

Physics and Electro-Biochemical Technology

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Introduction

My interviews with three Nobel laureates showed uncommon expansion of contexts are often needed for breakthrough research. Except for serendipitous findings, the boundaries of breakthrough research often include uncommon hypotheses. Uncommon hypotheses often push boundaries of current paradigms. Pushing boundaries of common paradigms often result from heuristic thought experiments.

Thought experiments are infrequently given attention in many science journals including biochemical technology. A recent discovery showing 73% of the universe is dark energy, 23% dark matter, and only 4% is matter and energy, suggest now is the time for heuristic thought experiments.

Physicists at the Cern LHC are searching for a Higgs boson which some physicists call a "god particle." If a Higgs particle is found it would be another indication of now is the time for heuristic thought experiments. Some physicists are projecting that the Higgs particle is similar to a field in which other particles operate. Biochemical technology concerns itself with certain arrangements of certain sets of particles. May it be useful to consider what effects the Higgs particle may have biochemical technology?

While it is easier to understand projected small steps from "biochemical" to "electro-biochemical," Buckminster Fuller's notion that large gaps (as one side of a canyon to another) cannot be jumped successfully in two steps.

This short communication relates to large gaps and larger leaps involving more uncertainty and more quality guessing than is

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common. It deals with potentially stretching paradigms which may provoke unusual hypotheses surrounding $E = mc^2$ and biochemical technology.

Unifying biology and chemistry leads eventually to unifying not only biochemistry with physics, but also unifying to what now may be thought of as meta-electro biochemistry and beyond. The beyond part relates to J.B.S Haldane's famous quote: "The universe is that only stranger than we suppose. It is stranger than we can suppose." We suppose within paradigms and as paradigms are expanded, there is the potential to hypothesize and unite more of what appears to be separated.

In order to make some of the leaps over presently existing large gaps, it may be useful to notice that some of Albert Einstein's great discoveries arose from his use of imaginative and intuitive thought experiments. The physicist, Witten, through thought experiments and mathematics, united five string theories into M theory. Part of M theory includes membranes some of which may be as large as the universe. Other physicists are now disputing the value of string theories because of no way of verifying elements of string or M theory. Other physicists continue to work on these theories of everything which includes biochemical technology. This communication elaborates on expanding contexts to increase breakthrough research in biochemical technology.

Method – Thought Experiment

Results with discussion

Making discoveries depends on testable hypotheses. Breakthrough research requires expanding contexts. Expanding contexts requires open thinking and a willingness to be criticized for mistakes made in terms of bold hypothesizing which may need more time and thought to be testable i.e. (String theory). Expanding contexts influences paradigms in which hypotheses are formed. While hypotheses may be infinite, for practical purposes they are limited. One way to extend biochemical technology is to expand its context with "electro" element as well fuzzy aspects "beyond an electro element".

It is posited that expanding biochemistry to include an electro element eventually connects to $E = mc^2$.

Sir Arthur Eddington said: "It is a primitive form of thought that things either exist or do not exist." If we were living in a highly stable and linear universe, where things either exist or not exist, the scientific canon of avoiding observing one's observing, while one is observing, may be of noticeable value. A linear, stable universe does not exist. It is helpful to know that Einstein said: "Modern science, when measured against reality, is primitive and childlike. "It is considered true, yet not widely considered, that our universe has no middle and no limits. When expanding contexts, may the same be said for biochemical technology?"

Todd May, the Calhoun-Lemon chair of Philosophy, Clemson University, reminds us that, "A problem here, an inconsistency there, a perspective on a particular issue to be worked out" is what most thinkers use to create a pattern. May continues: "... "What that pattern is might be reinterpreted by later generations.... A pattern that might not have been noticed beforehand, might now make sense." May alludes to the idea that frequently a pattern is rarely noticed until attention is given to it, often by wide variety of thinkers. This short communication is an attempt to communicate with biochemical researchers what could profitably be given more consideration.

May adds to Haldane's ideas by saying: "Suppose we consider the possibility that there is more to our world than we can perceive, and more than we can conceive..." By examining what is interesting, remarkable, and important, more sense can be made than the limited sense contained in the use of fixed representations. Gilles Deleuze, the French philosopher, and May are saying that much change recently has occurred, and it is now time, "...to have the courage to look and not know what everyone else knows." As a result of not knowing what everyone else knows in biochemical technology we will be able to examine and form unusual hypotheses leading to breakthrough findings.

