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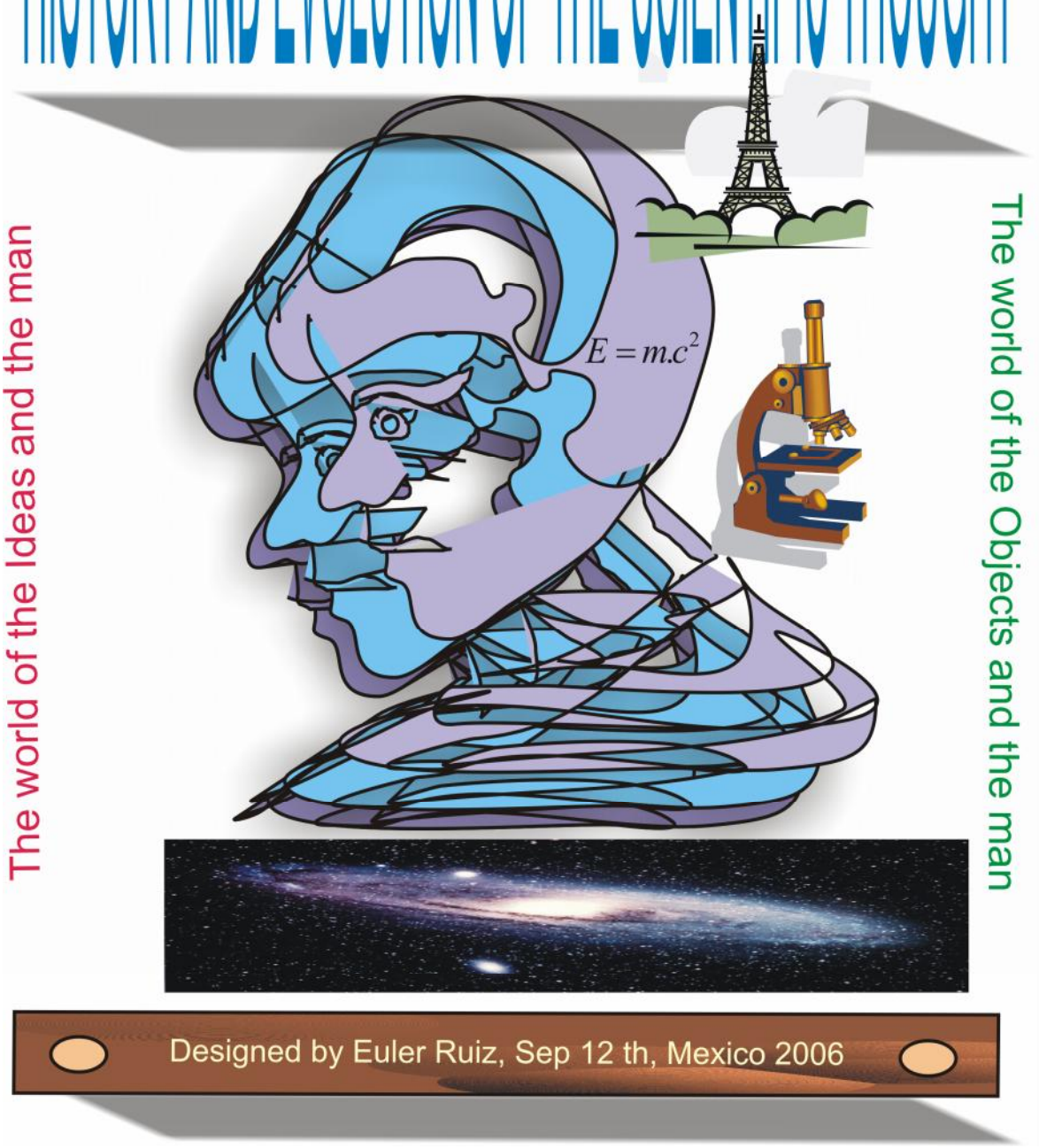
HISTORY AND EVOLUTION OF THE SCIENTIFIC THOUGHT



Thanks

To my mother and my brothers
for allowing me, sharing
the life between them.

Dedicated to these human beings that exist shared with me; the sleep of wanting to turn and to transform the thoughts actually. Across the searching to find and reach of the truth. Of what owes to be conscious all the time, since it implies a big effort and sacrifice, and especially dedication without limits. Nevertheless the biggest satisfaction is to understand, the laws that they govern the Nature, the society and the aspects that influence the attitudes of the human beings.

To the humanity, for this opportunity; although passenger and mayfly, of being a part of this beautiful and wonderful trip; which can be described as a quantum sleep, which is carried out in a quantum moment inside a space and limited time.

For all those for that, they have looked and work so hard for the virtue of being researches, since the above mentioned scientific spirit, it is not content to do the things; but it dares to be understood also and make understandable what it does.

RAMON RUIZ.

Culiacan, Sinaloa, Mexico, on September 12, 2006.

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P R E F A C E

From the antiquity, the human being has worried about transmitting his ***experiences, his skills, his myths, his credence, his desires, and wishes.***

Once man appears on the Planet earth, it faces and realizes that one exists without end of problems and obstacles; which it is resolving in an intuitive and gradual way, with great difficulty due to his scarce one or little experience of the events that him were arising and presenting him to him.

More nevertheless, similar raisin the time is invented its own hardware, which come to be an extension of his hands or of his both top and low extremities.

The natural phenomena and the needs that present him to him force it to try to give some response as a natural reaction product of the external and internal stimuli of which it turns out to be fastened.

Little by little he is realizing that it possesses certain virtues and completely different (cognitive) characteristics that the low animals. And it is like that, since the awakening of the conscience begins, being allowed him to realize of certain events that were presenting him to him with certain period of recurrence. But it was across thinking, learning, observing and relating that it began to fix the information that it was obtaining of his daily activities, and this way he was constructing his thought from the experience and the challenges that every day was to his step.

In agreement, with the previous thing it is possible to say that, the history and evolution of the scientific thought is the result of big sacrifices and dedication of generations that of one or another form

they have contributed and impelled the development and evolution of the humanity.

Some persons, they have to wonder: how and of what way does he contribute the development of the scientific thought in explaining and describing the processes that are a part of the natural and social phenomena?

The Greek HERODOTO, who lived in the V Th century B.C., is thought the father of the history. He travelled round the whole Mediterranean, and then he wrote a titled work History, in which it counted what he had seen.

Some historians as Herodoto, have given themselves the task of transmitting us and of putting at the disposal of the humanity, the events of his time, where it is possible to appreciate like every culture it strained in leaving something for the posterity as: constructions that are erected forming big monuments, colossal works where it appreciates the multiple forms of the human thought and the creativity.

According to Aristotle (384-322 to. of C.), all the alive beings also have the aptitude to feel (they perceive and have emotions) the world of his environment and to move in the nature. More nevertheless, the human beings have also the aptitude to think or to reason, or, in other words, of to arrange his sensations in several groups and classes. The human being has feelings, emotions, and the aptitude to move as the animals, but also a capacity, which only has the human being, and is that of thinking rationally and emotionally; to be or acquiring a level or state of conscience. Which allows him and helps to understand in a conscious way all the processes to which he turns out to be submitted during his interaction in the society and in the world.

The origin of the universe, the solar system, and the life of the plants and animals that are a part of the Planet earth have been some of the questions that the man has brought with it from generation to generation. It is possible to say that, from the year 1760 until 2006, they are almost 246 years in which gradually one has come gestating and developing the scientific and technological thought.

Nevertheless, there even stays a lot of work that to realize. It is necessary to take in account that; if the man perishes or is destroyed, then also the thought perishes; if the man transforms also then also the nature and the society will be able to manage to transform.

The human being constructs the culture, and the culture the transforms to him, it is suitable to reflect up to where it wants to come and which are the general targets of the goals of the human being; since the scientific and technological knowledge is infinite, if the nature is infinite in his multiple forms and movements of the changes of the matter then the object of study of the phenomena becomes infinite.

It is important that, ***the researcher*** ***across the scientific knowledge as the only viable and sure way to investigate, to understand, to analyze and to describe the human nature, and the processes that appear in the nature and in the society***, encourages and strengthens it so that the future generations are provided with a cognitive instrument that should guarantee them to describe and to understand the reality of the sensitive world.

It is like that, like the material present that I put at his disposal tries to transmit and of present in a simple and clear way ***the history and evolution of the scientific thought***, like a set of knowledge that arise after the myth, superstition and religion; whose knowledge has served as base and foundation for the construction of the science.

Finally it is possible to formulate the following interrogations:

1. What is the impact in the society, in the daily life or in the culture in general and in the entire world, the use and the development of the scientific and technological thought?

2. Which is the intention of the Basic and applied Science, as well as of the Technology in the life of being a human being and in the Society?

