

GLOBAL COGNITIVE THEORY

VOL. II INTELLIGENCE, INTUITION, AND CREATIVITY



Museum of future science

José Tiberius



Hobbies: chess, padel and philosophy among others

José Tiberius is the main author of Molwick publisher books.

With over 40 million visitors and two million books downloaded in PDF format, he is undoubtedly one of the most widely read authors in Spanish of scientific essays in the current millennium.

There are more than 10000 links to Jose's website, where his books on theoretical physics, theory of evolution, quantitative genetics, cognitive theory, philosophy of science, metaphysics, and children's stories are showcased in five languages. Many of these links –to all these different fields– come from universities, projects done by university students and blogs created by teaching professionals and Educational Specialists.

Moreover, it is interesting to note that these links are usually together with links to Wikipedia or pages such as National Geographic.



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

Molwickpedia: molwick.com
Title: Intelligence, Intuition, and Creativity
eBook: 978-84-15328-15-5
(Book series) Global Cognitive Theory
978-84-15328-73-5 // 978-84-15328-74-2*
© 2002 All rights are reserved
Editor: Molwick
6th edition: July 2019
Author: José Tiberius

MOLWICK

José Tiberius

<https://molwick.com/es/libros/>
<https://molwick.com/en/ebooks/>
<https://molwick.com/fr/livres/>
<https://molwick.com/it/libri/>
<https://molwick.com/de/bucher/>
<https://molwick.com/pt/livros/>
<https://molwick.com/ar/books/>

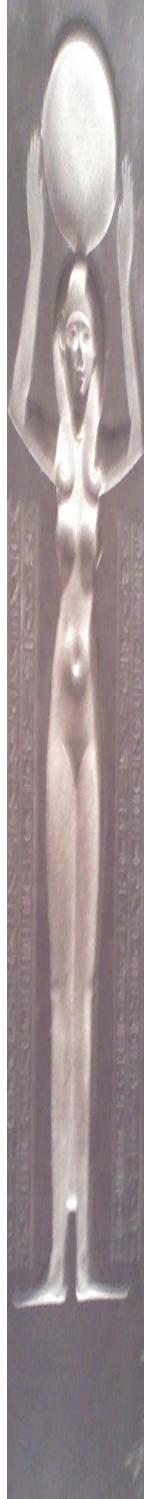


Molwick Publishing Catalogue - I

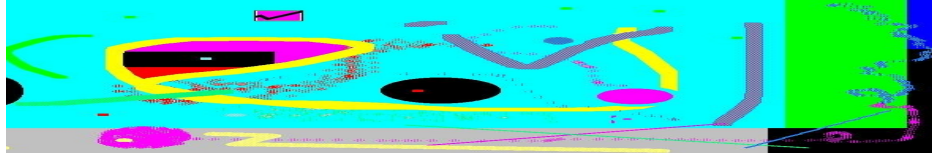
	<h1 style="text-align: center;">MOLWICK</h1>	ISBN (eBook Paper* ePUB**)
	<p style="text-align: center;"><i>Conditional Evolution of Life</i></p>	<p style="text-align: center;">978-84-15328-75-9 978-84-15328-13-1* 978-84-15365-82-2**</p>
	<p style="text-align: center;"><i>Global Cognitive Theory (Book series)</i></p>	<p style="text-align: center;">978-84-15328-73-5 978-84-15328-74-2* 978-84-15964-00-1**</p>
	<p style="text-align: center;"><i>The Brain and Modern Computers</i></p>	<p style="text-align: center;">978-84-15328-14-8</p>
	<p style="text-align: center;"><i>Intelligence, Intuition, and Creativity</i></p>	<p style="text-align: center;">978-84-15328-15-5</p>
	<p style="text-align: center;"><i>Memory, Language, and other Brain Abilities</i></p>	<p style="text-align: center;">978-84-15328-16-2</p>
	<p style="text-align: center;"><i>Willpower and Artificial Intelligence</i></p>	<p style="text-align: center;">978-84-15328-17-9</p>
	<p style="text-align: center;"><i>The EDI Study - Evolution and Design of Intelligence</i></p>	<p style="text-align: center;">978-84-15328-18-6</p>
	<p style="text-align: center;"><i>Original Fairy Tales for Children</i></p>	<p style="text-align: center;">978-84-15328-00-1 978-84-15328-76-6* 978-84-15964-24-7**</p>
	<p style="text-align: center;"><i>The Global Scientific Method</i></p>	<p style="text-align: center;">978-84-15328-01-8 978-84-15328-77-3*</p>
<ul style="list-style-type: none"> • See Web page, some books may not be edited in paperback, eBook or ePUB 		

Molwick Publishing Catalogue - II

	<h1 style="text-align: center;">MOLWICK</h1>	ISBN (eBook Paper* ePUB**)
	<i>Physics and Metaphysics of Time</i>	978-84-15328-84-1 978-84-15328-80-3* 978-84-15964-02-5**
	<i>The Equation of Love</i>	978-84-15328-34-6
	<i>Theory of Relativity, Elements, and Criticism</i>	978-84-15328-81-0
	<i>Global Physics</i>	
	<i>Global Mechanics and Astrophysics</i>	978-84-15328-37-7 978-84-15328-83-4* 978-84-15964-03-2**
	<i>Global Mechanics</i>	978-84-15328-35-3
	<i>Global Astrophysics and Cosmology</i>	978-84-15328-85-8
	<i>Dynamics and Law of Global Gravity</i>	978-84-15328-91-9 978-84-15328-86-5* 978-84-15964-04-9**
	<i>Physics and Global Dynamics</i>	978-84-15328-36-0
	<i>The Law of Global Gravity</i>	978-84-15328-87-2
	<i>Global Physics Experiments</i>	978-84-15328-88-9 978-84-15328-89-6*
<p>• See Web page, some books may not be edited in paperback, eBook or ePUB</p>		



1. Theory of intelligence	15
2. Definition of intelligence	19
a. Relational definition	23
b. Conditional definition	25
c. Multiple intelligences	27
◦ In strict sense of the word	27
◦ G factor or general intelligence	28
◦ Modern IQ	29
◦ Human intelligence	31
d. Emotional intelligence	37
3. Knowledge management process	43
a. Automatic brain functions:	43
◦ Preconceptions and emotions	43
b. Reliable brain functions:	49
◦ Mathematical logic and math memory	49
c. Less reliable brain functions:	51
◦ Intuition and non-math memory	51
d. Ultrafast brain functions:	53
◦ Theory of language	53
e. Complex and mix brain function	55
◦ Concept and definition of creativity	55
4. Genetics and intelligence	61
a. Genetic predisposition	63
b. Heredity vs. environment	63
c. Cognitive science and intelligence test	71
d. Social and technical issues	77
5. The metaphor of the semaphore	91



MOLWICK

MOLWICKPEDIA

Museum of the science of future

Philosophy of evolution, history, and life

New paradigms of Physics, Biology, and Psychology



GLOBAL COGNITIVE THEORY

**INTELLIGENCE, INTUITION, AND
CREATIVITY**



1. Theory of intelligence

The second book on the [Global Cognitive Theory](#) refers to the different meanings, and it defines **the elegant intelligence** as an active subject of knowledge management; this is, without any pseudo-scientific refinement aiming to deny the existence of such a capacity.

Pseudo-scientific because it is evident that this capacity exists and following **Galileo's** scientific method or, if preferred, the [Veus vei method](#) discoursed in *Global Scientific Method*, it is not necessary to demonstrate what is obvious; besides, sometimes it is not even possible to do so.

The introduction of the first book on the *Global Cognitive Theory, The Human Brain and Computers*, discusses the general context of the books about evolution and cognitive psychology in Molwickpedia.

Also, in the section called *Global Cognitive Theory* of the book *The*

[Human Brain and Computers](#) is a summary of the four books that make it up. Besides, it mentions the experimental psychology studies related to the said theory.

