

The Uncertainty of it All  
A summation of thoughts.

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To begin, I am reminded of a phrase I once heard, “If Heisenburg was uncertain, what makes you so sure?” This particular phrase has held special significance for me. When I first heard it I instantly laughed out loud with abandon, my wife at the time uncomprehendingly stared at me, but over time it has gone beyond just being humourous and come to symbolize for me a certain way of thinking. No matter how true, certain, sure, positive one may be about something, anything, one hundred percent confidence is impossible. Let me explain; simply and popularly stated Heisenburg’s theory broadly says that if the speed of a subatomic particle is measured its location cannot be simultaneously ascertained and if location were instead measured then speed cannot be simultaneously ascertained. So, this means that at any point in time and space precise location and speed cannot be simultaneously determined. It is enough to understand that Einstein hated the idea and in response remarked, “God does not play dice.”

The significance to me was in its *scientific* way of saying that nothing is for certain. From a field that gave us Galileo, Keplar, Newton, Einstein and Bohr, a tradition where nothing is left to subjective observation or chance and where all things must be conclusively explained, our machine culture that has feed many more millions and brought man to the moon and back, and also where the sum of the parts is equal to the whole, to now have a scientist state that some things can not be determined absolutely is stunning. Einstein’s Theory of Relativity, while it is a law, says that it does matter where one is in relation, and ‘relative’, to that which is studied and, for Heisenburg, there are some things that cannot be determined no matter how hard one tries. Both men had horrible times explaining and verifying their theories, indeed, they were often vilified by their peers as being unscientific, insane and insufferable for insisting on the validity of their theories. It seems that their ‘objectivity’ was as questioned as their theories themselves.

Another popular theme in the past decade or so and the impetus for Hollywood's rampaging dinosaur films is Chaos Theory (Gleick, 1987) and its accompanying Butterfly Effect within complex systems (Coveney and Highfield, 1995). Chaos Theory, is in effect a misnomer as the state of chaos is itself a form of organisation, albeit a very complex one where things that appear to devolve into a state of chaos from their original state are, in fact, attaining a different and often more diffuse and stable state. I like to think of it as relaxed randomness as opposed to restrained order. And this itself reforms into a new order of growing complexity. As one line in the movies said, "Nature finds a way." This, too, has caught scientists somewhat of guard. What was thought to be predictable is, in fact, not. Similarly the Butterfly Effect says that even the minutest event can have far reaching and enormous affect on complex systems felt half a world away. Here, simply, the idea tells of a butterfly flapping its wings in the Gobi desert of China can have enough affect on the air currents that will eventually become storms in America. So, here again science is dramatically affected as it becomes virtually impossible to speculate, or predict, with any total accuracy the actual 'cause and effect' of large and small systems. The summer of 2006 was predicted by National Oceanic & Atmospheric Administration (NOAA), U.S. Department of Commerce, to be an intense hurricane season by all weather models, at least 10 with half of them category 4 or 5, the most powerful recorded and there were worries of even a more powerful hurricane to appear. This was in the wake of 2005's Katrina event. Well, of course, the 2006 hurricane season was nothing like the predictions and only 5 were recorded and nothing of any great consequence. Very large complex systems are very tough to predict indeed.

Science has done so much work on brain theory and learning that the buzz word 'metacognition' or thinking about thinking has become normal in our schools when ever teachers talk about how children learn. Now Malcolm Gladwell has come up with his idea of Blink, or

