

Myth of the genius solitary scientist is dangerous

November 21 2017, by Ken Clark



Scientist and inventor Rick Sanchez of the animated series Rick and Morty embodies the erroneous popular archetype of the scientist as eccentric lone genius.

Picture a scientist. Seriously, right now. I'm not going to discuss the nature of the person that you have in your mind (although I am going to guess: White? Male? Crazy hair? That's not surprising, but another topic entirely). I'm more curious about what they are doing.

It's a relatively safe bet that the scientist in your head is sitting

somewhere in front of some very intimidating looking equipment, researching as hard as they can. What's more important to me is what you don't see in that image: All of the people worldwide with whom your pretend scientist collaborates.

Unfortunately, this omission can be dangerous, an idea that I will explain later.

First, let's try to figure out why the archetypal image of a scientist is one who works alone. In fact, for centuries this was close to the truth. Looking back at history you can see that many of the [greatest scientific minds](#) tended to work mostly in isolation or, at most, with a few indentured graduate students.

Sir [Isaac Newton](#), for example, is credited with much of not only the physics still used today but also the mathematical framework, and famously preferred working alone (although that could have been due to his propensity for viewing his colleagues as enemies).

[James Clerk Maxwell](#), father of electromagnetism as we know it today, also tended to work solo. Even Albert Einstein gave us the theory of general relativity (and probably the inspiration for the crazy hair mentioned earlier) working by himself.

So, the "lone genius" model of scientific progress has historical justification, right? Well maybe not.

Reality of scientific genius

Newton looked down on his contemporaries (while suspecting them of stealing his work) but regularly communicated with [Gottfried Wilhelm Leibniz](#), who was also working on the development of calculus. Maxwell studied at several prestigious institutions and interacted with many

intelligent people. Even Einstein made the majority of his groundbreaking discoveries while surrounded by people with whom he famously used as sounding boards.

So if this myth has little basis in reality, why do people still believe it?

Think back to the last pop culture representation of a scientist that you saw. I would tend to think of a few favourites like Eleanor Arroway (Contact), Doc Brown (Back to the Future), Peter Venkman (Ghostbusters), Dana Scully (The X-Files), Seth Brundle (The Fly), Hubert Farnsworth (Futurama), and even Rick Sanchez (Rick and Morty).

The one thread that connects all of these characters is that they worked alone. In fact, this is one of the defining characteristics for the majority of them. But this is far from how science has evolved, through many centuries of effort, to function.

Science doesn't happen in a vacuum (unless your experiment requires vacuum conditions). The whole philosophy of scientific investigation requires every idea to go through validation and scrutiny by many scientists. This process can be a bit time-consuming, and sometimes harsh, however it serves to improve not only the results, but the entire process.



Dr. Emmett 'Doc' Brown (Christopher Lloyd) of the Back to the Future films remains one of the iconic popular depictions of the lone genius scientist.

Anything that passes through the fire of criticism from other scientists comes out the other side a vastly improved product.

Dangerous rejection of facts

Given that collaboration is the norm, you may be asking yourself the eternal question: Who cares? How does the image of a lone scientist hero cause any danger to me?

The problem arises when there is a debate about a scientific topic. Following this structure, debate is a necessary and encouraged part of the scientific process. This debate happens before the idea is released to anyone outside of a few scientists and, while it can become heated at times, takes place with great respect between proponents of different

viewpoints.

The danger can come when scientific results are released to the public. Our society now provides a platform for anyone to comment, regardless of his or her education, experience or even knowledge of the topic at hand.

While this is an excellent method of disseminating knowledge, it can also provide a platform for any opinion—regardless of the weight of data behind it—to be equal to that released in more traditional scientific ways.

Particularly in today's largely populist climate, people are looking to see the lone scientist hero overthrow the perceived dominance of facts coming from academia.

And herein lies the problem. In this situation, the opinion of a lone commenter may be considered on equal footing with that of tens or hundreds of people who have made the subject their life's work to ensure their interpretations are correct.

This could give the impression that there is debate about whether evolution is real (it is), or the connection between vaccination and autism (there is none), or whether humans have had an impact on the climate (we most certainly have). Taken to the extreme—which is the only way the internet seems able to take things—these misconceptions can be harmful to everyone.

Setting the record straight

So what can be done? Everyone in this scenario has some responsibility to enact change. The scientists have an obligation to present their results in a manner that's not cloaked behind impenetrable (to anyone but them)

jargon, theories, and paywalls.

Particularly in a society in which science is publicly funded, it is the duty of researchers receiving that money to ensure that science can be understood by everyone. Scientists must also walk a fine line not to dismiss "external" viewpoints out of hand.

On the other side, the public has an obligation to consider the reliability of any opinions they read. In this way, discussions can be had which are well-informed and can further lead to the improvement of the final results.

It's important to make science accessible so that the perception of the "hero scientist" does not cause widespread harm to the results as a whole.

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