[Relational intelligence](#)

Pyramid of Louvre museum



Chapter II, [intuition](#) and [creativity](#), try, on the one hand, to criticize the multiple concepts associated with the word intelligence, like the concepts of **Howard Gardner's** multiple intelligences and **Daniel Goleman's** emotional intelligence. On the other hand, it also establishes the essence of the popular idea of normal or general intelligence.

Within the different existing concepts in the theory of intelligence, the capacity for making abstract relations seems to be the most appropriate definition.

A deepening of the theory about the conditions and mechanisms lead to the definition of conditional intelligence. A significant case would be reliable answers.

These elucidations allow to approach the concepts of intelligence in a strict sense or G factor and discuss some particularities about the male and female brain. The whole cognitive manager would be elegant intelligence.

Chapter III focuses on the relevant types of operational conditions regarding the reliability and speed of the output. The context of the *Global Cognitive Theory* allows this innovative analysis.

Firstly, the automatic answers would be found, such as [preconceptions or emotions](#), since, due to their nature, they must be answers of the unconscious.

In the second place, accurate functions have been included, such as logical inference or the so-called [mathematical memory](#).

After that, with lower requirements of reliability, it comes across [intuition and standard memory](#).

Then, an approximation to the unique case of [language](#) is carried out; emphasizing its impressive speed as lack of

precision. Regarding **creativity**, the characteristics are its complexity and powerful relational functions.

The mentioned context of the *Global Cognitive Theory* relates to evolutionary psychology and, more specifically, the **General Theory of Conditional Evolution of Life**.

Chapter IV examines the effects of inheritance and environment within the theory of intelligence.

In the first part, there is a review of the studies on the genetic inheritance of intelligence and its interpretation in favor of the *Global Cognitive Theory*. It also includes two possible methods of intelligence improvement procedures using genetic engineering.

The second block of ideas discusses the philosophical or sociological motivations as opposed to the genetic influence. Some ideas sometimes even deny the very concept of intelligence.

The problems and intricacy of intelligence tests are in chapter IV. However, going to the moon was more complicated and, curiously, only some lunatics deny that humankind has been there.

Another section explains the experimental research difficulties, especially the shortage of data source. These limitations are so severe that are only understandable thanks to the social sensitivity a significant scientific rigor might entail.

Finally, **chapter V** exposes the *traffic light metaphor* as an example of multiple concepts associated with the kindness of a car, showing the possible routes, conditions and times; and simultaneously, the simplicity of quality indicators when not using the same words for different concepts.

2. Definition of intelligence

Colloquial language has many connotations, and some of the meanings are opposite of what one would expect.

The doctrine is divided and influenced for the social acceptance of its proposals. An author who is suggesting everyone has a very similar endowment and can become very intelligent would have a lot more possibilities for publicity and promotion.

Another promising and complementary path is minimizing the importance of the classic concept or definition of intelligence and associating the marvelous word to other aspects of life, such as social or emotional success. Sometimes, the lottery could be considered a representation of the winner's financial intelligence or that having lots of *friends* could represent emotional intelligence.

These tendencies, even the most serious and scientific ones, such as the theory of multiple intelligences, suffer from an additional problem, reaching the public with distorted content due to their accelerated acceptance.

In short, false humbleness is not humbleness but rather falseness, which of course does not help scientific development at all, especially in the planning of an educative system. The supposed quasi-equality of the genetic endowment of intelligence could impede the comprehension of complex social phenomenon.

From the Vox General Dictionary of the Spanish Language:



- *The ability to understand, a greater or lesser capacity to know or learn*
- *A group of all the functions whose objective is knowledge (sensation, association, memory, imagination, understanding, reason, conscience)*

Both are excellent and acceptable definitions in the sphere of **language**, but somewhat imprecise technically. In the first definition of intelligence, some aspects do not have much to do with it, such as memory in its distinct dimension of the memory manager. The second one is excessively generic.

The reflections made about the multifunctional and multifaceted nature of intelligence and the conditions or requirements associated with the desired responses and its

hereditary nature, allow to propose a conceptual approximation and propose a new definition.

2.a) Relational intelligence

This name is an attempt to gather what we have expressed on various occasions, that we understand intelligence as a capacity for making abstract relations. Therefore, it will be the group of abstract and elemental functions allowing for any complex relational operation.

So, we can cite the following relations as known examples: above / below, large / small, general / specific, deep / high-pitched, smooth / rough, dark / light, matt / shiny, in front / behind, kind / rude, sour / mild, direct / refined, sweet / bitter, intense / light, good / bad, etc.

These conceptual relations are not as elemental as they seem. For example, all appear binary, but this is not a necessary condition to be a primary relationship. In addition, they could be in an increasing linear order; some could be better in two dimensions. In any case, they serve to express what we are trying to say.

2.b) Conditional intelligence

As we have seen, the cognitive functions work depending on the demanded requirements regarding response **reliability**. Surely, we could specify another type of operating conditions for intelligence, and we would obtain other categorizations.

These demands define conditional intelligence, indicating that the same group of functions of relational intelligence can imply a different conditional intelligence.

The concept is remarkable given that, on the one hand, it provides an instrument for identifying some instances of particular significance; on the other hand, it reminds that elemental functions are the same when the only variation of the specific case refers to the operative conditions.

2.c) Multiple intelligences

Regardless of the somewhat opportunistic *Theory* of Multiple Intelligences of Howard Gardner, it seems clear that multiple intelligences exist.

They will be identified not only by the different types of elementary relations (space, sound, color) involved but also by the operational mechanisms or any other criterion we could associate.

The categories could be as extensive as wanted because in any act or concept it is possible to find primary relations; although calling intelligence to everything would eliminate its differentiating concept and, therefore, the utility of the word intelligence.

Other sections deal with more types of multiple intelligences. Below, there are some cases.

2.c.1) Intelligence in the strict sense

It would be the capacity for making relations with the condition of a high degree of reliability. See more details in the section related to the [knowledge manager's secure](#)



Squirrel

(Public domain image)

responses.

In other words, it corresponds with conditional intelligence when we require a high degree of reliability. When the word *intelligence* appears in colloquial language, it refers to this concept.

The verification of responses to obtain the desired reliability implies some specific biological mechanisms explained in the Conditional Evolution of Life book when talking about the method of [Verification of Genetic Information](#).

The main factors in perceiving intelligence are the depth and originality of ideas, along with the absence of errors in reasoning. Not expressing the thinking so as not to commit mistakes is another matter!

2.c.2) G factor or general intelligence

It is the result of adding to the concept of intelligence in the strict sense the condition that its relational functions form part of many the intellect's processes.

The G factor is the closest concept associated with the intelligence given by standard IQ tests.

These measurements have the advantage of being independent of cultural factors.

The study of the hereditary nature of intelligence uses information about IQ that, to a great extent, fit in this category. If some specific relational functions are hereditary, it is logical to assume that others would also be, but with different mechanisms of expression.

2.c.3) Modern intelligence quotients

Different dot matrix and **language** test batteries are into just one IQ test and, therefore, they gather in the greater measure of the potential of multiple intelligences. Although, these modern intelligence quotients are closer to the concept of **relational intelligence** than multiple intelligences.

To broadly determine a person's intellectual ability they are useful. However, they suffer from two problems: when including language tests, they incorporate aspects other than intelligence in the strict sense and have strong cultural influence.

2.c.4) Woman and man intelligence

The [sexual differentiation](#) between woman and man is a delicate subject. There is a consensus about the differences between female and male sensitivity. Consequently, the groups of primary relational functions that support these sensitivities should be somewhat different.

If an IQ test collects the feminine sensitivity of men and women, the latter will obtain better results and vice versa.

Water-Lily Pond by Monet

(Public domain image)



There is an automatic evaluation of others where, on top of their image, there are some characteristics. Among them is an intuitive estimation of that person's intelligence.

As this approximation is carried out on a personal scale, it should not be surprising that many women think that they are more intelligent than men, and vice versa. All men

and all women are right from their point of view or scale of reference.

An example of how complicated is the subject of [sexual differentiation](#) between woman and man would be to speak

about the beauty of intelligence and the intelligence of beauty. Both affirmations are correct and, therefore, elemental relational functions supporting them should exist. Without getting any more in-depth, there are some symmetries.

