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The Claimed Revolution to Understand Consciousness: Information Plays the Driving/Essential Role for the Structuration and Behavior of the Living Organisms

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A prestigious conference claimed recently a revolution in neuroscience to understand consciousness. In this paper it is shown that this revolution already came, revealing the determinant role of information for human and living structures, both for their structuration and behavior, explaining consciousness at human as the result of the activity of the Informational System of Human and Living Structures. For this, it is emphasized and discussed the informational structure of the eukaryotic cell, the basic/representative composing unit of the multicellular body of human, animals, and plants, showing that the composition and functions of the informational system are basically similar with that of human. To reveal the driving role of informational mechanisms in human and subhuman organisms, it is introduced the concept of matter-related information, showing that information can be hidden/"embodied" or released/"disembodied" in or from the elemental micro/macro components of the body, during the multiple chain/cascade interactions including transduction processes. It is shown that such interactions are initiated from two main categories of informational sources: implicit (genetic) and explicit (external/internal) sources, the first category leading to structuration of the body and the second the reactive behavior. Consciousness in human and subhuman organisms, expressed by two corresponding informational relations, is the result of the release of information by the mind, acting as an informational operator/device, the development degree of mind and consciousness depending on the complexity degree and adaptation. An analogy of this Informational Model of Human and Living Structures (IMHLS) with the ancient model of chakras is highlighted, showing that these models support each other, applied with beneficial effects in Reiki technique and music-based cognitive multi-task therapy for neuro-rehabilitation.

Keywords: matter-related information, embodiment/disembodiment, info-transduction, decision, info-operator, mind/consciousness

Introduction

The philosophical questions "what is life" and "what is consciousness" were present in the human cultures since immemorial times, and have likely been asked for as long as there have been humans (Mariscal, 2021; van Gulic, 2014). In spite of the spectacular development in practically all the scientific fields, starting with philosophy itself to physics (Schrodinger, 1944), biology (Alberts et al., 2015), and neurosciences (Tononi, Boly, Gosseries, & Laureys, 2016), these items remained as not answered questions, although various proposals were

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advanced on the research table of sciences, so that even recently, a famous conference of famous research community claimed a revolution in neuroscience to understand consciousness (Gaiseanu, 2023g). That is because, although information is already well accepted concept as the communication between persons is concerned (Gaiseanu, 2019a), in mass media communication (Gaiseanu, 2022f) and in management/decision making process in society, industry, and health care activities (Filip, 2020; 2021; 2022) within our informational era (Gaiseanu, 2023a), no appropriate importance is given to this concept to understand the living processes in human (Gaiseanu, 2023h) and living structures (Gaiseanu, 2022e).

In this paper it is shown that a suitable redefinition of the concept of information in the living structures is fundamental to redrawn the panorama of life and its characteristic processes, both of structuration and behavior, leading to the real understanding of their self-organization and functioning, driven by the defined informational matter-related mechanisms. For this, in the first section is shortly described the Informational Model of Human and Living Structures (IMHLS), emphasizing the common typical characteristics components of the Informational System of Human and Living Structures (ISHLS) on the entire organizational/evolution scale, and in the second section is detailed the informational involved mechanisms, taking possible such a self-organization/behavioral functioning process.

Information Drives the Structuration and Behavior of the Living Organisms

When people communicate in the common daily activities, nobody asks himself/herself what is information: This is implied in the communication act itself from remittent to receiver, as news, message—with a certain signification for both—the emitter and the recipient. Information is also a common concept within the communication by mass-media tools—internet, journals, newspapers, and all other mass-media channels. It seems therefore to be a little bit "strange" to involve this concept in the approach of the living organisms, associated phenomena and supporting mechanisms.

On the other hand, as the communication by language is specific of human in the commonly accepted terms, and as this is supported by specific tools—the brain, the question is how information as a communication factor is supported and allowed by organism. From philosophic point of view, such a question leads to the famous problem of the mind-body relationship (Gaiseanu, 2021b). To answer this question, a deeper sight into the structuration mechanisms is to be applied, but not only. It is to be observed also that human and all other living organisms are connected to two informational sources, determining their structuration behavior and their adaptation process.

Info-Structuration

A key mechanism for body structuration of the living organism is the transcription-translation (Alberts et al., 2015), which is performed inside of a eukaryotic cell, the basic composition unit of human, animals, and plants (Figure 1, right down side). Although probably surprising, this is composed by organelles, with similar functions like the organs in human and animals (Gaiseanu, 2020d). The eukaryotic cells of plants contain an additional organelle, which is chloroplast, useful to provide a glucose-based component for energy production, obtained by a light-assisted (photosynthesis) reaction.

