

Love Racing? Thank a Scientist!

By Jerry Shulz

As a rank amateur trying to put together a competent racing car, two things have become abundantly clear: first, I do not, nor will I ever claim to be, a mechanic, and second, I continue to be amazed by the efforts of scientists, inventors and engineers for the discoveries that make our amazing automotive technology – as well as countless other aspects of modern life, available to humankind.

I guess I feel the need to declare my awe and appreciation for STEM – Science, Technology, Engineering and Mathematics – because it seems that at least in the popular press and in an alarming fraction of our society there is a sentiment that science is not ‘real’, the province of tricksters, con-men, or charlatans.

To me, this points out a troubling problem in our educational system, since for anyone who has studied the basic sciences – and we all should have, beginning in our primary years – nothing could be farther from the truth.

Science, and the venerable ‘scientific method’ that defines modern science, came about precisely to prevent the misconceptions and misunderstandings of things in our world, of our reality. These misconceptions and misunderstandings are exactly the fodder of those who would manipulate, coerce and deceive others for their own purposes. These are the real tricksters, con-men and charlatans we should all fear.

A few things for which we owe the scientists and inventors of the past:

- ° Modern medicine – an understanding of our biology
- ° Electricity, and what to do with it
- ° Modern hygiene
- ° An understanding of nutrition
- ° Agriculture
- ° All of mathematics
- ° The ability to travel other than by foot! (Yes, a scientist/inventor came up with the wheel!)
- ° Space travel
- ° Bridges
- ° Engineers of all kinds (their fields are all predicated on scientific discovery)
- ° An understanding of ecology, the interrelatedness of all life on earth
- ° Almost any other thing you can think of in today’s world

So why has science been given such a bad name in the minds of some these days? Because not all scientists are good scientists! Like any other profession, there are credible, dedicated, well-intentioned people, and there are likewise crooks, charlatans and manipulators whose goal is deception.

There are bad actors in every field. In the Law, Finance, Entertainment, Education, Religion, and yes, even the sciences, there are those who use their specialized knowledge to attempt to gain an advantage unethically. But that is not the fault of whatever field from which they come. Instead, it suggests the existence of character flaws in the individual or organization.

Most recently, science has come under attack by those with political axes to grind. Real science has nothing to do with politics, other than to make information available so informed, reasonable decisions can be made. Even “Political Science” itself, while a necessary study in a complex modern world, is too subjective in nature to withstand rigorous scientific analysis.

So, what, in my opinion, sets science apart from other disciplines and makes it more trustworthy, more believable? Two fundamental principles – tools - that underly true science: the Scientific Method, and “Peer Review”.

Volumes have been written about the so-called Scientific Method, but in a nutshell, here it is:

The scientific method

- Make an observation.
- Ask a question.
- Form a hypothesis, or testable explanation.
- Make a prediction based on the hypothesis.
- Test the prediction.
- Iterate: use the results to make new hypotheses or predictions.

The Oxford Unabridged Dictionary defines it as “A method of procedure that has characterized natural science since the 17th century, consisting in systematic observation, measurement, and experiment, and the formulation, testing, and modification of hypotheses.”

As such, the scientific method does not involve pre-conceived ideas, it starts with an observation and a question. Always doubt the intentions of one who starts to address a problem with the ‘answer’! A study that starts with an attempt to prove one’s own belief is not a scientific study.

The second tool the sciences use, and the one that sets it apart from most other disciplines, is “Peer Review”. When a scientist determines to answer a question under study, there is what is sometimes considered a seventh step in the method, that of publication. This involves submitting the study to scholarly journals overseen by acknowledged experts in the respective field under study. If a study is deemed to be relevant and valid by the editors of the Journal, and is published, it now comes under review by others in the field, who are at liberty to either agree and support the study or to take exception to it and offer criticism. In this way, the consensus of all who weigh in as credentialed experts in the respective field is approached.

With exceptions, this consensus is rarely static, and it is hoped that new study will further refine our understanding as time moves on.

So, the next time you’re having a blast at an autocross or on a race track, thank a scientist – for the powerful, reliable engines we use, the continually refined suspension technology, the sticky

tires, the improved asphalt, the state-of-the-art timing gear, the safety equipment, but most of all, for the adrenalin and good times!