3. Which is the advantage of the man of science, on the ordinary person, with regard to the awakening of the conscience?

4. How does the man of science can, to help to promote the cognitive top instruments of man?

5. Will the scientist be able any day, to transform to the ordinary consciences, across the scientific and technological knowledge?

6. Will the scientist be able any day to manage in a future, to discover and to understand the origin of the man, across the scientific and technological knowledge?

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INTRODUCTION

From the HUMAN BRAIN there comes any **feeling, thought, emotion, memory, desire, language or aptitude to learn, to reason and to investigate**. From this organ the creativity and the imagination grows, he and the sensory organs are the bridge between the physical world of the objects and the world of the Ideas or Representations of the man; that across the knowledge of the phenomena manages to understand the laws that govern in the Nature and in the Society. And it is like that, that with the help of the science and the technology the man, can transform the resources that are in the environment for the sake of the Humanity.

The human being must be seen and studied as a totality, as everything. Since the human being is not a cosmic accident, but a culminating phase of all the natural order, with the peculiar and important function that to realize. Only he can illuminate to the nature with the light of the understanding and direct consciously his life and his activities inside a voluntary harmony with this order, since only he, of all the visible beings, possesses the faculty of rational comprehension, for weak and fragile that is, of this cosmic harmony.

HISTORICAL PRECEDENTS

On having analyzed the historical origins of a big diversity of scientific, technical, social and artistic disciplines, it is established that these had a rudimentary practice since the man appeared on the Earth.

The same happens with the origin of the SCIENCE, since one affirms that the Acts of thinking are universal and so ancient as the man; and that due to his physical limitations, the prehistoric men had the need to gather together and to cooperate between yes for being able to reach, in a joint way, certain targets with major efficiency and economy of action and resources.

The activities of the prehistoric man took as an essential target satisfying his needs related to the Survival in a way of dangers, tensions, discomfort, etc. Meanwhile a man was devoting himself to achieve his ends for yes same, realized Acts of intuitive thought; when it was acting as a whole, inside the group rudimentary aspects of intuitive thoughts were happening as a whole, we support in the experience of previous activities.

The hunting for animals to make use of his meat as food and the skin as garment performed the principal activities of which during a lot of time the prehistoric men realized and which it serves as undeniable indication of a form of Primitive Organization and of the transmission experiences in the groups. To realize such activity in group needed a Plan of Action to achieve the target with major facility and minor risks for the safety of the individuals, since to hunt wild animals was a dangerous adventure.

At first the Plan of Action was consisting of scaring to the animals throwing stones, expressing screams, etc., to direct them to an abyss or pitfalls previously constructed for the attainment of the target.

The methods were evolving in the measurement in which they were using his Intelligence to invent weapon (mallet, spear, and later the arch and the arrow), like instruments to improve the ways of realizing his activities of fighter, were sustained in the observation and the needs of his environment; but this was achieved thanks to the experience and the human reasoning.

Everything previous needed from the Human Cooperation, where we can identify a common target of group, a rudimentary division of the work, and for logical deduction, to certain persons who were exercising the leadership on others.

1.1.-ORIGINS OF THE KNOWLEDGE

From remote times, the man was already worrying for the fundamental questions of the reality that they were affecting in a special way to his existence: ***the origin, the nature, the history and the purpose of the beings and, between these, of the man himself.***

As response that was straining for giving to these questions did not perform rational order – as the philosophy will do it later-, but of magic and mythical - religious nature, it constructed one to know previously to the philosophy which the philosophers usually call " to know prephilosophically ".

Knowing prephilosophically understands, then, the deepest and universal expositions of the man, expositions that very much later (properly in the VI th century B.C.) the philosophy recaptures and tries to answer of rational and systematical form.

Since it has distinguished itself, knowing prephilosophically worries, consequently, for knowing and explaining, of magic and mythical - religious form, the origin, the nature, the history and the purpose of the beings.

Of magic form because in epochs of knowing prephilosophically the man it makes use of the magic to know, to dominate and to explain the partial reality or whole of the phenomena that happen in the nature.

With the term magic – of the Greek Magike Tecne: the art of the magic-, it was designated originally "the divinatory art of the priests mazdeos" of the zoroastrismo, in Persia.

He magic is of oriental origin and it spread in Occident during the period Greco-Roman, lasted of more or less secret form along the Middle age to return to the light with the Renaissance, epoch in which he was conceived as part of the philosophy that “allows the man to work the nature and to dominate it”. And it was like that, as this way the magicians, a meda tribe or priestly Persian caste, they were devoting themselves to the astronomy and to the astrology; that's why, they were had “as managers of the supernatural forces”.

The magic was of that time and it has kept on being a way of knowledge and mastery of the entire reality.

His myth – of the Greek myths: word, public speech, history-, faithful to his sense original, means any history regarding a real fact belonging to the origins, and repeated in the worship or in the history of the world and of the man. The fact becomes present in the words of the narrator since, in other words, “the myth is a history of the time primitive, had for real, which explains and bases the phenomena of the environment, of the history, of the society and of the human life”.

Now then, the myth lives and re-lives through his force in the polytheistic religion, which in his religious ceremonies brings the events gone on to the present in the words of the one that he narrates, of that he sings the events spent as explanation of the present reality.

This way, also the myth and the religion are a form of knowledge, since history announces us the finished reality, world, man, and to the same divinity, which they present in the history of both, since it happened in case of Mexico, Mesopotamia, Egypt and Greece.

The myth, then, knows in his level and explains, to his way, the reality that it makes constantly present in the words of the narrator.

1.2.-The Thought and his Factors

What means to think?

Thinking is an activity that we realize in a natural and spontaneous way, every moment, every day, and all the human beings of the whole world during our ephemeral stay and passenger in this planet earth.

Perhaps some of them wonder: “What is to think?”, or: “Why do we think?” he seems to us to know it perfectly; but if we are forced to answer we feel confused, faltering, and finish with confessing our ignorance.

Factors of the thought

- Thinking Subject.
- Psychic Process of thinking.
- Thought-out Object
- Expression of the thought-out thing.

1.3.-The processes of the Human Thought

The thought is defined as the mental derivation of mental elements (thought) from the perceptions and as the manipulation and the combination of these thoughts. To the thought in general he is named sometimes cognition. To the processes of the thought there are called they, sometimes, cognitive processes, and to the thoughts it is called them cognitions (of the Latin cogito, that means “fodder “; wherefrom it comes also "cogitar").

he term to "think" includes mental tidy and untied activities, and describes the cognitions that take place during the judgment, the

election, the resolution of problems, the originality, the creativity, the fantasy and the sleep.

They are the cognitive processes those that distinguish in a more clear way the man of the animals; the top thought provides the man of advantages for the survival that they have parallel, since to solve problems with great advance and to save abysses (with the thought) long before coming to them. The French philosopher Blase Pascal came to the conclusion that the cognition was the divine gift of the Creator of that the eternal dignity of the man was basing only on his aptitude to weigh. Pascal wrote that: "The man is only a cane that he thinks, the cane of more fragile nature. He dies of a simple jollification, of a simple drop of water. But although the universe was conspiring to squash it, the man would keep on being nobler than what it makes it fall down, since it is known that he dies and the universe does not know anything about the victory that it obtains on the man".

3.1. The psychologists are interested in the thought for several reasons:

- The rules of the thought "without errors", he allows to understand the perturbations motivacionales and emotional of the cognition.
- The experiments about the thought look for skills for the resolution of problems and, often, they discover better methods.
- The logic clarifies the scientific method.
- The investigations you continue about the thought that they study, this cognitive process that little recognizes so and that bases every important progress of the arts and the sciences. The investigation tries to discover the creative latent talent.
- The thought is accompanied by neurophysiologic phenomena that reveal preeminent properties of the nervous system.

- The human thought is compared with the animal "thought", which allows to extract unsuspected conclusions about the development and the evolution of the man and the animals.
- The computers have simulated to the thought. The investigation of the thought allows to do thin designs of computers.
- The thought is fundamental for the intelligence, and the investigation of the thought favors the improvement of the tests of intelligence.
- The thought and, especially, the fantasy are the foundation of the test projective that evaluate the personality.
- The cognitive deviation distinguishes to the pathological personalities of the normal ones.

It is this material named ***history and evolution of the scientific thought*** studies the ideas and the concepts, the affiliation of the elements of the thought, the inductive and deductive logic, the productive thought (the judgment, the comparison and the resolution of problems), the novel thought (the originality and the creativity), the fantastic thought (the fantasy and the sleep), the activity neuromuscular and the cortical that they accompany on the thought, the development of the processes of the thought in the individual, and the apparent cognition of the animals and the machines.

