

Base Camp Four

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FQXI Contest “How Should Humanity Steer the Future?”

Abstract

This is an opportunity to consider for a moment what the view might be as science climbs towards a summit. We appear to be on the verge of finding that the universe is teeming with life. This is great news but as we realize how inaccessible dialog will be perhaps we will still feel alone. To be fair, technology improvements have made an extremely positive impact on society. If there is a question about what more science can do for humanity it must refer to fundamental questions about existence that impact the way we act toward one another. If we can't dialog across disciplines, bridge gaps and agree on more things of consequence we may not be able to steer the future in this area. If not the future will look a lot like the past and our planet will be too small to support high quality life.

Methodology

Scientific information should help make good choices that steer our thinking and actions, not just provide an understanding of physical phenomenon. Sociology, law, literature, etc. of course share responsibility for optimizing life on our planet island but historically philosophy was the primary source of deep understanding. Modern philosophy generally follows science and appears to use the scientific method, i.e. posing questions, gathering data and considering possible answers. Good data in this area is difficult and the process of agreeing on meaning is open to dialog and interpretation of data. Often the more powerful argument or people win temporarily until more data can be gathered and society is left waiting for the contribution. By default, the status quo of the culture we are imbedded in decide questions for us and we continue thinking and acting like others.

The path forward is consolidating ideas, exposing them to refutation and integrating the result. If there is resonance, the ideas survive and contribute.

Basic Questions

We still have childlike questions like what are things made out of? Where do the laws of nature come from? Why is life possible? What connects mind and matter?

Perhaps we need to rethink our basic assumptions regarding reality. There is developing literature [1] regarding information being a real building block that can help us understand nature. Could what looks like creation have been information based? By information, we mean the thoughts our minds are manipulating but there is a formal approach attributed to Claude Shannon [2] (Information (N) = natural logarithm of probability (P) or $N = -\ln P$).

The FQXi Physics of Information grants, 2014 conference on the subject and the author's 2012 FQXi essay [3] explore the possibility that information is fundamental to physical reality. If there is a relationship between information and energy (Appendix), we can postulate that things are made out of information. Since we see information created all of the time we can imagine that creation of information underlies creation of energy.

Where do the laws of nature come from? Considered as information, laws correlate repeating observations and we can state with language augmented by mathematics what the relationships are. No one knows the origin of some laws.

Why is life possible? We can find information operations responsible for differentiation of information into units able to combine at different levels similar to the way an alphabet forms words, words form sentences, etc. Information operations can be associated with the laws of nature, and information units (actual numerical values) can be associated with particles and fields. Thinking along this line, the author's 2013 FQXi essay [4] attempted to show that a specific information value and known quantum mechanics leads to color vision and perhaps other senses.

Information Structures

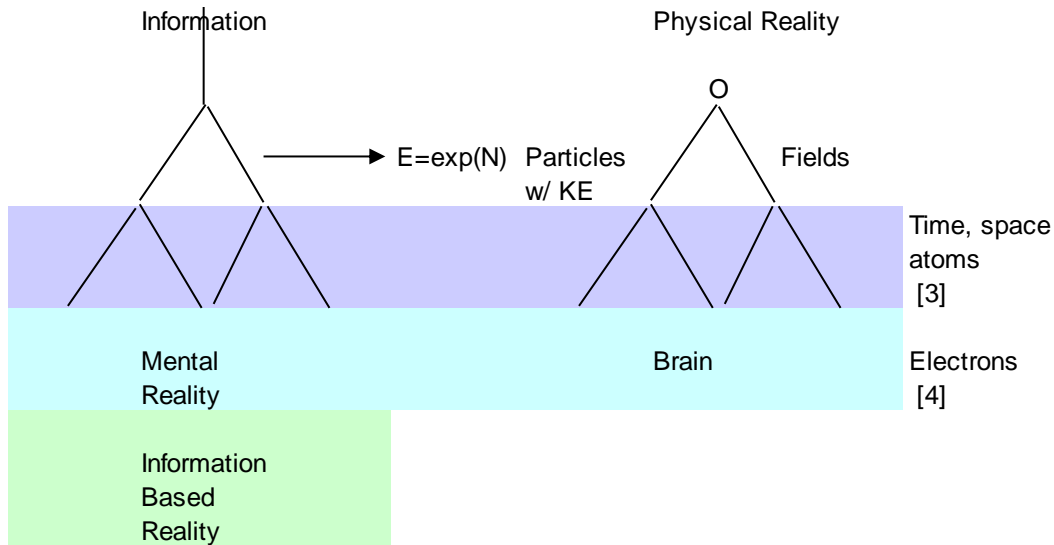
Since language is information, an analogy can be drawn between information structures found in nature and language. Language is based on symbols that we learn to form into concepts and eventually complex meanings. One important aspect of information is it can be taken as parts or as a whole. Small defined units can be added together (integrated) into larger and larger structures. The analogy below proposes a relationship between language, information and observed physical reality. The concepts DNA words and DNA sentences represent molecules held in place by electrons. Their meaning is coded but are read and expressed as specific functions that support life.

