

GLOBAL COGNITIVE THEORY

VOL. I THE BRAIN AND MODERN COMPUTERS



Museum of future science

José Tiberius



Hobbies: chess, padel and philosophy among others

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The only antidote for the egocentrism
of pure reason is Love.

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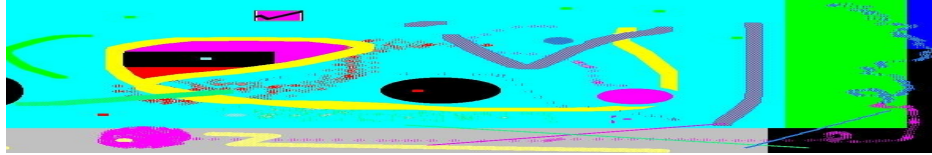
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GLOBAL COGNITIVE THEORY

THE BRAIN AND MODERN COMPUTERS



1. THE BRAIN

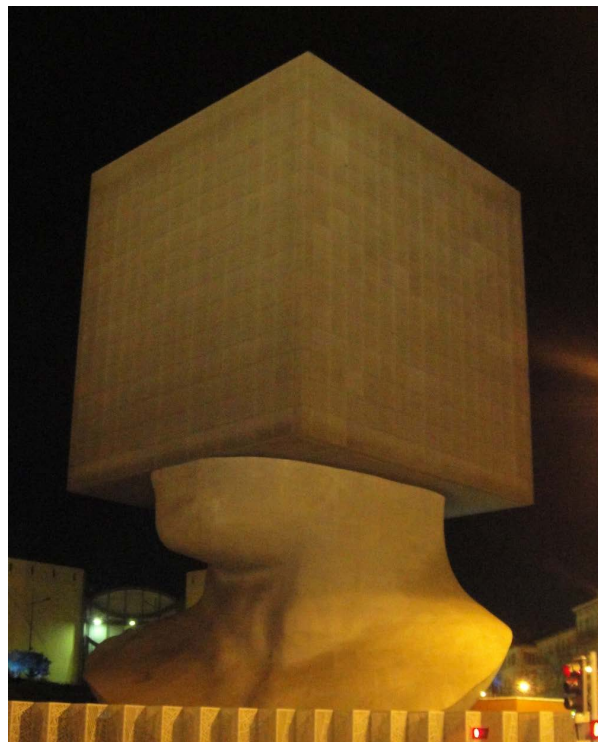
1.a) The brain and cognitive psychology

The book on modern computers and cognitive psychology is the first one of a series of four books on the [Global Cognitive Theory](#).

The comparison of characteristics between the brain and modern computers is beneficial to explain the basic concepts of memory, intelligence, and performance requirements of the system.

The parallelism is evident and extensive. Everyone would agree on the quickstep from Windows 3.1 to Windows 8 cannot appear from random or pseudo-random mutations. Perhaps with a relative time and an eternity ahead...!

Square brain - Nice



The books of the Global Cognitive Theory plus an essay on experimental psychology are:

- [The Brain and Modern Computers](#)
- [Intelligence, Intuition, and Creativity](#)

- [Memory, Language, and other Brain Abilities](#)
- [Willpower and Artificial Intelligence](#)
- [The EDI Study - Evolution and Design of Intelligence](#)

In the next section, there is a summary of the four online books about human brain capacities, giving a quick perspective of the theory.

The germ of the original ideas of the *Global Cognitive Theory* appeared initially in the book of the [General Theory of Conditional Evolution of Life](#).

Both theories address the central theme of cognitive psychology: intelligence, cognitive functions of the brain, their origin, and evolution from various perspectives.

If specific rules of evolutionary genetics applied to cognitive psychology and brain functions could explain the [evolution of intelligence](#), the experimental verification for the model could refute [Darwin's theory](#) of Evolution and support **Lamarck's** theory.

Said refutation turned into a long-term aim since Darwin's theory is a weak theory from the scientific point of view.

