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Original Theoretical Article

Renewal of structural anthropology through a new concept of knowledge origin 'The dynamic mixed origin' or 'The deepest remembering process'

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Abstract - The first incentive leading to this study is to search for the origin and the nature of what Levis-Strauss meant by fundamental structures and/or hidden rules that contribute to the construction of languages and cultures within the principal idea of structural anthropology. This leads to rethink the process of knowledge origin that is still a matter of controversial debates. I propose the DNA as a physical source of these hidden innate structures. Supported by evidence and substantial arguments derived from the latest scientific findings, this suggestion is developed and formulated into a new concept of the process of knowledge formation that I call 'The dynamic mixed origin of knowledge' or 'The deepest remembering process'. According to it, the formation of knowledge occurs thanks to our mental abilities through a complex dynamic network of reciprocal interconnections involving (1) extrinsic inputs, (2) what is stored in our conscious and/or in our unconscious and (3) genetic factors. Furthermore, I show how this mechanism of knowledge formation represents a particular remembering process deeper than the known remembering ones. Based on this concept, I clarify some issues such as what we call usually intuition, and I regenerate the principal idea of structural anthropology in a modern vision that is not subject to the criticisms directed at the classical vision. According to this modern vision, among other things, it is considered that cultures are based on the same structural foundations emanated from our genome, but each culture wears a different dress reflecting the impact of accumulating extrinsic inputs and historic events that it was exposed to during its formative stages.

***Keywords*:** Knowledge origin, remembering process, mind definition, DNA structure, genome-epigenome, genetic factors, extrinsic inputs, intuition, structural anthropology, cultures, language structure

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Introduction

Structuralism has its origins in the linguistic theory of a Swiss thinker Ferdinand de Saussure (1857-1913). In his Course in General Linguistics (Saussure 1916), he envisioned language as a system in which each of its elements (or signs) can only be defined by the equivalence or oppositional relations it has with the others. This initial theory is developed by scholars who came after him and the term 'system' is replaced by a more appropriate term 'structure' and therefore nowadays we speak about a theory called 'linguistic structuralism' according to which language is a structure, that is, as a set of units structured by networks of relations.

From the 1950's, structuralism has been presented as a movement started by Emile Durkheim, a French anthropologist, who generated the idea that human thought precedes observation and social and cultural phenomena derive from universal human cognition. Claude Levi-Strauss (1908-2009), a French anthropologist, expanded upon Durkheim's basic concept to generate the main ideas behind structuralism particularly at the anthropological level. Among other considerations, Levi-Strauss believed that hidden innate structures common to all humans could be appeared in the behavior through the culture. He proposed that culture, like language, is composed of hidden rules that govern the behavior of its practitioners. He believed that the human mind tends to organize information and make sense of the world by identifying binary opposites (Lévi-Strauss 1963, 1967, 1972).

In the 1960s-1970s, structuralism became a school of thought in the humanities in which social processes arose from fundamental structures that are most often unconscious. In addition to its application in linguistic and anthropology it has been applied in other disciplines such as philosophy, economics and psychology. However, from 1970 some criticisms of structuralism appeared such as the fact that structuralism tends to leave aside the history of man and to disregard individuality in human action. And in this way several studies more and less related to this issue were published under the label of 'post-structuralism'.

This article aims to search for the origin and the nature of what Levis-Strauss meant by fundamental structures and/or hidden rules. I propose the DNA as a physical source of these hidden innate structures. This suggestion requires before all to rethink the process

of knowledge origin that is still a matter of controversial debates. Hence, I begin the article by presenting a new conception of the origin of knowledge and the mechanism of its formation. Then, taking account of it, I regenerate the initial principal idea of structural anthropology in a modern vision that is not subject to the criticisms directed at the classical vision.

Literature review on the origin of knowledge

Throughout history, from the time of the ancient Greeks to the present, thinkers have tried to define knowledge, but its origin is still a matter of controversial debates. In this context, they have developed different positions that I summarize in four major ones: Innatism, rationalism, empiricism and Kant's theory.

Concerning the empiricism, John Locke (1632-1704), a British philosopher, and other empiricists consider that man comes into life with white mind and all knowledge comes from experience (e.g., Locke 1690; Sellars & Brandom 1997). Moreover, they often fell into contradiction: for example, although Locke argued that one is born with white mind (tabula rasa), he corrected himself by saying that one can receive some few ideas before he is born (Locke 1690). This view is severely criticized in several research works in cognitive neuroscience and psychology and research of infants' representations of events. For example, the contemporary American linguist Noam Chomsky considers the mother language acquisition as being mainly innate in us arguing that languages are so complicated that it is not possible to children from less than two years old begin to learn their mother language only by hearing it in its spoken state; most notably the grammatical knowledge cannot have originated from their limited experiences (Chomsky 1990; Cowie 2008).

In the case of innatism, Plato, ancient Greek philosopher (428-347 av. J.-C), through the example of mathematical truths, argues that such rules of the mind are not the fruit of learning but they are hidden in the depth of the soul. So, he believes that the soul was both the source of life and the mind (Plato [ca. 380 BCE] 2009; for review see Yacouba 2016; Campbell 2021). But, in the following sections, considering the latest scientific findings that Plato did not have in his epoch and according to my view, I will define the mind showing its genetic basis and therefore it could not be a part of the soul (mysterious source of life), and although I consider it as the principal organizer of the formation of knowledge it could not represent its origin.