thinking without thinking, where he discusses the “Aha!” moment and how it comes about. I was stunned by the implications. The “Eureka” moment cannot be orchestrated as we had assumed by ever more advanced and higher learning that will culminate at some point in time where the next leap of understanding or logic should occur. Learning does not create that moment, rather the learning, although still necessary, enabled the moment of insight to occur. And that moment could come at any time, often unbidden and in unlikely circumstances. The best example of this I am aware of is of a Japanese archaeological team who studied the Pyramids of Giza and were, as all have been, confounded by the measured exactness of the equilateral sides. How could this have been achieved in the days of antiquity without transit and modern surveying technologies. Egypt gave the team permission to study the pyramids first hand for 10 days. The team tried to measure by lengths of rope first, but the stretch in the rope made it impossible to maintain equal lengths. Steel tape was used but the stretch problem persisted. For nine days the team tried everything they could think of. During the night of the next and last day a frustrated crew went to sleep. During the night one team member restless with thought and fatigue fell into a shallow sleep and if by electric shock suddenly sat bolt upright exclaiming that he had the solution. Frantically he assembled the team, asked for a wheel to be mounted on a stick with the circumference of the wheel to be equal to one cubit, the standard measure of the pyramid builders time. He put the wheel down at one corner and walked the length of the side, counting revolutions as he went. At the end of the side he turned ninety degrees and walked the other edge counting again as he went. The revolutions were identical in distance and so here was a simple, non-extraterrestrial, solution to the mystifying problem. To me the even more mystifying question is how did his mind finally come up with the solution? He was highly educated, knew all there was to know about the pyramids and this knowledge

enabled him to come up with the solution, but in his sleep. So what are the implications in all this for our world, and more particularly for my world.

In a world so dominated by positivism and scientific rationalism, it seems odd that such great ideas and discoveries, considered scientific, would come from such strange circumstances and talk in such ways as to make one feel that these ideas were not in fact scientifically derived but were in fact intuitive leaps of logic and understanding, or even just fancifully made up. This in itself should render them as 'unscientific' and therefore not 'truth'. They somehow do not seem to stand up to the 'objectivity' test that so much of science requires. However they do stand as some of the greatest discoveries. So how is this possible? Is it possible that the scientific community knows it is not objective and that they are subjective as any other method of inquiry?

Power has been in the positivists hands for so long that this paradigm has taken on mythic proportions. That they should endeavour to retain this power is no small wonder. What is interesting to me is the continued efforts of many others to search outside that mainstream for answers to their and others' existence. Spirituality remains as a large area of study while trying to answer large questions that the positivists have difficulty with. Foucault says that we are seeing a "...insurrection of subjugated knowledges ... a whole set of knowledges that have been disqualified as inadequate to their task or insufficiently elaborated: naïve knowledges, located low down on the hierarchy, beneath the required level of cognition and scientificity."(Foucault, pg 70) So where are these subjugated knowledges? It is interesting that the scientific, modern, positivist community generally described the issue by calling themselves the hard sciences and the others 'soft sciences'. Power remains in the hands of the positivists to this day in spite of a large and diverse community of seemingly resurrected subjugated knowledges. Education of

centuries worth of children has largely been in the scientific tradition and paradigm. But certainly inroads into this paradigm have taken place over the past 100 years or so.

The 'new' are really the old subjugated knowledges. Common sense, practicality and eons of observation, generation after generation, that made sense of the human condition from a human standpoint. Little could be tested by science and so these knowledges were seen as unscientific, unsubstantiated and therefore null and void, except for their curious quirky interest. How could these "new" knowledges gain credibility in an environment such as that run by the positivists?

Part of this battleground has appeared within information analysis. The scientific community is deeply involved in Quantitative analysis, where 'scientifically' derived facts and figures are collected and this data is 'crunched' to satisfy or disprove a proposed theory. This view sees itself as the ultimate arbiter of truth as it is believed to be openly arrived at and most importantly objective in its data collection and analysis. Positivists can say this for their theory and its data must be peer evaluated and the theory reproducible at any place and any time in order to gain validity and become a truth or scientific fact. Each of these are really limitations for if all of the community are positivist based then 'peer' evaluation can only occur along predetermined positivist lines, outside views or opinions are not valid, so the peer review itself is very limited in scope. The same can be said of the test of theory being reproducible in any place at any time. If a scientific theory is able to be reproduced exactly as the original any place and time then it must be general in its scope for a specific theory would have greater difficulty being reproduced just anywhere as the parameters anywhere on earth are different from the initial or parent experiment/theory. Hence we always hear about the exceptions as anomalies, aberrations that must be taken out of the data set. So, the idea that science can explain phenomena and

anomalies are withdrawn would lead one to conclude that some form and degree of ‘subjectivity’ has entered into the picture. But such is their power that people accept this unequivocally. Scientists who deviate from this are outcast, much the same as the anomalous data.