Another example could be the different results in mathematical calculations with variables rounded to integer or not. Perhaps, it would not be efficient both criteria simultaneously.

In the study of the heritability of intelligence, the results changed when the variables item's order had different criteria.

If the natural scale is unknown, a solution would be a neutral scale concerning gender. Some of the most appropriate tests of today use different batteries of forms or questions, which through adequate ponderation, achieve an overall unbiased evaluation of the tests.

In some cases, there is an adjustment with a different scale according to gender; the TC1 test is an example based on a series of dominoes.

In other cases, the correction is according to age. For ages above 30, the result is compensated, considering the fall in performance although not in potential. In short, it deals with obtaining equality by age conventionally.

It could also go the other way around, theoretical inequality. For example, the youngest may be more intelligent due to evolutionary reasons; the EDI Study obtains better adjustments in IQ correlations for an average 10% improvement in each generation.

The interpretation of statistical data is not only risky, but also the data can be bias.

An example of the difference between men and women,

which is accepted by both men and women with a good sense of humor is the following. Men prefer women with the vertical symmetry of 90-60-90 and women prefer an exponential growth of 10-23-10²³ in their man, that is to say, a 10 in intelligence and 10²³ in \$.

Continuing with the humor, if men had to define a single measurement that encompassed the three previously mentioned parameters, they would use the mean squared error and women the sum.

Contributions to other observed variations from a scientific point of view are:

- **Human life expectancy**

Women have an estimated life expectancy between 5 and 10 % more than men in most countries. In Spain, this supposes approximately six years (86 years versus 80 years for men). There could be something essential regardless of the existence of factors such as a lower rate of tobacco consumption or different types of work.

According to the [Conditional Evolution of Life](#), the main goal of [sexual differentiation](#) is to serve as a genetic filter between the information received from the male and female progenitors. It also affirms that women provide an intact copy of the genetic information, with the advantage of its phenotypical viability guaranteed.

Consequently, the filter of two X chromosomes will give in a more stable structure than the one made up of the XY [chromosomes](#), leading to higher female longevity; explaining, at least in part, the observed reality.

- **Gender differences in human intelligence in the lower threshold**

An interesting issue will be the stability effect in the lower part of the typical bell curve of Gauss.

The [EDI Study – Evolution and Design of Intelligence](#) detects, one out of five cases, what it seems to correspond with genetic accidents in the [evolution of intelligence](#), which are very relevant in quantitative terms.

■ **Gender differences in human intelligence in the upper threshold**

As in the case above of the dominoes series.

Following the *Conditional Evolution of Life*, the [Global Cognitive Theory](#) and the empirical results from the *EDI Study* women do not modify their genetic information, and most of the elemental functions of intelligence have a genetic nature. One of the X chromosomes in women would have at least a generation behind with [sexual differentiation](#) and two backward on average.

Unless the X chromosome may pass 100 % updated to the next generation every time it coincides with the Y [chromosome](#), this fact could help to explain the low female participation in highly gifted associations, in nominations for the Nobel Prize, the few inventions made by women, a lower rate in management positions. Consequently, there is no necessity of restoring to a historical specialism of jobs or being particularly negative towards men accusing them of gender favoritism.

Socially, it seems the gratuitous accusation is not rude, while a scientific explanation of some specific characteristics of human intelligence is.

The scientific nature of the *Conditional Evolution of Life*, the

Global Cognitive Theory, and the results of the EDI Study are palpable. Due to the social sensitivity, it is desirable to carry out more research to confirm and obtain higher sensitivity and significance of the model.

The *Conditional Evolution of Life* proposes the new Darwinout and Menssalina experiments, which have a more straightforward methodology.

2.d) Emotional intelligence

It is one expression with popular success in recent years from Daniel Goleman's book published in 1995. Let us analyze the concept of emotional intelligence from various perspectives.

It is worth mentioning that if there were problems in the definition and acceptance of the concept of intelligence, the new expression is even more confusing since it is partially contradictory.

■ Previous Concepts

There have always been attempts to take away reputation from the characteristic of personal intelligence, especially by those who do not have it as much as they might wish or they do have ideological prejudices.

The distinction between being intelligent and clever has the same inspiration for the expression of emotional intelligence.

■ Terminology

Some concepts can be useful and descriptive of reality or ideas, but in the case of Daniel Goleman, the chosen vocabulary seems more like an attempt to change the meaning of the word intelligence or represent something not corresponding with the given content. The adjective emotional is different and even contradictory to [logic](#) or reasoning.

■ Concept

Daniel Goleman's definition of emotional intelligence uses

words with diffuse or diverse meanings like intelligence, control, emotion, **feelings**, social success, and personal well-being.

Everyone can think of and assume a concept appropriate to their socio-personal reality.

A suitable philosophy would be wordology for the concept of emotional intelligence.

Of course, those who champion the concept would develop an idea more in line

with social intelligence; but the terminology had such strong connotations that it does not work.

The Scapegoat **William Holman Hunt** (Public domain image)



■ **Scientific character**

There is not any! Trying to evaluate social success objectively or valuing the adequacy of interpersonal relationships or emotional well-being is like imposing an objective scale on personal happiness.

Apparently, in extreme cases of depression or other types of personal problems, one can try to make some objective scale, but it will always be in general terms such as standard, slight, or severe. Besides, they would not be suitable for emotional intelligence.

Biology of emotions

The [Global Cognitive Theory](#) dedicates a chapter to this subject in the book on willpower. In particular, emotions are not [feelings](#), which are on a more spiritual level to avoid complicating an already tricky issue.

The concept of emotions is close to the body's [automatic reactions](#), both cognitive or physiological. In this sense, they are like programs of immediate action that have been created throughout the whole life and form part of a person's character. Each person optimizes these automated response programs as much as possible.

Emotions exist because it would not be possible to examine complex situations that require quick response or it would not be efficient for repetitive circumstances; therefore, they are automated in both cases. Expecting to control [emotions](#) would mean giving up the brain's and body's elegant design, which is impossible as the majority of these actions are inherent.

■ **Sociological support**

Socially, the concept of emotional intelligence is enough to promote the working spirit of citizens. It would not look lovely, from a political point of view, to point out possible genetic differences in intellectual abilities.

The media in general and specialized magazines about the brain are happy to include articles commenting positively on the modern concept of emotional intelligence.

Also, numerous freelance professionals enthusiastically take on Daniel Goleman's emotional intelligence and the possibility of self-improvement, while saying they have a special gift and are naturally experts.

■ **Personal success**

The significant advantage of emotional intelligence is allowing each person to become intelligent, and even more, also emotionally intelligent. This perspective increases self-esteem when believing that those who are intelligence in a strict sense do not adequately manage emotional intelligence.

The less intelligent someone is in a strict sense, the more probable to accept the new concept. Likewise, this effect is more significant if a person does not have much self-esteem regarding intelligence.

Indeed, there are some signs that, when characterizing people with the word “intelligence” in this new context, it is independent of whether they are intelligent in the strict sense. Moreover, in most cases, this expression tries to diminish the importance of the classical concept.

There could exist cases where the acceptance of the new expression is related to feelings like arrogance, envy, personal complexes, or economic interests.

To summarize, a real and useful idea behind emotional intelligence exists, in line with social abilities, but the expression is unfortunate, so it becomes something entirely negative.

The concept of elegant intelligence is much more pleasant and real. It allows everybody being proud regardless of the quantitative aspect and comparisons because, in short, the **logic** of the evolution of life leads to quite a pyramid of development stages of the group of elemental and multifaceted abilities.

Thanks, and respect to all the living beings that have made

and continue making the current world possible.

3. Human knowledge management process

This chapter presents some brain operative modes when producing responses.

The behavior reflects an explicit aim to optimize the processes.

San Diego

(Public domain image)



3.a) Automatic or unconscious brain functions

- **Preconceptions and emotions**

The assumptions and prejudices are hardly negative in the theory of knowledge; they are necessary to avoid thought repetition and constant mental reasoning; at the same time, they can act as a real limit of knowledge and its innovation.

