



Artificial Intelligence and Global e-Business

By: Alan Metcalfe

For at least the past 25 years, the world's leading information technology (IT) scientists have been trying to discover how to do electronic business (e-business) on a global scale. Their appetite for this quest has been wetted by the availability of the Internet. For at least 25 years, the top IT people have recognized the Internet as an ideal hardware-based, global platform for e-business. To date however, the IT world has not achieved its goal. Why? Because, they have been unable to develop the software needed to take advantage of the Internet, for e-business. They developed the World Wide Web (1993), but it has subsequently proven to be unsuitable. The problem is that they have not been able to discover how to create artificial intelligence (AI).

Artificial Intelligence (AI) is essential to the creation of a global system/platform for e-business because it provides the critical "mechanical reasoning" capability that is essential if large scale systems are to be;

- Affordable;
- Semantic (convey meaning);
- Fully integrated and fully interoperable (seamless);
- Private and secure; and
- Be able to monetize products on a global basis.

The Importance of Artificial Intelligence

IBM's autonomic computing R&D program is among the most advanced in the world. It is not surprising to me therefore that IBM autonomic computing researchers Jeff Kephart and Dave Chess, ask in their 2004 paper, "The Vision of Autonomic Computing," authorised by the IEEE:

- "Is it possible to meet the grand challenge of autonomic computing without magic and without fully solving the artificial intelligence (AI) problem?"

To answer this question, consider what Kephart and Chess, Tim Berners-Lee, and all reputable autonomic computing (Semantic Web) researchers agree are the essential parameters for the universal logic language (Universal Logic) that they say is essential to the creation of autonomic computing (the Semantic Web). They agree that it must have:

1. A reasonably **compact syntax**.
2. Well defined **semantics**.
3. Sufficient expressive power to **represent human knowledge**.
4. An efficient, powerful, and understandable **reasoning mechanism**
5. It must be suitable for building **large knowledge bases**.

Tim Berners-Lee in on record confirming that:

- “It has proved **difficult** to achieve the **third (3)** and **fourth (4)** properties simultaneously.”

One moment of logical thought ought to clearly tell anyone that to represent human knowledge (3), and provide an efficient, powerful, and understandable reasoning mechanism (4), obviously, the logic that they are looking for must reflect the way that the human mind thinks (reasons = processes) to create knowledge. This is because there is no other creature or thing that possesses these capabilities.

Consequently, it ought to be logical, that, if we are to ever to find the solution to global e-business, we must first understand how the human mind works. To create artificial intelligence, you must first understand intelligence.

Universal Principles

Although they understandably question science’s ability to find and apply the logic of artificial intelligence, Kephart and Chess do acknowledge in this milestone publication that:

- “The success of autonomic computing will hinge on the extent to which theorists can identify *universal principles* that span the multiple levels at which autonomic systems can exist – from systems to enterprises to economics. ...Bridging the language and cultural divides among the many disciplines needed for this endeavour and harnessing the diversity to yield successful and perhaps universal approaches to autonomic computing will perhaps be the greatest challenge.” (“The Vision of Autonomic Computing, 2004)

The question is, of course, what are *Universal Principles*? Webster's Online Dictionary defines a principle as "a comprehensive and fundamental law". This is why I have argued that we ought not be looking for Principles (plural), but a single Principle, a Universal Law (Principle); in the same way that Stephen Hawking and other theoretical physicists are looking for single law (the Singularity); the Law of laws; that one law or Principle that creates the seamless (fully integrated, fully interoperable) world of "many" that we see all around us.

And my position, I suggest, is in line with what Tim Berners-Lee and the World Wide Web Consortium is striving to achieve with its effort to create "The Semantic Web".