Later a relatively moderate models of innatism appeared and developed in a modern model called rationalism. Among these moderate models, I can quote that proposed by al-Fārābī (870-950), Muslim philosopher, who consider only a part of knowledge is innate. He showed that the most prominent example of innate knowledge is the child's awareness of the primary principles without the need to obtain them through the senses, but rather get to him unintentionally and without feeling them. He proposed an external source of innate knowledge 'effective mind' that can gives the mind something like the light that floods things and sees them sight after they exist invisibly, and these principles are shared by all people (for review see Bidoui 1952). He raised for the first time the existence of two main factors (a hidden internal factor and an external factor) with an accurate description of what is hidden and common between us without reaching the material diagnosis of each of the two factors due to the limited evolution of science at his epoch.

In the same way René Descartes (1596-1650), a French philosopher, claimed that not all ideas are innate and only a special kind of ideas, such as the idea of God, the ideas that express the general mathematical attitudes of arithmetic and geometry, and the laws and principles of logic. According to him, reason is a natural light made possible by innate ideas (for review see Landau 2017) and therefore it is the origin of innate knowledge. This view is similar to that proposed after him by rationalists who claim that all or at least some knowledges could be acquired purely by 'thinking' rather than through perceptual experience. But, as I will explain below, reason or thinking cannot be considered as real innate origins of knowledge.

Finally, I should present the view of German philosopher Immanuel Kant (1724-1804) that represents a new turning point in the diagnosis of the origin of knowledge. In fact, he is the first who combines sensory input and inborn concepts into a unified account of how we understand the world. This is well claimed in his famous expression "*Percepts without concepts are blind and concepts without percepts are empty*", namely the lack of one of these two elements makes knowledge impossible. He argues that for our perceptions to make sense to us, they should be received into concepts that exist within our minds. These structures of understanding allow our minds to process the impressions that we experience (Sangeetha 2021). However, Kant consider the mind as the origin of what is innate or what he calls innate structures that determine how we perceive the world.

As I will explain below, although I agree with the Kant's consideration that knowledge is the result of a combination of sensory inputs and innate information, I disagree with him in considering the mind, or the reason, as the innate origin of knowledge. In the following sections I will explain why, although the mind (including all higher mental abilities such as thinking and reasoning) is the organizer of the formation of knowledge, it could not be the innate source of knowledge.

Conceptual framework and foundations

Conceptual framework

I think that the research on the origins of knowledge requires answering two key questions:

*The first one: Are all knowledges innate or acquired? or some are innate and others are acquired? or all knowledges are simultaneously innate and acquired?

As presented above, all thinkers interested in this subject have given an answer to this question. In the context of my view, in accordance with the principal idea of Kant's theory, I consider that all knowledges are simultaneously innate and acquired.

*The second one: What is the origin of what is innate and/or what is acquired?

If for the acquired inputs the origin is evident, such as personal experience or learning, the origin of what is innate represents a problem. In fact, in all previous views only nonphysical origins of what is innate are proposed such as the mind or the reason. Hence, I will explain in the following sections why these intangible entities could not be considered as real origins of what is innate and, therefore, I propose for the first time a physical origin. From this proposal a new conception was developed on the origin of knowledge and the mechanism of its formation.

Before describing this concept, it is better to present its schematic position among other theories. This is illustrated in the **Figure 1**, where I differentiate the four major theories: empiricism (*posteriori* knowledge) on the one hand and innatism and rationalism (*priori* knowledge) on the other hand, while the fourth one is the 'Kant's theory that is in an intermediate synthesis position. In agreement with this position, I build up my concept.

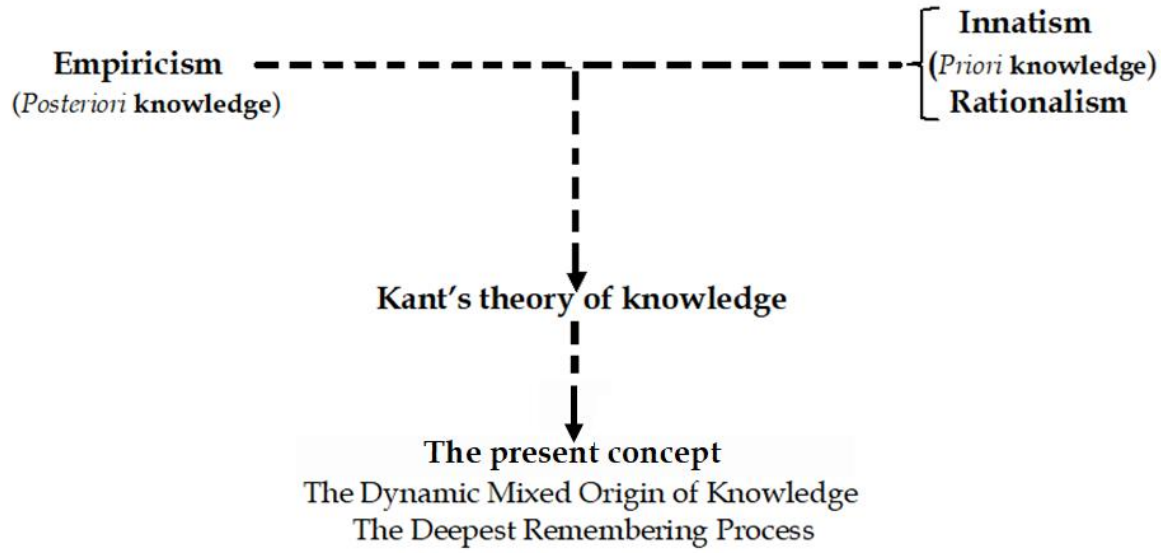


Fig. 1. Schematic situation of my concept of knowledge origin among major previous theories

To ensure a good understanding of this concept and in order to avoid any confusion for the reader, it is necessary to present a modern definition of the mind and show its genetic basis.

