

Toward the essence of information

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I will always remember a special day when I was dining at the university student's residence of Ciudad Vieja in Guatemala, Central America. To the same table I was sharing with others came a catholic priest who also was a philosophy professor. The conversation started immediately and the priest told us about a new crazy man, this time coming from the information and systems field, who was asserting that every thing that exists in the universe could be reduced to matter, energy and information.

The history of philosophy teaches us how many of these reductionisms were forgotten with time, so our friend, the priest, did not worried about the situation, actually it seemed to be some how funny to him.

The situation instantly triggered my curiosity. What is the role information plays philosophically? How can information be defined? I had a philosopher in front of me, so I decided to ask him all these questions and he pointed to the field of substance and accidents. Accidents are information or data about an object that permits us to reach the substance of it and, through this path, to know it. The explanation seemed fascinating to me, so I decided to investigate a little bit more. This was what I found

Human knowledge

There are two being modes, being in the mode of substance and being in the mode of accident. Being in the mode of accident is to be in another with no possibility of being stand-alone, accidents have a being not of their own but they participate of the being of some substance. For example, a dog could be white, this is accidental to it, because it could be

black and that would not change it from being a dog, that's why it is said that the being of the dog is the substantive one (it is substance) and the white color of the dog is the accidental one. White color standing alone does not exist, we recognize white color when we see it participating of the being of a substance which accidentally is white.

The ones who went deeper in the study of substance and accidents were the Greek Aristotle, who named accidents and substance "categories", and Saint Thomas Aquinas. The description made by those philosophers establishes a classification that comprises every possible accident including quantity (the corporal measure of things), time (the temporal situation), place (localization), relation (reference to other things), action (actions made over other things), passion (the effect produced by actions made by other things), quality (which makes the substance be one mode or another), habitus (to have or to posses something externally and immediately, like wearing a coat), and position (actitude or mode of being in a place).

When these concepts reach the human knowledge field, there are some basic facts that are very interesting, concerning information:

- Human beings know first the accidents which we perceive through our external senses: sight, sound, touch, smell, and taste.
- We know the substance by going first through the accidents, that is, starting from a set of accidents identified in a particular object, we discover the substance (what is) of that object.

- Human knowledge progresses in two ways: in the knowledge of the couple substance-accidents and in the knowledge of the be's transcendentals: unity, goodness, beauty and truth.

The be's transcendentals theme completes the philosophical study of information. The transcendentals are not substance nor accidents, but intrinsic features of every being, which practically can be identified with it, it can be said that when the being has more beauty, goodness, unity or truth it is more being.

For example, a mountain as a being has little unity because it is compounded by many other individual beings: rocks, trees, vegetables, land, sand, etc. Due to its little unity, it can be said that its being is lower than the being of a tree, whose unity is higher, even though it also has many parts.

Put in a nutshell we can say that information, philosophically speaking, is the same as accidents and substance, but there is more information in a being that has more unity, beauty, goodness and truth than in some other that is more compound, is less convenient (less good), less beautiful, and less intelligible (less truth).

Sources of Information

As all these aspects indicate the be or be degree of a given being, we can say that there is as much information in a being as the being itself is. This gives us the first clue about sources of information in the universe. Objects (beings) themselves are the first source of information, and the information that comes from them is exactly what they are (their be).

Stepping aside from philosophy, we can observe that in things there are tracks or traces of other things that are not necessarily there now. Fossils are a good example, they give information about things that were in the past but are not now. These tracks of things in other things are also information and for the computing and informatic fields are very important because they open the possibility for information storage. These tracks or images can be identified as the second source of information.

Coming back to philosophy, or more specifically to gnoseology, we find that humans know in a very particular way. Their external senses capture information from things and send it to internal senses (memory, cogitative, imagination, and others well specified by Saint Thomas Aquinas), that then present such data to the mind, which is a spiritual potency of the human, meaning that it can not be located in any specific physical organ. The human mind has two components: active intellect or agent, and passive intellect or patient. Active intellect is in charge of forming and joining concepts to store them later in the passive intellect. For example, to know a 1 GB RAM computer with a clock running at 300 MHz, active intellect first forms the concepts of computer, RAM, MHz, 300, GB, 1 and clock (which are also formed by many others concepts that have been already

stored in the passive intellect by similar knowledge procedures) and then joins them to form a new concept.

In the passive intellect, concepts are in the same form they appear in the reality. Keeping the same example, the 1 GB RAM computer with a clock running at 300 MHz concept is equal to the computer that exist in the real world except for the matter that only exists outside the mind, that is why it can be said that human mind has taken the form of the object that exists in the reality, and now both have the same form. This process is also called information and it helps us to understand the third source of information: the human mind. The active intellect works not only with concepts taken from reality, it also joins those which never have been known as joined to form a new concept which is typically called idea. For example, from the computer concept joined to the dish washer machine concept, the active intellect can form the computerized dish washer machine concept that does not necessarily exist in reality. In this case the concept is a form existing in the human mind but not in the reality, but that can be turned into an existing being by adding matter.

Final Words

Even though all these ideas may look pretty impractical, and philosophy can also can give us different views (here we used Aristotle and Saint Thomas' theory, reality philosophers, but some one else may wish to use Kant's or Descartes', which seems to me less rich than the ones used here), it is needed to search these definitions and theories to guarantee that informatic work is well oriented and that it will grant the results that are required, to make it easier for human kind to know the surrounding world.

About the Author

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