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Infographics: The Artistic Way to Convey Information into Knowledge

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Abstract:

Today we are surrounded by information which is being bombarded at us from everywhere. The information is easily available to us. Is this easy availability of information making us intelligent or dumb? We are overloaded with information accessible to us but we do not retain much of it. That's where art and aesthetics comes in. Neuro-scientists have proved that a large part of our brain is dedicated to vision. Hence it very much possible that we are stimulated by visual information and find it much easier to retain. If infographics are aesthetically pleasing then it is much more possible to retain the information presented in them.

Keywords: *Infographics, art, data, information, knowledge, neurons, visual*

1. Introduction

This paper is an attempt to study how art helps to convert information to knowledge. This art of data visualization is called infographics. The paper starts with the glimpse of increasing overload of information in the world today. This research is supported by the studies done by various neuro scientist.

2. Information Overload

With the availability of internet and technology of mass media, any data and information is just a few clicks of mouse away. As a consequence of ease of availability people are overloaded with information. There is an information flood and we are drowning in it. Studies show that we receive information equivalent of 174 newspapers a day.^[1]Edward de Bono expressed his concern about overload saying "Because of the excellence of our computers we are starting to believe that all you need to do is to collect information. That information will do your thinking for you... This is much more dangerous than most people realise"^[2]

Now the question is does this easy abundance of information make us any smarter? Is this information being converted into knowledge by the users or has it become major distractor of thinking mind? One of the objective of this paper is to probe this particular question.

To move further in this direction it is necessary first to define technical terms such as data, information and knowledge. Sometimes these words are used interchangeably by print and electronic media. Even though they have very different meaning. Such indiscriminate use of words creates unnecessary confusion in society.

3. Data, Information and Knowledge

Data is not information. Information is not knowledge. Knowledge is not understanding.^[3] Data is facts, observations, measurements and statistics collected in the form of numbers for further analysis. Data in itself has no meaning and does not convey any idea. Data is a concrete set of numbers while information is an abstract idea. One can have data without information but cannot have information without data. Data is foundation of scientific knowledge. Therefore errors in data result in formation of wrong concepts.

When data is classified, processed, analysed and finally distilled in the form of idea it becomes information. Therefore information unlike data is useful, while data in itself is useless without proper logical, mathematical or statistical processing. Information is processed data, that has been given meaning by way of logical and relational connections with larger picture of context. This meaning can be useful and easy to understand and remember.

When new incoming information is well integrated with the past concepts held by an individual then only it becomes knowledge for him. Therefore knowledge is subjective while data and information is of objective nature. Information gets integrated by process of thinking which creates a well-connected neural pattern in the brain of receiver of the information. Thus a well-connected neural pattern well integrated with his past experience is knowledge. Such well-integrated knowledge helps an individual in arriving at right inferences regarding the task at hand.