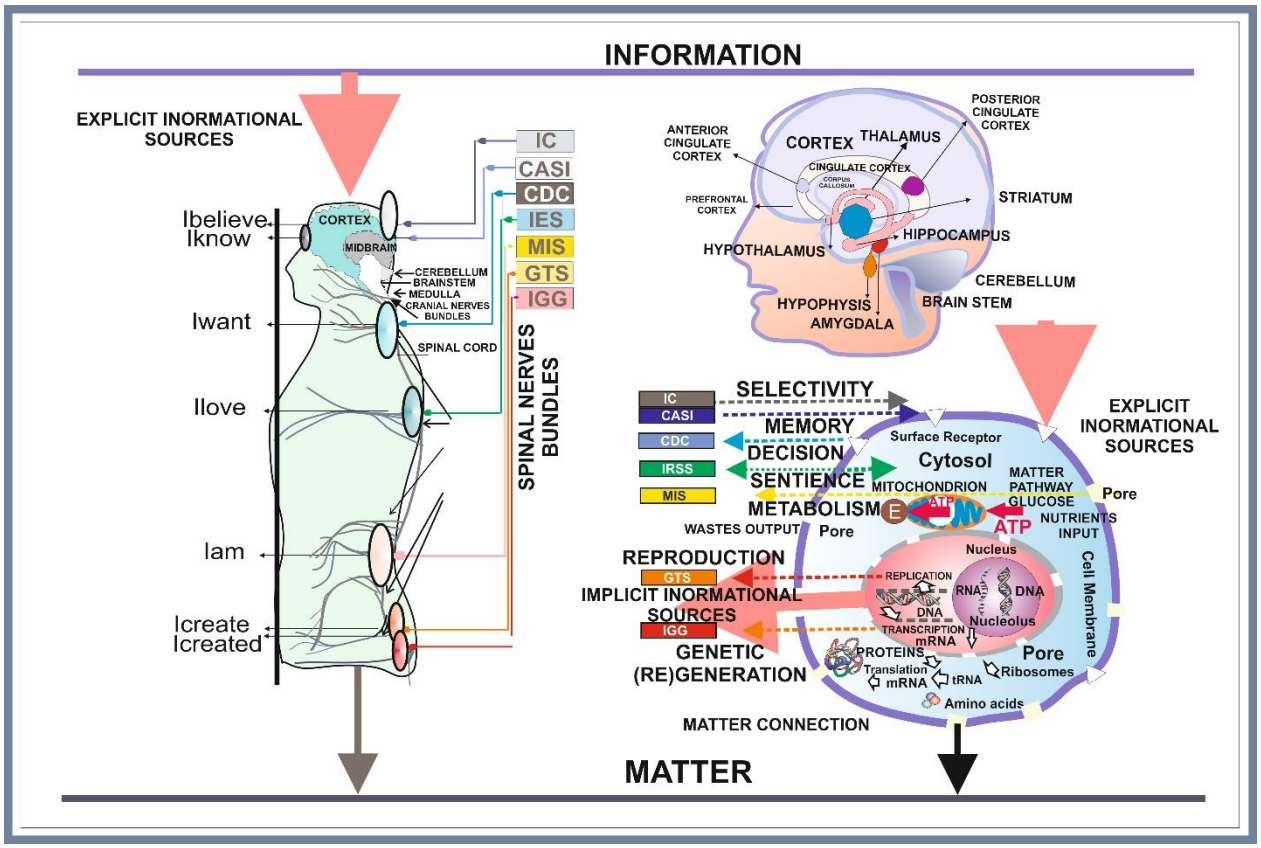

Figure 1. The Information System of Human and Living Structures (left and right bottom side) and brain corresponding zones at human (right upper side).

The transcription-translation process can be schematically described by the relation (Gaiseanu, 2024a):

$$Seq\ (DNA)\ \Rightarrow\ mRNA\ \Rightarrow\ tRNA\ +\ Amino\ Acids\ \Rightarrow\ Protein \qquad (1)$$

where Seq (DNA) represents a certain sequence from a deoxyribonucleic acid (DNA) of a gene in nucleus. mRNA is the messenger ribonucleic acid (RNA), a species transporting copied information/structures of the DNA sequence, tRNA (transport RNA) is a transduced messenger in ribosomes organelles, and Amino Acids (AA) are certain combining components in cytoplasm of the cell, to form a certain species of protein—the brisk of the body, which can play also an informational/info-transporting role (Figure 1, right bottom side). Ligands for instance are produced by signaling emitting cells, and they interact with the receptors of the target cells, which can be: proteins, hydrophobic molecules (like steroids), or gases (like nitric oxide) (Khan Academy, 2024).

