

## **Information – Is It Everything?**

**By Doris Drucker**

I am honored by your invitation to give a talk at this Conference on Leadership. However, when Ms. Cormack first proposed the idea my first thought was: how can I possibly say anything new about leadership at a forum that features world-wide experts on the subject. On second thought, though, it occurred to me that leadership in every sense of the word, has not been applied to at least mitigate the influence of a large potentially threatening development which affects our private and professional lives. We are engulfed by a maelstrom of Information and we do not know how to deal with it. Where is the leader who can find floodgates and channels to stem the deluge?

We are so pleased with ourselves for having discovered Information in our environment as a means to exploit it for our benefit. But in mining Information, we are really not so different from our ancestors in the Iron Age, who discovered iron and used it for what their culture valued most: tools and arms. Iron had been in the ground long before, and Information has existed long before we began to talk about the Information Revolution and the Information Society, and before we learned to transmit Information over wires or wirelessly over the internet or any of the modern high-speed communication channels. What we have done was to gain access to Information that had been inaccessible for millennia. No mean feat – but not the same thing as having created an infinite database which we call Information. The name is actually a misnomer: Data by themselves are not Information. What we get out of the database are just strings of data which remain meaningless and incomprehensible unless they are activated by knowledge.

Information itself is far more complex than is generally assumed. It cannot be defined by conventional structural notations. It has neither mass nor energy. You cannot describe it in terms of any tangibles. You do not talk of a ton or a gram of Information, nor of a millimeter or an acre or a similar definition. Furthermore, it is presumed to be infinite and to prevail in our universe as long as there is life. It does not react with non-life, with rocks or “dead” stars.

We may run out of space, water, energy and other essential properties within another 25 or 50 years. But we will not have a scarcity of Information; it is “there” and it is accessible. If you take iron ore out of the ground you take it away from your neighbor. But if you mine Information - you may have heard the expression “data mining” – it remains available to everybody. It does not diminish, it can only increase. We cannot even get rid of it.

The great British mathematician Stephen Hawking once proposed that we can dispose of Information by throwing the Encyclopedia Britannica down a black hole, but shortly after proposing that idea, he recanted. We can and do archive Information – on paper or tape or any other medium, or as memory in our cognitive organs, our brains - but we cannot make it vanish into thin air.

Is there a definition for this strange and unique entity? Scientists don't really know either. The best description I have found is that Information is sui generis – a principle which consists of an infinite base of accessible data.

Information has been a constituent part of our universe - it is as old as life itself, perhaps even older.

Let's go back to the Big Bang 10 billions of years ago, or rather to a later date when the atmosphere created by the initial explosion or implosion had cooled down sufficiently for the formation of nuclei. Eventually life appeared - an accident according to scientists, an act of God according to believers, whatever. Life was a single cell which housed two strands of molecules, phosphate-sugar chains arranged in a ladder-like formation coiled around each other – the double helix that most of you have probably heard of. This helix received Information - a message - ordering the two strands to uncoil, so that each would become the template for an identical ladder-like construct, and, once this had been accomplished, to reset so that there were now be two helices. The message was repeated, the helices kept multiplying, and then Darwinian Evolution took over, and we got viruses and bacteria and worms and insects, birds, fishes, mammals and eventually man, home sapiens. We do not know, and probably will never know, whether life, as a single cell, created the database out of which the original messages were sent, or whether the message source, Information, came first and created life.

In the Bible's book of John it says: "In the beginning was the Word, ...and the Word became flesh" – something to think about, which hints at the primacy of the Word, at least according to the Judeo-Christian religion. How the message was extricated or extricated itself from the source, the database called Information, how it was encoded into the universal binary language of 0s and 1s, how it was transmitted across which medium to the single cell, and decoded before it could be read by the receptor – these are all unknowable phenomena. We now believe that the signals were transmitted in binary code, the string of zeroes and ones which is still the universal computer code. According to Claude Shannon, the famous author of [A Mathematical Theory of Communication](#), the binary system is the least expensive way to handle Information. For example, when a sailor flags signals from his ship, he needs 128 numbers to designate any number between 1 and 127. With the binary system, he needs only 14,

seven 0s and seven 1s. I will not go further into this, and I mention it only in case someone wonders about the transmission code from a data source to a single cell.