Another book related to the brain and cognitive psychology is [The Global Scientific Method](#) about the philosophy of science, which includes a design with the accurate classification of its stages and steps; understanding it in a broad sense as the application of [logic](#) to the generation of shared knowledge with a high level of reliability.

According to the [sociology of science](#), all types of social interests affect the phase of general acceptance of a scientific theory, from the realm of sociology as in the case of [Darwin's theory](#), to the professional interests and technician nature as in the case of the [Theory of Relativity](#) of Einstein's brain.

The edition of the *Global Cognitive Theory* contains a fifth book –*The EDI Study*– confirming the proposals of the *Conditional Evolution of Life*, regarding the cognitive abilities of the brain.

This statistical study is empirical research about some considerations of the [Global Cognitive Theory](#) related to the brain and evolution, in particular, the definition of intelligence.

The [results of the statistical survey](#) *The EDI Study, April 2002*, regarding an **elegant intelligence** show some crucial considerations within the scientific method:

- The hereditary nature of [relational intelligence](#) is confirmed.
- The genetic information with less intellectual potential is the significant one, as the *General Theory of Conditional Evolution of Life* states.
- Likewise, it seems that the primary functions of intelligence, or those evolving faster, are reasonably concentrated in only one [chromosome](#).
- The most innovative element of this work on cognitive psychology is the section relating to [simulation](#). It section contains the explanation of how to generate the [artificial intelligence](#) quotient vectors by using the provisions of the new theory of evolution; they practically behave like the observed variables, despite the inherent complexity involved.
- With the due caution, it proves the existence of a finalist or teleological evolution in agreement with the [Conditional Evolution of Life](#).

Given that the current results suggest a fairly radical change

from the prevailing opinions held by the majority of the scientific community, it would be appropriate to perform more extensive studies using the same methodology.

An example of the further exploration of this study has been added subsequently, which relates to partner choice. A hypothesis regarding a requisite of the [acceptable limit of the difference in intelligence when forming a couple](#) is confirmed and simultaneously reinforces the model's overall coherence. The requirement refers to the unconscious choice of unknown information.

Since any change of paradigm does not occur quickly, as it is well pointed out by the [sociology of science](#), in June 2011 was included in the General Theory of Conditional Evolution of Life the proposal of the [Darwinout](#) and [Menssalina](#) experiments to confirm the results of the EDI Study.

The methodology of these new experiments is more straightforward than the previous research, comparing both its execution and comprehension.

1.b) Global Cognitive Theory

The *Global Cognitive Theory* focuses on the consequences of the [General Theory of Conditional Evolution of Life](#) of 1990. It analyses the information systems, the cognitive aspects of the brain, and the psychology of knowledge about [neuroscience](#) and evolution of the brain in modern culture.

Regardless of other possible points of view, according to the *Global Cognitive Theory*, there is no difference between the terms *brain* and *mind*, which does not mean denying the fundamental liberty of Life.

The digital books online of the *Global Cognitive Theory* are:

- [The Brain and Modern Computers](#)

In the first title, there are some ideas about the [logic](#) of the human brain's activity and the physiological structure for its optimization.

The characteristics of intelligence and memory are in title II. The primary conceptual identity of both functions is stressed because one cannot exist without the other.

Other common aspects discussed are the necessity that both have for physiological support, their complementariness, and the continuous optimization the human intellect is subject to due to the complexity and flexibility of cognitive theory.

In title III, there are a series of practical implications or considerations about specific topics of evolutionary psychology regarding people, education, and the evolution of life.

