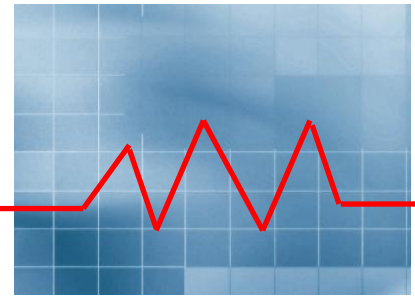


EDITORIAL ARTICLE

THE GLOBAL MIND, CONTEXT AND KNOWLEDGE CREATION



➡ **Gregory Vert**
Louisiana State University

Many years ago like so many of my friends, I often watched shows like Star Trek and Lost in Space. The allure of these shows was their fictional technologies and solved social issues. The ideas of communication being done over a hand held communicator and internal medicine being practiced without surgery were stunning and have now become our reality in a relatively small time period of forty years.

On the road from the past to the present, I had two very important events that would change my view point on the world, science and technologies role. The first of these was seeing James Burke a BBC journalist who created the show “The Day the Universe Changed” talk about the nature of creation of knowledge and the future. Mr. Burke argued that human beings create knowledge and technology based on what they are interested in. In a nutshell, he said that if we had the will to develop Star Trek like technology and flying cars we would have developed them by now or will develop them.

The second viewpoint changing event was that of somewhat accidentally pursuing a degree in Geographic Information Systems. This was done at a time in the 80’s when PC’s were just coming into use and there was very little GIS software. It turned out that a background in geography led me into a different way of thinking about the world, data and computational research. That perspective recently has been integrated to define a new model of information processing based on temporality, spatial properties and the notion of context. The concept of context is key to everything human beings do in the creation of knowledge from data, and it can be used in a computer to control its processing.

Contextual processing starts with the notion that data that is not shared often has uncorrelated inferences of meaning and criticalities of information processing in a fashion that truly serves various perspectives needs. For instance a part of the context model, spatial autocorrelation argues that objects of a similar type tend to aggregate at temporal and spatial loci. Context processing is thus driven by the environment and semantics of meaning describing an event. Often this type of processing can be described by a contextual model using meta descriptive data about an objects raw data.. Meta descriptive information can often lead to previously unknown insights and contextually derived knowledge that is germane to location in space and time. Meta data often has a spatial and temporal component to it but can be more complicated.

Initial development of the context model paradigm was based on analysis of the natural disasters of the Indian Ocean tsunami, Three Mile Island nuclear plant and 9/11. In all of these events, had a better model of information sharing existed there may have been faster mitigating action in response to the event. Analyses of these events lead to the derivation of dimensions upon which to base a model of context. These dimensions of contextual data could uniquely identify and describe a contextual event and determine how its information was processed. The context model can be integrated into most models of computation to make them more powerful and robust. The dimensions turned out to be:

Temporality – the span of time and characterization of time for an event

Spatiality – the spatial dimension of an event

Impact – the relative degree of the effect of the event on surrounding events

Similarity – the amount by which events could be classified as being related or not related.

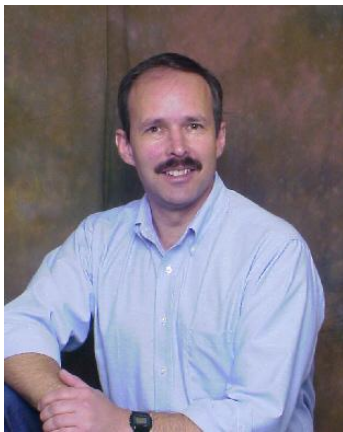
It turns out that almost anything including security, communication data mining, repository management, logic and sensors can be enhanced by application of the models principles and geographically based concepts. A book has recently been written on the subject and several papers have been developed around this model.

In conjunction with the new model of context, the world is increasingly becoming hyper connected. Humanity, its consumption and dissemination of knowledge may be thought of as being a single

global organism where each person is neuron in a global consciousness. This is evidenced by the speed of which we all became aware of 911, and the current crisis in the Middle East.

The accelerating rate of human connectivity and its implication for production of meaningful information suggests at some point we will approach overload, a point where there is so much information it becomes impossible to determine which to use in decision making. The application of context, a very real way humans perceive things, can be a useful method for managing the tsunami of information racing towards our computers. Such a world where knowledge may be the principal capital of exchange could become a place where we develop flying cars and star ships because of a common global view and interest.

The world of 10 years from now, will not resemble the world of today, as it barely resembles the world of 10 years ago. The rate of technology change driving knowledge generation and global views will be the challenges of the future. We must therefore explore new models for knowledge creation and management as a means to make sense of what will be a complicated new frontier, the future.



Dr. Vert is a US citizen, who specializes in advanced security research in the areas of authentication, malware detection, classification and modeling of state changes caused by malware in a system. He is the inventor of the contextual security model and Spicule state change model for malware detection. He has extensive experience in industry as a software engineer and extensive security training through SANS and his CISSP security certification. He has held two security clearances, one during his military service and one while working for Boeing. He teaches soldiers from Fort Hood who attend Texas A&M and recently published a book defining the new field of Contextual Processing. As part of his work he has developed a new model for security based on context referred to as Pretty Good Security that has the potential to be faster and more computationally efficient than existing methods.