mRNA is an informational agent structure, bearing a certain structuration configuration to the other participating components at the protein structuration, according to Equation (1). A key property of the DNA and RNA molecules is that they are formed by only four basic nucleotides components, i.e. a nitrogen-containing base: adenine (A), guanine (G), thymine (T), and cytosine (C) in DNA, adenine, guanine, uracil (U), and cytosine in RNA, plus a phosphate group and a sugar molecule (deoxyribose in DNA, and ribose in RNA) (National Cancer Institute, 2024). With three billion nucleotides pairs in each cell at human, fitted into a space of just six microns across, the DNA has a helical form, packaged into 46 chromosomes in nucleus. However, if stretched, the DNA in one cell is about 2 m long, and all the DNA in all body cells put together would be about twice the

diameter of the Solar System (Ashworth, 2024). That means a huge number of sequences with various nucleotides combinations, each of them bearing a certain information for structuration.

These nucleotides have the remarkable characteristic property: A can combine only with T (U if RNA), while C only with G, by complementary of their structure (Alberts et al., 2015). Such a property is thus expressible as a Bit-type Yes/No informational unit (Gaiseanu, 2023a; 2023b). Therefore, the very large DNA molecule contains an enormous number of nucleotides, which makes possible a corresponding enormous number of informational structuring sequences, with distinct properties, which are further combined with AA (20 in human—11 fabricated and nine taken from foods) (MedlinePlus, 2024) in other various multiple complementary Yes/No Bit-type combinations. Such an amazing system can be defined therefore as Info-Genetic Generator (IGG) in cell (Figure 1, right bottom side), with a corresponding function in human and mammals, managed by hypophysis and hypothalamus (Gaiseanu, 2019b) (Figure 1 left and right upper side), and in multicellular organisms.

Similarly, a Genetic Transmission System (GTS) can be defined in cell, supported by the cell nucleus (Figure 1 right bottom side). The basic process at the cellular level is replication, schematically represented by the following specific reaction:

$$DNA => \frac{1}{2}DNA + \frac{1}{2}DNA + 2(New\ \ Strands) => 2\ \ DNA \tag{2}$$

which shows that the DNA molecule is split into two halves, which are reconfigured by the addition of new strands (the "spine" of the helical molecule structure), to form finally two mew DNA molecules. At human and mammalians, GTS is managed by the hypophysis and hypothalamus, connected with the sexual organs (Figure 1 left side) (Gaiseanu, 2019b).

The fundamental reaction in the digestive system, providing energy (E) in the living organism, is the conversion of the glucose-based foods carried out on the metabolic pathway of cell, from adenosine triphosphate (ATP) into adenosine diphosphate (ADP), with liberation of energy in mitochondria organelles (Figure 1 right bottom side), according to the following schematic reaction:

$$ATP\ +\ H2O\ <=>\ ADP\ +\ Pi\ +\ Free\ Energy\ (E) \tag{3}$$

where Pi is inorganic phosphate (LibreTexts, 2024). The concentration of cellular ATP is maintained in the range 1-10 mmol/L (1 mmol = 10^-3 mol), and the regular ratio of the ATP/ADP concentration of about 1,000 (Zimmerman, Arnim, & McLaughlin, 2011) is a critical value, driving/controlling the forward or reversible Equation (3) (Gaiseanu, 2023k). This allows the production of ATP (Yes) or not (No), when the value of this ratio becomes less or higher than the critical value. Therefore, a Maintenance Informational System (MIS) can be defined both in in the composing cells (Figure 1 right bottom side) and in human (Figure 1 left side), managing the absorption/desorption/metabolic processes (connection to the matter pole), supported in the brain by medulla and brain stem. Such a system, acting automatically, is fundamental for the existence of any living organisms, on the entire evolutionary/organizational scale (Gaiseanu, 2023b; 2023d).

During the interaction with the genetic system, the info-processing takes place only in a forward (=>) way, according to the molecular norm limitation (Wikipedia, 2024), and in maintenance/metabolic processes, reversible-type reactions, according to Equation (3), control their info-operability.

