

VEDAS ON COGNITION OF INFORMATION.

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Abstract

Information is limited data about external systems, duly classified and organized to present a meaningful value. Processing by a machine remains data only and does not become information, because it can't be utilized without involving a conscious being directly or indirectly. When it is used indirectly (through programming or issuing a command to a machine or worker), it is Artificial Intelligence (worker's intelligence). Information is differentiation of necessary data from different classes or of the same class or different subset of the same data, by linking the observer and the observed and identifying certain special characteristics, both similarities and differences, for taking measures to achieve the desired goal. It is limited data, because we can't know everything about some thing. Here, the mechanism of perception has been discussed from the Vedic perspective.

Everything in the universe is covered up (तमं आसीत् तमसा गूळहमग्रेऽप्रकृतं सलिलं सर्वं आ इदम् । नासदीय सूक्तम्) and needs light to uncover it. Perception (प्रत्यक्ष) is possible only during transition of state (रजसा उद्धाटितम्). There are different types of bodies (वैचित्र्यम्). Some are self-radiant like the Sun that reveal themselves (स्वज्योतिः). Others are reflectors to reveal others, like the Moon (high albedo - परज्योतिः). Yet others, that reveal themselves only in the light or reflected light (low albedo - रूपज्योतिः) like most objects on Earth. The fourth category do not reveal themselves in light like black holes (अज्योतिः). But all these provide data. To become information (आत्मज्योतिः), they must be cognized by a sentient being.

What is information? It is limited data about external systems, duly classified and organized to present a meaningful value. Processing by a machine remains data only and does not become information, because it can't be utilized without involving a conscious being directly or indirectly. When it is used indirectly (through programming or issuing a command to a machine or worker), it is Artificial Intelligence (worker's intelligence). Information is differentiation of necessary data from different classes (विजातीयभेदः) or of the same class (सजातीयभेदः) or different subset of the same data (स्वगतभेदः), by linking the observer and the observed and identifying certain special characteristics (विशेषः), both similarities and differences (साधर्म्य-वैधर्म्य), for taking measures to achieve the desired goal. It is limited data, because we can't know everything about some thing.

This begs the question: what is cognition (प्रत्ययः)? When we say: "I know this is a pot (जानाम्यहं घटः)", it has three parts. The "I (अहम्)" part is the observer (द्रष्टाः, ज्ञाताः). The "this is a pot (घटः)" part is the observed (दृश्यः, ज्ञेयम्). The "know (जानामि)" part is the cognition (प्रत्ययः), which arises from the interaction of the observer with the observed (दर्शनम्, ज्ञानम्).

What is the process of cognition? Like all actions, it takes place in four steps (क्रिया, क्रियातो विभागः, विभागात् पूर्वसंयोगनाशः, ततो उत्तरसंयोगः). First the object (or the impulse emitted by the object like light, sound, etc.) is received (अवग्रहः) by the specific sense organ (इन्द्रियम्). Then the impulse is disconnected from the source and transported by the mind (मनस्) to the brain, where it interacts (सङ्कल्पः, संशयः - इदं वा इदं वा) with memory (चित्तः) following a process of assimilation (आवापः) and elimination (उद्धापः) for finding a proper match (ईहा - चेष्टायाम्, ईहायार्थो विवर्द्धते) by the intelligence (बुद्धिः). The intelligence (बुद्धिः) finally picks up one alternative (विकल्पः, निश्चयः - आकाङ्क्षापूरणम्) - may be with some modification from the earlier impulse based on combined memory (अवगम). For this reason, different people may perceive the same thing differently (कर्मवैचित्र्यात् प्रधानचेष्टा गर्भदासवत्).

Then the final imprint is updated in our memory (चित्तः, स्मरणम्). Then the Ego (apparent Self - अहङ्कारः, गर्बः) cognizes as "I know it", which is stored for future use (धारणा). The agencies for these four steps (उत्पाद्यः-creation/reception, आप्यं- consolidation elsewhere, संस्कार्यः-independent analysis, विकार्यः-final selection and retention) are called the four internal sense organs (अन्तःकरणम् चतुष्टयः - मनोबुद्धिरहङ्कारश्चित्तं करणमान्तरम् । संशयो निश्चयो गर्बः स्मरणं विषया अमी). Here, the observer (apparent Self) is not bound by the constraints of space, time and position (आभु). The observed object is bound by the constraints of space, time and position (अभ्व).

REALITY (भावः).