- "There is a need for a powerful universal logic language." (Tim Berners-Lee, Business Week Magazine, March 27, 2002)
- "To achieve its potential, the Semantic Web must provide a common interchange language bridging these diverse systems," (Tim Berners-Lee, "Semantic Web Development – Technical Proposal", February 4, 2000).
- "The strategy is to translate the various languages into a common 'base' language thereby providing them with a single coherent model theory," (W3C Working Group Note 10 relating to "Semantics for Languages of the Semantic Web", October 2003)

If you are trying to understand how "many" of anything exists, it is well established and accepted science that you look for the design (principle or law) of the one from which the many are created. If you see a row of "track homes", for example, that are all built the same way, any experienced builder will tell you that there is a common plan for the construction of these homes; there are not two or more common plans for a "track" of homes that are all built the same way – only one.

The Stumbling Block

The stumbling block for Kephart and Chess, Stephen Hawking, and all who try to solve this problem is that they cannot accept that such universal principles only exist with the human mind. And why are they wrong, you ask? Because: the human mind is the only thing capable of comprehending reality (logic = law). One moment of thought will also reveal that the human mind is not only capable of understanding reality, but it is able to understand every other law of nature; and it is able to create itself. One moment of logical thought will also reveal that no other thing (nothing else) has this amazing and unique ability.

The problem with this observation, as obvious as it may be, is that, if it is true, it shatters the Darwinian belief that the human mind has evolved over time; that the invisible human mind is not a principle (law) of nature, let alone is it the Law of laws, but “something that simply defies explanation”. Hardly scientific, but this is where science leaves us on the question of the human mind.

Denial of the Mind

Why it is so difficult for most of the world’s scientists to accept this argument is because, as, psychologist and Princeton professor Philip N. Johnson-Laird says in his book “Computers and the Mind,” science, throughout most of the 20th Century has been in “[denial of the mind](#)”.

As strange as it may seem, many in science today do not even recognize that “the mind” exists, or for that matter, have any idea what is meant when we speak of “the mind”. If you doubt this, go to Wikipedia, the online encyclopaedia and type in mind and see what you get. You will get an explanation, not of the invisible mind, but the physical brain. http://en.wikipedia.org/wiki/Human_mind

This is despite statements like these that follow, from such notable scientific minds as Isaac Newton and George Boole:

- “It is inconceivable,” Isaac Newton (1634-1727) said, “that inanimate brute matter should, without the mediation of something else, which is not material, operate upon and affect other matter without mutual contact.” (I. Benhard Cohen, Preface to Sir Isaac Newton’s “Opticks”)
- “It is the ability inherent in our nature to appreciate order, and the concurrent presumption, however founded, that the phenomena of nature are connected by a principle of order. Without these, the general truths of physical science could never have been ascertained.” (George Boole, “The Laws of Thought”)

For some strange reason however, science has put its fixation with Darwinian evolution before sound science. And this, I humbly suggest is a major mistake, and a serious failing of modern science, because, if one is trying to find Artificial Intelligence and understand the reasoning mechanism of the human mind, it is surely logical that one must start by acknowledging that the human mind exists.

Does the Mind Exist?

George Boole (1815 - 1864) is widely acknowledged as one of the finest mathematicians in history. Like most mathematicians prior to the 20th Century, Boole was also a philosopher. British mathematician and philosopher, Bertand Russell (1872-1970)

said that “pure mathematics was discovered by George Boole in his work published in 1854.”

Boole says in his book “The Laws of Thought on which are founded the mathematical theories of Logic and Probabilities” that the logic of the mind’s existence “is made manifest in all its generality by reflection upon a single application of its application.” In other words, Boole is saying that we can prove that we have a mind by a single instance of thought.

- “This is ...evidence that the particular principle or formula in question is founded upon some general law or laws of the mind. ...The general knowledge of the laws of the mind,” Boole said, “does not require as its basis any extensive collection of observations ...but is involved in the clear apprehension of a single instance.” (The Laws of Thought)
- “One cannot denote any part or state of a brain by referring to mind,” Gerhard Gelbmann said in a review of “Umberto Eco’s Perspective on *Semiotics* and Problems Combined with It”. “Trying to denote mind” is not the same as trying to denote “brain”, because in the first case one talks of an abstract object through reference or demonstration of a mental process and in the second case one talks of a physically given thing by pointing at it with other words like ‘cerebrum’.”