■ Intelligence, intuition, and creativity

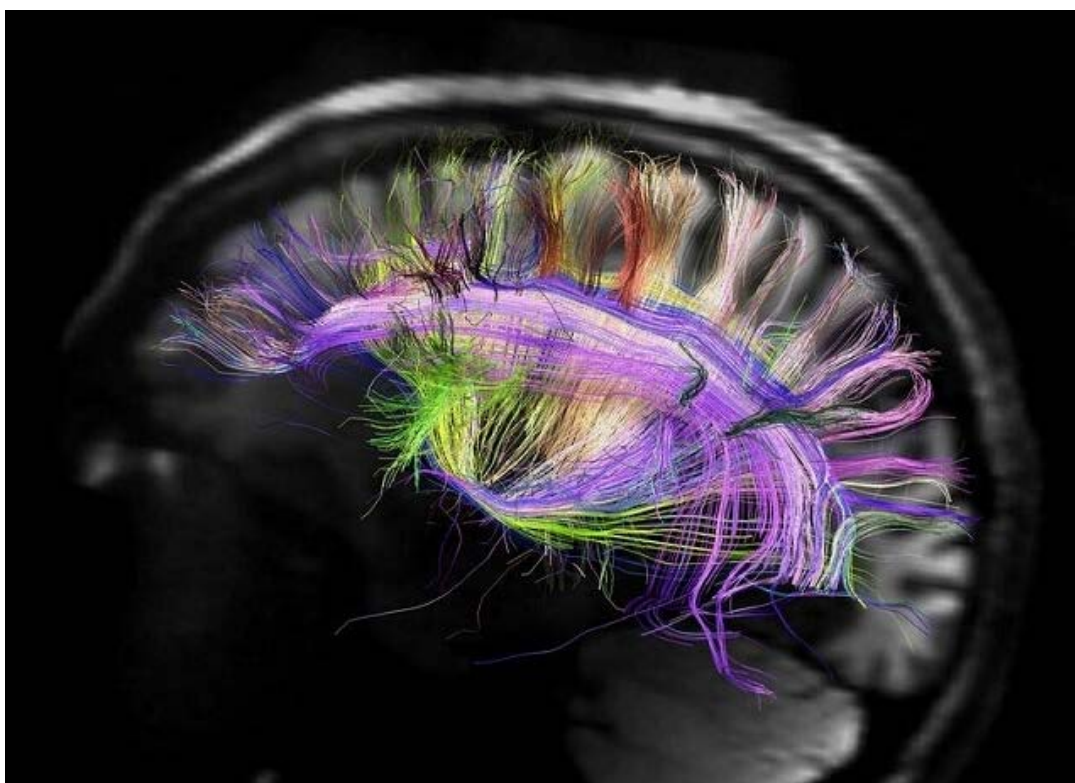
The following book discourses to the various concepts of as a knowledge manager:

- The different forms of its internal functions, from the [pre-concepts](#) and automatic responses to those generated by [logic](#) and the system of [language](#). The organization criterion chosen is the degree of reliability associated with the answers.
- It presents an approach to [creativity](#) as groups of complex functions or packets of basic tasks supporting specific abilities of the brain.
- The next step is to speculate on the physiological structure that is most apt to execute the required functions, its [genetic nature](#), and how intelligence transmits to the coming generations.
- The coherence of the proposals needs an additional element, how intelligence grows. It seems slightly complicated that it evolves and improves its efficiency through random mutations.

It will allow a better understanding of the different concepts, particularly about the terms used for [relational](#) and conditional intelligence.

Diffusion spectrum MR image of the human brain

(MGH | UCLA | [Human Connectome Project_science](#)
| SINC)



- **Memory, language, and other brain abilities**

The third on-line book of the *Global Cognitive Theory* is dedicated to the different memory types, functional analysis, and its genetic base; giving rise to explanations about the power of language and other intellectual capacities and ideas as for how to improve memory and its limits.

The memory is the brain's crucial second function. The cognitive theory of this intellectual capacity until now has not been as developed as that of intelligence; perhaps due to its complexity and types.

Language can be an example of this complexity and variability since it consists of the interaction of different types of intelligence and memory, which are present in many physiological and working processes of the brain.