When the knowledge management process has sufficiently developed an idea and reached a conclusion, it records it to avoid repeating the entire process over again. Typically, the essential preconceptions are immediately loaded into the memory every day, establishing part of what is called a person's character.

Regarding the computer knowledge, we can assimilate the preconceptions to direct links, an association of files, or other similar mechanisms.

One of the characteristics of computer abilities that stand out is their capacity to repeat or carry out instructions previously saved. The computers need a program loaded in the memory to achieve automatism.

The human knowledge management system is much more powerful than any existing computer, but it also needs previously developed programs loaded into *operative or immediate memory* to work. These programs or cognitive processes are somewhat similar to the preconceptions but have an operative nature, and are usually programs, small functions, or groups of them.

The following processes are relevant.

- *Driving a car*

When we are not driving, the related knowledge and experiences are in our brain, but they are not active; once we enter a vehicle, the operative memory loads those programs. The cognitive process is intense for the driver.

- *Personal security*

Another clarifying example is the control of the immediate surroundings. When the knowledge management process

loads a security program, it affects how the senses operate and the capacity of the rapid response of the body's muscles; this process does not correspond with the adrenaline effect.

- *Language*

People who speak various languages know they will lose a lot if they do not practice a specific one. They also know it can recover almost miraculously with a little bit of practice. The problem is significant when people speak more than one foreign language because they tend to interchange in the operative memory due to the brain's limited capacity. Too many concepts and different grammatical structures to maintain active.

It seems reasonable to assume that, when waking up, the knowledge management system boots the programs or information is going to use throughout the entire day. Additionally, the group of programs and words loaded would be in direct relation with the brain's capacity. That is, as our cognitive abilities develop as a human species, the number of words in a language increase.

- *Emotions*

Following the same [logic](#), the brain will locate other programs of immediate reaction in a particular place so that they can be quickly accessed. It seems it is one of the functions of the human brain area called *Thalamus*, which controls [emotions](#); understanding them as biochemical reactions provoked by a specific stimulus, regardless of the [feelings](#) that may or may not accompany them.

Naturally, the programs must exist previously, and with each new experience, they enriched. In other words, there is a

constant cognitive development producing the evolution of the knowledge management system. It is just like how a programmer perfects his work until obtaining a certain level.

The brain's power notably increases with this automation, and response velocity will be quite superior for two reasons.

First, because the information from the outset is placed directly in the subprograms or functions' prepared fields, and once all the information is received, the specific operation is triggered.

The second is that just a few responses from the knowledge system are enough to validate the start or result of the operation. In this respect, the speed can be similar or even faster than the [ultra-fast responses of the language manager](#).

Aside from the examples in the previous section, the following two cognitive processes show an internal function development.

- *Typing*

An exciting example of programs is the constant improvement when learning to type, if one stops for a week and then returns, a pleasant surprise will occur; instead of worsening the skills due to inactivity, they improve. The human brain and other cells dedicated a great deal of time to reordering, simplifying, rationalizing, and improving without the conscious being aware.

- *Dreams*

The section [optimization of the brain](#) also discuss the cognitive functions of the unconscious.

3.b) Reliable brain functions:

- **Mathematical logic and math memory**

Both the [preconceptions](#) and the [automatic cognitive responses](#) are a product of the intellect throughout the individual development; on the other hand, the secure or reliable responses and the ultrafast are a result of the immediate logic of the intellect.

Crystal Ball

Waterhouse de Juan (Pre-Rafaelita 1849-1917)

(Public domain image)



A specific vision is set out in the Conditional Evolution of Life about the logic and math memory when speaking about the [method of verification of transmitted genetic information](#), possible models for contrasting the theory, and technological

development of the breaks in the example on the automobile industry. The section [genetic structure of intelligence](#) of this book deals with the same perspective about those concepts and evolution.

Briefly summarizing, both operate on the combined result provided by billions of neurons created with the genetic information of a progenitor and another group of neurons of the other progenitor. That is, to the extent that both results coincide, they are reliable.

This mechanism implies a significant consumption of time because it is looking for the certainty of the responses. As soon as the results from the two sources are not identical, reliable reasoning or formal logic will stop.

3.c) Less reliable brain functions:

- **Intuition and non-mathematical memory**

The fact that formal logic mechanism stops when there is not a 100% certainty does not mean that somewhat less sure but perhaps operative conclusions cannot be made within a reasonable margin of error. It is also possible that, at the end of this non-mathematical logic, there is a result that can be checked or verified by other means or perspective.

Intuition can reach far beyond simple reasoning. The previous cognitive processes bring the essential idea to intuition definition.

From this perspective of the cognitive science, each person will have a fair amount of intuition in comparison with their mathematical logic or intelligence in the strict sense according to the equilibrium or imbalance of the capacities inherited from their progenitors.

The same argument about the nature of logic can apply to mathematical and standard memory. Consequently, standard memory is much more potent than math memory because it does not demand absolute certainty from its results.

Given that there are no worries about the error when using the cognitive processes of the non-mathematical memory, there is a personal relaxation. It is worth pointing out that not having the inner certainty of the responses it does not mean the results are incorrect.

When a cognitive process demands a 100% reliability, response time can be excessively long. In complicated programs, when there is not a severe error like in voice-recognizing, 100% reliability will never be optimal; the system would try to find a balance between the risk of error and losing time and energy to reduce this risk, just like the human brain.

The computer works better in cases requiring 100% reliability such as calculations and math memory; on the other hand, it is worse when the required consistency of the cognitive process is low, such as [languages](#).

3.d) Ultrafast brain functions

- **Theory of language**

Language is the consequence of the brain's functions of intuitive intelligence and **standard memory** modes. Alternatively, it is the combined set of linguistic intelligence and **semantic memory** functions.

Of course, it is possible to go much more in-depth and distinguish between the different levels of certainty required within the functions of language, but it would be applying the same **logic**. The language shares the characteristics of diffuse logic.



Parrot

(Public domain image)

The configuration of the human brain functions for language could help to create a **model to possible verifications** of the Conditional Evolution of Life.

Semantic memory behaves like **standard memory** with a lower degree of reliability. If **mathematical memory** works with 98-100%, standard memory could work with 90 or 95%,

and semantic memory

could be around 80%.

In other words, not selecting the word that best says what we want to say, does not mean, that the word we have said does not say what we wanted to say with enough precision.

The previous paragraph is an example of itself!

According to the Global Cognitive Theory, the memory manager is the intelligence; the semantic memory manager acts by selecting the first proposals that its internal mechanisms or cognitive processes offer.

That is, the overall language mechanism is made up of semantic memory and its manager; it will not apply the method of verification of information. Instead, it will apply a different one that will act intuitively but quicker than intuition.

The cognitive ability of complementariness of two elements that, in this case, do not demand the VGI (*Verification Genetic Information*) should be higher than individual elements when the VGI is active. It could be the reason the capacity of human language is astounding.

From another point of view, it is not surprising that any little malfunction of the memory or its manager can have a significant effect on oral expression. Specifically, these malfunctions are well known, and problems related to language and its written expression are relatively widespread, like problems related to dyslexia.

3.e) Creativity

Creativity is another essential quality of living being. Keeping to the topic of human ability, everybody is creative to a greater or lesser extent, just like with intelligence and beauty.

To be creative refers to a person who is particularly talented in comparison to the average of the rest of the population. A slightly creative person is more creative than a very original cat!

A decent definition of creativity could be a **subset of conditional intelligence**, which means a group of essential relational functions with a high association of reliability. If the brain's functions responsible for creating logical relations often make mistakes, this would not be intelligence, but rather something else that the **Global Cognitive Theory** calls **intuition**; of course, if there were lots of errors, it would be called a lack of intelligence.

The creativity subset will be those functions that make the creation, design, invention, or imagination of new concepts more comfortable.

The demand for high reliability is paradoxical in creativity because it has not the same justification for *a severe possible error of intelligence*.

Not only an error is not considered something serious in creative processes, but mistakes are usual. Nonetheless, given that creativity requires various successive operations to exist if elemental functions make errors, it is not very likely that the result will be correct; there can be new creations due to

chance but not creativity.