1.3.2. Elements and functioning of the thought

Next there will be studied the simple ideas, like units of thought. James Mill wrote that the perceptions that we have by means of the senses, exist only for the presence of the object, and they disappear when it is not present. It is known that it forms of our constitution the fact that, when our perceptions disappear, for the absence of his objects, there is something that remains … We designate to this trace, to this copy of the sensation, which remains after it eliminates the perception (sensopercepción), with the name of idea (mental representation that

generates the human brain, in the individual). The word "Idea or representation" does not express anything any more than the simple fact, which is indisputable …

This way, we have two classes of mental phenomena: one, which exists when the object of the sense is present; other, which exists after the object of the sense has stopped being present. The first class of phenomena called it "Perceptions "; another "Idea or mental Representation".

In the XIX Th century previous perceptions appeared to the scrutiny. The Ideas can designate to the perceptions of any sense; even the visual ones (think about the white snow with the closed eyes), the auditory ones (think about the noisy thunder while a few stoppers have positions in the ears) and the gustatory ones (think about the herring salted with the empty mouth). For this mental production of ideas, some time ago that the language has assimilated the word ideation and his adjective ideativo, that James Mill proposed.

The ideas can be mental images (almost you copy of the perceptions) or mental symbols (substitutes without images of the perceptions).

The persons possess clearly different faculties to evoke mental images; someone of them can avert lived images or symbols; others, moderate images or symbols, and others cannot avert any image, but only symbols.

This was the surprising discovery of sir Francis Galton, an English anthropologist of last century. Galton, in one of the first statistical psychophysical studies, examined the ideas used by the scientists and the schoolboys.

Galton said to them: "Think about the table of his breakfast, since it was when they sat down to her this morning. Is it the dark or quite clear image? Is it his brightness comparable to the real scene? Are all the objects really defined at the same time, or there is some moment in which the place more clearly definite is more limited than in the real scene? Are there very precise and natural the colours of the china, the toasts, the crust of bread, the mustard, the meat, the parsley or any another thing that has been in the table?

To discover the wide scale of the mental imagination, Galton arranged the responses of hundred adult questioned males, and these are the common appointments in descending order:

1. Brilliant, different, never blurry.
2. So brilliant as in the real scene.
3. On having thought about the table of the breakfast of this morning, all the objects of my mental image are as brilliant as in the real scene.
4. With the eye of my mind I can see the table of my breakfast or an equally well-known thing, so well in all his details as l to vein if the reality is before me.
5. Quite clear and with a lighting comparable to that of the real scene, especially when I evoke it for the first time. Devoted to become tenuous when him one does not pay attention specially.
6. The image of the table of my breakfast is quite clear, definite well; also the part where I feel and his surroundings are definite well.
7. I can evoke any alone object or any group of objects, but not the whole table simultaneously. Generally, the things are definite well. Our table is long; in my mind I can walk the look for the table; but not the whole table simultaneously.
8. Dark and indistinct, anyway, I can do a relation of the table of the breakfast of this morning; sliced herrings, roast chickens, bacon, rolls, jam of quite clear colour, plates of green tenuous colour

with pink flowers raised, the garments of the girls, etc. Also I can say where all the plates were and where the persons sat down.

Galton spent his life looking individuals who had an extraordinarily vivid imagination; one, for example, was evoking images of combs and was counting his teeth. Nevertheless, the most expensive treasure of Galton was Flinders Petrie, an archaeologist whose technical works about Egypt keep on being classic; Petrie towards mathematical routine calculations with an imaginary rule of calculation, was preparing the rule and was reading the responses mentally.

Therefore, we can say that, the investigations confirm that the cognitive productiveness does not depend necessarily on the mental images; often intellectual eminences use symbols exclusively.

During more than 60 years, the psychologists have studied the children eidetic (of the Greek eidetic, that it means " relatively to the images "), who possess images eidetic as persistent that appear immediately after the visual stimuli and remain great more time than the posimágenes, prints or common denials. The recent investigations reveal that about 8 % of the children is eidetic; this gift disappears after the adolescence begins.

The eidetic describe with extraordinary detail, since it is possible to notice in this taken extract of a typical protocol: "I see the woman with the sunshade in his hand. There is a type that runs in his car, his right foot is in the air … The man of the right hand has lost his cigar, which has fallen down to the soil next to him … "

Ralph Norman Heber and his companions inform the following finds in his investigations with children eidetic in North American.

- The children eidetic present themselves with equal frequency in all the ages between the seven and thirteen years (more or less). The eidetic males and women present themselves with equal frequency.
- The imagination eidetic is not related to the intelligence.
- The eidetic preserve his aptitude to have images eidetic as during the whole infancy.
- The undue attention that lends during the scrutiny disturbs to the images eidetic as; for example, the attentive eidetic that verbalizing the content of the picture stimulus during the exhibition, images cannot form eidetic as. This experimental observation is the opposite of what is waited, and it is not understood.
- The eidetic have little control on the images eidetic as. They can neither change the size of the image her nor withdraw of the surface where there appeared the picture stimulus (a child said that "it was falling down).

1.3.3. Concepts (derivative ideas)

In the XVIII Th century, Leonhard Euler, Swiss mathematician who was living in Germany, discovered patient and deliberately, a frightening capacity of the human mind; he wrote the following thing: "The senses represent objects that exist externally and all the simple ideas refer to them. But with these simple ideas, the mind forms many other ideas that they already do not represent to the objects that exist really".

For example, when I look at the Full moon, I form the idea of roundness; but I cannot affirm that the roundness exists for yes same. The Moon is round, but the roundness does not exist separated from the Moon … here the mind exercises a new faculty, which is called a power of abstraction; this happens when the mind gives his attention only to a quality or quantity, as if unit was already not to the object. These ideas

that are acquired by abstraction, are named notions, to distinguish them from the simple ideas that they represent to the objects that exist truly … there is a type of additional notions that form equally by means of the abstraction, and that provide to the mind the most important material.

When I think about a pear tree, a cherry tree, an apple tree, an oak, a fir, etc., all these simple ideas are different. Nevertheless, I notice that there are several things that they have in common, as, for example, the trunk, the branches and the roots. To the symbol on which all these qualities concentrate I call it a tree. So that the idea of tree, which I have formed this way, is a generic notion and understands the resemblances of the pear tree, the cherry tree and, in general, of all the trees that exist or they will exist.

The knowledge intellectual

Is the appropriation of the objects that us cannot be presented by the senses, to which they cannot stimulate. These objects are the ways of life of the things and his relations, what sound, what they cost, why and why they are, etc., etc.

The successful knowledge and that can serve us to acquire new knowledge, constitute ours to know, which is, therefore, the possession or incorporation of our life of knowledge ready to be updated. It is usually called to know potential, to separate it from the effective use of this knowledge that name to know current. Also it receives also the name of knowing the completion of the psychic process in which something is known.

The knowledge and, therefore, knowing, is achieved by means of the production of certain experiences, which set receives the name of thinking. East reveals us as a psychic event of peculiar nature: it turns

on objects, which it treats of apprehender whole or partially, refers to them, them lie. Let's remember what in us happens, when we hear a word or a phrase that we understand; we give them a sense: this one to give sense and acts of thinking are this sense. They them are also the expression of our words, what we lie as they and our mental. For him we feel especially active, it is one to go towards here and there, one always to strain, with a point of view, one continued pointing, it prays in this direction, prays in other one.

According to Aristotle (384-322 to. of C.), all the alive beings also have the aptitude to feel (they perceive and have emotions) the world of his environment and to move in the nature. But more nevertheless, the human beings have in addition to the aptitude to think or to reason, or, in other words, of to arrange his sensations in several groups and classes. The human being has feelings, emotions, and the aptitude to move as the animals, but also a capacity, which only has the human being, and is that of thinking rationally and emotionally; to be or acquiring a level or state of conscience. Which allows him and helps to understand in a conscious way all the processes to which he turns out to be submitted during his interaction in the society and in the world.

1.4.-*Some problems of the Knowledge*

What is the knowledge?

It is a process in which there are linked narrowly the operations and mental, subjective procedures, with the operations and forms of activities objectives, practical, applied to the objects. The knowledge that arises as product of this process, takes the stamp (trace) of the interrelated aspects.

It is the appropriation of present objects to our conscience. This appropriation peculiarìsima allows us to act on the world, to direct our

conduct and to give a sense to our life. The possession of the successful knowledge constitutes ours to know, which constantly our effort to acquire new knowledge and it serves as plot in which the new procurement are woven.

1.5. THE PHILOSOPHICAL PROBLEMS AND HIS CHARACTERISTICS

The philosophy has arisen thanks to the human curiosity, as a beginning of the knowledge to describe, to analyze and to explain the phenomena and puzzlers that appear in the nature, in the individual and in the society.

He tries to look and of exhibit the response to worrying questions about the truth, the being, the existence authenticates, the Absolute one, the transcendence of the spirit, the good and evil, it is to do philosophy. The tendency to investigate, to know the last sense of the things, has existed in the man along the whole history. In the western world, the above mentioned tendency has excelled from the VI Th century B.C., in Greece. The history of the philosophy is the trace that has left this investigative tendency of the man, it is the series of aspects and solutions that the philosophers have discovered, in his investigations about the reality.