Analogy between language, information structure and physical reality

Language	Information Structure	Physical Reality
Concept of symbols	Information operations	Laws of Nature Time, Space
Alphabet	N for particles Proton mass model [3]	Particles Atoms
Words Sentences	DNA Words DNA Sentences	Electrons, Molecules Senses, Brain
Paragraphs	Genome	Body
Life Experiences History	Mental Reality Information Based Reality	

Our vantage point is from within an existing information structure. Perhaps the reality we observe is a subset of an overall larger reality. One definition of intelligence is seeing differences and we appear to have mental freedom to use information and expand reality. This is enhanced by language that increases our ability to see differences and think about complex issues. Our evolving mental reality suggests that our mind participates in an overall information based reality. When we create new thoughts from old ones, we are advancing our reality.

Is it possible that information operates on a different level than our brains and bodies? It appears that information based laws predated our physical reality. The diagram below shows a relationship between two sides of reality but suggests that they are separate. The physical side of reality (right side of diagram) began as information (left side of diagram) and now appears to fix the laws of nature. Quantum mechanics and information form the senses that evolve to the brain and these are part of physical reality. The left side of the diagram underlies physical reality and our mental reality is an extension of this information side. As a whole, the left side can be called Information Based Reality.



Integration

When information is integrated it represents the product of its components. A computer program works because instructions written in a standard language can be processed by a machine into an output. Lego[®] blocks make things because they fit together. Integration of the body information structures makes a complete human not just the components. This is similar to language telling a story; i.e. we focus on the story not the components. We see alphabetic symbols but automatically read them as words. There are repetitive patterns throughout nature that suggest many levels of information structure and integration. Higher level DNA structures integrate sense components into the body. Our senses evolve with our body and extend basic information to mental structure. As the brain evolves, freedom for each individual to be different emerges because the information is not “hardwired”. The brain can process information and does not have to exactly follow a set of instructions. Complex living beings are made possible by integration.

Evolution of information structures

DNA sentences form the body and survival promulgates DNA. In similar fashion, as our brain develops useful concepts that survive, our reality evolves.

Information based reality

Reality is at the same time divided into many but also united as one. For physical reality, many duplicate protons form one universe. For mental reality, consciousness is divided into many experiences but its structure is information based and can be integrated at a high level. It is possible to occasionally experience feelings of wholeness because we are based on the same information.

Base Camp Four

We want a mountain top experience but the view from camp four still looks a little jungle-like from the stand point of how people think and act toward one another.

People need shelter from each other and our planet island is taking a beating in the fight.

Many are busy examining their cages while everyone expects more.

The powerful are greedy and those in need contribute to their own peril.

