

Science and Speculation

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"Ideas have consequences"—Richard Weaver

There is something about the late hours that clears the mind for contemplation. At least I find it so. Perhaps it is the reduced impingement of sensations; the easing of attentional demands. It was in this quiescent time that, over the past months, I pondered why I felt torn over the value of a recently completed thesis.

I found myself riddled by an abiding, vague sense of forboding over submitting and defending this research. For some reason, although common sense said the work was in fact good, evidencing considerable thought and solid research methods, I would inevitably lapse into a recurrent malaise, an almost palpable sense of dread. While attempting to title the thesis over which I felt so ambivalent the problem came into clearer focus. After tentatively inking, red-lining, and re-inking, the ugly truth stared back in stark relief; I had indulged in speculation. That was the only word for it. Why did this realization feel so awful? The words of Lynn Margulis (1990) echoed in my inner ear:

Whereas in science theory is lauded, speculation is ridiculed. A biologist accused in print of 'speculation' is branded for the tenure of her career. (p. 159)

And I had just titled my own work "Speculations On...! Part of me felt as if I had voluntarily donned a scarlet S. (Like Margulis, I found this concern not without foundation.)

What I became aware of through this Kafka-esque experience is an apparent paradox in U.S. science and science education. Educators, scientists, and business people all lament the low numbers of youth interested in science as a career and poor academic performance in the sciences. At the same time science, through active definition, is being divested of that which is inherently intriguing about it—the generation and exploration of ideas through the art of speculation; the joy of playing with ideas and letting ideas play with us.

In our official scientific orthodoxy that which is not tightly controlled and manipulated, which lacks large numbers of observations based on frequency of occurrence and complex mathematics, is in large considered unscientific, unworthy of serious consideration. I have seen thought-provoking and useful research denied journal publication for being insufficiently 'scientific'. Yet reputable scientists and philosophers repeatedly have pointed out that science is not the objective absolute 'truth' it is wont to be. Science is a human endeavor that is

socially and culturally embedded (Ellenberger 1970, Kuhn 1962). Scientists are influenced by prevailing social/cultural beliefs and are part of the investigation (Dennett 1984, Laing 1982, Lewin 1935, Sartre 1956). Likewise, the truly significant may well be described by the exception, the individual occurrence rather than the frequent, the 'average' (Dennett 1984, Lewin 1935).

Testimony to the importance of speculation in science is found in a diverse array of scientific discoveries. Consider only a few.

- In a dream, Friederich August Kekule envisioned a snake chasing its tail until finally grasping it in its mouth—and proposed the ring structure of the benzene molecule. He admonished his scientific fellows, "Gentlemen, let us learn to dream" (LaBerge 1985, p. 5). (NOTE: some historians discredit Kekule, stating his dream was a ploy to lay claim to this discovery.)
- As a youth, Charles E. Osgood imagined strolling among words, sensed a geometry of language, and as an adult formulated the semantic differential method for quantification of meaning and attitude (Osgood, Tannenbaum and Suci 1957).
- A Scottish physician, James Hutton, roamed the countryside noticing various types of rock formations. He pondered the mechanism of their origin, and contemplated the role of time; a new science of geology revised forever the view we hold of ourselves as a species (Matthews 1971).

Perhaps Webster's Third New International Dictionary (1976) holds a key to explaining why so much dread is attached to the idea of a scientist 'speculating'. It appears the word as currently used has taken on only the negative definition of:

d. Light, casual, or superficial mental examination or study: mere guesswork or surmise (p. 2189)

while ignoring the first-listed meanings:

a. studious or profound considerations of some object or topic; b. the faculty, act, or process of intellectual examination or investigation. (p. 2189)

What is the meaning of this choice of meanings? More importantly, what consequences does this idea have?

No one can deny the utility of the language of quantification. However, if we want a creative and vital science, one that attracts human beings and awakens their genius, we may indeed need to learn (or relearn) to dream, to speculate. Science is, as Gould (1977) notes, "...after all (although we sometimes forget it), practiced by human beings." (p. 125)

Danger lurks in confusing our useful conceptual fictions (Vaihinger 1968) with 'truth' or in allowing ourselves to engage in a type of fictional chauvanism, elevating one particular fiction above all others. Like Adler (1956) I fear those who hold a mistaken view of metaphysics and "...would like to see everything eliminated from

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the life of mankind which they cannot comprehend immediately." (p. 142). Adler goes so far as to comment that:

Authors afraid of losing ground or of being assailed by criticism attach importance only to those facts that are capable of receiving physical confirmation in laboratories and that can be recorded and reduced to figures. They feel protected by mathematical rules and they become irritable if they are without such symbols. (p. 198)

Of course, this has all been speculation.

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A Poem About Range Management

Sometimes in the papers, an article's printed,
About you who manage the range,
And those articles are mainly the reason,
Why everyone thinks you are strange.

My neighbor, he practices holistic management,
He's lost all his marbles, I'm sure—
He runs through the range while he blows on a whistle,
Yelling, "I'm an artificial predator!"

And now with the CRP Program,
We make things sound worse than they are;
The truth is the land only needed a rest,
But it sounds like it needs CPR.

We're giving the wildlife birth control.
I'd sure like to see the inspection
That those old park rangers have to go through
To make sure the bull moose use protection.

We hear that a hundred million buffalo,
Out on the range used to toil;
Then we hear that we have to get rid of the cattle—
Their cloven hooves damage the soil.
The newspapers probably misrepresent you,
They make us all misunderstand;
Do rangeland managers manage the range,
Or do they manage fantasyland?

Jay Kulm
Seaview, WA