other probing details are the necessary information to initiate the narrative of your paper—and, thus, belongs in the Introduction. Introductions lay the bulwark for the story you about to tell. They set the stage by ramping up to the means and methods of the paper. But abstracts can be terse and even a bit choppy, as long as they convey what, how and what's new—enough information for people to decide if they wish to continue reading your article. Abstracts are compact and direct and don't ramp up and don't ramp down. Again, abstracts answer three questions: what, how, and what's new? It's just that simple.

Now, consider this: If you cannot answer these questions, easily and directly, especially the last one, you are, most likely, not ready to publish your work. You need to scratch your head a bit more. Your means and methods and results may be done, and they took up most of your effort, but your work is not done. You have to realistically consider the last question. I frequently receive manuscripts that survive in means, methods, giving gazillions of results graphs, but are total casualties in discussion and conclusion—what was learned, and, as a result, what was the value of this work. Authors can get lost in their studies, losing "the forest for the trees," and fail to consider and convey discussions and conclusions germane to the reader. Hence, they are not able to answer the last question without further considerations.

So now I have simplified abstracting to its basics, no garnishing, no fluff. You should be able to write good abstracts!! So, listen to the Abstract Guru, me: Follow these guidelines, answer the three questions, and write good abstracts. It's that simple. **TJE**

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