The universe is neither fully real (भावः) or fully unreal (अभावः). It is not even a mixture of both (जगन्भावोनाभावो भावाभावोविलक्षणः). Energy is the only fundamental object apart from the imperceptible field (क्षेत्रम्). Everything came into existence from the interaction of energy with the field (देवानां पूर्व्ये युगेऽसतः सदजायत ॥२॥ देवानां युगे प्रथमेऽसतः सदजायत । तदाशा अन्वजायन्त तदुत्तानपदस्परि ॥३॥ ऋग्वेदः १०-७२-२,३). There is much confusion about reality (सत्ता).

Reality (सत्ता) is defined as anything,

- 1) which has existence (अस्तित्व) independent of all Observers based on universal principles of causality (गृह्यमाणधर्मेणाभिनीयमाना नियतिः - ब्रह्म), so that all observers describe the same thing for all observations outside of themselves,
- 2) is knowable (ज्ञेयत्व) - invariant in all measurements at the same time and place as received by different observers by their internal mechanism due to inertia (गृहीतपूर्वाहितसंस्कारेणाभिनीयमाना नियतिः - विद्या), and
- 3) is describable in any language (अभिधेयत्व) to compare with other observations to confirm that, similar measurements return similar results (वाचाभिनीयमाना नियतिः - वेदः).

We may see a mirage, but only when we compare our experience with that of another from a different place or at a different time, we can know the reality. This is not possible with dreams, which are unreal (स्वप्नेऽत्र वेद्यन्तु न स्थिरं जागरे स्थिरम्).

KNOWLEDGE (ज्ञानम्).

Cognition is the cause of knowledge (ज्ञानम्) – hence, it is also called proof (प्रमाणम् – प्रमा+अन – the agency for proof). A question may arise as to the validity of such proof, because we also cognize mirage, which is not a valid description of reality. Here, we must remember that what the eye sees, it truthfully reports to the brain. If there is a problem in the incoming radiation, or defect in the sensory system, the eye can't be faulted for this. There are ways to overcome the defects and know the reality.

Knowledge (ज्ञानम्) is the content of the experience as compared with memory (स्मृतिपूर्वानुभूतार्थविषयं ज्ञानमुच्यते). As shown above, where the result of the operations of the senses, the mind and intelligence converge and after comparing with the memory, project a consolidated picture, which is invariant in space and time, before our “self”, cognition of such picture by our “self” is called knowledge (एकत्वं बुद्धिमनसोरिन्द्रियाणाञ्च सर्व्वशः आत्मनो व्यापिनः). Such cognition can be of two types (अप्रमा च प्रमा चैव ज्ञानं द्विविधमुच्यते). When it passes the test of reality as explained above, it is called proof. Otherwise, it is called invalid knowledge (तच्छून्ये तन्मतिर्यास्यादप्रमा सा निरूपिता). Such invalid knowledge can be of two types: error of judgement (विपर्यासः), or doubt (संशयः - तत्प्रपञ्चो विपर्यासः संशयोऽपि प्रकीर्तितः).

Invalid knowledge could be due to defects in the mechanism of our senses (अवग्रहः), or of mind (ईहा), or of the mixing apparatus (अवगम). If our senses receive distorted images because of external factors (as in the case of the mirage), or our mind is highly disturbed, or our stored concepts are defective (like treating the body as self), the knowledge we get is corrupted and leads to error of judgement (विपर्यासः). If we receive impulses that are common to two or more different objects (साधारणादिधर्मस्यज्ञानम् – किं स्वन्नरो वा स्थाणुर्वा – in darkness, a man or a pole), it creates doubt (संशयः).

WHAT IS PERCEPTION?

For self-luminous bodies (स्वज्योतिः), we require no light. They are self-evident and reveal themselves and others. Light itself is dark (कृष्णः). We can't see Sun's light passing by us directly. We see its effect only - objects that reflect Sunlight. The Sun emits light continuously and it hits the objects continuously. There is no time when the Sun doesn't emit light. The light accumulates (Chiti - चिति) on the surface of the object that stops its propagation. Hence, it is called Chaitanyam (चैतन्यम्). From there, it scatters in all available directions. Some of the scattered light, which is a modified form of the incident light, may come towards us and get measured by the corresponding sense organ. Since the object of measurement and the unit of measurement must have similar properties, and since our eyes only have the same property of radiation, only our eyes can receive such radiation and our mind, which is common for all senses, takes it in for measurement. The radiation provides limited data only on the body's surface facing us. It doesn't reveal complete details about the body. Hence it is called science - limited information about something (विज्ञानम् - विशिष्टज्ञानम्). The information so received is

called form (रूपम्). We classify the information about objects and give it a name (नाम, उपगम). The concept includes its interaction potential (कर्म) also. These three define all objects.

