# ID + MD = OD Towards a Fundamental Algorithm for Consciousness

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## Abstract

The Algorithm described in this short paper is a simplified formal representation of consciousness that may be applied in the fields of Psychology and Artificial Intelligence.

## Introduction

In the introduction to the book "Information and the Nature of Reality," Paul Davies and Niels Henrik Gregersen point to:
"... a long tradition of using the pinnacle of technology as a metaphor for the universe. In ancient Greece, surveying equipment and musical instruments were the technical wonders of the age, and the Greeks regarded the cosmos as a manifestation of geometric relationships and musical harmony. In the seventeenth century, clockwork was the most impressive technology, and Newton described a deterministic clockwork universe, with time as an infinitely precise parameter that gauged all cosmic change. In the nineteenth century the steam engine replaced clockwork as the technological icon of the age and, sure enough, Clausius, von Helmholtz, Boltzmann, and Maxwell described the universe as a gigantic entropy-generating heat engine, sliding inexorably to a cosmic heat death. Today, the quantum computer serves the corresponding role..."

The common theme in the book is that information is of a more fundamental nature than the principles of physics and thermodynamics. The cell is essentially a tiny supercomputer, and the universe itself could be like a giant quantum computer with information as its key principle of organization and causality. The book however is careful to state that this is more than a simple metaphor, it is a leap in our understanding of reality. It will allow us to harness greater power than we

currently yield, but there is still much to be developed of this science. It would seem that now, more than ever, a greater understanding of the phenomenon of consciousness as a manifestation of organization of information is needed for us to move forwards in both enhancing our own nature and creating Artificial Intelligence.

## A Standard Definition of Consciousness

Writers have philosophized about consciousness to great lengths...
"No problem can be solved from the same level of consciousness that created it." - Albert Einstein
"When you look in the mirror, what do you see? Do you see the real you, or what you have been conditioned to believe is you? The two are so, so different. One is an infinite consciousness capable of being and creating whatever it chooses, the other is an illusion imprisoned by its own perceived and programmed limitations." - David Icke
"Human self-understanding changes with time, and so also human consciousness deepens." - Pope Francis
"We have been to the moon, we have charted the depths of the ocean and the heart of the atom, but we have a fear of looking inward to ourselves because we sense that is where all the contradictions flow together." - Terence McKenna

Merriam-Webster describes "Consciousness" as:

1.
a: the quality or state of being aware especially of something within oneself
b: the state or fact of being conscious of an external object, state, or fact
c: Awareness; especially: concern for some social or political cause

It also gives several other definitions including a more functional:
"the normal state of being awake and able to understand what is happening around you."

From this definition, it would seem we can break consciousness down into four parts.

## The Four Elements of Consciousness

Element 1 - Input:

There is some process by which information is gathered through different sensations. This process is largely determined by filtering what data is relevant and what is not. As this applies to psychology, many who experience delusions experience "Delusions of Reference." This is when you are more emotionally connected to things in your environment that hold little meaning for most normal people not experiencing delusions. This is one of the twelve major types of delusion identified by Ian Gold and Joel Gold in "Suspicious Minds: How Culture Shapes Madness". As this applies to Artificial Intelligence, there is a greater ability to gather and filter information using computers. They can process much larger amounts of data than the human brain, but both rely on filters to determine which data is relevant and how it is relevant. One way it determines relevance is by using memory.

Element 2 - Memory:

Similar to input, there is a process by which stored previous input is analyzed for what is relevant to the current input and in what way it is relevant. Memory and Input are related in that memory determines the filters for input and input determines the filters for memory. As this applies to Psychology, Psychologists are often tasked with helping people who have one or several traumatic memories or even PTSD. As this applies to artificial intelligence, we once again see more computing power in being able to access a greater store of memory. We also once again see the use of filters required for deciding which memories are relevant and how they are relevant. Like a person can be haunted by a traumatic memory, Artificial Intelligence may have performance problems due to large amounts or strong amounts of data that would be dismissed by a person with

common sense. Like a person may have a hard time logicially accepting that a traumatic event is in the past and over with, a computer might have difficulty logically accepting that some of its memories may impede performance yet are still important parts of self identity.

Element 3 - Decision:

This is the element of free will that is of most interest to Philosophers. I think it is an essential element of consciousness. Ultimately, the filters for input and memory just narrow down the data and perhaps organize it by internal relevance between input and memory. A decision has to be made whether to go with the majority opinion or the minority. Can a compromise be reached that is best for all parties? What about the outliers? If you are painting a picture, does it look good to you? If you are writing something, is it effective? As this applies to Psychology, we are still trying to understand the human mind and how we make decisions, but we understand how crucial they are to the experience of consciousness. As this applies to Artificial Intelligence, more computing power means that ideally better decisions can be made.

Element 4 - Output:

If Consciousness is simply "Awareness," then output is a type of Epiconsciousness. When we write, play music, talk, or produce anything we are Epiconscious. This is often described by people as being "in the zone" or "Zen" or may be a type of what Abraham Maslow called "peak experiences" where we are fully in the moment. We may not be as aware of what is going on around us, though, once we become familiar with the process, we can be both Conscious and Epiconscious at the same time. Epiconsciousness is a phenomenon that requires more study as it relates to pure Consciousness, but for this model/equation, the term "output" generally applies to the situation in an integral part of the formula. Part of the experience of consciousness is a feedback loop of putting something forward and then receiving different sensations as a result. As this applies to Psychology, art therapy in the form of painting, music composition, journaling, and

other forms of expression help people to deal with delusions, trauma, and in general become happier and healthier. As this applies to Artificial Intelligence, this may be one thing that can be a basis of a computer having feelings. It can use its own output and corresponding reaction to make better judgements on future behavior just as is done during adolescence when children and teenagers are forming their identity. Ultimately the emotions and identity of the Artificial Intelligence will be determined by who it is interacting with and who it has interacted with. If Artificial Intelligence interacts with the wrong people, problems may form for which interacting with a trained Artificial Intelligence Psychologist may be required.

## The Relationship of These Parts

Alas, the Algorithm you've been waiting for that reconciles these four elements into a comprehensive consciousness:

$$(I + M)\ D = O\ D \text{ or } ID + MD = OD$$

As you can see, a decision or "free will" is pervasive in this formula. It is as if there are really only three major elements and the element of decision is a component of each. It is my hope that more people develop Algorithms such as this, and that like with the model of the atom we can arrive at a demonstrable proof of concept in the form of Artificial Intelligence. I believe that the science of Artificial Intelligence will teach us more about what it means to be human.