However, we should not lose sight of the fact that an absolute conceptual definition of creativity is not easy, as we have also previously said, **language** does not require a high degree of reliability. Occasionally, a significant cause behind artistic creations is a defective function in sensorial perception.

On the other hand, the creativity deal within a complex area of intelligence; that is, it uses many packets of elemental tasks operating with a high degree of reliability. Therefore, sometimes, it is unavoidable to make some errors.

Molindinsky



Consequently, a more precise **definition of creativity** would be complex functions of intelligence supporting the capacities of:

- Carrying out extrapolations and estimations of the result, given the existing relations
- Delimitating the limits of the parameters involved
- To detect changes in the variables caused by a variation of the settings; otherwise said, qualitative implications for quantitative changes
- Simultaneous management of various dimensions
- To perform scale or model variables alterations and returning to the previous scale or model variable in the

appropriate point of the corresponding original settings. In other words, the concepts related to the different types of associations defined in Set theory –a branch of mathematical logic.

- Thoughts related to advanced statistical such as average value and a standard value, different value and extraordinary value, and a case or typical value

Plausibly, to be creative in a specific subject, it is not necessary to have all the previous functions. Nonetheless, aside from them, it should also be present both elemental capacities associated with a topic and the specific abilities not linked to general reasoning, like dealing with music or sports.

Consequently, smart people tend to be more creative, and it would be more apparent that the more intelligent someone is. Of course, it occurs the other way around (the less intelligent, the less creative), but it is not as strong because of the intelligence associated and the specific capabilities.

A person can be brilliant and not creative in a subject and vice-versa.

Nevertheless, the **colloquial language** practically depicts these meanings perfectly. An intellectual genius means a person very creative, but another one known for creativity in a subject implies only that is reasonably intelligent.

The next section talks about the genetic structure of reasoning. Regarding the innate nature, creativity has two sides to it; one the one hand, being part of intelligence, and on the other hand, dealing with the specific subject of creativity, such as music for example.

Continuing with the music example, the [Verification of genetic information method](#) (VGI) does not apply to the genetic information of both progenitors associated with music

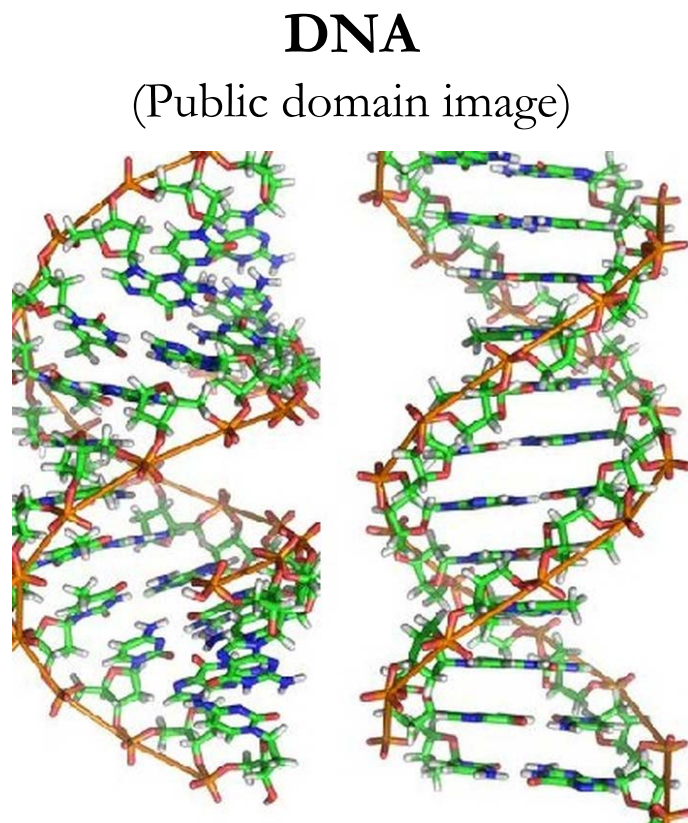
(Union in Set theory). However, in the transmission of musical creativity, the rules of the VGI method will apply for the relational functions being part or a subset of general intelligence, only showing the capacities derived from genetic information that is present simultaneously in the two sources of information received from the progenitors (intersection)

4. Genetics and intelligence

Until today, there are numerous statistical studies on IQ heritability. The observed correlation is low, except in identical twins, which is 80-85% among them; nevertheless, if they had considered the relationship with their parents, they would also have obtained a low correlation.

The problem is the lack of a correct definition of the variable to analyze. If the studies were about the color of the sisters' flowers or rats, as in the typical examples of [Mendel's laws](#), again the results would be low correlations!

There is not a simple linear relation; *there are jumps in continuous variables with random processes governed by evolutionary genetics laws.* Establishing the relationships implied by the Conditional Evolution of Life, it is possible to obtain a high IQ correlation between the parents and their children. Therefore, it indirectly verifies the coherence of the theory.



The genetic influence on cognitive abilities has been and continues to be a great topic of debate because of its possible

social consequences.

The EDI Study shows both the hereditary nature of **relational intelligence** in general and in the strict sense –with high reliability; in other words, it validates a large part of the Conditional Evolution of Life.

Although Statistics is famous for its vulnerability to manipulation, it is also true that some people do not want to recognize reality as evident as it may be. They are happier living in their imaginary world!

This chapter looks at a few points in favor and against a high correlation in evolutionary genetics of intelligence, and at the difficulties or elements allowing for the coexistence of such different positions.

4.a) Genetic predisposition

4.a.1 Highly gifted children

Their existence indicates the genetic inheritance of intelligence beyond a reasonable doubt.

Another significant argument supporting the heritability of human intelligence is the impossibility to isolate any specific environmental cause for the observed correlations. Also, brothers and sisters with similar environments have different levels of reasoning.

Furthermore, the fact that children intellectually, physically, or artistically gifted exist supports the hereditary character of these abilities.

4.a.2 Cognitive processes and genetics

Accepting formal **logic**, intelligence, and **intuition** as variations of the cognitive processes due to the method VIG would mean admitting the genetic origin of reasoning capacities.

The method of **Verification of Genetic Information** occurs, in this case, just after the genetic transmission and even after the initial development of a new being. However, keeping the adjective related to genetics in the name of the method indicates its design is innate.

The book *Conditional Evolution of Life* includes a section on the **theoretical framework of the EDI Study** about the nature of intelligence and genetics with or without the application of the

method of Verification of Genetic Information.



GENETIC ENGINEERING APPLIED TO INTELLIGENCE - I

An ever-present issue when studying the genetic inheritance of intelligence is the possibility of its improvement along with life.

If intelligence is a genetic characteristic, then it seems there is no chance of enhancement. In this case, it would represent an inequality among human beings from the very beginning, which is not very pleasant for most people; this leads to denying the genetic inheritance of intelligence unless it is confirmed absolutely, an impossible goal when is already established beyond the evidence.

However, in the future, it may be conceivable the possibility of refining intellectual capacity, despite its genetic character, if the technology of **genetic engineering** advances adequately. This prospect is still a long way off but maybe not as far as we might think.

The *EDI Study –Evolution and Design of Intelligence–* demonstrates not only the heritability of relational functions making up intelligence but also that they are mainly in a single chromosome.

If the study is correct; the problem of increasing inherited intelligence reduces to the upgrading of the **chromosome** involved. Nowadays, it would be easy to identify the responsible chromosome; nevertheless, it looks is the sex chromosome, as much **Y** as **X**.

The film *Gattaca* discusses the option of selecting descendant's qualities with great tenderness and respect for the individual's freedom regarding whether to use genetic engineering or not. Moreover, it focuses about intelligence, but at no point goes into technical detail.

The problematic of altering hereditary qualities is the loss of identity or the evolutionary line from the parents to the child. Consequently, it seems weird to consider specific changes due to their moral implications. However, as in *Gattaca*, if the parents' freedom of choice exists and, on the other hand, the rest of the characteristics will continue to evolve, there would be no moral objection to applying the technique of genetic engineering as is currently being done to avoid congenital diseases.