The problems regarding the knowledge

It is a question of determining the validity of the knowledge. In what conditions is it real? When do we reach really the truth? Up to where they reach and our cognitive faculties limit themselves?

The importance of this problem results from the moment in that offer themselves several solutions to the same question. The fact that each one has his own response, and, sometimes, completely opposite to that of others, it does not stop being worrying (the dialectical law of the unit

be remembered and it fights of the opposite ones), for that it tries to study in depth the reality.

Why is no the only response to the problems of the soul, the freedom, God, the good and evil? The same History of the Philosophy, with his chain of systems and solutions, is a motive of worry for the philosophical spirit.

There have been five solutions to the problem of the knowledge: the skepticism, the empiricism, the rationalism, the idealism, the realism. The skepticism denies validity to all knowledge; the best thing is doubting. The Empiricism only grants cognitive capacity to the sensitive faculties; or rather, knowledge is valid only when it is supported in some sensitive experience. The rationalism, on the contrary, claims that the senses cheat, and that the need and the universality of the scientific knowledge only are obtained by means of the intellectual faculties. The Idealism, for his{your} part, he denies that we could go so far as to know to the things independent from the subject, finally, it supports that yes we have valid knowledge reached by the senses and the intelligence, and that they reach to the same reality, which is independent from the subject that he knows.

Tendencies in the scientific investigation

With the intention of understanding the controversy that as regards the comprehension of the social sciences has been generated; there has adapted herself the taxomonía of Burell and Morgan (in Of Cock 1997). According to these authors, the principal currents of thought in the social sciences can be studied doing a map of any theory or coherent investigation along two dimensions: the dimension Objetive/Subjetic and the Regulatory / revolutionary dimension.

Dimension Objetive/Subjetic

For effects of our investigation, we assume that the first dimension refers to the constant opposition between two radical tendencies, the objectivists and subjectivists.

The objectivists, who look for the explanation of the phenomena giving to the information excessive objectivity. His interest centres on the generation of universal laws by means of the search of causes and effects; these tendencies, they have been named positivist tendencies, every time only it costs the positive fact (that one that it is possible to demonstrate). For these, the world does not depend on the subjects, since, on having been governed by laws, it is possible to control the sociocultural phenomenon.

He subjectivists claim a comprehension of the social phenomenon, granting to subjective the principal source of the information; before generating universal laws, there look the description and someone for the comprehension of particular stages.

The social world depends on the subjects and it is them who construct it and the vivencial; therefore, to know it, it is not enough to generate explanations objectives on him; it is not possible to consider that the social world should be governed by universal laws, since the realities are for the subjects meanwhile every group can live through a different reality. In this sense a social reality cannot squared in a Cartesian plane and percentage table, since the society is a dynamic jumble of significant and important that constitutes the above mentioned reality.

The battle that is lived between these two tendencies is expressed by Mardones, on having thought that two traditions in the philosophy of the scientific method are the tradition Aristotelian and the tradition galileana. First, worried by the comprehension; how, and his teleological

explanation from the essence of "giving account of the facts". Second, worried for why and why, does it occur of the ideas of Galileo, Plato and Bacon, and does it try the explanation from the causes and consequences of the phenomena. Since his interest is the general law that governs the phenomenon, it returns, according to the author, in mechanism and functionalist.

Hammersley and Atkinson, admit likewise, that two paradigms have existed in conflict in the social sciences, on the one hand the positivism (dimension Objetivista) that privileges the quantitative proper methods of the natural science; and on the other hand the naturalism (dimension Subjectivist), which defends the description objective from the phenomenon from a natural way.

Referring to the same controversy, Taylor and Bogdan, they admit two theoretical principal perspectives in the social sciences: the positivism, which affirms that the social scientist must consider the facts or social phenomena to be things that they influence day pupil the persons; and the Phenomenology, which wants to understand the social phenomena from another perspective of the actor. Likewise, Of the Slope, it assumes this controversy from the consideration of qualitative and quantitative methods of social investigation.

This battle between ***the objectivism*** and ***the subjectivism*** has been based from the paradigmatic considerations of the philosophy considered by Briones, as ***empiricism, rationalism, idealism, materialism and existentialism.***

The empiricism, which he considers to be the knowledge as product of the sensitive experiences and has his consolidation in the experiment. The contemporary expression of the empiricism is in the logical positivism.

The rationalism, for whom the knowledge is a product of the reason, inferring consequently the deduction from the discovery of the causes of the phenomena. Any effect, it has his cause; therefore, on having found her, it is possible to dominate his effect. The deductive expression of the rationalism is in the search of laws and his generalization, and is assumed by the positivism, as a contemporary expression.

The idealism, which defines all knowledge as a product of the ideas; for his drives, the world does not exist out of the mind, since what exists is a subjective representation of him. This paradigm has evolved from the most orthodox positions as the idealistic subjectivism, up to the positions that recognize the existence of the world expressed across subjective categories, which, they are independent to all sensory experience, case of the transcendental idealism. It is considered that the maximum contemporary expression of the idealism is the Phenomenology.

The materialism, for this paradigm, everything what exists belongs or depends on the matter, the ideas, for example, is only a consequence of the organization of the matter. His expressions have been achieved from the tendencies functionalists and structuralisms.

For the functionalists, the knowledge does not have to be faced to the facts or consequences, but to the organic function that implies being indivisible in his units, and must be studied by means of methods targets and procedures probabilísticos. A cause cannot turn independently from the consequence, since it corresponds to a structure of function; the stimulus, for example, cannot turn independently from the response, was saying Dewey (quoted by Abbagnano).

The tendencies structuralisms, they rest on the theories of the gestalt or theories configuracionistas of the form. These tendencies, they arise as

a response to the atomism of the theories associationism, assuming that the reality does not consist for the sum of the parts, but for the entire or structural form. Before speaking about facts, his drives speak about configuration, forms and fields taken as entire structure. Koler and Koffka were his founders.

The expressions of the materialism are diverse; between them, the historical materialism is considered to be the dialectical materialism, in scientific materialism and the physical materialism and fisicalismo.
The realism, he thinks the existence of the world and the phenomena independent from the mind. According to his drives the world exists this way it has not been thought. In this paradigm different tendencies have appeared; from those that assume the knowledge as an exact representation of the exterior world (ingenuous realism), up to those who think that this reality is necessary to submit it to review (critical Realism).

The second dimension, regulatory / revolutionary, express the constant tension between the entire radicalism of the tendencies objectives and subjective and the possibility of the same tendencies of being achieving more flexible positions.

Tendency Objectivist:

A constant tension between the radical thing and the regulatory thing

The classic positivism

In this dimension, recognized like positivist for all the consulted authors, there are located those investigations that present the following characteristics: (To see Hammersley and Atkinson, Mardones and Briones).

1. The natural science is conceited in terms of the logic of the experiment. It has been constituted in base of the natural sciences and rests fundamentally on the empiricism.
2. The search of universal laws rested on the deductive method and the use of the polls as instruments to generalize, from the rationalist vision of the world.
3. It uses the language of the neutral observation, where he looks for the standardization of skills of observation, to grant the validity of the information, according to perspectives assumed from the realism.
4. Since his characteristic is to be subject to the cross-check and falsación of hypothesis, his target is to verify the theory with the empirical facts. For the previous thing, the used instruments are pre-established and rigid, validated by means of actions previous, which guarantee his universal use.
5. It uses the causal explanation or "Erklaren" as characteristic of the scientific rationalist explanation.
6. His interest centres on the mastery of the positivist knowledge, which from A. Comte, places the emphasis on the prophecy of the phenomena.

The positivism, it has been recognized for big theoretical, achieving his biggest developments from the XVI Th century until the first decades of the XX Th. Between the first drives it is possible to consider Copérnico, Francisco Bacon in 1600, August Comte in 1840, who introduces the term of positivism and Emile Durkheim in 1938, those who were his first representatives. The positivists look for the facts or causes of the social phenomena with independence of the subjective states of the individuals (To see Taylor and Bogdan and Mardones).

The positivism, from a social point of view, was assumed, according to Sandoval, Taylor and Bogdan, and Restrepo, for Emile Durkheim on having proposed, in his book on the rules of the sociological method

that: The social scientist must consider the facts or social phenomena to be things that they influence day pupil the persons, and claim with it to introduce the requests of the technical rationalism and the sensitive experience of the empiricism to the social studies. Therefore, Durkheim introduced the experimental method used in the natural sciences, which search to find the causes of the problems to exercise his domain over the phenomenon. This approach rests basically on the translation of the behaviour of a phenomenon or object on Cartesian quadrants and mathematical scales.

Since ***the classic positivism*** is the expression of ***the paradigms empiricist, rationalists and realists of the philosophy***, he does not know the influence of the idealism in the knowledge, since he considers it to be a speculation.

