

Students' Exploration on "Quantum Agriculture" on Radio, and my Exploration on "Pseudoscience"

Let me share with you what transpired here at UPLB last March 21, 2012. Development Communication students set up a panel discussion in their radio program "Do you AGRI?". The panelists were myself (considered agriculture scientist and promoting Quantum Agriculture), a Physics professor, and two undergraduate students pursuing fields in Agribiotech and Applied Physics. The proceedings may be **read here** or **heard here** (contracted version, in mixed language).

Students are asking ... what is this "Quantum Agriculture" organism that people in campus are talking about? Some gladly receive it, while others seem perplexed, if not disturbed, and a number say that it is "PseudoScience" or not True Science (*"suds" or science ?*). It is indeed healthy to be skeptical because this attitude can be the beginning of deepening of one's truth. I tend to be one, too, but can't resist my inclination toward indigenous practices and knowledge systems. I am always intrigued with the science of "unexplained", "amazing" or "out-of-the-box" practices and phenomena, especially in agriculture. Only later did I realize that these concepts and practices are labeled "pseudoscience" by some sectors or individuals. I feel confident, however, that the scientific explanations will continue to be revealed. Indeed, science is discovering new things that bring many of those in the list of pseudoscience their due "true science" status. In fact, many practices or concepts have already been taken off the list of Pseudoscience as scientific knowledge grew, and as scientists came to accept them. Thus, what would be more productive now is not to argue who or what is right but to try to understand that there is a more expanded definition of science, that science evolves and has a half-life, that it is not neutral, and that knowledge may be obtained through other processes.

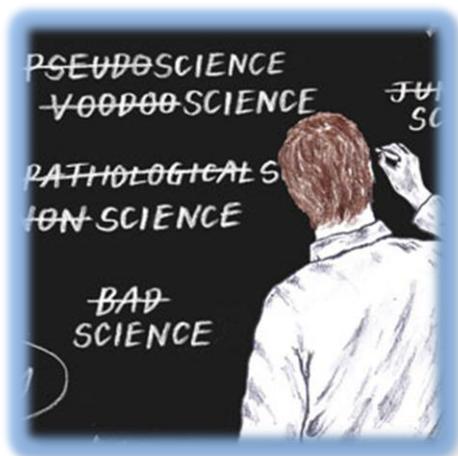


Image: Illustration by Alex Robbins

One who would like to further know about pseudoscience may just search the internet because articles abound there. The internet is also replete with readings to support the validity of many of those considered false science (some references given at the end of this article).

Quantum in Quantum Agriculture

Now, on to the use of “quantum” in quantum in agriculture... I qualified that my quantum version is about those that have a quantum leap effect, or of using super small amounts of matter and of subtle forces. I use quantum to refer to those that are under “non-material science”, or to “Spiritual Science” (i.e., that of Steiner’s Anthroposophy), to science of subtle and formative forces, etc. An interesting foreword on “The Magic of Quantum” by Phyllis Kirk can provide further insights on quantum and the author’s journey into the quantum world (Click here: <http://www.themagicofquantum.com/files/foreword.pdf>; and here <http://www.themagicofquantum.com/book.php>).

“Quantum Agriculture” could be easily dismissed as pseudoscience because it is a relatively new term, unknown to many, very different, promotes indigenous knowledge systems, and gives support to some practices that are in the list of pseudoscience. The name could also rub physical scientists the wrong way for the free use of the word “quantum” to apply in agriculture (remember that quantification, manifestation, precision, and repeatability are big issues in quantum mechanics and materialist science in general). The history of my advocacy can be gleaned from the radio interview mentioned at the onset. There and elsewhere I always relish the opportunity to speak about or spread news on the new science and on quantum approaches that are holistic and sustainable, because in the academe even **Organic Agriculture** is still largely dismissed as pseudoscience by some respected scientists, despite the presence of evidence and the recognition of its validity by different sectors and by the law on organic agriculture for the country in 2010. Many of those who started shifting toward organic are yet to free themselves from the reductionist mindset.

What is Pseudoscience?