As stated previously, the intelligence concentrates in one [chromosome](#), which represents an [independent unit of the genetic code](#); that is to say, a new being can form from genetic code from different people's chromosomes. It should work because functional incompatibility should not exist between genetic development involving different chromosomes.

Consequently, if genetic engineering were to allow a change to the whole chromosome in the first moments after fertilization, we could find ourselves with a new being with all the characteristics of the progenitors except those derived from intelligence together with all the other contained in the same chromosome.

It is not about forcing or inventing something odd regarding genetic inheritance; it is about the possibility of applying genetic engineering in the future (50 years). It could be acceptable as long as the [conclusions in the EDI Study](#) were correct, there were not collateral problems,

other personal characteristics evolve naturally, and, of course, that people could freely choose with the necessary guarantees.



GENETIC ENGINEERING APPLIED TO INTELLIGENCE - II

There is no necessity to wait for 50 years to achieve improvements with genetic engineering methods if the *EDI Study* is correct about the update of the X chromosome and if the sex chromosome is the carrier of the genetic information linked to reasoning.

The [Darwinout](#) and [Menssalina](#) experiments of quantitative genetics could confirm the mentioned conclusions beyond any reasonable doubt.

Also, both experiments could help to establish the real chromosome responsible for the evolution of intelligence if the X and Y sex [chromosomes](#) were not.

The *preimplantation genetic diagnosis* is successful in the elimination of the genetic inheritance in certain diseases. Another matter is, of course, the cost of this procedure and the collateral effects that currently exist, such as multiple births.

There are some severe intelligence disorders related to the genetic inheritance of certain sicknesses and, at the same time, sometimes it is hard to distinguish between diseases and people's characteristics.

Therefore, it is crucial that any action on this field respect people's **freedom** to choose with the necessary guarantees and with adequate information within the **social freedom** expressed through the political decision of allowing or not

its practical implementation.

The ethical perspective should not interfere with the scientific analysis since there are enough historical examples of denying scientific evidence and achieving an unnecessary delay in the technical development of our current civilization.

The closest case would be [Mendel's Laws](#)!

4.a.3 Identical or monozygotic twin studies

Several studies on intelligence using IQ inheritance among identical twin brothers have shown correlations close to 80%.

The argument of identical or monozygotic twin studies is definitive because it would not make much sense intelligence had a genetic component so high only in some cases.

Another question is why it does not always appear like that. The cause of the apparent inconsistency is [Mendelian genetics](#).

An exciting aspect of [identical twin studies](#) on IQ inheritance is that if the correlation of the twin's IQ with their respective parents were measured, the explained variance would be noticeably smaller than the mentioned percentage due to the genetic combination derived from Mendel's laws.

One of the most well-known authors for his *IQ studies with twin brothers* and his articles is **Arthur Jensen**.

In their book, *The Bell Curve*, **Charles Murray**, and **Richard J. Herrnstein** present a meta-analysis bringing together articles about twin brothers, adopted and standard siblings. It works with different, even contradictory conclusions, some of them with monozygotic and dizygotic or non-identical twins. It is a book on sociology and the consequences of education; it states there is a correlation between genetics and environmental influence that could generate pockets of populations with slower development.

4.a.4. Siblings and dizygotic or non-identical twin studies

In statistical **twin studies** on IQ inheritance, if the observed correlation in one case is 40% and, taking into account Mendelian genetics, the expected is 50% of the real correlation, the degree of heritability will be the ratio $40\% / 50\% = 80\%$

Einsoder



It is necessary to make some theoretical hypotheses to establish the expected correlation. It will not be the same knowing or not the rules for determining the supposed **dominant and recessive gene**. Also, the analysis could be quite complicated if different chromosomes affect the studied characteristic.

Regarding the environmental circumstances; if they were relevant, the resemblance between the IQ in siblings and dizygotic and non-identical twins should be more prominent

than observed. These circumstances are equal within the same **family**, except if there is disproportionate ponderation to the influence of a different math teacher or any other subject. In such a case, the sum of all the parameters would be higher than the unit.

4.a.5. Studies among families: father, mother and one sibling

There is not very much research on intelligence inheritance using the IQ; In fact, there is only one study of this characteristic despite many works affirm to do so, but when asking for the data, it does not exist, and they are purely theoretical.

The initial results on the correlation of the IQ were low. If the calculi had the modification regarding the observed and expected values, the results might have been higher.

The genetic affinity in intelligence between parents and children will be, as a maximum, equal to that of siblings or dizygotic and non-identical twins.

The *EDI Study – Evolution and Design of Intelligence* belongs to this group. If the results are similar in additional studies, the debate over the heritability of intelligence could end, at least in its current scale. At the same time, it is possible that other disputes are becoming more critical.

The obtained correlation was higher than 80% in many cases, reaching 96% and 99% in some of them.

The key to success doubled. On the one hand, the use of the [Conditional Evolution of Life model](#); on the other hand, the EDI Study makes groups of the data set to compensate for variations due to the random component of the Mendelian combination.

With the grouping methodology, it is not necessary to correct

the values observed according to the expected correlation. Therefore, there is the advantage of not needing to be known. Moreover, other variables of small intensity and random distribution that could affect intelligence or its manifestation and measurement will compensate automatically.

The multiple dimensions the different groupings imply have allowed an [analysis of sensitivity](#) to be carried out in respect to the goal function, changes in partial aspects of the model's structure, and the parameters involved with a reasonable guarantee that the results are not due to somewhat random coincidences of the sample information.

4.b) Heredity vs. environment

The following points are in specific groups because it is not easy to separate the arguments in this subject. There is an eternal controversy, both on a personal and political level for philosophical or sociological reasons, either there is no evidence, or not accepted.

The following paragraph, from a study on inheritance in continuous variables, is an example.

Given that there is currently not a definition or an objective measurement of intelligence, it is not reliable to use the methods of quantitative genetics to research the heritability of this characteristic.

Many debates have this common denominator.

4.b.1. Modern materialism

A typical stance refers to the environmental influence on the development of human intelligence; it mentions both the small variations between individuals and in the last thousand years of the human species. Furthermore, they are minimum variances, if we compare them to the differences between the intelligence of diverse species.

This vision of reality is, without a doubt, the greatest obstacle for the acceptance of the Global Cognitive Theory postulates; it deals with a personal attitude impregnated with a kind-hearted egalitarianism and a so-called idealism.

The idea is not necessarily mistaken, but its arguments are not

scientific and are slightly contradictory. There is a philosophical correlation between this idealism and egalitarianism and the famous historical materialism.

It is manifest that human intelligence has developed a lot in the last thousands of years. Also, the significant difference between individuals is readily observable.

It could perhaps be much higher than what is politically desirable or people, in general, would like to hear; therefore, it is almost banned in advance to obtain specific measurements of intelligence slightly less relative than the current intelligence quotients. Correspondingly, whatever the results of the studies are, some of them will have a more significant presence in social media.

At the same time, the connotations of a Nazi author when supporting the idea of intelligence being hereditary spreads out. It would be better not to mix politics with science to maintain a healthy scientific point of view.

As this point does not take the deliberation anywhere, it ends with **Galileo Galilei's** point of view: *Although there is a vast difference between man and other animals, we could say that this abyss is no deeper than what separates some men from others.* He had his reasons!

4.b.2. Theory of natural selection

A certain degree of intelligence must be hereditary; the visible difference between species of animals makes it palpable.

If it were very similar for all members of one species, it would be very complicated to explain the appearance of new species with highly superior abilities.

The [evolution of animal intelligence](#) by random mutations of

DNA chains is **hardly convincing; it would imply** that a personal computer could come from alterations in the molecules in a planet. This argument is another one of the great difficulties in the innate nature of reasoning; it goes against the evolutionary theory of [natural selection](#).

Along these lines, ideas have come up that human intelligence has not changed in the last thousands of years or the lack of using the full potential. Although these ideas only achieve to augment the problem, at some point, intelligence should increase, and logically, it is even more improbable that a more considerable and fast increase will occur by random mutations. However, it is not proving to be problematic; everything eases over time.