Qualitative analysis, in my view, came about as a quasi-scientific response to the criticism by scientists of the conclusions drawn by researchers who did not use recognized scientific formulations, who disputed the claims of objectivity of the scientific community, and so whose theories were then brought into question by the academic establishment so firmly seated in positivism/modernity. To combat these accusations standardized data collection, interpretation methods and overall frameworks were tested and adopted by various researchers as they endeavoured to have their work accepted by the scientific community. This could be accomplished as the view is that nothing is truly objective, even scientific ‘facts’, therefore subjectivity is everywhere and this little acquiescence to science may not be a bad thing anyway if one can get their work published. Of course this opened a large can of worms, so to speak, as many things were now studied in many different ways. Adherents to certain methods pushed their points forward and it appears that the initial contest for validity has calmed down to accepting many methods of research depending on the desired approach of the individual researcher themselves. Post-modernism, post-positivism and even post-structuralism have become accepted research methods as more and more everyone becomes comfortable with the idea that while it is nice and easy to say one is objective in one’s research, everyone knows that bias, differing lenses and alternative views are accepted as normal. That the truth one finds in their work is really only truth for them and the greater world can only accept or reject it. But as one may wish for this scenario, unfortunately it is not quite so. The Quantitative and the Qualitative are two differing camps and seemingly never the twain shall meet.

Some have espoused a mixed methodology, that of Quantitative and Qualitative methods, to create what appears a more generalized and authentic final view of any given research topic. Of course, the Qualitative researchers would readily accept this compromise seeing as how they are the lost ones and are begging for some sign from the Quantitative of acceptance. But this cannot work and is doomed to failure, for while the Qualitative can accept the scientific rigidity as a part of their spectrum of analysis, the Quantitative will brook no compromise away from the scientific method of validity and see no other form of interpretation of the data.

So where am I now? I am more uncertain now than when I started. My truth be told I have been a hypocrite for years. I have 'hung my hat' on facts and figures that I relate to others, mainly my high school students, and yet I am continually the 'devils advocate' as I try to promote a emotional, human answer to a question rather than the inhuman, scientific objective answer. I have somewhat intuitively known that there is no such thing as definitive truth, nor objectivity have zealously protested against those who proclaim to have it. I have always sensed that perhaps their truth was good for them, but that my truth, and those of anyone else for that matter, was good for me, and them, also. I never had a problem with multiple truths, it just seemed to make sense to me. Objectivity, to me, is a method to avoid being scrutinized in a certain way.

But I have been educated in, and I teach in, the positivist paradigm. I have sought to come to some singular truth that may explain the workings of human history and have come to some conclusions that I have taught and pressed onto others as THE truth. This, of course, is false. It is a knowledge and power situation not unlike the debate between Quantitative and Qualitative analysis. And I find myself craving both, each for the good qualities and admonishing both for their bad.

Quantitative analysis is, for all intents and purposes, the scientific method and has been the predominate paradigm for nearly half a millennia. While it has allowed great strides to be accomplished it has its limitations. It can be overly used to justify policies that seek to make one person or group more powerful than another and that to me is its lethal fault. That is not objective truth, it is, rather, subjective power.

For the foreseeable future we remain in the positivist paradigm until Foucault's 'subjugated knowledges' truly return, where the "functionalist coherence or formal systemization" are themselves subjugated in favour of ...

*"the re-emergence of these low ranking knowledges, these unqualified, even directly disqualified knowledges, and which involve what I would call a popular knowledge, a differential knowledge incapable of unanimity and which owes its force only to the harshness with which it is opposed by everything surrounding it – that it is through the re-appearance of this knowledge, of these popular knowledges, these disqualified knowledges, that criticism performs its work."(Foucault, pg 70)*

And so my search for certainty continues

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