Below is some definitions on what is pseudoscience, for a ready reference:

***Pseudoscience** is a claim, belief, or practice which is presented as scientific, but does not adhere to a valid scientific method, lacks supporting evidence or plausibility, cannot be reliably tested, or otherwise lacks scientific status... is often characterized by the use of vague, exaggerated or unprovable claims... an over-reliance on confirmation rather than rigorous attempts at refutation, a lack of openness to evaluation by other experts, and a general absence of systematic processes to rationally develop theories....*

<http://en.wikipedia.org/wiki/Pseudoscience>

***Pseudoscience** is any belief system or methodology which tries to gain legitimacy by wearing the trappings of science, but fails to abide by the rigorous methodology and standards of evidence that demarcate true science....* <http://rationalwiki.org/wiki/Pseudoscience>

A pseudoscience is often known as fringe-or alternative science. The most important of its defects is usually the lack of the carefully controlled and thoughtfully interpreted experiments which provide the foundation of the natural sciences and which contribute to their advancement ... <http://www.chem1.com/acad/sci/pseudosci.html>

The word "pseudo" means fake. The surest way to spot a fake is to know as much as possible about the real thing—in this case, about science itself. Knowing science does not mean simply knowing scientific facts (such as the distance from earth to sun, the age of the earth, the distinction between mammal and reptile, etc.). It means understanding the nature of science—the criteria of evidence, the design of meaningful experiments, the weighing of possibilities, the testing of hypotheses, the establishment of theories, the many aspects of scientific methods that make it possible to draw reliable conclusions about the physical universe.

<http://www.quackwatch.com/01QuackeryRelatedTopics/pseudo.html>

And here are sites that offer characteristics of pseudoscience:

<http://www.quackwatch.com/01QuackeryRelatedTopics/pseudo.html>

<http://www.tmforum.org/community/groups/frameworkx/blog/archive/2010/03/19/beverstein-s-pseudo-science-criteria.aspx>

<http://earny123.hubpages.com/hub/Anomalistic-Psychology-Science-or-Pseudoscience#>

- 1) *Isolation – failure to connect with prior and parallel disciplines*
- 2) *Non-falsifiability – no means to invalidate hypotheses*
- 3) *Misuse of data – leveraging data out of context or beyond validity*
- 4) *No self-correction, evolution of thought – often centred round a single 'thought-leader'*
- 5) *Special-pleading – the claim that this is a special-case that can't be measured in any other terms*
- 6) *Unfounded optimism – unrealistic expectations*
- 7) *Impenetrability – an over-dependence on complicated ideology and obfuscation, or bluster in place of debate*
- 8) *Magical-thinking – such as "the belief that good things will result from willpower alone"*
- 9) *Ulterior motives – particularly ulterior motives of a commercial kind*
- 10) *Lack of formal training – including certification schemes that link back to #4*
- 11) *Bunker mentality – such as complaints about being 'misunderstood' by others, and often linked to #5 and #7*
- 12) *Lack of replicability of results – especially replicability by others under controlled conditions*

Or more easily Coker offered the ways by which one may distinguish real science from the fake: <http://www.quackwatch.com/01QuackeryRelatedTopics/pseudo.html>

1. *Pseudoscience displays an indifference to facts.*
2. *Pseudoscience "research" is invariably sloppy.*
3. *Pseudoscience begins with a hypothesis—usually one which is appealing emotionally, and spectacularly implausible—and then looks only for items which appear to support it.*
4. *Pseudoscience is indifferent to criteria of valid evidence.*
5. *Pseudoscience relies heavily on subjective validation.*
6. *Pseudoscience depends on arbitrary conventions of human culture, rather than on unchanging regularities of nature.*
7. *Pseudoscience always achieves a reduction to absurdity if pursued far enough.*
8. *Pseudoscience always avoids putting its claims to a meaningful test.*
9. *Pseudoscience often contradicts itself, even in its own terms.*
10. *Pseudoscience deliberately creates mystery where none exists, by omitting crucial information and important details.*
11. *Pseudoscience does not progress.*

12. *Pseudoscience attempts to persuade with rhetoric, propaganda, and misrepresentation rather than valid evidence (which presumably does not exist).*
13. *Pseudoscience argues from ignorance, an elementary fallacy.*
14. *Pseudoscience argues from alleged exceptions, errors, anomalies, strange events, and suspect claims—rather than from well-established regularities of nature.*
15. *Pseudoscience appeals to false authority, to emotion, sentiment, or distrust of established fact.*
16. *Pseudoscience makes extraordinary claims and advances fantastic theories that contradict what is known about nature.*
17. *Pseudoscientists invent their own vocabulary in which many terms lack precise or unambiguous definitions, and some have no definition at all.*
18. *Pseudoscience appeals to the truth-criteria of scientific methodology while simultaneously denying their validity.*
19. *Pseudoscience claims that the phenomena it studies are "jealous."*
20. *Pseudoscientific "explanations" tend to be by scenario.*
21. *Pseudoscientists often appeal to the ancient human habit of magical thinking.*
22. *Pseudoscience relies heavily on anachronistic thinking.*