Also, the problem would change dimensions because, upon rejecting the random mutations, we would need an alternative model of evolution and Lamarck was not appropriate at the time.

4.b.3. Environment and intelligence

Presumably, environmental conditions should relate to people sharing a living space and other variables.

These interrelations could partially hinder or hide the origin of the capacities studied in multiple regression studies.

The need for specific environmental conditions for human development is another aspect of the present issue. In adverse conditions such as the lack of oxygen during birth, children rose by wolves, alcoholism during pregnancy, meningitis, or other extreme situations, there is no doubt that intellectual potential will be severely affected.

Nonetheless, in the absence of these limitations, the development of the intellectual potential will be slightly less than its maximum. In other words, most of the population in a developed country or a country without grave food shortages will find itself in environmental conditions superior to those corresponding at point X1 of the graph.

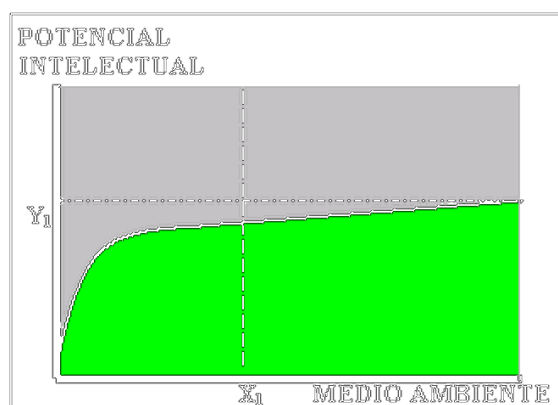
The [Conditional Evolution of Life](#) section includes a different focus to what is generally said as far as the environmental influence on intelligence. IQ and genetic traits develop mainly throughout individuals' lives, and the improvements go to the offspring.

Two stances with a slightly radical metaphor are: those in favor of the environmental influence on intelligence would say that all birds are born with the potential to fly like an eagle, but some remain as ostriches and others as chickens. On the contrary, the *Conditional Evolution of Life* would state that the

birds are born with a structure and that, of course, healthy growth takes place in practically all of them; they perfect the art of flying during their development, and their offspring will maintain the specific structure of their progenitors.

Consequently, both postures are not so contradictory if we think of them as existing in different scales of the analysis of intelligence. The results of the EDI Study allow some approximation between both perspectives.

Intellectual power



4.b.4. Training and IQ testing

An intelligence test is designed to measure specific capacities that hardly increase when doing the test several times. Of course, with intense preparation, the results would be higher; but it would not even be a permanent quality.

A comparison often made to justify the environmental effect on intelligence is how physical exercise changes athletes' performance.

In these instances, the argument is about top-ranking athletes or sports professionals. First, it is not typical for individuals in society to be intelligence professionals like in sports; they seem to earn less. Nevertheless, a large part of the population presumably uses intelligence daily, even though it sometimes may not seem so for some people.

Secondly, aside from exceptions of sports professionals and people who do not exercise at all, the inheritance

fundamentally determines a person's speed in a 100-meter flat race, that is, by the physical constitution of each. Of course, unless there is terrible nutrition, which is not very probable in many possible examples.

It would make sense to acknowledge the trouble of comparing the development of any ability with the achievements of professionals. Can the difference in physical strength be justified bearing in mind educational disparities at an early age without straying away from the scientific method?

On the other hand, maybe alcohol, and some traffic accidents would have a similar effect in both cases.

More information on this subject is in the section on the [inheritance character of intelligence model](#) of *The EDI Study*.

4.c) Cognitive science and intelligence test

4.c.1. Hereditary versus predetermination

It is imperative to stress that having an innate intelligence or any other character does not mean following a hereditary linear ratio or a predetermination of a value. The combination of genes offers a wide array of possibilities.

The pink flowers may have red, pink, or white descendants in the typical examples of [Mendel's laws](#).

The chart relating to the concordance in **identical twins** and just **twin brothers** can help to see the difference.

The comparison between these percentages of concordance not only allows to differentiate between hereditary character and its predetermination correctly but also to deduce information about the number of [chromosomes](#) involved and possible different expressions or characteristics.

Hereditariness degree versus predetermination

GEMELOS		
Carácter	Monocigóticos	Dicigóticos
Grupo sanguíneo	1	0,66
Color ojos	0,99	0,28
Sarampión	0,95	0,87
Esquizofrenia	0,69	0,10
Diabetes	0,65	0,18
Tuberculosis	0,57	0,23
Cáncer de mama	0,06	0,03

For example, the blood group depends on just one chromosome while schizophrenia depends on various, possibly six or seven, although it is difficult to know with just

this information. Similarly, for schizophrenia, the heritability of parents to children is very low even though it has a genetic concordance of 69%

The concordance of intelligence is not on the table because it varies with different studies. Although from the EDI Study, it appears to be on one chromosome.

4.c.2. Multiple functions and facets of intelligence

Another problem is the [definition of intelligence](#). Multiple functions and operative modes configuring the cognitive processes affect the ability of measurement of an intelligence test.

However, the fact that intelligence is a group of elemental faculties does not mean they cannot be hereditary brain functions. Furthermore, if it turns out that one group of them has this characteristic, they all will probably have it.

On the other hand, the lack of a generally accepted definition of intelligence is inconvenient. Even so, a way of avoiding this *byzantine* discussion is to reverse the concept: *the study on the heritability of reasoning will understand it as a group of intellectual faculties measured by a typical intelligence test.*

Afterward, it will appear the analyses of the [results of the EDI Study](#) compared with standard results.

4.c.3. Continuous variable

Intelligence is a continuous variable of nature, which complicates the quantitative research of its heritability.

Typically, studies perform the treatment of continuous variables as a sum of more elemental and discreet ones. In general, the change of continuous variables is not readily compatible with variations by random mutations.

Intelligence can be like a sum of relational functions such as above/below, larger/smaller, general/specific. Although the appearance of a new relationship could be due to accidental causes, the improvement or greater precision in reasoning could turn out to be a little incomprehensible.

4.c.4. Cognitive ability test

There are two big problems when measuring intellectual abilities. The first comes from the fact that the display of these brain functions depends on the time of the day.

Tiredness, moods, and other various factors can significantly affect their expression from one day to the next or between the beginning and end of the same day.

The second one, each measurement uses a specific test, and the results can vary according to whether the individual has done a similar ability test in the past, the individual's personality or cultural affinity. However, if the design is adequate, this aspect should be minor.

In the quantitative data used from the longitudinal *Young Adulthood study* for the statistical analysis included in the *EDI Study*, the [correlations between the different measurements](#) of the same children of intellectual abilities are very low. The maximum is 33% even though they refer to the same people.

A simple conclusion would be to think that the brain

functions of intelligence are not stable throughout life and that they highly fluctuate with the environment. However, some experts believe that intellectual abilities are incredibly durable throughout life, especially from 6 years of age on.

Common language, as an expression of the collective unconscious, clearly shows that intelligence is a fixed quality while referring to permanent characteristics in phrases such as *that person is brilliant or knowledgeable*. Well, at least in Spanish, this aspect is visible.

4.d) Social and technical issues

4.d.1. Shortage of statistical studies with adequate IQ data

The papers with a large sample are scarce because the fieldwork including this type of variables tends to work with identical twins, twin brothers or adoption programs, and do not include the two progenitors.

Apart from the EDI Study, if there were another one, it would be nice to have access to its *raw data*.

Regardless of sociological topics, the required data is quite costly. For instance, the research needs a good sample design, volunteers to take the test, and specialized personnel to perform the IQ test.

