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 Mechanical engineer and Reader in Thermal Energy, Imperial College London.

**Area of expertise**  
 Combustion, fire science and heat transfer.

**No. of reviews**  
[35](#) (since joining Publons in 2015)

**Editorial positions:**  
 Editor-in-Chief, [Fire Technology](#). Associate Editor for two other journals. Guest Editor of at least one journal per year.

**Describe your first experience with peer review.**

My PhD supervisor asked me to help him review a manuscript. I learnt a lot from it, because at first I didn't do great. I demanded way too much from the authors. I pretty much was saying they had not

yet solved all of the scientific problems in their field and therefore the paper was not ready. My supervisor read it and called me for a meeting. He drew my attention to my impossible expectations, and the need to balance criticism with constructive comments. I worked on it again and the result was much better. My supervisor sent it to the Editor with my signature included. Since then and several thousands of reviews later, I confirm that peer review has an essential constructive role in science, it is not only about setting a minimum standard.

**Why is the peer review system so critical to science and research?**

Traditional peer review is about setting minimum standards for science. In other words, it is a barrier to wrong, weak or incomplete work. But peer review in modern times is also a booster of quality, a corrector of work, and a global improver of science overall. Science progresses better and faster thanks to peer review.

**What would the world look like without Peer Review?**

It is possible to do science without peer review, but science would progress at a glacial rate. First, it would be more difficult to differentiate good science

from bad science, or excellence from scam. Because many more wrong or misleading papers would be published and read, it would take 10 to 100 times more papers to be published on any subject to correct the record and the state of the art.

**Has peer review ever led to major breakthroughs in your personal experience?**

Not long ago I was asked to review a paper for a top journal. The paper was at the brink of being rejected based on two previous reviews. I found the work was beautiful and the findings were most impressive. The authors were correcting the state of the art and putting forward a new theory. I was able to convince the editor to give the authors a chance and instead of rejecting the work, invite them to revise it. The revised manuscript was ultimately accepted in the journal. The paper is now considered a scientific breakthrough. Revolutionary science is not as easy to identify and celebrate as most people might think.

**What is the biggest misconception about peer review?**

There is a strong human component in it that is not always recognized. The output of peer review falls somewhere in the spectrum between

science and opinion. It is not science, and it is not opinion, it is a mixture of the two. If the process of peer reviewing a manuscript were repeated multiple times, the outcome might not be the same because the opinion component can change significantly from one peer to another. Just saying "it is peer reviewed" does not mean a paper is unmovable science casted in stone. It just means that two or three experts, chosen by an editor, think the paper is novel and contributes to science.

**Are editors important to the quality assurance process?**

Editors are the elephant in the room. Their role is essential in driving and shaping peer review and scientific publications, but they are rarely mentioned or recognized. For example, media discussing peer review hardly talk about editors. This means society, and also younger scientists, to a degree, are not really aware of the importance of Editors. In my case, the importance of editors is something I learnt on the job, step by step, more than being taught by anyone.

Thanks Guillermo for joining in on the conversation about Peer Review.