The regulatory dimension of the objectivism

In the XX Th century, the interventions of the logic introduced to the positivism, they generated the so-called logical positivism, like one of the forms of declaration of the neopositivism. It is a new version of the positivism, Schlick was impelled by Russel, Wittgestein I, y, Carnal, Neurath, Frank, between different, as big representatives of the circle of Vienna (to see Mardones, 1991, 33; Rosental, 1997, 371, and Briones, 1996b, 39).

The authentic existence of the man

At present there has taken heyday the Existentialism (Sören Kierkergaard), whose central topic is the elucidation of the characteristics of the authentic existence of the man. It is a question of the most human problem that could affect each one; on his resolution there depends the keynote of the life continuing.

Is the freedom the essential thing in the human life? Are they, perhaps, the moral values (ethics) the most important thing? Of what does the authenticity consist? How must the interrelation and human communication be carried out? How does the human level of authentic existence degrade itself?

Such are the principal questions that are tried to solve in the above mentioned philosophical current, and this is alone a sample of a plot of the scientific knowledge. Which has his base in the humanism, since across the scientific knowledge, he tries to find a solution, and of put it at the disposal of the humanity, for the best benefit of the emotional and intellectual development of the individual and of the society.

The problem of the constitution and evolution of the Universe

The problem of the time and of the space, of the evolution and of the essence of the matter, they constitute one of the central topics in the works and investigations of the physicist modern. Generally they are the scientists those who have devoted himself to penetrate philosophically in the above mentioned matters. The important thing is to clarify that, at the moment when a person tries to base the knowledge as soon as you fell, in your own branch, in this moment it is doing Philosophy. The Cosmology is the philosophical branch that treats the above mentioned matters, and she was one of the first ones that were cultivated between the Greeks.

The problems of the Logic, the Ethics and the Aesthetics

The typical topic of the Logic is the order of the concepts. It is up to her to pass about the mental structures, the correct processes in the reason, and the laws of any structured well thought, as that of the definitions, the divisions, the categorizations, the conversion of intentions, etc.

To the Ethics it corresponds to treat the questions about the good and the evil. His importance derives from the role governing that the above mentioned science acquires in the mind of the one who investigates and comes it to based solutions. Together with this problem they connect that of the obligation in harmony with the freedom, that of the categories of values, that of the virtues, that of the autonomy in interrelation with the heteronomy, etc.

The philosophy is one to know fully humanly, to the effect that it penetrates exactly in the topics and questions that affect intimately the personal life of every man. This way for example, the Philosophy is the one that treats the existential, such topics as the freedom, the love, the interpersonal relations, the loyalty, the obligation, the good, the evil, the supreme end and the happiness. This way, at the same time that it fills the requisites of a science as for the rigor and order that of her is demanded, this way also it fills the proper topics of a properly humanistic study. The philosophy is, since, a balanced synthesis of knowing human being.

Characteristics of the philosophical problems, as for his resolution:

a) The Philosophy, as for the resolution of his problems, it continues an eminently rational method. Which does not mean that the empirical information is rejected, so, on the contrary, these constitute, precisely, the material on which the intelligence deepens and finds his cause or reason. The philosophical method is, since, a balanced use of sensitive experience and reason, it is experimental - rational.
b) And finally, the Philosophy is disinterested, as soon as that the proper knowledge of his dissertation, problems and solutions provide, for yes same, a full satisfaction to the intellect that contemplates them. The Philosophy constitutes, for yes same, a valuable object, to which it stretches the intelligence as full

purpose. To obtain it, to contemplate it and to satiate itself in her is the same thing. Which is not an obstacle so that, later, in a practical attitude, it is possible to obtain applications, uses and derivations, is to base other sciences, is to apply and to arrange the proper life.

DIFFERENCES BETWEEN PHYLOSOPHY AND SCIENCES

With the concept of Philosophy already explained previously, we can give now a clearer idea of her if we compare it with knowing scientist as at present it is understood, that is to say with the experimental or particular sciences. As soon as the Philosophy was distinguished with regard to the experimental sciences, we will do a comparison of the solutions that give both levels of knowing opposite to the same topic to elucidate, for example, opposite to the man, to the world, to the number, to the human conduct, or opposite to the beauty or the happiness.

Difference between next causes and last causes

The philosophy studies the last causes (or supreme), whereas the experimental sciences study next causes. For example, on having studied the movement, the Physics receives the topic by means of the forces, rubbings, weight and balances, which they affect to the bodies. These are the next causes, and they differ because they always remain in the plane of the sensitive thing and of the experimentable. On the other hand, the Philosophy examines two beginning that explain everything to occur into his essential form, to know, the act and the potency. These are supreme causes, and they do not remain already in the sensitive level; only they are received in the intelligible level.

In other words, the philosopher tries to come up to the essence of the studied object, and his explanation is in vertical sense, since it leaves

the sensitive and experimental level. On the other hand, the scientist prepares explanations in horizontal sense, inside an experimental level. The fundamental difference of both types of knowing resides, since in his different formal object.

The totality and the bias of the material object

Only the Philosophy tries to include the totality of the things; his material object is wider that it could happen. On the other hand, other sciences are particular, that is to say, they study a part or certain sector, between all the entities.

Experimental method and Rational Method

The experimental sciences underline the need of the sensitive experience, and this way it is in effect, so the laws of the nature are not deduced of certain beginning, but they have to be observed in a sensitive way, even using the experimentation.

On his part the Philosophy, even if it could not do without the sensitive experience, insists on the Rational Method and in the use of the understanding, thanks to which it is possible to receive the essences, the first beginning and the supreme causes that they base to the Universe.

Difference between Epísteme and Sofia

Another way of receiving the difference between two types of knowing, is in what Aristotle called Epísteme and Sofia.

Epísteme is the science, but understood, not as a set of truths, but as an intellectual demonstrative habit. The subject that possesses this quality has facility to demonstrate with rigor and accuracy his asserts, can base his dissertation, or, gives the causes of those that it supports.

For his {your} part, Sofia is the knowledge that there loves the philosopher (knife-edges: that it loves; Sofia: knowledge), and it consists of a conjunction of episteme and nous. The Philosophy, therefore, includes also the epísteme or demonstrative habit, but he adds something more: the nous.

Nous is the intuitive habit of the first beginning; it is the mental quality (intellectual virtue, there says Aristotle) as which a subject has facility to go back in an intuitive way until the first beginning that serve as base to any demonstration.

Therefore, Sofia, as soon as it contains epísteme, takes part of the scientific rigor, and as soon as it contains nous, enters until the beginning. Is here the resemblance and the difference between science and Philosophy. The philosopher is, since, a scientist who enters until the causes and the first beginning.

The grades of abstraction

Aristotle (384-322 B.C.) and Saint Thomas of Equinox (1224-1274) they explained the triple graduation of the formal abstraction.

In the first grade, which corresponds to the Physicist, one does without the individual matter, and is studied to the mobile entity.
In the second grade one does without the sensitive matter, and there is studied to the entity quantum (the quantity). In this level the Mathematics is.
Finally, in the third grade one does without any matter, and is studied to the entity as soon as such, in the widest possible horizon, which is called transcendental, and which includes to everything all that exists. This third grade of formal abstraction is the one that corresponds to the Metaphysics, nucleus of the whole Philosophy.

Consequently the particular sciences belong at a level categorial (distinguished), and only now to sit that the Philosophy, from the moment in which it goes until the first beginning, is a governing science; this for two reasons:

The Philosophy applies to all other sciences, because it bases the beginning of them. At the moment when a scientist analyzes the beginning of his own science, ipso facto is doing philosophical work.

For example: the Mathematics deal with the relations between quantities; but at the moment when a mathematician checks and criticizes the bases of his certainty and the beginning that serve him to base his reasons, it penetrates the limit of his field and touches that of the Logic or of the Theory of the Knowledge, that are typical branches of the Philosophy. Exactly this is what has happened in the XIX Th and XX Th centuries, when the mathematicians managed to clarify dissertations that now contain in the branch so-called mathematical Logic, and that must understand each other as an enlargement of the Logic Aristotelian.

On the other hand, the Philosophy also is a governing science, because it gives norms that govern the human conduct, basing on the analysis of the nature of the man and of his requirements, with which it derives the general lines of an authentically human existence.

Other parallel sciences

Finally, it is possible to mention other branches of the Philosophy that have his corresponding parallelism in some experimental science. For example: the Philosophy of the Mathematics studies the essence of the quantities, the essentials of his certainty, etc., whereas the Mathematician studies the relations between quantities.

The Rational psychology and the Experimental Psychology

The first one is a philosophical science, and the person studies the topic of the soul, of his faculties (intelligence and will), the immortality, the spirituality, the freedom. On the other hand, the experimental Psychology studies preferably the observable phenomena and his explanations, in horizontal sense; for example, the stimulus and the corresponding reaction. It uses "test", statistics, experiments done in big number of persons. This way it is as there have arisen laws, like that of Weber (that it relates the sensation and the stimulus), and also the interesting study on the unconscious one, from the theory of the psychoanalysis of Freud.