4.d.2. Access to the quantitative data source

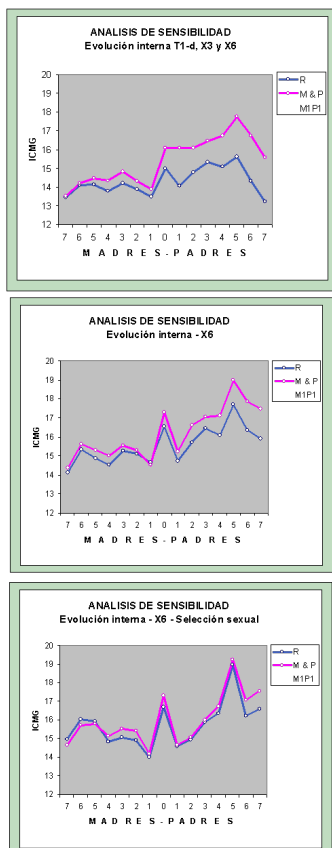
To find and access the [original quantitative data source](#) to accomplish the EDI Study was the most complicated step of the whole work.

Despite the small magnitude of the analyzed sample, the generation of variables by different groupings and criteria of the available values has allowed for an excellent model sensitivity. This characteristic is one of the model's strong points; even with the vulnerability of the researched correlations, it is significant that some determination

coefficients are close to the unit and thousands of checks give a high level of consistency.

In defense of the small sample of quantitative data, we would like to say that, asking for statistical data on intelligence quotients (IQ) of families, we have been virtually traveling for more than one year to numerous worlds of professionals, national and international organizations dedicated to the study of intelligence, public organisms, universities, Internet newsgroups, and international essays on twins. We even turned over the search to a psychometric company, but there were no results.

The EDI Study



In the end, a search performed by the Google server's paid service found four different sites. We had entered three of them before and did not find the information. Fortunately, the fourth gave its fruits, although with some difficulty. At least we obtained a sample of quantitative data, even though it was small.

We imagine the personal info and the social and political implications hinder access to the statistical data, or even it does not exist. It would not be the first time an article says it contains IQ raw data of families and, when we tried to find it, we discovered there was not the anticipated data.

Consequently, it looks like the authors of most of the thousands of *statistical research articles* published on this subject probably did not have access to the quantitative data source and limited themselves to

commenting on the results published by other works and theoretical justifications of their point of views.

4.d.3. Modern computer technology

Analytical research with [sensitivity analysis](#) of multiple correlation coefficients obtained by linear regression requires a great deal of knowledge of statistical techniques.

The analysis of the correlations of variables with computer models of regression by ordinary least squares is available for quite some time.

Nonetheless, computer capacity has multiplied in recent years spectacularly. It has been essential to the results achieved in the *EDI Study*.

It is worth pointing out that each time we reorganize the quantitative data, the Excel math worksheet generates more than 10,000 random numbers, hundreds of variables, more than 100,000 coefficients of determination of linear regression for ordinary least squares of the different variations of the model, and presents 200 graphs with 16,000 values, of course, in color. It used to take 3 to 7 seconds.

5. The metaphor of the semaphore

Despite all the previous comments, it is possible that the concept of intelligence remains confused by its multiple meanings.

Consequently, the example of the relationship between the working of our brain and the world of automobiles can help to understand that there are many expressions of intelligence. The goal is not to impose a single criterion but to look for parallels to differentiate the concepts with precision and simplicity.

Analyzing the concept of a car can verify the degree of its complexity and possible variations. Surely, any system of vital impulse would be worthwhile, but that of automobiles is very graphic and known by all.

This metaphor has two main objectives. On the one hand, present a simple comparison of the many meanings that the word intelligence can have and, on the other, understand how that diversity makes the debate about its innate or environmental nature endless.

5.a) Concept and parts of an automobile

A car is different from a train, a truck, a ship, or an airplane. That is, its meaning is more complicated than the purely literal "something that moves" and, although we all recognize what a car is, its definition is not simple. Similarly, intelligence is not memory, creativity, mathematical or musical ability, or other intellectual abilities.

An additional step will be the comparison between different models and brands; In short, the goodness or measure of the capacity and effectiveness of a car.

■ Relational automobile

A solution for the definition of a car is to resort to all its parts; known its elements, could be specified concerning them.

The engine, the wheels, the brakes, the windows are part of his concept; well, the first three, yes, but windows are not necessary!

Although the set of parts of an automobile is essential and helps to comprehend its characteristics does not seem to be very useful for a generic definition, much less for an estimate of the goodness, measurement, or assessment of its capacity.

It is enough to indicate that

Car



the brakes fulfill a critical technical function, but by themselves, they cannot perform the typical operation of the cars, nor are they exclusive to them.

Moreover, even workshops, garages, parking lots, streets, and roads would be part of the relational world of the automobile in a broad sense.

■ **Conditional automobile**

The sought-after concept will be more precise if a specific subset of the parts of the relational car is associated with some operating conditions; for example, that can allow people or things to move from one place to another and with their means of propulsion.

The different operating modes of the same subset of parts would give different conditional cars.

Now it will be possible to establish goodness indicators such as how long it takes to go from one city to another. However, it will be necessary to bear in mind the number of passengers, the state and preparation of the driver, whether it is day or night, or whether it rains or not. There are many conditions associated with the goodness of an automobile.

■ **Multiple automobiles**

There are differences such as engine power, number of seats, car size, boot, all-terrain, five-wheel drive, or snow chains. Also, various external conditions, such as curves and lanes of the road.

Indeed, there will be vehicles prepared for specific conditions and very different from each other; so, their comparison is arduous.

An additional and relevant feature will be to incorporate a high degree of security for passengers.

5.b) The driver and technology of the automobile

In the metaphor of the semaphore, the driver could represent the will of the individual, since it has its quality and influences the result of the activity of the vehicle.

Also, the driver will be responsible for the maintenance of the vehicle, study the route and decide on some of the conditions of a journey; Now, to know its effect or influence on the effectiveness of the car, quality indicators will have to specify what is the goodness of a car and how to measure and compare the info.

After the last chapters, it is easier to understand one of the reasons for the controversy about the heritability of intelligence and the influence of the environment.

If intelligence would mean the time it takes a car to go from one specific city to another; it will depend in no small extent on the type of road and curves, the weather conditions, whether it is day or night or the driver. These environmental factors are more important than the power of the engine.

On the contrary, if intelligence would be like the goodness of the car in any route and meteorological conditions with a regular driver, the power of the engine will be a useful reference, and a small set of quality indicators related to the factory design –genetic inheritance– can be a significant index.

Of course, the other factors count, and faulty maintenance can cause the car to crash, but usually, that will not happen with minimal maintenance.

Another exciting aspect of this metaphor is that many

elements of a car correlate from the technological point of view despite fulfilling independent functions.

The subject of training is exciting; a driver can learn the curves of a mountain road and substantially improve the time needed for a transfer. However, this does not mean that it is a better driver, nor that the car is more powerful than before, nor that if two years pass without doing the route or the road changes again, the advantages obtained with training, will maintain.

On the contrary: "A good driver will always be a good drive."

Likewise, "A good car will always be a good car."

Finally, if there are not the means to know the technical characteristics of a car, when estimating them based on the time spent on a the route, many errors will be committed –or the variance of the estimator will be extensive– due to the number of factors influencing the results of a particular path with a specific driver.

Note that the mentioned factors cannot be readily isolated either because each of them, in turn, has multiple elements. For example, the same person may be tired, happy, in a hurry or, quite the opposite.

5.c) Goodness indicators

To find a reference of the general goodness of a car in the realization of any function and be able to compare with each other, even if it is not very accurate, it will be necessary to use measures of its most relevant characteristics.

A good representation of a car can be its price, but it depends on the market and includes aspects such as "celebrity or movie cars," "old cars," brand and advertising effect, unique accessories or taxes.

The power of the engine will be one of the best because it is independent of external conditions and closely related to the price, with the average speed, safety, and with the technology of the car.

The previous indicators plus consumption would have higher accuracy. Note that it is also strongly correlated with technology.

This type of amalgamated information could be the "g" factor of cars. Although it was not an indicator of perfect quality, it would be very comfortable; it would allow simple comparisons understood by everybody. Well, not everyone, there would always be people who denied its usefulness.

* * *



When **M^a José** finished the book,
Globus said to **Goblin**:

–M^a José must be very intelligent,
because she’s almost never wrong. –

Goblin answered:

–I agree, and *she only talks about what she understands!* –



©

MOLWICK