Certainly I do not wish Quantum Agriculture to be affiliated with any of the described traits. But I also do not agree that all those listed under Pseudoscience are what they are- false science. You might be surprised to see many of those you hold dearly in your heart are there. A sample list may be found in this site:

http://en.wikipedia.org/wiki/List_of_topics_characterized_as_pseudoscience

There are many, and the list is longer than the criteria... However, this should not be a cause for despair or confusion, because the recent developments in science have already come to lend validity to many of those in the list. Many of those are already off the list but many are also added as science progresses, just waiting for proofs and new finds in science to validate them.

Of course there is also some psychology involved in making the list. Some thinkers offer factors like culture, religion, habit of thinking (like ready judgment), framework of education, and egotism. Sheer deception (for some vested interest) could also come into the picture. A good perspective on humanity's history also gives us some perspective on the polarity of science. Remember?: *The earth was flat then round; it was the center of the solar system then it is not. What about acupuncture, meditation, yoga and many more in the Eastern tradition?* Now, there are advances in science that deal with the invisible or non-material realms (beyond electromagnetic on to quantum mechanics, unified field, and strings). Here are a few of the advances in different scientific fields:

a. Physics- Quantum physics and non-locality

b. Chemistry- quantum chemistry, non-equilibrium dissipative structures, self organization and chaos (Ilya Prigogine):

(<http://www.osti.gov/accomplishments/prigogine.html>)

(<http://www.youtube.com/watch?v=2NCdpMIYJxQ>)

(<http://www.osti.gov/accomplishments/prigogine.html>)

(<http://www.youtube.com/watch?v=2NCdpMIYJxQ>)

(<http://www.osti.gov/accomplishments/prigogine.html>)

Green chemistry, bio mimicry (*design principles borrowed from nature for use in human settlements, industries, etc.*)

http://portal.acs.org/portal/acs/corg/content?nfpb=true&pageLabel=PP_ARTICLEMAIN&node_id=1415&content_id=WPCP_007504&use_sec=true&sec_url_var=region1&uuid=14fbef55-7743-424c-af54-e426ee0634b7

http://www.zerowaste.org/publications/06j_gc_pres.pdf

c. **Biology**- Epigenetic biology (the new exciting mainstream understanding of our genome). Evolutionary biology and non-Darwinian evolutionary theory
<http://www.bruceLipton.com/spontaneous-evolution-overview/>

Read also the book by Bruce Lipton, "Biology of Belief" to get an idea. Or watch the video- (<http://www.youtube.com/watch?v=VYYXq1Ox4sk&feature=related>)

Elisabet Sahtouris <http://www.sahtouris.com/>
<http://www.ratical.org/LifeWeb/Articles/theBridge0302.html>

From Mechanics to Organics: An Interview with Elisabet Sahtouris
(<http://www.scottlondon.com/interviews/sahtouris.html>)

What's Wrong with Environmental Education? Elisabet Sahtouris
<http://www.ratical.org/LifeWeb/Articles/theBridge0302.html>

The Systems View of Life - Fritjof Capra...videos
(<http://www.youtube.com/watch?v=2NCdpMIYJxQ>) or
the magic of Consciousness

(<http://www.youtube.com/watch?v=48ol4sHasA8&feature=related>)
Fritjof Capra at Schumacher College (http://www.youtube.com/watch?v=_c_M1HK7aw)

e. **Astrophysics**- the Anthropic Principle
<http://www.reasons.org/articles/anthropic-principle-a-precise-plan-for-humanity>
http://www.physics.sfsu.edu/~lwilliam/sota/anth/anthropic_principle_index.html

f. **Social Science**- Linguistics and the evolution from polysemous to monosemous words

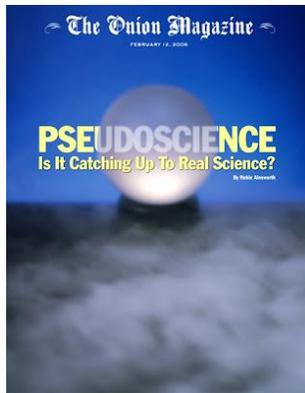
g. **Mathematics**- projective geometry

h. **Medicine/Brain science**- neuroplasticity

i. **Agriculture**- Ecological pest management; Utilizing microbes;
Quantum agriculture: Biodynamics, Homa-agnihotra, Vedic, Yogic, etc.