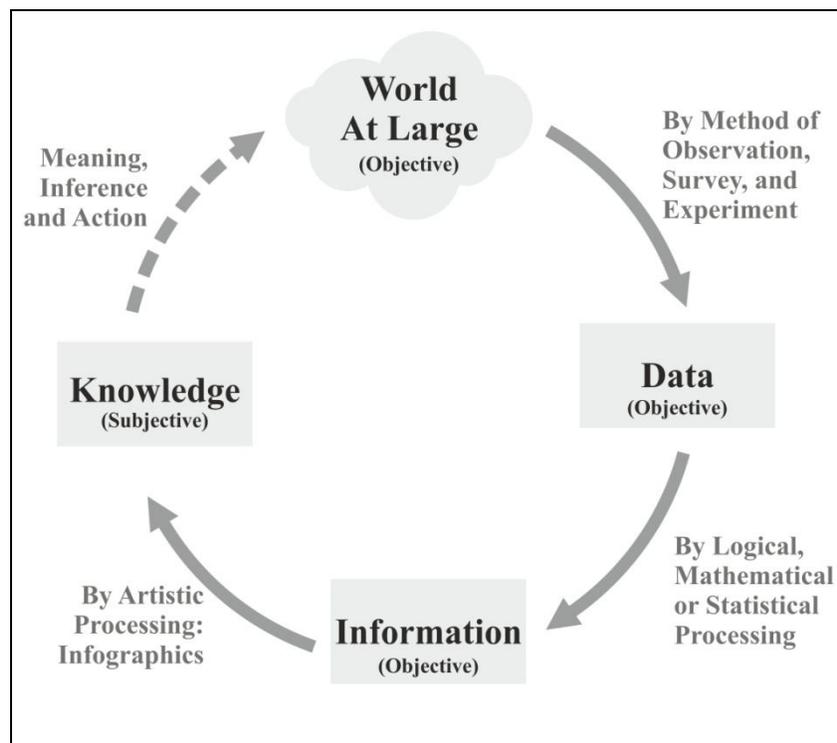


Figure 1: Integrated systems view of Data, Information, Knowledge and Action

Data is retrieved from study of the happenings in the world. The world, which is dynamic and is always in flux therefore at every instant it constantly generates new data about its present state. Data and information are objective and can be verified by any one. They are undistorted by personal bias and emotions. The knowledge is psychological result of perception, reasoning and past experience. Thus knowledge is subjective. Study of data and information helps us to understand the world so that we can purposefully act in it.

At the dawn of 21st century we are drowning in irrelevant information which is bombarded at us by mass media from every direction but that is not knowledge. It is a general misconception that easily available information by mass media and internet is making us smart. Infact, it can have an opposite effect also.

Nicholas Carr, in his famous book *The Shallows*, says “we’re losing the ability to pay deep attention to one thing over a prolonged period of time. Any kind of thought process that requires focus on one thing is what is being disrupted and, unfortunately what another thing brain science tells us is that the process of paying attention, paying deep attention, activates a lot of our deepest thought processes, our long term memory, the building of conceptual knowledge, critical thinking, all of those things hinge on our ability to pay attention.”^[4]

4. Importance of Infographics

To attain knowledge one must search for patterns and seek the hidden connections in seemingly unconnected things. The search for patterns is at the heart of science and scientific research and of mathematics too.^[5] One must be able to use information to make right inferences about the world at large. Here comes the role of art and aesthetics of infographics. Infographics can compress mass of raw data into meaningful pictorial patterns of information. Infographics can organize lot of information in a few aesthetically pleasing pictures, so that receiver can easily assimilate and integrate it within his memory and can recall when needed.

One of the important tools that helps in converting information into knowledge for an individual is infographics. Infographics is pictorial representation of abstract ideas generated by data. Infographics creates visual impact on observer thus help him to appreciate, understand, remember, recall and infer meaning. Artistically created visual patterns are aesthetically pleasing, retainable in memory therefore recallable as per need.

Working memory of brain can hold 4 to 7 elements at a time.^{[6][7]} These elements are stored for 10-15 sec.^[8] To recall, access, remember information it is necessary that it gets stored in long term memory that can hold an indefinite amount of information. The human brain consists of about one billion neurons. Each neuron forms about 1,000 or more connections to other neurons, amounting to more than a trillion inter connections.^[9] Information in short term memory is shifted to long term memory where it gets integrated with previously stored knowledge in the receiver’s brain. This process is called memory consolidation.^[10] Knowledge is the integrated whole of neural patterns. Patterns may connect with activity in other groups of neurons, forming associations or combining to create new concepts.^[11]

Long term memory is subject to fading when not frequently used, this is known as natural forgetting process.^[12] Elaborative rehearsal is required to preserve long term memories.^[13] It involves thinking about the meaning of the information and connecting it to other

information already stored in memory. Infographics can help in elaborate rehearsal because representation by Infographics is found to be more memorable.^[14] Understanding of abstract data and information is a complex mental task. Processing of vision occupies 30% of human brain hardware.^[15] Humans have evolved by natural selection to be visually intelligent that is why humans were able to developed complex art forms. Hence infographics is an important tool to create memories, associations and patterns.

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