Modern presentation of mind

Several definitions of mind were proposed, but its exact nature remains disputed (e.g., Kim 2011). Here, I try to give it a modern definition in accordance with the latest scientific findings. I consider the mind as an intangible entity that represents the outcome of the brain's workings. The brain is the most complex organ in the body, it regulates essential bodily functions such as mental activities, heart rate, and hormone production. It transmits chemical and electrical signals via about 86 billion of nerve cells called neurons (Azevedo *et al.* 2009). Hence, the mind represents all mental activities of the brain such as involuntary and voluntary actions, sensations (vision, hearing, emotion, touch, etc.) and particularly the higher abilities such as, thinking, reasoning, memory, language and learning. In addition, thanks to mind these mental processes are organized and guided in different more and less complex networks. Many studies have been focused on the determination of the brain area(s) and mechanisms of formation of different mental

processes particularly the complex higher ones such as Memory-learning development and memory-language acquisition. For example, in the case of Memory (recollection), findings revealed that it is not formed and stored in a single part of brain, but it is distributed in different parts such as the medial temporal lobe and structures like the hippocampus and the striatum (e.g., Albouy *et al.* 2013; Burman 2023).

Moreover, as proposed by Freud (for review see Boag 2017) there are three levels of the mind: conscious, preconscious and unconscious (or subconscious): - Through the conscious mind, people is aware of external and internal circumstances such as thoughts and actions, - The preconscious mind consists of anything that could potentially be brought into the conscious mind, - The unconscious mind, work day and night beyond the awareness of the conscious mind, it is a reservoir of good or bad feelings, deepest desires, thoughts and memories that are outside of our conscious awareness, also it stores everything that ever happens to us particularly that helps as to interpret the world around us and to resolve indirectly our problems. In the following I will show how these levels of mind interfere in the formation of knowledge process.

Although the mind is principally the outcome of the brain's workings, the heart could have a complementary slight influence on our mind. In fact, the heart, in addition of its role as a pomp, could have a complementary slight influence on the mind during some emotions and feelings and few specific recollections such as those related to talent and tendency. This, could be due to the fact that the heart has a complex intrinsic nervous system of about 40,000 neurons enables it to act independently of the cranial brain in addition of the reciprocal communications and influences with the brain via the nervous system, hormonal system and other pathways (e.g., Armour 1991, 1994, 2004). This is slightly supported by the manifestation of some personality changes following some transplantations of some organs particularly the heart (Liester, 2020) and the fact that tiny clumps of cells show basic cognitive abilities, and some animals can remember things after losing their head (Jacobsen 2024).

In sum, biologically speaking the mind is the results of chemical and electric signals that move along about 86 billion of neurons of the brain in innumerable complex networks, which are more and less connected and organized in two major levels (conscious and unconscious). But the mechanisms of translation of these chemical and electric signals in information is yet unclear. Very likely, future scientific findings will demonstrate such possible translation particularly thanks to the topic of artificial minds

through the use of computer systems. Moreover, in the following I will show that the root of mind is genetic.

It is important to note that although important advances in molecular biology and genetics were done during recent decades, there remains great long research works to do: In fact, in humans, the majority of DNA, about 98 to 99%, do not code for proteins. At the start, it is thought that this mysterious non-coding DNA (ncDNA) represent nonfunctional evolutionary remains. However, using advanced technologies scientists have begun to reveal within it some functional factors such as some forms of regulatory elements (essential to the control of gene activity). Such findings have given substantial insights into several diseases such as the neurobehavioral and cognitive disorders. Furthermore, variation in ncDNA has a recognized role in several human diseases, for example there are about 350,000 Short Tandem Repeats (STRs) in the human genome, although yet we ignore their functions variations in their number can cause genetic diseases when they lie within a gene (Pagni *et al.* 2022).

It is also important to note that the discovered human genes (about 25,000) and other yet unidentified ones are more and less influenced by environmental factors such as nutrition, climatic conditions and severe constraints that often act through the metabolism (see **Fig. 2**). These environmental effects occur before and after the birth of each person particularly during early childhood leading to the accumulation of DNA chemical marks (epigenetic factors), which mainly contribute to regulate the activation of genes and other unknown functional genomic sequences. For example, a negative environmental effect such as malnutrition, exposure to chemical toxins, and painful constraints, could lead, among others, to mental problems including possible weakening in learning capacity and behavior (Holliday 2006).

Genetic basis of mind

The investigation of neurobehavioral and cognitive disorders and related genetic scientific experiences are in favor of a genetic basis of mind that encompasses all mental processes (simple and higher abilities) (for review see Churchland 2023; Burman 2023). Furthermore, the revelation of some genes involved in some higher abilities come to prove this genetic basis.

***** For example, the discovery of the first case of a gene, FOXP2, the mutation of which affects the development of speech and language starting in early childhood, and shows the involvement of this gene in the ability to acquire spoken language (e.g., Fisher 2019;

Marcus & Fisher 2003). FOXP2 is not the only gene to have been implicated in speech and language. In fact, it encodes a regulatory protein, a center in a network of other genes, several of which have also been associated with language-related impairments (Fisher 2016).