Since perception involves radiation, we must consider the event horizon. Modern concept of event horizon is wrong and time cone fictional. If you consider only two spatial dimensions and time, the light pulse will present a series of concentric circles and not conic sections, which are three dimensional. If you introduce the third dimension, it will present a series of concentric spheres. It will never be cones.

Event horizon (दिग्बलयः, दृक् मण्डलम्) should be considered from not only the observer's perspective, but also the object's perspective, because information involves the interaction between the observer and the object. The man on the platform and his friend in the running train, both see each other reduce in height, though neither actually does. It is apparent, as Special Relativity is optics and kinematics only, which are apparent. SR is apparent and not real. What the man on the platform sees is the total height (spreads – ऋक् - ऋचामूर्तिः) of the friend in the train. With distance, the triangle with his eyes as the tip and the friend's height as the base, stretches, which appears as reducing base, hence reducing height. When the base becomes zero, that is the event horizon for the observer.

But does observation describe the object fully? No. When we touch an object, we touch it directly. But when we see an object, we see the radiation emitted out of it – not the object that emits radiation. We can't describe the object fully by describing one aspect (अनवर्णे इमे भूमी). The object emits radiation (साम) in all directions spherically (साममयं तेजः). We see only an angular segment of it coming in our direction. As the sphere increases in size, the angular segment becomes smaller and smaller. The image becomes fainter. The point where it becomes invisible, is the event horizon for the object. Some say what our eyes see is radiation and what the object emits is the field.

Some people question: "What are we actually touching? Are the electrons of our body's atoms pushed back by the electrons of the object's atoms? Or are we actually feeling the core forces which are keeping the electrons in their orbitals? In either case, we are feeling field forces working on charges. In nano-scale view, mechanical connections don't exist (perhaps with the exception of neutron stars)". This view is not correct. Electrons are nothing but the negative field confining the radiation coming out of nucleus. Negative charges have no internal structure, but are spread out in the field (निरंश). They do not repel each other like objects with positive charges that have internal structure (सांश) and follow exclusion principle (स्थानावरोध). The negative fields combine harmoniously (सामञ्जस्य) into superposition of states (अध्यास) in two different ways. If they are similar in all respects, they remain in a combined state (ऐक्यव्याप्ति or एकात्म्य). If they are not similar in all respects, they remain in a mixed state (संयोगव्याप्ति or एकभाव्य). In touch, they remain in a mixed state. Since measurement is a process of comparison between similars, and unlike vision, touch involves bodies whose negative fields are oriented in opposite directions, they have superposition of mixed states (संयोगव्याप्ति or एकभाव्य).

Regarding vision, some say: "we feel the forces of its magnetic or electric fields, which are subject to the same influences by di-electricity and permeability of space as the light waves are, as well as to the Lorentz contraction. Waves are emitted, fields are not. A field is what remains in space after a wave passed through it". It is a wrong description of reality. Fields are regions of space, upon entering which we experience a force. We name the field according to the nature of the force experienced. But the field is not the force. Field contains the force. We can switch on or off electricity to create an electric field or switch it off. The field remains same, though force is now not experienced. They admit it when they say: "A field is what remains in space after a wave passed through it".

What we see in black holes are NOT the event horizon, but the point where darkness overtakes light or light is covered. In sun-spots, we see less light and temperature. In black holes, we do not see any light. The interplay of radiation between the observer and the object (यज्जुः - याजुषि गतिः) plays a crucial role here.

THE CHARGES (लिङ्गम्):

The primordial energy (शक्तिः) and the field (क्षेत्रम्) inseparably co-exist (अविनाभावी) and are the only eternal realities. While the field is non-interactive by itself, it contains energy that is ever mobile. Energy in the potential form is called force (बलम्). In the kinetic form, it is called charge (प्राणः). After energy completes its operation and comes to rest, the effect is called action (क्रिया). A combination of kinetic energy of the same type, is called Rishi (ऋषिः). A combination of different types of kinetic energy is called quantum particles (देवाः). Hence, we do not see single quarks.