Life is a work in progress, and that applies to mutating lower forms of life as much as to mankind. Who can predict what our descendants will look like in a million years from now? Will the continued intensive flow of Information change their anatomy and psyche? Perhaps they will have developed two brains. Conversely, if they devour Information at the rate which they do now, their brain may have atrophied and they will end up with half a brain or none at all.

We are no longer conscious of the quantity of Information that floods our visual and aural receptors, our taste and smell and our cognitive organs. Actually we do not seem ever to be surfeited. Like guests at an all-you-can-eat smorgasbord, we stuff ourselves with Information just because it is “there”. “Fill ‘er up” seems to be the slogan of the day. If you overeat you become obese and sluggish. If you stuff yourself with surplus Information you become mentally obese and mentally sluggish. Most of us are not even aware how dependent we have become on always available Information 24/7.

The Post office used to – and still does – deliver mail once a day; today everyone with access to a computer, a Blackberry or a similar cell phone, checks his or her mail 3 times or more often during the day. Why? Because we have become addicted, not only to email, but to all kinds of electronically transmitted Information. Take multitasking, which has become a standard activity. A 14 year-old schoolboy in my hometown says that he is bored unless he can do six information-based activities at the same time; text messaging, listening to his iPod, downloading a computer game, watching TV – I forgot the remaining two activities. A physician would probably describe such fixation as Information Addiction, similarly to Drug Addiction and just as hard to cure. We know how drugs affect the body and the mind of an addict, but we have only rudimentary knowledge of the results of Information Addiction, such as the loss of the ability to memorize. Why make an effort to remember mathematical formulas, dates in history, verses from the Bible or other documents if you can evoke all of this by clicking on your calculator or on Google or another search engine?

The question of who wins and who loses with the advent of new forms of communication is a long standing one. In Plato’s Phaedrus there is the fable of Thamus, who was an Egyptian king living in a time before the advent of writing. Thamus was visited by a god named Theuth who presented him with the invention of writing. Thamus rejected it. He said to Theuth: “You who are the father of writing have attributed to it quite the opposite of its real

function. Those who acquire it will cease to exercise their memory and become forgetful. They will rely on writing to bring things to their remembrance by external signs rather than by their own internal resources. They will have the reputation for wisdom without the reality. They will receive a quantity of Information without proper instruction, and in consequence be thought very knowledgeable, when they are for the most part quite ignorant. And because they are filled with the conceit of wisdom instead of real wisdom, they will be a burden to society.

Are our brains capable of absorbing the volume of Information which surrounds us and possibly an even larger future volume?

I don't think the public in general realizes how staggering that onslaught is. According to studies conducted at the UC Berkeley School of Information, Information production increased at an average rate of 30% each year from 1999 to 2002. The amount of new Information stored on paper, film, optical and magnetic media doubled during those three years. In just one field – global climate data – the volume of recorded Information was expected to increase from 2 billion gigabytes in 2000 to 15 billion gigabytes in 2010. Moreover, most of all that Information is being delivered faster than in years past. One example: you are probably aware that TV announcers – from commercials to newscasts – talk at a much higher speed than they did fifteen or twenty years or so ago, because the producers of these shows want to compress more Information in the available time slot. Sometimes the spoken words are layered upon a musical soundtrack, based on the idea that you need two simultaneous channels of Information; one is not good enough. Nevermind that delivery of the content of the message suffers from incomprehensibility. The purpose was the deliver Information, not understanding.

In his book Flat Earth, Friedman tells us what we can do with all the Information, but not what the Information onslaught does to us. If left unchecked, Information Overload threatens our physical and mental health. And worse, what does it do to the developing brain of children? The average child after all spends daily 4 to 5 hours in front of a TV, with its rapidly changing pictures and cacophony of sounds.

Most of us, though, are so taken in by the undoubtedly huge benefits of the Information Revolution in almost every field – from economics and marketing to the physical sciences and communications theory, that we are apt to overlook the deleterious aspects of uncontrolled volume and velocity of delivery. Efforts are underway to organize the vast amount of existing Information, and that quantity that is being accumulated every day. But what we need most are people, leaders who understand that the Information Revolution is not about communication,

but about human behavior and human values. Just as during the 19<sup>th</sup> century reformers, mainly in England, fought to phase out the excesses of the Industrial Revolution, such as child labor. We need now reformers to identify and put a stop to the excesses of the Information Revolution.

It is high time.