* Another example concerning the genetic source of the formation of memory process: In fact, our brain cells or neurons store information not only in synapses, but also in their dendritic structure and connectivity (Koch & Segev 2000). The computations, particularly in 'deep' neurons, occur at multiple different levels and time scales, ranging from very rapid wetware and electrodynamics to the much slower formation of long-range neural connections during development (Fitch 2023). The molecular process of the formation and storage of memories occur within neurons called engram cells and is subject to coordinated gene expression and synthesis of synaptic proteins (Alberini 2009; Albo & Graaff 2019). Although molecular mechanisms remain poorly understood, recent studies begin to reveal some details such as the emergence of epigenetic modifications and 3D-genomic architecture as a key factor in dynamic regulation of gene expression and their importance in neuronal function, development and disease (e.g., Marco et al., 2020; Dekker *et al.* 2017; Rajarajan *et al.* 2016). Moreover Marco *et al.* (2020) showed that memory is controlled by large-scale remodeling of cells' chromatin that allows specific genes involved in storing memories to become more active. Namely their work elucidates the comprehensive transcriptional and epigenomic landscape across the lifespan of memory formation and recall in the hippocampal engram ensemble.

* A third example concerns autism spectrum disorder (ASD). It is a human neurodevelopmental disorder that affects communication, behavior, and social interaction organized mainly thanks to higher abilities of the mind. This ASD has a strong and complex genetic component, with multiple familial inheritance patterns and possible involvement of environmental factors. Moreover, common polygenic and *de novo* variation would have additive influences on the ASD risk (e.g., Weiner *et al.* 2017; Waye & Cheng 2018).

Presentation of the concept through its designation "Dynamic mixed origin of knowledge"

Focusing on the research of origins of knowledge and the mechanism of its formation, I call the concept I came up with 'The dynamic mixed origin of knowledge'. According to

it, knowledge is formed thanks to our mental abilities through a complex dynamic network of reciprocal interconnections involving (1) extrinsic inputs, (2) what is stored in our conscious and/or unconscious and (3) innate intrinsic factors. While the extrinsic inputs are known such as perceptual personal experience and learning, I propose the DNA as a physical carrier of innate intrinsic factors I consider as genetic factors. These could be among known and unknown genes and possible yet unrevealed ncDNA sequences (genomic basic infrastructures) **(Fig. 2**).

In the light of current knowledge and understanding of genetics, it is clear that the gene regulation is much more complex that we have imagined: genes are often directly or indirectly more and less interrelated touching multiple functions at once. Thus, it is difficult to discover well determined genes or DNA sequences involved directly and evidently in the complex process of knowledge formation. However, some important points are in favor of their presence. For example, as stated above the gene FOXP2-related speech and language disorder is involved in many functions that some of which could interfere directly or indirectly with the process of knowledge formation, which is involved, among others, in the language acquisition. Such complex interference could be also present between the process of knowledge formation and the autism spectrum disorders (ASD), that affect communication, behavior, and social interaction, and have a strong and complex genetic component, with possible involvement of environmental factors. Moreover, the genetic basis of both social adaptation and autism is supported by research works that comparing genomes of humans and honey bees, despite profound differences between their two complex societies, showed strong similarities in the genes associated with social responsiveness, and therefore they show how such comparative genomics could permit to reveal some common mechanisms (Shpigler *et al*. 2017).

As shown in the **Figure 2**, the mechanism of knowledge formation process could occur in response to external requests that come to be centered in the conscious, then move to reach the unconscious. The latter searches the suitable genetic factors, activates them and therefore extracts the needed structural information (see schematic trajectory 1, 2 and 3). Namely, the unconscious researches and extracted, as a computer, structural information innately stored in the DNA. Then, this preliminary structural information reaches the consciousness, where it will be analyzed under possible influence of the environmental context and what was already stored in the unconscious and conscious and finalized in a new knowledge (see schematic trajectory 4, 5 and 6). However, the extracted information, in addition of their use to contribute in the formation of the knowledge in

question, they would be stored in the unconscious and/or in the conscious and, therefore, could be used during the formation of other similar knowledges without direct contribution of genetic factors. So many knowledges can be formed without the direct contribution of genetic factors.