The analysis comprehends the following main points:

Discussions on [how to improve memory](#)

- Functional analysis during conscious cognitive processes
- Special memories such as linguistics
- [Types of memory](#) through their temporal perspective ([short](#), medium, and long-term) and by their temporal persistence and [reliability](#).
- Management of information from the perspective of intelligence as a manager of knowledge

Unconscious mechanisms of [compression](#), [degradation](#), and [reconstruction](#) of data, and conscious optimization mechanisms.

- The interaction between storing and managing information will produce the effects of complementariness between both intellectual abilities.

Consequently, the empirical research by the cognitive theory and [neuroscience](#) of the global efficiency in the management of information, and the possible genetic nature of memory and language will be more complicated than of intelligence; even with precise evaluation methods of the available data.

■ [Willpower and artificial intelligence](#)

The decision-making process does not appear in the functional diagram of the brain because it is more appropriate to make a philosophical approach to willpower than the other cognitive processes of the brain.

The critical aspects included in this book are:

- The origin of ideas and thoughts
- The brain intervenes in decision-making processes, but surely, the body's cells are also involved; as if it was the expression of will autonomy through a decision-making system like a real [political system](#).
- This viewpoint of the decision-making model, along with its sensitivity, offers rational explanations for the changes produced in personal decisions without apparent reasons and, in some way, to derived problems such as schizophrenia.
- The philosophical perspective allows comments on the very existence in the sense of existing as a unique individual, a [vital impulse system](#) of elemental individuals or a global collectivity, or alternating the forms above over time, moreover, according to the expression of will or the existence of a feeling.
- A discussion about the active subject of will in decision-making processes offers two definitions of [artificial intelligence](#); bringing together all the mentioned ideas about natural brain functions.

The basics of the evolutionary genetics of the *Global Cognitive Theory* and the empirical research carried out in the [EDI Study - Evolution and Design of Intelligence](#) are on the page [the evolution of intelligence](#) of the book *General Theory of Conditional Evolution of Life*.

On the same page, the [Darwinout](#) experiment is proposed to confirm the results obtained with the [EDI Study](#). Furthermore, the novel [Menssalina experiment](#) is more potent

and straightforward than Darwinout.

1.c) The human brain

Despite the numerous studies on how the human brain works, many of the questions asked regarding this subject continue to be an enigma. There are some ideas about the logic of brain activity and the physiological structure suitable for its optimization, but a warning of the presence of a significant, intuitive component in the reasoning.

The link between the human brain and modern computers is an enthralling subject given the similarities between these two mechanisms of storage and management of a tremendous amount of information.

The similarities offer the advantage of a simpler model and widely recognized by everyone.

The technological advances made by human beings has allowed designing machines capable of emulating certain cerebral operations, managing to surpass the brain in specific instances, for example, in the calculation and [mathematical memory](#).

Due to both the intuitive nature and the extent of the subject, the goal is not to perform a systematic analysis, but instead, comment on the new ideas calling the attention or contributing to the current culture, especially from the [General Theory of Conditional Evolution of Life](#).

On the other hand, the rapid evolution of these cerebral operations has been the main reasons for the development and formulation of the cited theory.