Ray Kurzweil, MIT award winner and author, states that we will have 1000 times more technological change in this century than the last. The first hundred years of technological change will occur in the first 14 years of this century. This second hundred years of technological change will occur in the next seven years etc. This rapid change may indicate a need for greater multidisciplinary research as well as more openness to what may have previously been considered impossible.

The following quote is taken from the Philip J. Ross article in: *No Way: The Nature of the Impossible*. The notion of mathematical impossibilities is converted to possibilities by changing the structural background, by altering the context, and by embedding the context in a wider context. Ross states:

"Meaning in mathematics derives not from naked symbols but from the relationship between the symbols and the exterior world. This relationship is established through the mediation of the mathematical community. In so far as structures are added to primitive ideas to make them more precise, flexibility is lost in the process. In a number of ways, then, the closer one comes to an assertion of an absolute 'no', the less is the meaning that can be assigned to this 'no.'"

Richard Feynman said: "What is meant by 'right now' is a mysterious thing which we cannot define... 'Now' is an idea or concept of our mind; it is not something that is really definable

physically at the moment." Einstein thought past, present, and future were illusions implying that "now" is all there is. "Now" is the only time searching can occur. A part of the inquiry into one's inquiry deals with present awareness. Since awareness can only happen in the present, dealing with "now" is unavoidable, unless we are to be primitive and childlike, as Einstein suggests modern science is when measured against reality.

Aspects of eastern thinking helped generate quantum physics about which Einstein had reservations. Einstein's thinking was broad enough to go beyond eastern and western thinking. Richard Nisbett's research (*The Geography Of Thought*) shows that East Asian thought is noticeably more holistic than western thought. As Nisbett reports that east Asian children are more interested in verbs and relations between objects, whereas western children are more interested in nouns/objects.

East Asians never separated philosophy and poetry. Einstein's thinking went beyond east Asian and western thinking and was even more unified than east Asian thinking. Einstein thought a great scientist was also a great artist.

Neils Bohr and Einstein disagreed concerning some aspects of quantum mechanics, but Einstein would agree with Bohr who noted: "...Causality may be considered as a mode of perception by which we reduce our sense impressions to order." Expanding contexts (uniting "electro" with biotechnology) allows one to increase sense impressions. According to the July, 2008 issue of *Wired*, when considering petabytes (1 petabyte=1024 terabytes) causality may take second place to correlations. Most scientists may disagree but suppose 1 billion petabytes of data are considered? Can a human simultaneously consider petabytes? (By 2024, our fund of knowledge has been projected to be doubling every 17 days (projected by a recent candidate for the Presidency of the American Psychological Association?) Einstein chunked large amounts of data into wholes which could be more easily conceived and used.

As contexts continually expand, Einstein's thinking of cause and effect alludes to the non testable notions that are beyond what is commonly considered science.

Of course we need balance between excessive expansion of contexts and ove How often do biochemical researchers refer to differences between balance and balancing? "Balance" represents a fixed event whereas "balancing" signifies the dynamism of "becoming." "Balance" more closely involves an identity/being and "balancing" is the process of becoming through noting "difference." Todd May's book: *Gilles Deleuze. An Introduction*, demonstrates how an updated "difference" ontology helps one know by knowing how something is different from something else. The old identity ontology merely deals with disconnected identities which appear to remain fixed and not in process.

Would balance between precision and flexibility help us prepare for a rapidly changing biochemical technology? Paradoxically, the facilitation of the goals of expanding contexts create conditions whereby goals to be attained in the future are seen as highly connected to the noticing what is happening, as it is happening. Noticing is a becoming; a process. Noticing always happens in the present and always includes one who notices as Heisenberg found.

Renowned physicists say the following about physics: Physicist David Bohm said: "Matter is like a small ripple on this tremendous ocean of energy, having some relative stability and being

manifest...and in fact beyond that ocean may be still a bigger ocean... the ultimate source is immeasurable and cannot be captured within our knowledge.”

Erwin Schrodinger said: “Eternally and always there is only now, one and the same now; the present is the only thing that has no end.”

J. Robert Oppenheimer, head of the Manhattan project, said: “If we ask, for instance, whether the position of an electron remains the same, we must say ‘no’; if we asked whether the position of the electron changes with time, we must say ‘no’; if we ask whether the electron is at rest, we must say ‘no’; if we asked whether it is in motion, we must say ‘no.’”

Einstein thought much like Dee Hock who said: “The problem is never how to get new, innovative thoughts into your mind, but how to get old ones out. Every mind is a building filled with archaic furniture. Clean out a corner of your mind and creativity will instantly fill it.” What is old in biochemical technology that may stand in the way of the not-yet-discovered?

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