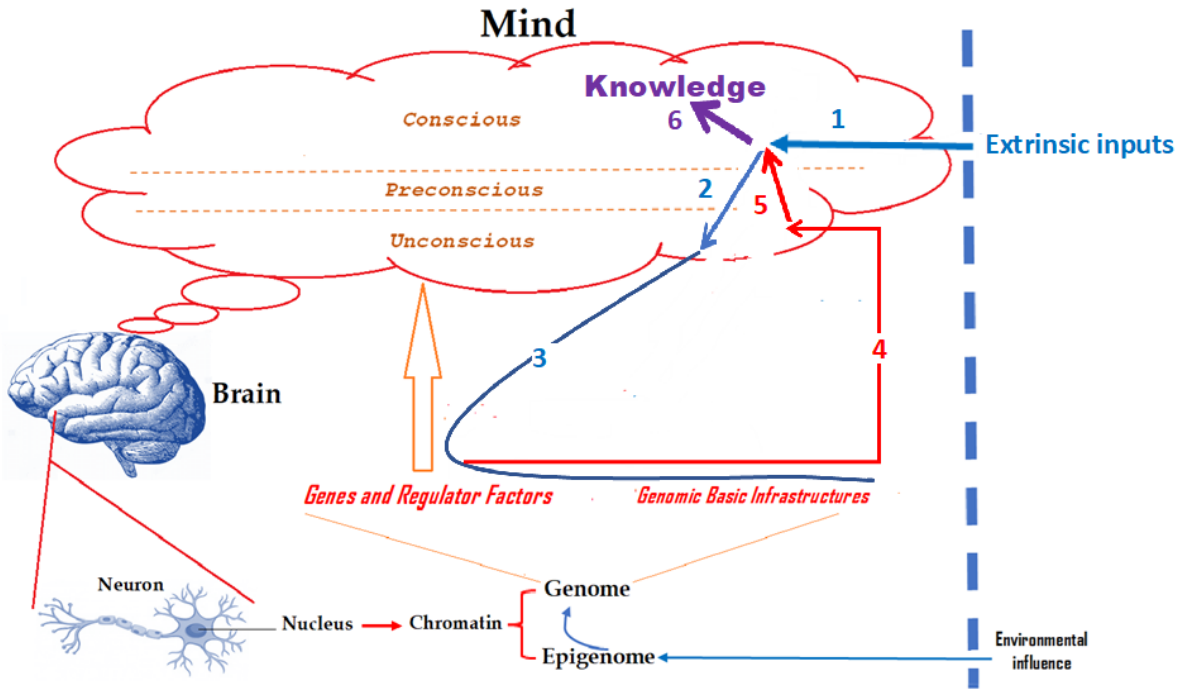


Fig. 2. Schematic presentation of a new concept of origins of knowledge and mechanism of its formation 'The dynamic mixed origin of knowledge'
(The arrows 1, 2, 3 and 4, 5, 6 represent only simplified major trajectories, while in the reality the mechanism would happen within a complex dynamic network of reciprocal interconnections).

According to this concept, there is no knowledge purely innate or purely acquired, but each knowledge differs from others only by (1) the degree of the complexity of the dynamic network leading to its formation including the order and the direction of interconnections and the time taken, (2) the degree of involvement of each of the two combined intrinsic and extrinsic components, (3) the quantity and the specificity of the information already stored in the conscious and unconscious, and (4) the direct use of intrinsic genomic factors or indirect use via what already extracted from them and stored in the conscious and unconscious.

Furthermore, the knowledge, in the case of its formation in the unconscious (with or without the interference of the genomic source), can emerge in consciousness only after the latter's request. But this general rule could be broken in some scarce circumstances:

for example, when the person needs urgent rapid knowledge leading to his direct or indirect protection or to resolve crucial problems such as those which meet him while delving into some complex scientific research issues. In other words, owing that our unconscious mind, works continuously day and night and when it arrives to form specific knowledge needed in a crucial circumstance, it could arrive to trick the rule and erupt suddenly in conscious without its request. This particular scarce process is at least in great part explain what we usually call 'intuition'. This term, including various cases, is generally defined as the ability to know something without having to use conscious reasoning. However, a more accurate definition could be given to the intuition process considering it a rare beneficial case that represents an exception to the general rule that, what is produced in unconscious can emerge in consciousness only after the latter's request. Thus. according to my concept such useful accidental cases are not magical and come of nothing as often popularly believed.

According to this concept and the modern definition of mind stated above, the mind, or any of its components particularly higher mental abilities such as thinking and reasoning, cannot represent the intrinsic origin of knowledge as proposed by some thinkers. For more clarification and persuasion, when we say that the carpenter is who made wooden furniture, we cannot say that the carpenter (and/or the tools he uses) represents the origin of the wooden furniture, because the origin of this furniture is wood combined with materials used to paint it and measurements and forms according to which the furniture was shaped and finished. Hence, it is true to say that the mind, through its mental abilities, is the organizer and the finalizer of the formation of knowledge, but it cannot be the innate origin of knowledge.

Finally, it is important to underline that as the mind is the organizer of the knowledge formation, the latter could occur, like higher mental abilities, in many areas of our brain especially at the cerebral cortex (gray matter) level and more particularly at the frontal lobe, which is responsible for several functions indispensable for the emergence of a refined suitable knowledge in our conscious; among these functions decision-making, problem-solving, conscious thought, attention, emotional and behavioral control, personality (e.g., see Gabrieli *et al.* 1998; Yang & Raine 2009; De Young *et al.* 2010; Baldauf & Desimone 2014; Barrash *et al.* 2022). These executive functions relate, among others, to aptitudes to differentiate conflicting thoughts such as determining good and bad and morality and immorality.

Presentation of the concept through its designation "The deepest remembering process"

Looking at the present concept from a different angle, I demonstrate its similarity with the known remembering processes. Before presenting this issue, it would be beneficial to begin by giving a brief definition and classification of the different types of remembering processes.