And we have to do this, as Gelbmann says, because the mind, like every law, is spiritual and therefore invisible, whereas the brain is material and therefore can be seen, touched, and felt. And there should be no problem with this, because this is a world of opposites in which one (1) part is always spirit or law, and the other (2) part is physical matter – it’s as simple as that.

Speaking about the logic of the human mind, George Boole said:

- “Logic ...lies at the very foundations of general reasoning. ...Language is an instrument of human reasoning ...the most important of our intellectual faculties ...this is a law of thought ...it is actually developed in a law of language, the product of the instrument of thought.” (George Boole, “The Laws of Thought, 1854)

Boole’s credibility is also established by the fact that Boolean logic (what explained in 1854) is the mainstay of modern computerization.

- Boolean logic is a complete system for logical operations. It was named after George Boole, who first defined an algebraic system of logic in the mid 19th century. Boolean logic has many applications in electronics, computer hardware and software, and is the base of digital electronics. In 1938,

Claude Shannon showed how electric circuits with relays were a model for Boolean logic. This fact soon proved enormously consequential with the emergence of the electronic computer.

(http://en.wikipedia.org/wiki/Boolean_Logic)

- “In ordinary language, logic is the reasoning used to reach a conclusion from a set of assumptions. Logic provides prescriptions for reasoning, that is, how people—as well as other intelligent beings, machines, and systems—ought to reason. Traditionally, logic is studied as a branch of philosophy. Since the mid-1800s logic has been commonly studied in mathematics, and, even more recently, in computer science. As a science, logic investigates and classifies the structure of statements and arguments and devises schemata by which these are codified. The scope of logic can therefore be very large, including reasoning about probability and causality.” (<http://en.wikipedia.org/wiki/logic>)

Despite this logic that was first published in 1854, computer scientist Johnson-Laird says that:

- “In the United States the study of mental processes was abandoned; the introspective technique was replaced by the controlled observation of responses in the laboratory. ...The mind was expelled from its original place in the Dualistic scheme: it was a ghostly mystery that had no role in determining behaviour. ...The taboo on the mind was reinforced by a seductive argument made by a number of Behaviourists, notably B. F. Skinner.”

This argument concludes, he says, that:

- “In framing psychological laws, there is no need to refer to mental states. They are either unnecessary or unmentionable.”

Johnson-Laird disputes this conclusion. He says that:

- “It is based on two false assumptions. The first is that the sole purpose of science is to frame parsimonious laws.”

Parsimony is defined as a scientific rule that states that “if there exists two answers to a problem or a question, and if, for one answer to be true, well-established laws of logic and science must be re-written, ignored, or suspended in order to allow it to be true, and for the other answer to be true no such accommodation need be made, then the simpler of the two answers is much more likely to be correct.”

Personally, I do not believe that when the mind is understood for what it is: the Law of laws, there is no way that it contradicts any other law. It is also impossible for someone to say that the law of the mind is not the simplest of all laws, if one has never seen the law of the mind that Boole called the Law of Thought.

- “The second false assumption,” Johnson-Laird says, “is that psychology should concern itself solely with the sequence of a stimulus in the external world giving rise to an overt response.” However, he argues: “Some behaviour is not controlled by environmental stimuli. Many human skills – from spontaneous speech to the solving of intellectual problems – are not governed by events in the environment but depend on complex mental processes. Likewise perception (the study of which was largely eschewed by the Behaviourists) does not necessarily give rise to any overt behaviour. If perception, thought and communication are explained, mental processes (logic) must be involved,” Johnson-Laird says, stating the obvious.