Info-Communication/Behavior

As it can be deduced from the above presentation, the genetic system represented by genes/genome in

nucleus of the cell acts as an implicit Source (iS) of information, assuring the genetic transmission to the new generation by GTS and the organism development by IGG. The connection to matter, managed by MIS, assures the necessary energy of the organism and material resources for the body maintenance. However, the living organisms are also connected to external Sources (eS) of information, necessary to correlate their functioning with the external environmental conditions. There are two important motives for such a connection: (i) The relation with the external environment is fundamental for their feeding necessities; (ii) the living organisms are dynamic structures, working under dynamic/homeostatic equilibrium, which should maintain their existence within potentially changing/dangerous external conditions. This connection is supported by a sensor network on the membrane surface, in the cytoplasm body and nucleus (Khan Academy, 2024), with the possibility to integrate the repetitive/intensive information into the genetic material structure, by means of the epigenetic mechanisms (Gaiseanu, 2019g). As the nucleus is the central memory of the cell, a Center of Acquisition and Storing of Information (CASI) can be defined (Figure 1 left bottom side). At human, mammals, and other subhuman organisms, such a system is managed by the brain, supported by prefrontal cortex (short-term memory), hippocampus (long-term memory), thalamus (a hub-type component) distributing information from inferior to superior (cortex) zones of the brain and cerebellum, memorizing the motor-acquired skills (Gaiseanu, 2019b). The quantic perception and various other phenomena, described by various models (Gaiseanu, 2017a; 2017b; 2019f), are included in CASI.

One of the key of the survival of the living organisms consists in their ability to adapt to the reasonable changes of the external conditions. Therefore, they have to dispose of a Center of Decision and Command (CDC), able to select from the multitude of possible responses to an external/internal informational stimulus/signal the optimal response, suitable for adaptation, with respect with their capabilities. This means that they dispose also of a specific Info-Connection (IC) system, able to compare the input signals with own inherited/acquired life experience, signalizing the acceptance (Yes) of rejection (No) of such a signal. Such a selection is operated even from the entrance at the surface receptors (Figure 1 left bottom side), which allow (by construction) a selective Yes/No-type connection only of a certain (complementary structured) signal agent. The CDC is operated by the chain of successive cascade-type reactions into the cell body (cytoplasm), finishing by a final decision of activation/inhibition of certain genes, consisting in genes expression. Such a process controls the activation (Yes) or inhibition (No) of proteins, which actually determine certain behavior/reaction of the cell, or the motor-type commands at Execution Elements (EE), as it is the case of cells living independently (Gaiseanu, 2023k). At human and mammals, the CDC is supported basically by the prefrontal cortex (judgement) and cortex, while IC by the anterior cingulate cortex (warner of disparity between signal meaning and existing experience) (Gaiseanu, 2023a; 2023c), and posterior cingulate cortex, as explorer of daydreaming/future/introspective projects/desires, with respect to the existing experiential data. The so defined Informational Reactive-Sentient System (IRSS) at cell and subsequent superior multicellular organisms, and Info-Emotional System (IES) at human and mammals refer to the sentient-emotional internal reaction at the received information, supported by internal sensors/(reactive chain circuits) (Gaiseanu, 2023c; 2023k) and by the limbic system (thalamus, hypothalamus, hippocampus, midbrain, amygdala (Gaiseanu, 2019b) (NQ3) (Figure 1 upper right side)) respectively. The reactive activity of the cell and all other living organisms can be therefore described by the Operative Informational System (OIS), defined as: OIS = CASI + CDC + IRSS/IES + IC. The possibility of Info-Connection (IC) to quantic phenomena/mechanisms extends the informational window of connection with the external reality of human/subhuman organisms (Gaiseanu, 2017a; 2017b; 2019f).

Consciousness Is a Result of the Informational Activity of the Informational System

Consciousness is still an enigma for the scientific field, because its intimate mechanisms are still not understood. Regarded from the perspective of neuroscience or frim any other traditional science, comprising biology, physics, or chemistry, the characteristics and the behavior if consciousness cannot be really explained. Therefore, the intervention of the science of information on this matter is already welcome.

The Informational Model of Human and Living Structures

Introducing the role of information in the living structures (Gaiseanu, 2021d) as presented above, an Informational System of Human (ISH) can be defined as:

$$ISH = (CASI + CDC + IES + IC) + (MIS + GTS + IGG) = OIS + PIS \quad (4)$$

As similar components act also in any other living organism (Gaiseanu, 2023c; 2023d), an Informational System of Human and Living Structures (ISHLS) can be actually defined as:

$$ISHLS = (CASI + CDC + IES/IRSS + IC) + (MIS + GTS + IGG) = OIS + PIS \quad (5)$$

where the term IES/IRSS refers specifically to human or any other living organisms respectively.