But we are climbing and there is hope. When we think of information as a base for reality we see ourselves as almost identical and understand that evolving mental reality is all there is. Less focus on external "riches" and more focus on quality of thought and life could be a welcome outcome but ultimately laws will need to govern our nature.

Everyone realizes that the place they live is beautiful but needs understanding and more care.

We become more human when we understand that life is precious and we look inward to quench our desire for external things.

Humans fulfil our potential when we understand that appreciating and helping others brings quality of life rewards.

Inventors discover new ways of doing things that creates opportunity for business development and more ways to meet energy and resource needs in a sustainable manner.

Education brings awareness to those in peril and they learn to protect and help themselves and others.

References:

1. Charles Seife, *Decoding the Universe*, 2006
2. Shannon, Claude, *A theory of communication*, 1948.
3. Barbee, Gene H., *A Top-Down Approach to Fundamental Interactions*, FQXi essay, June 2012 and vixra:1307.0082. Microsoft ® spreadsheet Unifying concepts of nature.xls.
4. Barbee, Gene H., *Life from Information*, vixra:1311.0124v1, FQXi 2013 essay contest "It from Bit". Microsoft ® spreadsheet Color vision.xls, July 2012.

Appendix

Detail of information operations leading to N. Excerpts from reference 3, reproduced below, shows one possible information system and correlates particle and field energies with that system (energy equals the natural number e to power of information (N) or $E=\exp(N)$). Reference 3 also describes a proton model based on these values.

	Operation 1	Operation 2&3	Operation 4	Operation	Fundamental N values	
Higgs X dimension	22.5	10.167 12.333	5.167	15.333 12.333	0.0986 0.0986	15.432 12.432
Higgs Y dimension	22.5	10.167 12.333	3.167	13.333 12.333	0.0986 0.0986	13.432 12.432
Higgs Z dimension	22.5	10.167 12.333	3.167	13.333 12.333	0.0986 0.0986	13.432 12.432
		0.667		0.667	0.0750	0.075
Time	22.5	11.500				
		10.333		10.333		10.333
Total	90	90		90		90

unifying concepts.xls cell aw48		Proposed						
		Particle Data	PDG	Energy	IS Hughes	Bergstrom	Randall	Best
Identifier	N	Group energy (Mev)	charge	$E=e^0 \cdot \exp(N)$ (Mev)	energy (Mev)	energy (Mev)	energy (Mev)	data for N Value
				$e^0=2.02e-5$				
0.0986	0.0986							
e neutrino	0.000	2.00E-06			1.50E-07	3.00E-06		-2.315
E/M Field	0.296	0.0000272		2.72E-05				0.295
	(3*.0986=.296)							
ELECTRON	10.136	0.51099891	-1.00	0.511				10.136
mu neutrino	10.408	0.19		0.671	less than 0.25			9.147
Graviton*		1.75E-26		2.683				
Up Quark	11.432	1.5 to 3	0.67	1.867		1.5 to 4.5		2.4 11.683
vt ?	12.432	18		5.076	less than 35		18	
Down Quark	13.432	3 to 7	-0.33	13.797		5 to 8.5		4.8 12.376
Strange quark	15.432	95+/-25	-0.33	101.947		80 to 155		104 15.452
Charmed Quark	17.432	1200+/-90	0.67	753.29		1000 to 1400		1300 17.978
Bottom Quark	19.432	4200+/-70	-0.33	5566.11		4220 4000 to 4500		4200 19.150
Top Quark	21.432		0.67	41128.30		40000	171200	21.404
W+,w- boson	22.099	80399	-1.00	80106.98	81000	80000	80400	22.102
Z	22.235	91188	0.00	91787.1	91182	91000	91200	22.228
HIGGS	22.575	125300		128992.0		105000		22.546
* sum of 3 N's of 10.431 and one 10.333 and graviton is $2.68/\exp(60)=2.3e-26$ mev.								
Mw/Mz	Weinberg radians	sin^2 theta						2.1986E-39
0.87274771	0.509993439	0.48817152	0.238311					