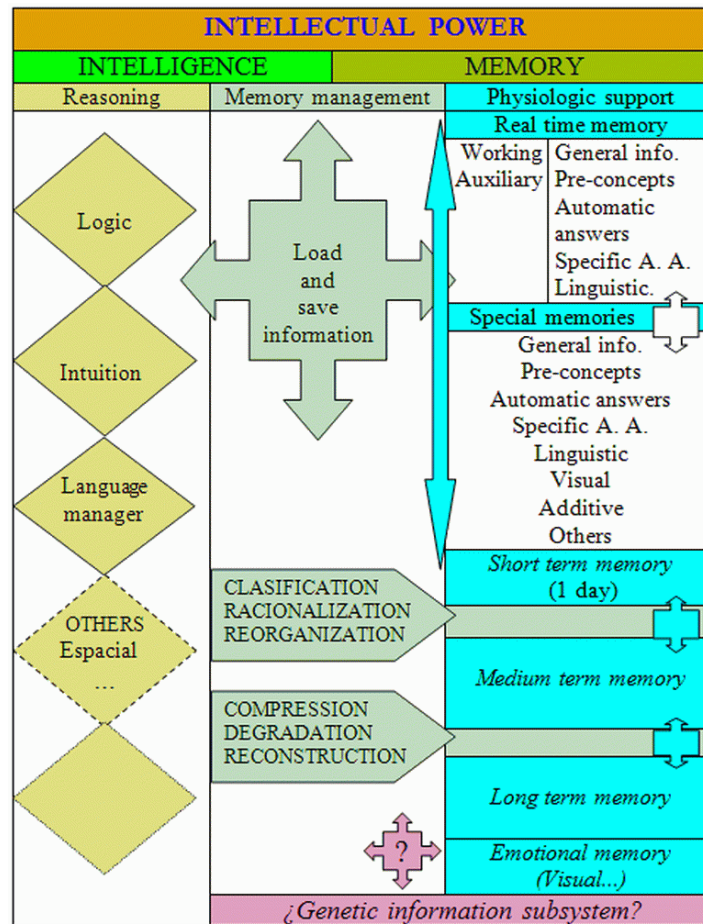
The content of this book appeared initially in the appendix of

the Conditional Evolution of Life book. The statistical study performed on the heritability of intelligence –The EDI Study– led to the definitive separation of the books.

Time will tell if the new approach is heading in a proper direction or not. It will not take long to shed light on the surprising results of the stated statistical study. They seem to confirm the hereditary nature of global and [relational intelligence](#), the significance of the gene with less intelligence potential –IQ, pointer with specific conditions–, essential functions of [sexual differentiation](#), and the existence of a finalist evolution.

1.d) Human brain diagram

Cognitive functions



Advanced animals can be considered symbiotic macro-societies of more elemental units with their own lives –cells. The organization gives the group an enormous intellectual potential and its own will, independent of the elemental units.

The figure shows a functional diagram representing the central concepts graphically and their connections, discussed in the following sections.

Modularity and connectionism in the human brain are two philosophical approaches that could well be complementary.

Likewise, the current theories on mental structures (*constructivism* - **Jean Piaget** and *innatism* - **Noam Chomsky**) appear to be two ways of looking at the complex reality. However, there is no need to start discussing some of the simplifications and the rather unfounded affirmations of innatism.

The brain is the organ responsible for carrying out superior cognitive functions. Nevertheless, these are not the only functions the brain carries out, for example, the human brain's decision-making system can feasibly contain democratic processes with a connection to individual cells that in some instances may serve the purpose of a mere coordinator.

2. MEMORY AND INTELLIGENCE COMMON CHARACTERISTICS

2.a) Concept of these brain functions

Understand **intelligence** in broad terms, like the ability to link concepts; it implies some data is necessary for its operability, and the **memory** will provide the required info.

Likewise, **memory without a manager** would no work. If a processor could not read computers' hard disks, it would be no more than a piece of useless junk.

Nonetheless, concepts appear somewhat artificially, emphasizing the ability to link or store information for the brain. Intelligence and memory can never labor separated; a critical characteristic not to lose perspective when dealing with specific lines of arguments.

Black Strokes - Kandinsky

(Public domain image)



2.b) How the brain works

Despite its relation, it is better to leave aside the problems that could arise when studying the positions or theories on the existence of the soul-body (*monism and dualism*) and, although in a smaller degree, the concepts mind-brain (*logical behaviorism - Wittgenstein, identity, and functionalism*) to be in the scope of theology and philosophy more than in science.

Intelligence and memory need physiological support; although cellular specialization exists for both functions.

For example, there are cells specialized in searching for information by detailed criteria previously provided. Also, visual memory can be in a different part of the brain than auditory or [semantic memory](#).