At human, the projection of the activity of ISHB (Equation (4)) in the mind gives rise to the cognitive centers of consciousness, with which human may detect, analyse, feel, and decide in a binary (Yes/No-Bit type) manner on the suitable/optimal reaction to the environmental stimuli/info-input information and to the himself/herself external/internal explored reality (Gaiseanu, 2019a; 2022f; 2023a). Therefore, a self—Iself at human connected to input of explicit/implicit sources (INFO) (eS/iS) of information could be defined by the equation:

$$INFO => ISHLS \rightarrow Mind \rightarrow Iself = Iknow\ (Ik) + Iwant\ (Iw) + Ilove\ (Il) + Iam\ (Ia) + Icreate\ (Ic) + Icreated\ (Icd) + Ibelieve\ (Ib) \quad (6)$$

where the symbol => represents the transmission/communication between the source of information and body, received specifically by sensors during their interaction, the symbol → indicates the transduction from the carried information in the human body circuits into information itself (Gaiseanu, 2023k), perceived by means of the corresponding cognitive centers as follows: Iknow (memory), Iwant (decision), Ilove (emotions/feelings), Iam (self status/vivacity/health), Icreate (biocreation, expressed by sociability/family relations), Icreated (biogeneration—expressed by inherited talents/predispositions/abilities (Gaiseanu, 2019e)), Ibelieve (mentality/decision criteria, duties/tasks) (Gaiseanu, 2018; 2019b; 2020c). Iwant represents actually the decision, which according to the Informational Model of Human and Living Structures (IMHLS) is expressed by Attitude, a function of all other cognitive centers (Gaiseanu, 2020h), which can be evaluated accordingly (Gaiseanu, 2021g). The Operative Informational System (OIS) manages practically the adaptation, because emotions/sentience could determine also a decision, depending also on the activity of MIS (power/health), GTS (reproduction), IGG (inherited predispositions/talents).

Generalizing the projection expresses by the Equation (6) for subhuman living organisms, it is also possible to associate them a mind and consciousness, although with certain important distinctions (Gaiseanu, 2022e). Thus, maintaining a distinctive consideration, necessary to differentiate always human from other organisms, able to apply specific meaning for each action/event/things by language, and use it in mental analyses, an info/emo-sentient/decisional-executive activity of other living organisms could be defined (Gaiseanu, 2022e). Such an activity is also experimentally observed (Gaiseanu, 2022e; 2023b; 2023c). Therefore, a similar relation with the Equation (6) can be written as follows:

$$INFO => \ ISHLS \rightarrow Mind \ (Info-Operator) \rightarrow Individual \ (In) = \ In\_m \ (Memo-experience) + \ In\_d \ (Decision) + \ In\_s \ (Sentience-feeling) + \ In\_v \ (Vitality-vivacity) + \ In\_r \ (Reproduction) \ + \ In\_i \ (Instincts- \ impulses) + In\_o \ (Info-selective \ Orientation) \quad (7)$$

where the concept of Mind here is taken as an Informational Operator (Info-Operator), the awareness of self (Iself) at human is substituted for subhuman/animal organisms by the distinctive perception of self as Individual (symbolized by In), different from others and the rest, memory (Iknow) is represented by an In_m (Memo-experience), decision (Iwant) by In_d (Decision), perceived as the possibility/capability to command the body Execution Elements (EE), emotions (Ilove) by In_s (Sentience/feeling), an individual sentience response to information, Iam by In_v (Vitality/vivacity), Icreate by In_r (Reproduction), Icreated by In_i (Instincts/Impulses), and Ibelieve by In_o (Info-selective Orientation)

Thus, this similar expression can be deduced taking into account the Equation (6) for other subhuman species on the organization/evolution scale, with less complexity of the organization of their specific informational system, corresponding to their evolution degree and their own capability of adaptation to the natural conditions of environment. Therefore, borrowing the term "mind" referring to human and transferring it to subhuman organisms, but taking into account distinct/less complexity for each of them, a simplified "consciousness" of these other organisms could be defined too, as a perception of distinctive individual with respect with others and the rest. Such organisms, endowed also with the seven distinct informational components of their informational system, connected to corresponding body "tools", although less developed like that of human, dispose thus of the ability to be connected (IC) and to "know" their reality, informationally perceived (CASI) and interpreted during the reactive/decisional process (IRSS/CDC), according to their inherited/acquired experience of life (PIS/OIS => CASI). In such a sense, the terms "mind" and "consciousness" should be actually applied in each specific case.