Concepts such the following are now acknowledged to be scientific or true:

- ❖ *Non-locality (local action has impact elsewhere)*
- ❖ *Quantum entanglement*
- ❖ *Morphogenetic fields (formative forces)*
- ❖ *Universal intelligence (scientists already accepted)*
- ❖ *Living Earth*
- ❖ *Collective consciousness (creative unique power & ideas emerge in a group)*
- ❖ *Chaos*
- ❖ *Presencing*
- ❖ *Imaginal cells*
- ❖ *Scalar energy, zero point energy*
- ❖ *Biophotons*
- ❖ *Mutualism*
- ❖ *Wormhole*
- ❖ *Quantum Computers*
- ❖ *Big Bang*



Some of these developments have been featured in my earlier postings, and more later. It would also be good to mention that the concept of pseudoscience, as distinct from real or proper science, may have emerged in the mid-19th century (<http://en.wikipedia.org/wiki/Pseudoscience>) and that “among the issues which can make the distinction between the two kinds of science difficult is **variable rates of evolution among the theories and methodologies of science in response to new data**. In addition, specific standards applicable to one field of science may not be applicable in other fields” (<http://en.wikipedia.org/wiki/Pseudoscience>). More is said below:

Philosophers of science, such as Paul Feyerabend, have argued from a sociology of knowledge perspective that a distinction between science and nonscience is neither possible nor desirable. Larry Laudan has suggested pseudoscience has no scientific meaning and is mostly used to describe our emotions: "If we would stand up and be counted on the side of reason, we ought to drop terms like 'pseudo-science' and 'unscientific' from our vocabulary; they are just hollow phrases which do only emotive work for us". Likewise, Richard McNally states, "The term 'pseudoscience' has become little more than an inflammatory buzzword for quickly dismissing one's opponents in media sound-bites" and "When therapeutic entrepreneurs make claims on behalf of their interventions, we should not waste our time trying to determine whether their interventions qualify as pseudoscientific. Rather, we should ask them: How do you know that your intervention works? What is your evidence?"

Homeopathy and Biodynamics

Now let us proceed to two of my favorites **Homeopathy** and **Biodynamics**. Homeopathy is for healing and medicine, while Biodynamics is for Agriculture (they are under the umbrella of Anthroposophy). These two have been variously listed as under Pseudoscience. But scientific reports and my experiences, as well those of others, say otherwise. They both work. They are now being applied wide-scale and are adopted by scientists and practitioners, and even by the business sector all over the globe. The International Organic Agriculture Movements (IFOAM) used Biodynamics as basis for Organic certification. On Homeopathy, read the article of a Nobel Prize recipient on Homeopathy vis a vis pseudoscience: Nobel Prize Winner Luc Montagnier Supports Science of Homeopathy (http://www.naturalnews.com/031210_Luc_Montagnier_Homeopathy.html). What would be useful to know in general is that we cannot apply scientific explanation to the above and

other practices if we don't and can't bring ourselves from materialist science to the nonmaterial science framework.

Here are other internet readings that I strongly resonate with:

"Questioning the Scientific Worldview" by Tom McFarlane

<http://www.integralscience.org/questioning.html>

"Mystery of Consciousness: A Critique" by Nick Perlas

http://www.imaginalmission.net/web2.0/index.php?option=com_content&view=article&id=86&Itemid=215

"BEYOND THE PHYSICAL. A Synthesis of Science and Occultism In Light of Fractals, Chaos and Quantum Theory". Bu Donald J. De Gracia

http://www.2shared.com/document/wq8DU0Bl/Beyond_The_Physical_-_A_Synthe.html

http://www.4shared.com/office/02CUer8o/Beyond_the_Physical_a_synthesi.html

"What Is Pseudoscience? Distinguishing between science and pseudoscience is problematic" by Michael Schermer in Scientific American

<http://www.scientificamerican.com/article.cfm?id=what-is-pseudoscience>

"Pseudoscience and Postmodernism: Antagonists or Fellow Travelers"

http://www.physics.nyu.edu/sokal/pseudoscience_rev.pdf

"THE SOUL OF SCIENCE: Christian Faith and Natural Philosophy" by Nancy R. Pearcey and Charles B. Thaxton

http://www.lambsound.com/Reading/books/Christian_Faith_and_Natural_Philosophy.pdf

"IS THE PSEUDOSCIENCE CONCEPT USEFUL FOR CLINICAL PSYCHOLOGY? The Demise of Pseudoscience" by Richard J. McNally

<http://www.srmhp.org/0202/pseudoscience.html>

Edgar Mitchell Nature's Mind: the Quantum Hologram

<http://www.edmitchellapollo14.com/naturearticle.htm>

A lot more can be added, but these for now.