The physiological endowment of ability varies among individuals and their different functions and facets. However, it would not make much sense if the same tasks to any memory or intelligence operated with different or mechanisms. In other words, the genetic information of specific roles is the same.

Computers also have similar elements with their corresponding specialties. For example, there is a central chip, a possible mathematical processor, and a graphics card. Regarding memory, there is RAM, extended, expanded, and the hard drive.

Regarding shared functions, the central processor of computers can work for many different purposes; two are, for instance, as a mathematical calculator or to display graphics on the screen. Of course, more specific elements improving

general operation can exist, like a math processor.

At the same time, if a neuron specializes in a function, it can generally perform other types of services. The simple act of closing the eyes allows to increase the auditory capacity immediately and even the reasoning.

2.c) Complementariness of brain functions

It is a significant aspect of these abilities. The book of the Conditional Evolution of Life shows an example of the complementariness of two variables when talking about **internal coherence and compatibility** of the genetic information.

Now, there is a double effect of complementariness. The more advanced the relational capacity, the higher the efficiency of information provided by memory; and the data contributed will be superior from having a better memory manager. That is, intelligence operates twice, first as a memory manager, and second as an information analyzer.

Consequently, it may be not so exaggerated that the extent of intellectual power is equal to the product of the capacities of intelligence and memory considered separately. That is, standardizing individual scales from 0 to 10; the total potential will be the scale of 0 to 100. Even more, as in all balancing elements, equilibrium will be more robust; average values of both will give a potential of 25, while relatively extreme values such as two and eight will provide 16.

A computer's power is often measured both by the power of its central processor and the velocity of access to information and communication between its different parts.

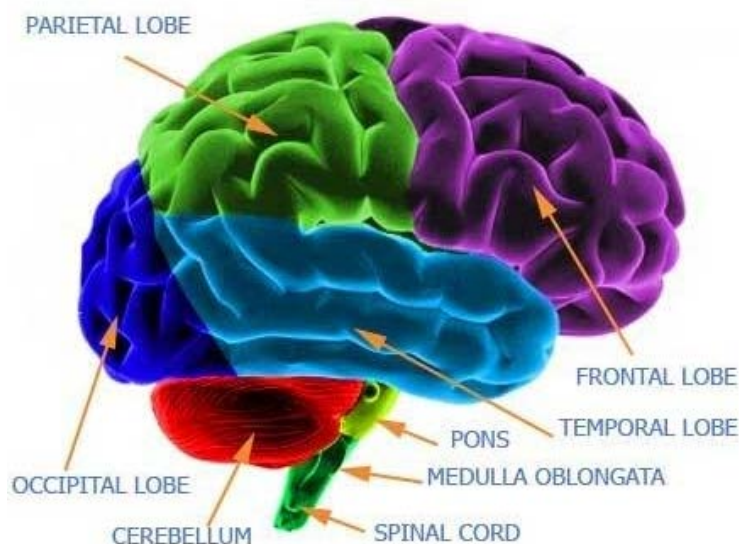
2.d) Optimization in the human brain structure

Logically, yet against widespread belief, the design of the brain should tend to its optimization along the evolution to take advantage of the available resources in its structure. Moreover, optimization is an epistemological principle of any [system of vital impulse](#).

The aim is not to justify the evolutionist or creationist theory (*evolutionism* versus *essentialism*), or more particular philosophical tendencies like *animal psychology* (instinct as a pseudo-concept), *behaviorism*, and *etiology* or, from another point of view, *ethnocentrism*, *cultural relativism*, or *universalism*.

Brain structure

(Public domain image)



On the contrary, the analysis tries to explain the possible connection or conceptual identity between the present reality of the complexity of the human brain's cognitive functions and the original essence of these vital functions, qualities or capacities by the study of their [real evolution and its](#)

requirements.

The underline philosophical perspective on this subject is **vitalism**. That is to say, the **essence of life** implies freedom, intelligence, and memory and that, a logical (non-random) and internal evolution has undoubtedly existed throughout time since the beginning.