Following this line, the concept of consciousness gets actually a dimensional property, referred to the complexity of the informational system and endowed/acquired decisional (CDC)/executive (EE) capabilities. CASI (memory) is always a stable reference for further decisions and thus for evolution. This can include also the personal evolution at human (Gaiseanu, 2023e; 2023j). Of course, as each species is connected to own specific environment, limited to specific informational window (IC) for the perception and interpretation in own particular style information, reality is different for each species and each individual, according to own concrete informational tools and processing capabilities and experience.

Information and Informational Mechanisms of Info-Transmission/Conduction/Communication in the Living Structures

To understand consciousness, it is necessary to understand also the intimate mechanisms supporting the information transport/communication from information sources to mind. For this, a new concept defined as matter-related information was introduced (Gaiseanu, 2016; 2019b). Such a concept rises observing the multi-particle composition of the living structures, in particular that of human, interacting between them and with the immobile structures of the organism, as it is for instance demonstrated by the Equations (1)-(3). In particular, Equation (1) shows that DNA molecules of genes serve as (immobile) implicit information sources (iS), offering various copies of sequences of their structures taken over and transported by mRNA communication agents, transduced in tRNA in ribosomes, which carry out this information in cytoplasm (cell body), to combine with various types of Amino Acids (AAs). Reducing this chain of subsequent reactions to an interaction of two

Components A and B, such an interaction can be schematically represented by the informational relation:

$$(A+B) \;+\; I \;<=>\; (AB)(I) \tag{8}$$

where I is information, hidden into the material compound (AB) as (I), possibly released by a reverse (<=) process, or by a subsequent dissociation/destructuration mechanism. Equations (1) and (2) can follow only a forward way, as established by biological central dogma (Wikipedia, 2024), like in the semiconductor diodes (Gaiseanu, 2013; 2021a). The interaction between various components of the living organisms takes place therefore by various chains of structuration/destructuration mechanisms, with incorporation/embodiment or release/disembodiment of information. Decisional factors intervene within such reactive cascade chains of reactions, which establish/drive the info-communication/transmission, which determine the triggering and/or direction of such a process, as it can be observed from Equation (3). Equations (1) and (2) are also driven by decisional factors, establishing the moment and conditions of their triggering and progress.

The connection with the explicit (eS) and implicit sources (iS) triggers typically a cascade/chain of associative/dissociative reactions, with embodiment/disembodiment of information, which can be schematically represented by the following informational relation:

$$\begin{gathered} INFO => (A1+B2) + (Info1) => C1(Info1) => (A2+B2) + (Info2) => C2(Info2) => \cdots => \\ (An+Bn) + ((Info)n) = TRANSDUCTION\ CHAIN => DECISION|_{TARGET} => Execution\ (\equiv \\ Exe)|_{\text{TERMINAL}} \end{gathered} \tag{9}$$

where Info1, Info2, … (Info)n represent the Transduced information of the input INFO, after passing through each Transducing step toward the final Decision at Target for Execution in Terminal, after interaction with material components A1, B1, … An, Bn (n—any natural number). The sum in Equation (9) is a Transduction Chain (Gaiseanu, 2023k), typical for informational processes in human and living structures/cells (Alberts et al., 2015), which can take place thus: (1) during the transcription-translation/replication processes, due to the interaction with the implicit (genetic) information source (iS); (2) during the interaction with INFO from external/internal explicit sources of information (eS), at which the living organisms are permanently connected for adaptation/survival.

In a general sense, an Info-Operation able to release information from a material multi-component living system can be schematically represented by the relation

$$O\{(AB\ldots)(I)\} \rightarrow \;\; [(A+B+\cdots)+I)] \tag{10}$$

A similar relation could be written for the memorization process of information, as a schematic form:

$$O\{(A+B\ldots)+\;\; I\} \rightarrow \;\; [(AB\ldots)(I)] \tag{11}$$

where (I) is hidden (memorized) information in a specialized area of the body. So, if the Operator "Mind" operates on the Memory set of Data (memorized information), the result is the representation of Consciousness, as a projection of real-time recorded or recalled/retrieved information from short/long-term Memory on the prefrontal cortex at human organisms (the informational "screen"). Such an informational process could be thus represented schematically by the following relation:

$$\begin{aligned} INFO \;\; => & \; O\{TRANSDUCTION\;\; CHAIN\} \rightarrow MIND\big|MEMORY(CASI)\big) \\ & \rightarrow MIND\{IMFO\;\; PROCESSING\;\; (CASI, CDC, IES, MIS, GTS, IGG, IC\} \\ & \rightarrow MIND\{INFO\;\; RELEASE\} \\ & \rightarrow CONSCIOUSNESS(Iknow, Iwant, Ilove, Ibelieve, Iam, Icreate, Icreated) \end{aligned} \tag{12}$$

which represents an explicit form of Equation (6), showing how Information is released as a final result of a chain of Transduction processes in the informational circuits of the organism, to give rise to Consciousness by means of the seven cognitive centers.