Remembering processes (or recollections or memories) represent the ability mainly to store information and retrieve it whenever needed. Although the classification of these processes is still a matter of debate, many authors agree that there are at least four types: sensory memory, short-term memory, working memory, and long-term memory. The latter could be as either implicit or explicit (For review see Ohwovoriole 2023). However, such classification of memories seems very theorical and subject of discussions. Therefore, some authors prefer to present this classification otherwise: they classify memories into only two distinctive types, implicit (or procedural) and explicit (or declarative) memory, view that other types of memories (like short-term, and long-term memories) are not types of memory but stages of memory (e.g., Atkinson & Shiffrin 1968; Stangor & Walinga 2024). I believe that this second classification is somewhat more realist and, therefore, I will take it into account in my following explanations considering only two principal types of known memories:

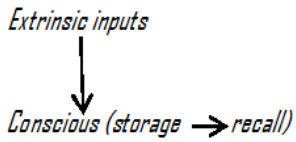
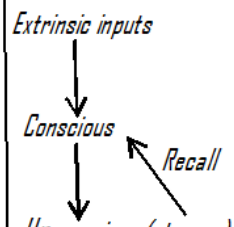
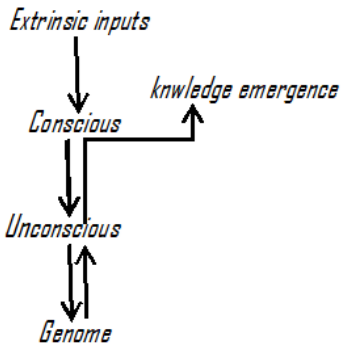
* Explicit (or declarative) memory is conscious and intentional retrieval of personal or general facts, events, or experiences

* Implicit (or procedural) memory, known as unconscious memory, it allows us to make actions without needing to consciously recall. Some of which become automatic over time with repetition and start to form very early in life such as one begins to learn how to walk and later how to drive a bicycle or more later a car. Moreover, given implicit memories are not consciously recalled, they affect information processing and/or behavior without conscious awareness or intention (For review see Dew & Cabeza 2011; Schendan 2017; Cherry 2024).

Through many works researchers have tried to determine the brain areas involved in each of these two memory types: For explicit memories, three important areas of the brain are proposed: the hippocampus, the neocortex and the amygdala (e.g., Joyce 2016); while implicit memories rely mainly on the basal ganglia and cerebellum (For review see Cherry 2024). Moreover, other works showed the involvement of the medial prefrontal cortex (mPFC) in both memories by providing corresponding adaptive responses, particularly emotional responses (e.g., Euston *et al.* 2012). Although explicit and implicit memories are two distinct types, they have complementary functions and work together permitting us to perform tasks efficiently. Hence, they are important for shaping our ability to recall information and interact in our environment and shaping our experience in the world (Bauer 2013; Cherry 2024).

As stated above the present concept 'the dynamic mixed origin of knowledge' looks similar to these two major types of known remembering processes. Similarities and differences, pointed out in Table **1**, show that known remembering processes (explicit and implicit memories) represent the remembering of ancient perceptions and/or information already stored in our conscious (in the case of explicit memory) or, at a deeper level, in our unconscious (in the case of implicit memory); while the process of formation of knowledge, goes more in depth to reach our DNA from which structural information innately stored in it is retrieved. This permits to consider it as a third type of remembering processes and to give it a second name 'The deepest remembering process'. Although these three major types (the two typical known ones and this new one) of remembering processes seem more and less distinct, they represent some interferences and overlaps. For example, there are some situations of overlap between the deepest remembering process and implicit memory, particularly in the case when structural information innately stored in our genome is retrieved and used for the first time to give a new knowledge, it could be stored for future use in the formation of related similar other new knowledges without reaching the genome; hence, in this case it is difficult to insert processes of such new knowledges formation in implicit memory or in deepest remembering process. Moreover, at its emergence in the conscious, new knowledge could be improved and refined thanks to related information or concepts already stored in our conscious within the framework of explicit memories or in our unconscious within the framework of implicit memories.

Table 1. Comparison of the two known major types of remembering processes (memories) with the deepest remembering process that represents the process of knowledge formation

Criterions	The two known types of remembering processes		The deepest remembering process
	Explicit memory	Implicit memory	Process of knowledge formation
Stage	*Short and long-term*	*Short and long-term*	*Short and long-term*
Role	*Retrieving specific information already stored in the* ***conscious***	*Retrieving information or automatic acts stored in the* ***unconscious***	*Retrieval (research and extraction) of structural information innately stored in the* ***genome.*** *This information could be restored in the* ***unconscious*** *for future uses*
Acts	*Conscious and intentional retrieval of personal or general facts, events, or experiences*	*Actions without needing to consciously recall such as the automatic drive of a car or influences on information processing and/or behavior*	*Acquisition of all kind of knowledge such as acquisition of mother language, determining good vs. bad and morality vs. immorality. Impact on personal behavior such as through evolving conceptual infrastructures needed to launch scientific and/or artistic researches*
Trajectory			

Furthermore, as shown in the same Table, like the two known types of remembering processes, the deepest third one could occur in short or long terms:

* In short term, it occurs rapidly and spontaneously such as the case of issues related to morals.

* In long term, it occurs through more and less long successive steps with some specific demands: for example (1) the case of the mother language acquisition that requires the perception of spoken language (as extrinsic inputs) and needs long successive steps during them the unconscious researches and extracts, as a computer, structural information innately stored in the DNA, or (2) the case of revelation of a new scientific information that needs a previous scientific background (acquired from personal experience or learning or intrinsic information already extracted from genomic factors

and stored in our conscious and unconscious), and successive more and less long steps of thinking and reasoning with persistence and concentration towards the issue in question. This will stimulate and orient the unconscious to retrieve new helping structural or conceptual genomic information.