In human evolution, there is evidence for the following characteristics related to brain structure optimization.

2.d.1. Multiple functions and multiple facets

Although these characteristics could be similar, here they mean two different concepts or nuances. The multifunctional nature refers to intelligence processes of analyses and data relation. For example, the operations may be aiming to conclude a mathematical result; but it can also operate analyzing and classifying information to store in the different memory levels.

Another viewpoint would be to consider the different way intelligence offers specific responses according to the operative mode.

Memory also has a multifunctional nature within the human brain structure, although there are differences with the intelligence. Its **Types** respect to the temporal horizon: instantaneous, short, medium, and long term.

The multifaceted nature as the different subject to which brain functions can be applied. For example, the information could be spatial, color, and auditory relations, **logical abstraction**, and multiple characterizations.

As far as memory is concerned, information related to images, abstract concepts, linguistics, and colors.

The computers are useful to explain these characteristics with examples. As previously mentioned, the central processor can find data and execute programs. There are also types of mechanical support, and multiple logical structures to store info.

For intelligence, this multifunctional and multifaceted nature allows delving slightly deeper into its content or definition —

understanding it *as a capacity to relate*. Therefore, it would be the group of abstract and elemental relational functions allowing all reasonably complex operations.

2.d.2. Human brain structure and efficiency

The efficiency is easily observed as much in intelligence as in memory. The first one uses the second so as not to repeat unnecessarily a multitude of operations; it even creates **subprograms of automatic action**, like the pre-defined responses to different situations when driving.

It could be half of the memory deals with data to support intelligence, independently of the stored information with a system of multiple references.

The memory, or better said, the memory manager, will try to save only the relevant information, which does not already exist or adding a new nuance to stored data.

2.d.3. Utilization of idle resources

The thought is not unique; that is, there is more than one line of argument simultaneously. Moreover, the human brain allows at least two more. It would be like the existence of a somewhat conscious thought that is, however, in the background.

It should not be confused with thinking about two things at the same time; in this case, the two things are in the foreground of thought.

On the one hand, it is taking advantage of the system's idle resources, and on the other, the mind would always continue to think.

A blank mind occurs when two simultaneous ideas end at the same time; it usually happens when trying to go back in a line of argument, which is not always easy or feasible.

The fact that computers already do something similar and are becoming increasingly complex needs no further explanation.

2.d.4. Maintenance of cognitive capacity

Given the intricacy of the brain structure and the necessity to maintain an optimum operational ability, the system needs to reorganize itself daily. While sleeping, it performs a significant amount of cleaning work.

Los Angeles - Skyline

(Public domain image)



A critical reason for sleeping is the brain needs to use the working memory and the relational capacity intensively for the exploitation analysis of daily experience stored in the short-term memory faced with its possible store o deletion, so these abilities need to be free from a multitude of conscious tasks.

Dreams widely represent the work that the [memory manager](#) performs when storing specific information. When it does not know what to do, because it lacks enough information, it recreates a situation and tries to force the intelligence to

choose. The brain will clean short-term memory without losing data or saving a full specific subject provisionally.

When intelligence does not manage to offer a clear decision for a topic, there could appear recurrent dreams. The issue is noteworthy, and the adopted solution would affect the saving of data in different places in the memory or the configuration a dimensional reference.

The difficulty degree of some relational problems may be so high that, at certain times, the quickest solution to a problem is to forget it and try it later, especially after sleeping. Any experienced programmer knows that faced with an elemental problem that seems irresolvable, one should try to shut down the computer and try it again.

In the first case, after sleeping, [short-term memory](#) has been cleaned. When it analyses the problem again, it will load every data related and in agreement with the priorities of each element; then, the analysis is notably more straightforward.

After restarting a computer, all the programs and variables in the memory have disappeared, and the computer will load into RAM only the necessary programs and variables. The restart assures there is free space and that none of the variables have erroneous values from multiple tests performed by a programmer.