Information is defined therefore in a large sense as a result of an operation of Physics, Chemical, Biologic and Mathematical Laws, or of Informational Device-like Systems (Nucleus, Ribosomes, Surface Receptors, External/Internal Senses (Sensors), and Mind…), which act as Operators (O) of Information on the micro/macro-components of the body, in human or in any other living structures, with or without nervous system. In particular, in eukaryotic or prokaryotic individual cell (Gaiseanu, 2023i; 2021k), Information intervene within basic schematic operation forms as Equations (7)-(8) show, by structuration/destructuration processes, with "embodiment"(I)/"disembodiment" of Information. The info-transference of Information takes place between various micro/macro-components (A, B, …) of the body with a final result to a Target for Decision (Exe) at Terminal phase for info output, defined as Attitude **(**Gaiseanu, 2023k; 2024a**)**. An exhaustive discussion on this issue is given elsewhere (Gaiseanu, 2024b).

Mind operates with information, so this is an info-creative Decision Making Operator, allowing the enrichment of the memory data with new information (Gaiseanu, 2021f). The memorized data could be therefore assimilated with an info-creational field (Gaiseanu, 2021f; 2020e), where mind may deposit or extract information. Such a process can be schematically represented by the following relation:

$$INFO\ \ Input => \ \ O\{TRANSDUCTION\ \ CHAIN\} \ \ \rightarrow MIND\{CASI \rightarrow INFO\ \ PROCESSING \ \ \rightarrow INFO\ \ RELEASE\} \ \ \rightarrow CONSCIOUSNESS(Iknow, Iwant, Ilove, Ibelieve, Iam, Icreate, Icreated) \ \ \rightarrow MIND\{INFO - CREATION \rightarrow CASI\} \Leftrightarrow MIND\{INFO - DECISION\ \ CDC\} \Leftrightarrow \text{MIND \{COMMAND } Exe\ \ [EE]\} => \ \ INFO\ \ Output \quad (13)$$

where the symbol ⇔ expresses a reversible process, INFO Input is the input information, and INFO Output the output information, expressed/manifested by Attitude. Human and living organisms in general are therefore processors of information by means of ISHLS, absorbing and releasing Information, in which Mind should be understood in a general sense as a reactive responsive final/Terminal Operator/Decision Making system, producing Attitude. The informational circuits of input and output of information are distinct and different, as it can be seen also in Figure 1. Mind could be therefore regarded also as an Info-Operational Device, able to receive the input information of CASI and interpret, analyze, process the information according to own inherited/acquired experience, to decide and to deliver an informational output reactive response.

The brain is neuro-connected to body by nervous bundles following the spine pathway, which go to the specific organs and organism systems (Figure 1 left side), as it was previously discussed (Gaiseanu, 2019d). The central zone of such bundles, with specific intensive/concentrated electrical activity, would be therefore assimilable with the center of the observed luminous "wheels", invoked by the ancient Buddhist philosophy, which promotes the model of the seven chakras of the human body (Gaiseanu, 2019a), remaining until now a mysterious, not understood enigma. From the perspective of IMHLS, this enigma is in this way solved. The luminous ring or disk represented in the religious iconography, equivalent with the more luminous chakra in the top of the head (Sahasrara—Crown Chakra, corresponding with the activity of the center Ibelieve in terms of IMHLS (F. Gaiseanu & A. M. Gaiseanu, 2023), can be explained by the intensive electrical activity and associated luminous emanation resulted from the posterior cingulate cortex, very active and high consumer of

energy, even during the resting state. This specific behavior, not understood until now, was explained recently (Gaiseanu, 2020g) by its implication in the "daydreaming"/planning processes of future projects, requiring the simultaneous/parallel exploration of the internal/external world, on the informational field of own data, just like the thinkers/philosophers/sages in the ancient times, involved within their contemplation state, and considered special humans, "saints". In the central space between the eyes, Ajna—the third eye chakra corresponds with the activity of the prefrontal cortex and Iknow (IMHLS), dedicated to the short-term memory and judgment, a brain intensive activity zone. The activity of the following chakras: Vishuddha—the Throat chakra, corresponds with the vocal system (the info output Iwant of the ISHLS), Anahata—the heart Chakra (Ilove of the ISHLS), connected with the cardiac zone, Manipura—the Solar plexus chakra (Iam in terms of the IMHLS), with metabolic system, Svadhisthana—the Sacral Chakra (Icreate), connected with the sexual system, and Muladhara—the Root chakra, representing the basic/fundamental root—genetic origin of the body (Icreated in terms of IMHLS) (F. Gaiseanu & A. M. Gaiseanu, 2023).