The philosophical Aesthetics treat of the topic of the essence of the art and of the beauty. His method is rational. On the other hand, a scientific - experimental Aesthetics would treat the same topics, but in the plane of the experimentable; his methods would be done by means of " tests ", statistics, remarks in the history and in the current civilization.

Heráclito, the philosopher of occurring, and of the tension of the opposite ones inside the unit. " Everything changes " (panta laughed), it is the phrase that assumes to him, as symbol of his dissertation, according to which there is nothing in rest. Nobody gets two times in the same river. What he wants to say is that quite this in constant change or movement it continued, from the quantity to the quality, everything dies and is renewed, everything is a cause and effect, and later everything what is an effect happens to be a cause, all the forms of movement of the matter are in constant change. Therefore, in the nature and in the society dynamic processes are realized.

THE MOVEMENT OF THE MATTER AND THE SENSORY ORGANS

But does the movement of the matter exist or is it only an illusion of the senses?

Parmenides criticizes Heráclito, and it is opposed radically to his dissertation on occurring. And he affirms that, the movement is qualified as an illusion of the senses.

Xenon of Elea is a disciple of Parménides and it has become famous for his abstractions or arguments against the movement. The most famous of his abstractions is that of Achilles and the Turtle:

> The two compete in a career, and Achilles transfers an advantage in distance to the turtle; from certain moment, the two start running, and when Achilles comes to the place A, where the turtle was, this one already advanced other little, up to the point B; when, again, Achilles comes to the point B, the turtle advanced, in the same space of time, another distance, for small that is, and came to the point C; and this way successively, the turtle would never be reached by Achilles; then the movement does not exist.

Xenon's intention, with argumentations of this style, is to make to see that, rationally, the movement cannot be explained, but he drives to paradoxical conclusions. This way he adheres to the dissertation of the immobile being, of his teacher Parménides.

Nevertheless, even in the rational plane, the shortcoming of such argumentation consists of dividing the spaces, both in distance and in time, in accordance with a decreasing proportion. If the considered spaces of time were equal, there would no be place for this so absurd conclusion.

Nowadays, we know that, the movement is the way of existence of the matter. The English and French materialists were already exhibiting this idea, considering the movement to be an internal property of the matter. But the materialists of the past were lacking a dialectical finished conception of the movement which qualitative diversity they were reducing often to mechanical processes (theory mechanicist). For Hegel (1770-1831), who was recognizing the universal movement in the world, the substance in movement turns out to be, in end of accounts, the absolute, ideal beginning, and not the proper matter?

The founders of the dialectical materialism (K. Marx and F. Engels), basing on the advances of the science of his time, showed that the matter is active and that the source of his activity, of his movement, is in her same. They showed that the matter and the movement are inseparable, that no type of matter can exist without being in movement. Therefore, the movement is the way of existence of the matter. The matter is the base of the whole plurality of phenomena of the nature and of the society because it is linked organically to the movement.

Therefore, without the movement, the world might not exist in general.

The materialist mechanicist were considering the movement to be a simple displacement of the bodies in the space and the time, which was leading to comprising the matter as a mechanical sum of particles of substance – atoms, etc.,-identical, of the same quality and indivisible. For them, the variety of forms and classes of the movement of the matter was coming down to the mechanical displacement of the physical bodies.

In contrast to the materialist mechanicist, Marx and Engels revealed the variety of forms of movement of the matter. The movement is not only a change of place; it is also the caloric - molecular movement and the

light, the electrical and magnetic tension, the disintegration and the chemical combination, the biological and, life finally, the most complex and varied form of the movement: the social life.

Therefore, the concept of movement, from the point of view of the dialectical materialism, understands all the changes that take place in the nature and in the society. "The movement applied to the matter, is a change in general".

The movement includes all the changes that produce to them in the world target. His concept is universal in the dialectical materialism and it has, for it, big importance of beginning.

The concept of change is wider than that of development. The change understands, in addition to the progressive development, the regressive movement and the simple displacement in the space, in which there cannot be progress I do not even return.

The knowledge presents two aspects:

1. That of the activity in exercises (knowing).
2. That of result of this activity, which forms the content of ours to know (knowledge). A few times it takes place as soon as the object is present; others it demands a more or less long and complicated work and the position of acts of very diverse character: I have here why one can speak about functions or facts of knowledge.

Classes of knowledge

Traditionally have distinguished in the study of the knowledge two spheres: that of ***the sensitive knowledge and that of the intellectual knowledge.***

The knowledge sensible

Is characterized by his aspect purely apprehensive, by the concrete individuality of his objects and by his physiological necessary manner of acting. The objects can be present to the conscience for yes same (immediate apprehension) or by means of representative (mediate apprehension).

On the other hand, the objects, placed they all in the way in which we live, can belong to the physical way or to the psychic (social) way constituting his apprehension our external experience, or can be the same events of our life (subjective way), our experiences, which appropriation forms the internal experience.

Forms of the Sensitive Knowledge

The principal forms of the sensitive knowledge are: the sensation, the perception, this way own like of the sensitive objects and of the neighbour, the imagination and the memory. In all of them it is necessary to distinguish the aspects of function and content.

The perception. - Is the immediate apprehension of something, in whose reality we believe.

For the way of making to him the objects present to the conscience and for the diversity of these, the perception can be sensitive, interns and of the neighbour.

The perception sensible. - Is the form of cognitive conscience of the objects to her presents with intervention of the senses. It is an extremely complex function, with which we answer to the performance on our body of the beings of the physical way. Nevertheless, into the analysis of the perceptive function, as explanation of his complexity, a

more elementary act is already admitted and irreducible to simpler other: the sensation, which content serves as base on having perceived.

What is the sensation?

It is the pure and simple conscience of something, produced in us on having worked on our body the physical beings. It forms the base of all our sensitive perceptions, and it is accompanied and as wrapped or penetrated by multiple acts.

His aspects. - The aspects of the sensation are two: that of being an act of conscience and that of content of this act. In the sensation of sound, a thing is feeling the sound and other one the felt sound.

The typical of the first aspect (sensatio) the being is elementary, pure and simple conscience: the pure apprehension of the subject opposite to the pure colour, the pure sound that stimulates him.

The second aspect (sensatum) differs for being:

a) The effect corresponding to the performance of the object that it causes and the response of the subject to the performance;

b) Something elementary, concrete, relatively independent, intuitive and consistent. That is to say, that the "green" contained of my sensation, is not anything of mine not of the object that it has caused, but the resultant one of both factors; it neither is joined inseparably with such a my act nor has to go necessarily accompanied of certain contents; it is, precisely, this "green" that now I feel, which cannot make a mistake with no other; it presents certain plastic, alive way of life, and such a consistency that allows the one that could reappear before the conscience in different conclusions, as in the representation.

The conditions of the sensation. - A being of the physical world (a house, a clock, a caramel) it acts on a part of the human body. Such a performance produces an excitement in the sensitive nerves, which gone over to a nervous center (certain region of the brain), causes the conscious fact of the sensation, like response of the subject.

Being, since, three the elements that in the sensation intervene (a physical being, the organism of the subject and his complex psychic life), the sensation is submitted to a triple conditioned reactions; physical, physiological and psychic. As the sensation arises at the end of the physiological process and favor to him, the conditions determined by the first two elements are conditions previous.

The physical conditions: the stimulus. - The beings of the physical way, as soon as they are causes of the sensation, are called stimuli, and can be defined as "those facts that produce in the organism a nervous excitement that will be accompanied of conscience".

In relation to the organism the stimuli can split into day pupils or interns, according to whom they are exterior or interior to him. Nevertheless, the external stimulus must transform in intern, so that it could cause the sensation.

The external stimuli can be chemical (in the olfactory sensations) and physicists; these, in turn, mechanics (movements), optical, acoustic, thermal and electrical. The interns are or peripheral or central.

The conditions physiological. - Apart from the dispositions momentary and individual, due to the entire corporal economy, influence powerfully and decisively in the sensation not only the structure of the organic parts put in game, but also his functional

changes. The organism intervenes in the sensation with the senses, the nerves and the nervous centers.

How or from where is it decided what the individual feels and thinks?

According to Hume, it is not the reason the one that he decides what we say or what do; they are our feelings. The rationalist thought had thought that it is inherent in the reason of the man being able to distinguish between the good and evil.

For example, if someone decides to help someone needed from help, they are his feelings (desire, interest, intention, condescension, compassion, altruism, etc.), and it is not the reason, which it starts. Since if it does not give him desire to help (this is the action - will, the final force that impels to the individual to achieve his goal or target, which turns into a process).