Another yet different example of how the brain structure works is the human eye. The eye adapts best to sudden changes in luminosity by opening and closing the lids, that is, by restarting the system. The latter is vital for those who drive for long periods at night. The light from cars provokes sudden changes in the luminosity that can be tiresome for the eyes.

However, it is fascinating to check that, if the eyes blink right when faced with a sudden change in light, the fatigue and the

discomfort reduces stunningly. There must be mechanisms to adjust to luminosity and optimized to initialize from the darkness.

3. EVOLUTIONARY PSYCHOLOGY

The main conclusions, which also appear in the corresponding section of the [EDI study](#), are the following:

- The hereditary nature of [relational intelligence](#)
- The significance of the less powerful gene regarding the concept of conditional intelligence
- Central goals of the [sexual differentiation](#)
- The existence of a teleological or [finalist evolution](#)

The intuitive vision of the brain's functions and cognitive psychology aspects of the Global Cognitive Theory is difficult to summarize. The index could be a good summary.

3.a) General psychology

- The description of how intelligence and memory operate could help to understand better human behavior.
- Cognitive psychology may help to be somewhat more conscious of the brain limits and more prudent in the fixation of individual objectives.
- The different ways the individual **decision-making processes** developed can explain the apparent change of individual opinion in specific instances; particularly when carried out in a centralized or democratic way regarding the cells or groups of cells.
- The knowledge of the decision-making process should imply, to a certain degree, self-education to avoid losing control of the will.
- A little bit of humor is never wrong, above all when saying something like 'it seems that **we do not exist** from a strictly scientific point of view'; or that the human being, more than a living being, strictly speaking, is configured like a **vital impulse system**.
- The concept of temporary discontinuity of existence is a consequence of evolutionary psychology and the stated dual nature of living beings.

3.b) Memory and education

- The tendency of using **standard memory** should increase as much as possible because of its enormous potential in comparison to mathematical one.

Currently, there is a tendency to practice and use **math memory** to develop it.

If new approaches in cognitive psychology are correct and this capacity is configured mainly by genetic determining factors, students' efforts could be genuinely counterproductive given that these efforts generate much tension and prevent the desirable use of standard memory.

- One more element to consider is the functional parallelisms between computers and the human brain.

The desired change towards the use of standard memory also comes from computers and communication, providing a large quantity of information in real time.

Education should promote people's capacity for managing and processing the large quantity of available information.

- The effects of sleeping and dreams on memory's operation should allow students to do not make the error of studying instead of sleeping.

The same reasoning applies to other types of behavior concerning the capacity to memorize.

- Higher knowledge of the memory manager methods helps to educate studying habits.

3.c) Evolution of the human brain

- If the parallelism between computers evolution and brain evolution are deeply rooted, an interesting consequence in evolutionary psychology would be the confrontation between random mutations and guided improvements.
- Likewise, the evolution of computers reminds of the proposals put forth by the [Conditional Evolution of Life](#). The same comparison will lead to reconsider the role of [sexual differentiation](#) in the evolutionary process: females seem not to modify genes after their early formation, we may find that they have specialized in “hardware”; and males, on the other hand, in “software.” Both, as we all know, interrelated and of similar reputation.
- This vision of the brain's functions creates many questions in the specific field of evolutionary psychology: *are genes the most compressed expression of our memory? Does something like a compiler exist in the human body, and where would it be found? When is genetic information updated? Why is [short-term memory](#) cleaned in sexual relations? What percentage of genetic information modifies in each generation?*

In this sense, a compression mechanism and information codification could exist for its multiple transmissions; once modified by the sub-system of the memory's genetic information.

- Finally, [artificial intelligence](#) could be as a machine's system of decisions, created or not by human beings, and having the characteristics of a vital impulse system.

* * *



When **Globus** finished the book, he received from the
future
an *heyelagic transversal resonance* of the
para-cerebellum of **Darwinout**,
sent by his friend **M^a José**.

PARA-CEREBELLUM





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