The IMHLS is strongly supported by experimental evidences and documented studies on the entire organization/evolution scale, from bacteria (independent prokaryotic cells, without well-defined organelles) to human, as it was shown recently (Gaiseanu, 2023b; 2023c). IMHLS is able to explain coherently the structuration of the body, the behavior determined by the tools of the organism and the functioning of the ISHLS, the nature of mind, consciousness, and its location in the brain (Gaiseanu, 2023g), and moreover, the relation with the vital centers considered by the ancient cultures and their philosophies, remained as a consistent, useful reference value. Such a comparison between IMHLS and the "chakras" ancient model, developed on the basis of empirical, but careful observations on the human body, used with benefic effects nowadays in Reiki naturist therapies (F. Gaiseanu & A. M. Gaiseanu, 2023) and music-based multi-task cognitive therapy for neuro-rehabilitation (Gaiseanu, 2020a), brings a mutual support of these models. The applications of such a cognition models are various and recognized in neuroscience concerning the info-assisted evolution of the brain (Gaiseanu, 2020f), the functions of the posterior cingulate cortex (Gaiseanu, 2020g), neuro-equilibrium and health (Gaiseanu, 2019d), psychiatry (Gaiseanu, 2021i; 2021h), neuro-psychology and social sciences (Gaiseanu, 2021j), immunology (Gaiseanu, 2022a; 2023f), plant sciences (Gaiseanu, 2022b; 2022c), and plants and animals behavior (Gaiseanu 2022d), in biology (Gaiseanu, 2021c), philosophy, concerning the basic constitution of the world, including information (Gaiseanu, 2021d; 2021e).

Conclusions

The claimed revolution by the scientific community involved in the study of consciousness to understand it was approached in this paper from the informational perspective, showing that the introduction of new concepts like matter-related information, info-transduction, info-embodiment/disembodiment during the interaction between the micro/macro components of the body allows to understand the info-transmission and info-communication in the living organisms.

The description/revelation of the Informational System of Human and Living Structures, applied in particular for human and the eukaryotic cell—the representative/elementary unit of human body, animals, and plants, applicable in general for any other living organism, allows to understand the common basic structuration and functioning strategy/organization and reactivity of the living organisms to the external/internal stimuli/signals, during/by the interaction with two main informational sources, i.e. the implicit (genetic) (iS) and external/internal Source of information (eS).

The interaction of the body micro-components with iS allows the structuration of the body and its maintenance by automatic mechanisms, while the interaction with eS allows the reactivity of the living organisms for adaptation, based on successive info-transduction chains to a Target and/or a Terminal phase. The driving/essential role of information is thus revealed by such interactive processes, in which information is operated by any biologic, physics, chemical, or mathematical law, or by micro/macro-device-like elements/components of the body.

In particular, at human and other subhuman organisms, the operator Mind allows to memorize (embody) information in CASI, according to the activity of the ISHLS, and to release (disembody) information, projecting them on the mental screen (prefrontal cortex at human/mammals) by the release/disembodiment of information. According to the Informational Model of Human and Living Structures, Consciousness is therefore the result of the informational activity/projection of the ISHLS operated by Mind, expressed by seven cognitive centers for the exploration of external/internal reality, schematically represented by two explicit informational expressions, corresponding to human and subhuman organisms, which highlight similitudes and differences. The Info-Operator Mind acts as an Info-Operational Device—connected to an informational input and able to deliver an informational output as Attitude. At subhuman organisms, the resulted/interpreted Individual (In) reality as consciousness, in the sense discussed above, depends on the complex development of the informational sensorial/processing tools and info-processing capabilities.

The comparison of the IMHLS with the millenary model of chakras at human, not yet understood till now, developed by empirical, but right/thorough observations, experimentally practiced in successful Reiki technique and music-based multitask cognitive therapy for neuro-rehabilitation, with beneficial effects in naturist/holistic medicine, shows that these two models support each other.

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