Also in this case they are his feelings those that they decide. It is neither sensible nor senseless not to help anybody who needs help, but it can be vile.

Hume adds that, the whole world has certain feeling towards the good of the others. We have the aptitude to show compassion. But all this has not anything in common with the human reason.

Therefore, we cannot prove with the reason how we must act. To act responsibly is not equivalent to sharpen the reason, but to sharpen the feelings that one has towards the others. It does not go against the reason preferring the destruction of the entire world to having a scrape in a finger, said Hume.

The senses or sensory organs are determined part of our body, on which they operate the stimuli. Some of them (the eye, the ear)

usually present a particular structure; and they all lodge elements of a peculiar impressive textile; the nervous textile.

The nervous - The nervous system has, as last element, the neuron, real anatomical unit. This is a cell that is known of a nucleus, of several branched extensions that they radiate of that one, calls dendrites, and of a long ramification, which is the so-called axòn or cylinder - axis. The union of the axons of several cells that form the nervous fibbers that, crossing the whole body, meet in the marrow and in the brain, forming bunches and bundles. A nervous route consists of ordinary of many contiguous neurons that happen. The produced excitement, either in the periphery of the organism, either in a nervous center, it is transmitted of neuron in neuron, causing the nervous current, which or there causes a sensation (current nervous afferent) or produces a muscular contraction in the members (current nervous efferent).

The centers nervous - The elements that they gather in certain interior regions of the organism, forming the nervous centers. His purpose is to be a term and beginning of nervous currents and place of his transformation. They are constituìdos for affiliation of innumerable neurons.

Who wants to know? How can acquaintance be? What can be an acquaintance?

There turns out to be quite strange that the majority of the persons, even those who have never heard speaking about the Scientific Method (or if they have heard it, little might for them matter) want to understand the world that they makes a detour. Really, this need for knowing is present also in the animals; a monkey, or even a rat, sometimes they will happen for multiple problems only to explore a part of his around.

In the persons, the need is strong, even if highly diversified. He studies some to the birds; others enjoy the reading of obituary news. And in addition to other interests, most of the persons likes understanding to other persons (fell like to yes same).

Therefore, the scientific study of the man can seem related to the obvious thing, while he says to us what any world already knows, or that it offers us extreme or erroneous ideas. But we must recognize and remember that not all the valuable knowledge about the people is obvious and that, affectionately, a lot of "obvious" knowledge often is false or trivial. But two preliminary problems must be established first, to knowing: the questions of the existence of the universe and the acquisition of the knowledge.

Types of problems of the Knowledge

Before examining the forms in which we acquire the knowledge and his sources, it is perhaps useful to determine if it is reasonable to accept that we obtain some class of knowledge somehow, and which might be the value of such knowledge, in case it was accepted that such knowledge can be achieved.

The ontological or metaphysical problem, or: “What exists? The basic assumption known about Rene Descartes (1596-1650): " <<Cogito, ergo sum>> I think, and then I exist” one caused of a long problem time stressed by the theology of the Christian Church. How does the "mind" can know the "matter"? Or in other words: How can we go so far as to know anything about the world? Perhaps it is only a fiction of our imagination! The response of Descartes was ingenious and persuasive; it keeps on worrying the philosophers and scientists of nowadays. It be allowed to suppose me, he said Descartes, that nothing there exists in the absolute thing about the

universe, except, the indisputable fact about which I am thinking, here and now, and which, because I am thinking, there must exist an entity that realizes thinking, this is, I. Even more, there must be a part of me that knows and a part (more basic) that it is like everything else, an object of knowledge. But immediately, Discard it was seen before a subsequent problem

What happens if only I exist, and does the rest of the universe exist only in the processes of my thought? Descartes worried deeply with this possibility (that later was called solipsism), because for a religious philosopher who could not doubt the God's existence, doubt the existence of the universe was implying that God might be playing a dirty trick of false representation. It is important to realize that the step of ***"I think, and then I exist"*** to "the universe exists" does not happen logically, happens only if the additional premises are accepted: " God exists and is infinitely good and honest" and "God gives me the perceptions of the world". The sophist Gorgias solved the quandary some 2500 years ago: "Nothing exists. If something existed he might not be an acquaintance. If something should be known it might not be communicated". He was been interested in particularly the logical and theological quandaries, and the worry of the man for the spiritual thing relegated the problem until the XVII Th century.

Then, the logical final conclusion that anything exists, except the mind of the one that it perceives, was still avoided by Discarding, Leibnitz and Berkeley. For them, God comes to the rescue: if it seems that the world is there, this way it must be; paraphrasing to Discarding: God is not a liar of confidence

On having denied the existence of the universe, the solipsism is therefore an atheist and on the contrary; the traditional theism needs from the consideration that the universe is real. (It might argue that the

solipsism is a form of theism that we might call an “autotheism “, which it means “I am the God of my own universe”. But this variant hardly might be considered to be "traditional"). Nowadays, the exact sciences you have exorcized in high grade the last doubt about the existence of the world as a metaphysical insoluble problem. No response can be passed or pushed back.

The problem epistemological: “How do we obtain the knowledge?” A more permanent objection, really of enough actuality, arises from the second and third affirmations of Gorgias: how, of being possible, can it ago be known and communicated? The first one of these two problems constitutes the base of the system of Immanuel Kant (1724-1804). We can know, he argued, only the impressions of the things, but do not sew themselves, even more, these impressions they are perceived only virtually on having been arranged to categorizations in accordance with certain innate criteria of the mind preceptor. For using empirical methods in order beyond the "simple" appearances, to the “things themselves”, any attempt will only be able to end in a speculation without end and esoteric: Although Kant wanted to provide rigorous guidelines for the acquisition of knowledge, really it provided an option for the scientist and an excuse for the metaphysician. The scientist had to leave his effort to know the world or to restate his doubts to admit that it might never but to know more than appearances.

On the other hand, the metaphysician and the theologian could ignore comfortably the relations established empirically on having accepted that these relations really say nothing about the things themselves, only of his projections. Even without doubting the existence of the world, it is possible to see how the distinction of Kant of the perceived phenomena opposite to the "real" things had to lead to the following logical step: the perceptions and the remarks are intimate personal events, which by definition cannot be shared directly. (The perception of someone more, therefore, turns into a projection that can be known by

me, only as a projection of “the second order”). Certain logical problems, for example, where the proper mind of one is observant or observed, or both, it must not worry us here.

We will examine on the other hand, the argument, since we cannot know anything of what is "there", of that everything what we can know is learned on having observed and to analyze our own perceptions or those innate ideas that can exist in us.

Supposing that we know nothing about the "real" world, only what we observe inside us, it is nevertheless indisputable that the majority of us, most of the time, we act as if we were hoping that these perceptions and remarks should happen in a quite tidy form, or even more, to use the worrying but precise terms, as if our perceptions were giving in the end the illusion of causality and determinism. When we are wrong on having derived the consequences of this "allusion", a very disagreeable perception can turn out to be like the one that is caused by the perception of an assumption and not necessarily existing, truck that happens on us. Certainly that the fact that the perceptions happen in this tidy form does not prove the "real" existence of the truck. Also we can in exceptional situations, choose cultivating the perceptions independently of his arranging, since it happens in a frenzy or under the influence of a psychedelic drug.

But the difference between the above mentioned is precisely experiences and those who happen arranged in our life in wake what leads us to taking a decision. We can never know if our private perceptions are entirely the product of a deceitful and supernatural conspirator or if it is that some consistent relation exists between what it is out and what is in our brain. Our alternatives consist of acting as if it was possible to know, or to resign ourselves what is, in effect, ***solipsism***. If we accept the last thing, the following obvious step would be to impose our election on our perceptions and to perceive our universe made by us

ourselves, in accordance with our desires. Very few of us we are capable of making it like that, and those that do it are not seen by the others with equanimity. They have to be seen as if they were experiencing illusions.

Nevertheless, without doing a very rash jump, it might be reasonable, or at least suitably, to accept that the universe exists, that it has, at least in certain grade, order, and that he can, in certain grade, be at least an acquaintance.

Sources of the Knowledge

It is possible to say that, the behaviour faced to the search of the knowledge, is a characteristic of the primitive native so much like of the refined citizen (in fact, of no form it is limited for the man). The motives for the search of the knowledge, they do not need to be the same; they can change from the physical basic needs up to the satisfaction sensation of the domain.

Some of the forms in which the knowledge has been looked by the man seem to us entertaining nowadays; the entrails of the animals are already not a method generally accepted to predict the future (nevertheless, the reading of the coffee and of the tarot is still very popular).

But the magic, like a way of acquiring the knowledge, always neither needs to be spectacular in his procedures, nor can say to him with certainty that such knowledge should always be necessarily erroneous.

The characteristic that defines it, and that distinguishes it from the scientific procedures, consists of the fact that accepts the existence of a relation between the events, which is purely speculative and does not hold to the critical cross-check. Also the form in which it accepts that an

event affects other has no base in the natural laws; it forms in that we say, it is supposed that the stars affect to the human destination, does not specify.