Regeneration of the principal idea of structural anthropology

Major elements of a modern vision

In the light of my new concept of the origin of knowledge, I present a detailed modern vision of the principal idea of structural anthropology. This could be done through answers to some major questions or explanations of some unclear issues as follows:

1. What is the origin and the nature of the innate fundamental structures and/or hidden rules mentioned by Levis-Strauss?

As clearly presented above, these common hidden innate structures would be very likely originated from known and unknown genes and possible yet unidentified ncDNA sequences.

2. How structured information emanating from these genetic and genomic factors contributes, to the acquisition of the mother language and the construction of cultures?

Answer to this question is presented above within the description of my concept (**Fig. 2** and related explanations). However, it is important to note that the extracted structural information from the genome would often emerge as opposite binaries' forms that for example help the child to understand the basic language structures of the mother tongue and later to understand everything related to morals and other issues that could shaped his behavior within the general culture of his society. However, he would have an individual behavior similar but not completely identical to those of his family and society members. This will be explained later in the last section.

3. Among structural anthropology considerations 'cultures are unique and different from one another' my concept comes to present clearer and more accurate cultures' characterization as follows: 'Cultures are based on the same structural foundations emanated from our DNA, but each culture wears a different dress reflecting the impact of accumulating extrinsic inputs and historic events that it was exposed to during its formative stages'.

4. Do languages structures explain the logic of culture? Or in more precise formulation: Are culture's structures similar to those of language?

It is true that structures of culture are somewhat similar to those of language, but I think that this similarity is so impressionistic that it is difficult to demonstrate it. In fact, according to my concept, the structures of language and those of cultures reflect those of DNA from which they, particularly the language, are in part originated. In fact, although that we yet do not know the function-structure system of the great part of DNA (ncDNA), we can present some common points between known general structures of DNA and those of language as follows.

* Each language consists of a limited number of letters and higher number of words. Also, DNA, particularly at the coding sequences level, represents a code language comprising 4 letters (abbreviated as Adenine (A), Cytosine (C), Guanine (G), and Thymine (T)) and 64 words (known as codons, each 3 letters long). Possibly other unknown system(s) at the non-coding parts could be present. Moreover, DNA seems organized into sentences or paragraphs (genes) and chapter (chromosomes).

* In addition of letters and words, in each language there are signs showing the start and the end of a phrase, this also exist otherwise in DNA: instead of the use of punctuation and capitalizing the start of a sentence, there is a word-signal ATG that indicates the beginning of a coding sequence 'gene' and one of three different words (codons) TAG, TAA, or TGA that indicates its end, and possible others yet unknown notifications could be present.

* Even at the level of verbal patterns and their semantics, there are some similarities. DNA structures are similar to sentence structures and obtain meaning thanks to their words ordering like the ordering of words in language phrases. For example, at the coding part of DNA, the order of words (codons) in each gene is expressed by determining the amino acid sequence for the protein it encoded. Moreover, it is known that each language has a system of binary opposition by which a pair of related terms or concepts are opposite in meaning, but often they do not show a contradictory relation but a structural, complementary one. DNA, also has a similar binary system. In fact, genes often follow a binary operational model (Fiering *et al*. 2000) leading to one of two opposite states, active state or inactive state.

Structural anthropology criticism is no longer valid for the present modern vision.

Some criticisms have been attributed to the classical view of structural anthropology particularly (1) problems that could be caused by the binary opposites system that is a part of it and (2) for not taking into account the historical or individual facts considering structuralism as anti-individual. In any case, whether these criticisms are suitable or exaggerated, I will discuss them showing some confusion and how much my present modern vision is not concerned with them. Therefore, explanations provided in this discussion will complete the presentation of my modern vision presented above.

Regarding to the first criticism, if we understand deeply the binary opposite system in the light of structural anthropology and my new report, we will not face any difficulty. In fact, the shape of certain hidden cultural facts and language structuration appeared mainly on binary opposites, namely, humans see things in terms of that are opposite to each other. I think that the binary opposition system is a vast system that should be revised mainly by pointing out the distinction between what is mainly innate and what is 'false' manufactured in response to personal desire or a temporary sociocultural situation in a given period. I can distinct at least two evident categories of binary opposites in addition of the 'false' ones:

- Typical binary opposites: this category represents the great part of known binary opposites that would be emanated from structural basic informative signs retrieved from genomic factors in the unconscious, and therefore they represent the real binary opposites considered in the structural anthropology and language structuration. For example, I can quote the general evident typical ones such as left and right, up and down, in and out, hot and cold, night and day and so on; or those more involved in the built of cultures and behaviors such as good and evil, true and false, justice and injustice, fidelity and infidelity, love and hate etc.
- Atypical binary opposites that represent a minority of binary opposites that although it could be considered as innate, it often seems complicated leading to secondary related 'false" binary opposites. For example, although man and woman have been considered as a binary opposite, multiple false binary opposites have been created from it such as the man may be described to be strong and dominant lead to binary opposites 'strength (man) and weakness (woman)' or 'supremacy (man) and subservience (woman)'. These manufactured descriptive binary opposites have nothing to do with the innate ones, and, although they are uncertain even in patriarchal societies, they may preserve negative stereotypes.

In addition to these two categories, one can note some 'false' binary opposites, such as the 'Black people vs. White people' one that was manufactured in response to racism, emerged particularly during the colonial periods, and therefore it is not innate and has nothing to do with structural anthropology. Other false binary opposites were manufactured from the tendency to create two ideas diametrically opposed and /or to line with one of them. For example the creation-evolution controversy represents a false problem, because it is based on ambiguous terminologies (see Chaabani 2020 : 26).

