

Re: thinking, loose ends, chaos, and assumptions

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- *From:* gresham <Gresham3@xxxxxxx>
 - *Date:* Sat, 14 May 2005 21:31:25 -0500
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In article <118ctd01lbiks0a@xxxxxxxxxxxxxxxxxxxx>, Jo Schaper <joschaper4ospam@xxxxxxxxxxxxxxxxxxxx> wrote:

- > James McKelvey wrote:
 - >> In article <1114787439.425209.276630@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>, >> "don findlay" <don@xxxxxxxxxxxx> wrote:
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 - >>
 - >>>If scientists were truly thinking about their field there would be so >>>many unanswered loose ends it would just dissolve into chaos. To get >>>anywhere you have to make certain assumptions to begin with.
 - >>>
 - >>>In general (i.e., being non-specific and inclusive as possible) what >>>are assumptions based on?
 - >>>
 - >>>I'll kick it off and say a belief. All in favour say 'Aye'
 - >
 - > If you do what you've always done, you'll get what you always have gotten.
 - >
 - > While in school I had some profs who insisted first we read the > literature, then we form an hypothesis, and finally as step 3, we visit > a site where we wanted to test the hypothesis.
 - >
 - > My preferred method of inquiry is to visit a site, look around at what's > happening, or what is unusual, form an hypothesis, THEN read the > literature looking for similar occurrences and how they were tested, and > devise some sort of test for the site to test the hypothesis I had > developed and researched.
 - >
 - > This got me into all sorts of trouble, and I was criticized for being > unscientific, because I did not anticipate a result BEFORE performing > the test (a move, in my mind, which I naively believed might influence > the results of the test.)
 - >
 - > At this point in my life I realize there are two approaches to science: > one deterministic and predictable, and most often used in cases where > science is being used to buttress a predetermined point of view. Sort of > like the the tobacco studies done by tobacco companies showing that > smoking improves productivity and sociability and lengthens life by

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- > relieving stress as you engage in a commonly accepted activity, and says
- > nothing about lung cancer. You can earn a very good paycheck by doing
- > this sort of science.

Oh My! Yes indeed! I've seen this in operation in Geology in petroleum exploration and in research. Most notably in the 'sniffing' programs where the chief Geologist decided that since oil migrated upward and appeared as surface shows, then there maybe be a continuum of seeps and many may be 'micro seeps' . A great deal of time and money was spent on this nonsense. Many Geologist earned a Good paycheck by tailoring and cooking!

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- > The other sort of science is rather serendipitous—you start out with a
- > general field of interest, and investigate aspects of that field, but
- > you are never entirely sure of your end result until you get there. Sort
- > of like solving a puzzle by testing each piece of the puzzle, but the
- > big picture does not come into view until fairly late in the process as
- > you place the tested puzzle pieces together. This sort of science is
- > somewhat speculative, and only rarely is anyone actually paid to do it.
- > In one sort you start with an expected result and tailor your hypothesis
- > and data to fit. In the second, you concentrate on collecting reliable
- > data, and at some point, an hypothesis emerges from that data. This
- > method of doing science is more economically speculative, since many
- > sponsors or employers want verified results, not necessarily novel
- > insights and new ideas.
- >
- > Both approaches are called "science." I suspect one of them really isn't
- > science, but instead uses scientific trappings for its own ends.

I can only speak for myself, I did not choose a method, it was thrust upon me. My very first project was to find the answer to a particular problem (why oil field brines have an inverse Mg/Ca ratio compared to sea water) and ways and means were suggested as to how I should proceed. Over the next ten years my work yielded about five papers and two patents, but not the answer to the original problem. At this point (some what discouraged) I switched from petroleum to minerals (uranium and geothermal) and worked at this for another ten years. I never gave up on the original problem and always read what came my way and as luck would have it I ran across a paper where the author chided me for not paying more attention to my own work! She was quite right, I went back studied my old notes and the problem was solved.

Sometimes research needs a little period of digesting.

BTW Jo – At my first paper presentation my roommate was from Missouri, he introduced himself and I blurted out 'THE C E MARSHAL?' which got me a red face and a chuckle from C. E.

gresham

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- **References:**

- ◆ **Re: thinking, loose ends, chaos, and assumptions**

- ◇ From: Jo Schaper

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