When designing a semantic or any other system, one also quickly discovers that all of the concepts are mental – everything that we do is an invention of our human mind and has nothing to do with the physical world in which we live, other than it may have application in this dimension.

As obvious and logical as this argument is, many in science are still not convinced. This is because, as Johnson-Laird concludes in his book:

- “What began as an objective science (the search for the laws of nature) has become an ideology,” rather than a true science.

Finding the Universal Logic of Intelligence and Safe Worlds

Although for commercial reasons I have not widely publicised the fact, I discovered Universal Logic in 1999. I subsequently came to understand that it is the logic of Artificial Intelligence (AI). I have since proven that it is AI by building the world’s first truly semantic database (2005) and now the world’s first fully integrated, fully interoperable e-business system [Safe Worlds (2008)] that is currently being used by more than 1000 users worldwide.

I was able to make this breakthrough discovery, because, while most in science have been “in denial of the mind,” I have long been a student of the human mind (the logical, reasoning process that enables us to think) and how this process can be computerized.

Clearly, if what Boole says, that thought is a process; then it is an algorithm (law) that can be computerized.

Relating Universal Logic to Darwin

Assuming that I am right, the question that will no doubt be lingering in your mind is: how then does Universal Logic fit with the Darwinian view of evolution that dominates modern scientific thinking?

Firstly, know and understand that I do not deny that evolution (change) occurs. Clearly it does. What I argue is that evolution (change) is not the Law of laws or the Creator, because clearly it isn't. Change (evolution) does not create anything (in a primary sense); to the contrary, it destroys what is.

The Second Law of Thermodynamics confirms this truth. It says that the entropy (destruction = the loss of energy) of an isolated system which is not in balance will tend to increase over time, approaching a maximum value at balance.

This truth that is explained by the Second Law of Thermodynamics is more simply explained by Isaac Newton's three laws of motion that are applicable to everything that exists (moves = lives) in this world. Study Newton's three laws and you will find that the First Law described the Creator; the perfect state of balance (equilibrium). The Second Law describes evolution (change = entropy). The Third Law describes what is created when the First Law and the Second Law are combined, 1+2; they create a consequence or result that is equal to the action of 1+2.

This truth is also confirmed by the way that mathematics works. Mathematics is the science of existence; there is nothing that cannot be mathematically explained, because all things are a mathematical equation of their parts that work together according to Newton's Laws of Motion. If you doubt, get a copy of a Times Tables booklet like the one that you studied in Grade 1, when you first went to school. Look at the way the Times Tables of mathematics work and you will see that they do conform to Newton's Three Laws of Motion. Note also that at no time do they cross-over; at no time does any equation (thing) of one times table become a thing described by the two times table. Yes, you can manipulate an equation, but this is not how it naturally occurs.

How then, you ask, do I explain the supposed adaptations that Darwin says occur, from his observations, through "natural selection"? They are natural creations, no matter how specific their application may be. A bird therefore that has a bigger beak than another that looks exactly the same, except for the different beak, has not evolved; this is just how that particular bird looks.

If you find this difficult to believe, then, consider the Second Law of Thermodynamics and Newton's Three Laws again. Both laws start and end with the perfect or balanced state of equilibrium. Consider then the original or

balanced state of the entire universe (what Stephen Hawking calls the Singularity) and realize that within such a state, there is nothing lacking. If this is the Law of laws (the blueprint for everything in existence), then surely there is no need for Darwinian evolution? All that is necessary is for the plan (design) to be rolled out.

If you still can't see this, then go back to the simple example of "Track Homes" and ask yourself: if the plan kept changing (evolving), then how could one create "Track Homes"? Obviously, it would be impossible. And so it is with creation. The truth is that the laws of nature (science); even the Law of laws by which every one of the laws of nature work, never change. All they do is they produce that which they are given to produce, within the balanced totality of the whole.

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