Concerning the second criticism, although Lévi-Strauss focused on the hidden common structures that contribute to the construction of languages and cultures, he did not deny the diversity of cultures and individual behaviors, but he had not given explanations about the cause(s) of such diversity. However, the present modern vision of structural anthropology provides explanations showing a clear importance of the individuality. In fact, as I have noted above, the mind has a genetic basis and therefore humans' minds share major common characteristics. But each person has his proper mind somewhat different from those of others. The same for knowledges organized and finalized in the mind, although they have in part a common innate genomic base, they somewhat differ from one person to another. This personal particularity is due to the impact of three principal factors:

1. Influence of the personal genetic background that is responsible in great part for the degree of performance of each of mental abilities (attention, memory, executive cognitive function, language, etc.), which vary from a person to another: for example, some individuals have strengths in a specific mental abilities and weaknesses in another. In fact, possible genes would be concerned by this personal genetic variation are not yet sufficiently proved: only some involved polymorphisms were revealed particularly the polymorphism of ApoE gene which is involved in cholesterol transport and likely has some influence on brain function (Flowers & Rebeck 2020; Tan *et al*. 2024). It seems that they are several genes and each one could have a very small influence but together this influence becomes no negligeable. Furthermore, considering the degree of intelligence as the reflect of the performance of the whole or a part of mental processes, the study of Davies *et al.* (2011) showed that biologically the human intelligence is highly polygenic and that could be predicted from the analysis of SNP DNA (very stable single nucleotide polymorphisms, frequently called SNPs).

2. Influence of the effect of epigenic factors (environmental epigenic factors) accumulated during the history of each person (before and after his birth) and acted often

via his metabolism sensitive to these factors such as nutrition and other environmental conditions.

3. Influence of personal extrinsic inputs such as familial conditions, learning and personal experience that could have direct influence on the mind function and the process of knowledge formation or indirectly after their storing in the conscious and unconscious.

Furthermore, the structural anthropology according to this modern vision, does not lose interest in the history of humans. In fact, the human genome is also the source that carry traces of our evolutionary history. For example, analyses of polymorphisms carried by genes or their products (proteins) and ncDNA sequences have been estimated the relationships between individuals and world human populations and used in order to retrace their evolutionary history proving their unique and recent origin (e.g., Denaro *et al.* 1981; Cann *et al*. 1987; Barbujani *et al.* 1997; Klyosov 2014; Chaabani 2014).

Conclusion

In this study I present a new concept of the origin of knowledge and its mechanism of formation 'The dynamic mixed origin of knowledge'. According to it, the formation of knowledge occurs thanks to our mental abilities (our mind) through a complex dynamic network of reciprocal interconnections involving (1) extrinsic inputs, (2) what is stored in our conscious and/or in our unconscious and (3) genetic factors. Although it is difficult to discover these genetic factors (genes or DNA sequences) involved directly and evidently in this complex process, some important points are in favor of their presence.

I show how the process of this dynamic mixed origin of knowledge could give explanations to related unclear issues such as what we call usually intuition. Moreover, looking at it from a different angle, I show how this process is similar but deeper than the two known remembering processes (explicit and implicit memories). Hence it could be considered as a third type of remembering processes and to give it a second designation 'The deepest remembering process'.

Moreover, I show that although the two major known types of remembering processes and this deepest one seems more and less distinct, they represent some interferences and overlaps. I have shown also that, like the two other usual remembering processes, the deepest third one can occur in short or long terms: - in short term, rapidly and spontaneously such as the case of issues related to morals, and - in long term, through more and less long successive steps with some specific demands. For example, the case

of the mother language acquisition that requires the perception of spoken language (as extrinsic inputs) and needs quite long successive steps during which the unconscious retrieve (research and extract as a computer) structural and/or conceptual basis related information from the genome.

After this extensive description of the present concept and related issues, I show its precious utility in the revitalization of the principal idea of structural anthropology in a modern vision that comes to give explanations and clearer considerations of the major issues of the principal idea of structural anthropology. For example, according to my concept, cultures can be assumed as being based on the same structural foundations emanated from our genome, but each culture wears a different dress reflecting the impact of accumulating extrinsic inputs and historic events that it was exposed to during its formative stages. I show also how structures of language which in part originated from the DNA are similar to those of the latter.

I also demonstrate how the present modern vision is not subject to criticisms directed at the classical vision. For example, while the latter seems somewhat anti-individual, in contrary the modern vision gives importance to the individuality as well as to the society. Namely, it considers that although individual's behavior is influenced by basic genomic infrastructures that could lead to cultural norms more and less shared between all humans, each individual has his proper personality shaped by (1) the influence of what he received as extrinsic inputs (such as those coming from familial conditions, proper experience, learning, social constraints etc.), (2) the influence of accumulated epigenetic environmental effects exposed to during his lifetime, and (3) the influence of his personal genetic background that, among others, determine the degree of performance of each of his mental abilities.

In brief, this study provides a complete presentation of a new concept of the origin of knowledge and the mechanism of its formation. It shows the valuable usefulness of this concept for clarifying related issues and especially for regenerating the principal idea of structural anthropology. It also represents a pattern that highlights the importance of following an interdisciplinary approach to reach promising results and carries indicators that open up new research avenues in different fields.

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