Everything becomes perceptible during the transition of energy from one state to the other making everything charged. There are two types of charges: color charge and electric charge. These are caused first by the interaction of energy with the field in a relationship of the container and the contained (आधाराधेयभावः). These create the color charges (लोहित-शुक्ल-कृष्णाः). The red-green-blue is a wrong classification. Green is a combination of yellow and blue. When the field dominates, it is called white (शुक्लः), because it reveals everything. When the energy dominates, it is called red (लोहितः), because it moves away. And when they are in equilibrium, it is called black (कृष्णः), because it covers up. They coexist in different proportions. When they are in equilibrium, that is singularity. Their combination in different ways creates the not-perceptible bases (असत् ऋषयः), whose combination leads to create the 33 types of quantum particles (त्रयस्त्रिंशत् वै देवाः) with complementary charges (योषा-वृषाभावः). While the center (अन्तर्यामी), which is governed by the color charges to create (गुणसृष्टि) everything, (प्रसव) is called positively charged (पुंलिङ्ग), the outer field that is scattered and confines the radiation (संस्त्यान), is called negatively charged (स्त्रीलिङ्ग). Together they constitute everything (अग्निषोमात्मकं जगत्).

Modern concept of fermions and bosons are also wrong. Objects belong to two types: those with internal structures (सांशः), where the positive charge is at the centre and radiates out (अग्निम्). They occupy position in space and obey exclusion principle (स्थानावरोधः, बिष्टम्भकत्वम्). They can't be in superposition of states. These are the fermions. Then there are objects with negative charge that have no internal structures (निरंशः). They are scattered in fields all around (सोम). When interacting with similar particles, they attain superposition of states (सामञ्जस्यम्). They confine the radiation emitted by positive charges. The point where they confine the positive charge is called electron. Hence, the position of electron can't be predicted. Only its probability can be predicted. Like pulsars, the protons emit pulse in opposite directions. Hence, we find electrons in pairs of opposite spins (आवर्तः). These two types constitute everything perceptible (अग्निषोमात्मकं जगत्).

The modern concept of hadrons and leptons are also wrong. Hadrons are said to be subatomic particles of a type including the baryons (त्राणुकः) and mesons (द्वाणुकः), which can take part in strong interaction (अन्तर्यामिसम्बन्धः). Leptons are negatively charged particles that don't take part in strong interaction. As per Vedic classification, anything that is discreetly perceptible (स्थितिसिद्धः), having an internal structure (सहृदयः), and having a physical form (सशरीरी) is a hadron (सत्यम् – स+ती+यम्). Hence, they can take part in strong nuclear interaction, which is nucleic (हृद्य). Anything that is not discreet - scattered (भातिसिद्धः), not having an internal structure (अहृदयः), and not having a physical form (अशरीरी) is a lepton (ऋतम्). Hence, they cannot take part in strong nuclear interaction. Leptons (ऋतम्) are spread out everywhere and nothing can transgress them (ऋतमेवपरमेष्ठी ऋतेनात्येतिकिञ्चन). For this reason, the Vedas declare that for the discerning eyes, the negative charge alone is the truth. Positive charge comes out of it (स्त्रियः सतीस्ताँ उ मे पुंस आहुः पश्यदक्षण्वान् वि चेतदन्धः 1).

The Sun is the primary source from which everything in our Earth evolves (सूर्यः आत्मा जगतस्तस्थुषश्च । सूर्याद्वि खल्विमानिभूतानि जायन्ते 1). In the Vedic concept, Sun (सूर्यः) doesn't mean a star, but that which leads to creation (प्रसूयते) and is ever mobile (सरति संसार). One such agency led to the creation of everything in a long chain of creation and structure formation. There are two types of creators. The first category creates the primary matter like the spider creates the web from itself. The second category creates different objects using the available material. Soorya belongs to the first category. For this reason, the Ultimate Creator is also called Soorya. The mechanism of creation will be discussed separately.

When rain water overflows on land, its base takes the shape of the earth below. Similarly, when sunlight hits a surface, it takes the shape of that surface. When that radiation is reflected in our direction, it projects the reverse image which is captured by our eyes. The lenses in our eyes reverses the image to project the proper picture. In another paper, I had discussed how the sensory agencies act mechanically like a computer. After processing, we cognize the form as reflected by the light. Other sensory organs function in a similar way. Since sound waves are longitudinal waves, they vibrate our ear drums. Since air spreads and moves everywhere, any moving sensation is captured by our skin, which defines our

spread. We feel the taste only after something is dissolved in our mouth with saliva and presents itself to the taste buds. We smell something when its odour reaches our nose to interact with the molecules there. Since everything is ultimately cognized by Self, it is called the light of lights.

सूदितस्वातिरिक्तारिसूरिनन्दात्मभावितम् ।
सूर्यनारायणाकारं नौमि चित्सूर्यवैभवम् ॥
चक्षुर्नो देवः सविता चक्षुर्न उत पर्वतः । चक्षुर्धाता दधातु नः ।