

Scientific Secrets

The “facts” need to be brought into focus.

Science has many secrets. Not deep, dark, conspiratorial secrets, but practical secrets that are well-known to trained scientists yet not often revealed to the public, and for good reason. Scientists like to project an aura of authority and calm, unbiased rationality, which might be in jeopardy if these “secrets” were widely appreciated. This is especially true in a world where scientific proof is expected and where scientific arguments influence everyday life—think global warming or recycling.

Almost all laboratory science at the university and industrial levels happens without reference to evolutionary theory. It is only in the paper writing stage that authors often search for some evolutionary framework in which to set their results, if only to satisfy reviewers.

So the first secret is that evolution is not at all the main driving force in modern science. The rare exceptions are those who claim to specifically study evolution and who must have something that generates research funding so they can keep their jobs. In truth, the vast majority of science is driven by the desire to know how the world works now and not how it supposedly evolved.

Another trade secret is that science usually doesn't work. In fact, an investigator must work hard to fine-tune conditions to make it work. Less time is spent generating results than time spent working out these “optimal” conditions. Once the investigator believes the results are real, then interpretation begins. One key part of interpretation is developing different ideas to explain the results. These then form the basis for the design of new experiments, whose conditions must once again be optimized before the results can be believed. And so it continues.

The third practical secret of science is that it must tell a good story. Science is, in essence, explanatory. If bits of information are woven together in a way that makes sense to the hearer, the more plausible the story is as



an explanation of an observation—even if it later turns out to be wrong. In practice, a coherent story can suggest new experiments to perform and even predict their results. But where scientific storytelling goes wrong is in the popular media where speculation becomes fact and where extrapolation is too easily held forth as truth. If a story is repeated often enough it starts to sound true. Carl Sagan and David Attenborough of *Cosmos* and *Life on Earth* fame, respectively, each made a second career out of weaving plausible-sounding stories which were often more philosophical than fact-based.

There are other secrets in science. For example, statistics can be used to “prove” almost anything the investigator desires, and proof in medical trials is different from that in a laboratory. In the final analysis though, science is an immensely powerful tool, but it is affected by philosophical and political agendas because it is performed by people who bring their own presuppositions to it. My advice is to be skeptical of scientific claims, especially in popular media, until you know the secrets.

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