Lastly, I would like to reiterate that what we now most need is not to win the debate (on whether quantum agriculture practice is false or flawed). Debates can only bring us nowhere or to bigger wars. We need more to check ourselves and see whether we are open to let in change and new truths, to accept the idea that science evolves (note that agriculture science half life is considered to be 6-7 years), and to act according to serving the truth, the earth and humanity. We need to humanize science and enable it to shed light on the true nature of the human being. We also need to reframe our understanding of nature.

I can assure you that there is now an abundance of scientific studies validating certain phenomena, including those surrounding Quantum Agriculture. The greater challenge now, however, is whether we can cultivate respect, unity, openness, intuitive wisdom or discernment, and re-connection to Nature. If we meet these, Truth may reveal itself. Here, too, Science can serve the Truth. I am not in favor of false science but would not limit myself to a science that only applies man's limited capacities to a universe that is more vast than man. Exploring the fusion of arts and science, such that of Leonardo da Vinci (e.g., http://www.youtube.com/watch?v=c_M1HK7aw) and Johann Von Goethe (e.g., <http://www.awakenings.com/jcms/anthroposophy-and-goethean/35-general-anthroposophic-and-goethean/45-goethean-science.html>; <http://www.kheper.net/metamorphosis/Goethean.html>) has made it much easier for me to delve into the hidden secrets of nature. Check out the following differentiation between the ordinary or old science and the new science. It is about Quantum Paradoxes... and summarizes Quantum traits.

The difference between Quantum and the older Science

(by Phyllis Kirk: <http://www.themagicofquantum.com/forward.php>)

Newtonian

Matter is made up of 'things'

The world is a clockwork machine

We understand things by taking them apart

Knowledge comes in pieces: science, math, art

People have narrow, specific skills

Motivation is based on manipulation of external lures

Things fall apart

The basic unit is 'things'

Structures are man-made

Order comes from having structure

Information should be closely managed

Either/or

Certainty

Predictable

Determined

Linear

Observer/observed

Duality: good/bad, right/wrong

Judgment and exclusion

Change is the troubling exception

We want equilibrium- - -

Quantum

Matter is bundles of energy in relationship to each other

The world is a great thought

We understand things by **looking at the whole**

Knowledge is seamless

People learn **continually and are multit talented**

Motivation is based on **a person's connection to the whole**

Things **self-organize**

Relationships are all there is

Structure **emerges**

Order comes from freedom of information

Information should be open, abundant

Both/and

Inconsistency

Random

Undeterminable

Non-linear

Participant

Wholism: it all belongs

Perception and choice

Change is **all there is**

We want to be at the edge of chaos~~~

And here are **some quotes that further illustrate why the challenge:**

"If you're not in awe, you don't understand quantum." Niels Bohr

“Do not believe in anything simply because you have heard it. Do not believe in anything simply because it is spoken and rumored by many. Do not believe in anything simply because it is found written in your religious books. Do not believe in anything merely on the authority of your teachers and elders. Do not believe in traditions because they have been handed down for many generations. But after observation and analysis, when you find that anything agrees with reason and is conducive to the good and benefit of one and all, then accept it and live up to it.” Buddha

“For those who believe, no proof is necessary. For those who don't believe, no proof is possible.” Stuart Chase

What you think will become. Ancient wisdom

First I shall test by experiment before I proceed farther, because my intention is to consult experience first and then with reasoning show why such experience is bound to operate in such a way. And this is the first true rule by which those who analyse the effects of nature must proceed: and although nature begins with the cause and ends with the experience, we must follow the opposite course, namely begin with the experience, and by means of its investigate the cause. Leonardo da Vinci

The second scientific revolution rescues “qualities” that have been methodologically stigmatized as “subjective” and “unreal” by the first scientific revolution. It is scientifically respectable to consider life, consciousness, and spirit as different from materials processes although these “qualities” interact with matter. The second scientific revolution sees nature as alive and ensouled and mind as operative in the universe. Nick Perlas

***“...science is nothing but developed perception, interpreted intent, common-sense rounded out and minutely articulated. It is therefore as much an instinctive product, as much a stepping forth of human courage in the dark, as is any inevitable dream or impulsive action.”
~George Santayana~***

Pam Fernandez

End