We must not fall down in the error of ridiculing the attempts of any cultures in his early stages of development to acquire the mastery of his ambience by means of the occasional use of the magic. Some aspects of the same science developed from the magic, and anyone that are the differences, he shares with the magic the need to know the physical world (in opposition to the metaphysics) and the credence of which the man can be more than a passive thing, disabled to understand, that it is a part of such a world. A more pernicious enough influence is the exercised one by those that they proclaim that they have come to know the nature of the universe on having started thinking about him intensely, or across the inspiration of a supernatural agent. The scientist not necessarily supports that the only valuable knowledge is the empirical one; she can be often a deeply worried person for the spiritual values. But when it thinks about how to discover the functioning of the real, tangible world, it has to, especially, be ready to observe this world, and his inferences must be consistent with the above mentioned observation.

Finally, the arguments appear sometimes saying to us that it is absurd or sinful to study the nature of the man. There are only two possible refutations to these two points of view. The scientist has to, first of all show that his methods increase our knowledge of the man and it must demonstrate that the knowledge is preferable to the ignorance.

The act of the Perception

What is the perception?

The perception is, simply an act. In accordance with an old and ingenuous concept, the nerves lead the images or properties of the object to the brain where different machines register the stimuli proceeding from the exterior.

The perception is the physical act of receiving impressions or sensory (across the organs of the senses), that is to say, of registering the reflection of the light or, to be more exact, the luminous waves, of registering the sonorous waves, of answering with a sensation when there touch the keys that mark " cold ", " heat " or " pain ".

Therefore, the perception is influenced by emotional factors and desires (affiliation of emotional and sentimental factors), and such psychological external determinants as the suggestion or the influence of group (a process of individual stabilization and of social adaptation).

The basic beginning of the perception:

1. Factors of proximity.
2. Factors of Resemblance.
3. Factors of direction and inclusion.

A perception is a result of the interpretation of two stimuli: the figure and the fund, this is in accordance with the theory of the Gestal.

Then we must understand that, the perception is not an outlying phenomenon, but it is determined by external and internal stimuli. Since, the act of perceiving is an act of integration and of synthesis. The

perception is directed by the attention, the interest, the integration and other psychic factors.

THE SYSTEM PERCEPTUAL AND THE SENSITIVE WORLD

What are the faculties of the mind?
What is the constructive sense of the need and the sense that it has BEING KNOWN in the human life?
How does he acquire and across that mechanism HUMAN UNDERSTANDING?
So that it serves the individual the UNDERSTANDING?
How does the human being know and perceives the information of the exterior and of the interior?

The potential possibilities of every person are the most fascinating and interesting of the whole creation.
Ray L. Wilbur

What is the human brain?

"The ancient Greeks were thinking that the mind was in the heart and not in the human brain. They were thinking that since the mind was essential for the human being, it is it should be in the most vital organ of all the organs".

The brain has approximately the size of two placed hands one along with other one or that of a coconut. It weighs about 1.5 kg, it is of soft consistency, of white - greyish colour, composed basically of water in his cells, so-called neurons.

The individual has two minds, one that thinks and reasons (voluntary or rational acts), and other one who feels involuntary or instinctive acts) is a set of impulsive and powerful knowledge.

There are three brains in one, according to Dr. MacLean (1987), and it was demonstrated that the emotions and the stress affect learning and how learning registers in the brain.

The human brain is the big biological center in which the matter transforms in conscience. The brain is the big center in which there take root two forces of conscience and the mind. Two sides of the human brain, ***the right side*** ***where there develops the imagination and the creativity and*** ***the left side*** ***that corresponds to the logical analysis and other intelligence.***

Therefore, the essence of our person or being is our unit of conscience. Inside our brain there happens the biggest miracle of the life that is the power to realize that "I think and exist …"

Inside every human being a universe shuts itself up. Perhaps still much more vast and grand than of out formed by million human beings, biological creatures, planets, stars and galaxies.

The personal universe, that of the conscience. There they lie in accordance with Paul MacLein. The whole evolutionary file of the tripartite brain, the reptile, the mammal and the cerebral neocorteza.

What is the mind and which are his characteristics?
How can we examine our capacity and see that objects are to our scope and which over our comprehension?
How to know the origin, the certainty and the extension of the human knowledge?
How to know the essentials and the grades of credence, of opinion and feeling that can be had with regard to the different objects that refer to our spirit?

What are the faculties of the spirit?

What are the limits of the certainty of our knowledge and the essentials of the opinions that are seen reigning between the men?

The functioning of the human beings in learning and in the daily this life basically determined by the quantity of endogenous neurohormonas that produces our brain and that also it consumes. These chemical substances or endogenous drugs take place inside or in the surface of our brain and are consumed also there; therefore, it is as if we had the whole pharmacy inside us that segregates the indispensable matters for the construction of the knowledge and the thought.

The brain is not only a cash machine register but at the same time that it registers he interprets the sense of the impressions. The act of perception is not like the response of a machine. If he installs to himself several artists to whom they paint the same scenery, each of it gives us a different picture. Every spectator of a movie can speak to us about the different things that he has observed; a piece of music is perceived in a very different way by different listeners; several witnesses of an accident or of an event tell us varied versions. We do not perceive only with an organ but every phenomenon is registered by several and the lightest deviation in each one can give place to considerable changes in every person.

Kant says that, “we see the things not as them they are but since we are we”. The perception can become an interpretation of the unknown thing. The following story exhibits us the idea that a blind person of the sun had:

> A blind man of birth was. He had never seen the sun and was asking how it was to the people whom he it had seen. Someone said to him that the sun has the form of a plate of brass. The blind person struck a plate of brass and listened to his sound. Hence from now on when it heard the sound of a bell he was thinking that it was the sun. Later they said to him that the light of the sun was like that of a sail; the blind person felt a sail and believed that such age the

form of the sun and this way when further on it touched a big sail he thought that it was a question of the sun.

It is deduced of this history that the perception cannot be communicated and his relations are deduced also with the imagination. Of the above mentioned story we can extract the conclusion that the truth is more difficult to see the sun, and when the people do not know her he behaves exactly just as the blind person. What is true for the exterior perceptions also it is for the internal ones; these perceptions are not fixed elements and they have to be understood in his set.

What happens when we look at an object?

The luminous waves reflected by the object come to our eyes and, with certain modifications, impress the retina where they give us an inverted image that is straightened up on having come to the brain, where also it is related to diverse affiliations and memories. This combined image is projected then on the object, which never tears the veil of our perception. We never perceive the exterior world but in reason of ours own.

Therefore, the perception is not completely different from the imagination. Certain grade of fantasy is always projected on the perceptions. We must establish a basic distinction between sensation, that is to say, the reception of the stimulus, and the perception that includes the knowledge of the existence of the object. The perception combines certain number of sensations; for example, the colour, the form, the smell, size and weight, etc.

We must remember that, the exterior reality has some qualities that we can recognize with the reason. These qualities are the mathematical relations, that is to say all that that can measure oneself, as the length, the width and the depth. These quantitative qualities are so clear and

clear for the reason as which the human beings we are a few thinking beings. On the other hand, the qualitative qualities as the colour, the smell and the flavour, are related to our senses and do not describe really the exterior reality.

But the exterior reality is essentially different from the reality of the thought. Rene Descartes (1596-1650)), already had stated that two forms different from reality existed, or two substances. A substance is the thought or "soul ", the different one is the extension or "matter ". The soul only realizes, does not occupy place in the space and by it cannot divide into smaller parts either. The matter, nevertheless, only has extension, occupies place in the space and it can always split into smaller and smaller parts, but it does not realize.

Socrates was sure that only our reason can provide to us sure and real knowledge. We cannot rely about what they say the old books. We cannot even rely about what they say to us our senses.

This way Plato thought, also he thought that only the reason can provide to us sure knowledge. There is a line that goes from Socrates and Plato and that happens for San Agustin before coming to Rene Descartes. All these philosophers were rationalist. They were thinking that the reason is the only sure source of knowledge.

THE IMAGINATION AS MENTAL PROCESS

What is the imagination?

We call imagination to that declaration of our activity which character consists of representing, that is to say, of putting productive acts of images. In the images we distinguish with the content the act, representing, or, producing contents of conscience in whose reality we

do not believe. The formation of the imaginative products they are ruled exclusively by the laws of affiliation and reproduction.

The images are products, real constructions that do not represent real object any; it is the constructive imagination, named also creative or productive. The images represent experiences previously had, reproduce them with major or minor accuracy; it is called a reproductive imagination of that time.

Phases of application of the Memory

1. Reception of the Information across our senses (ear, sight, tact and taste).
2. Association of the Information, this is a golden rule; since in agreement as one manages to find some relation with the previous information, it is possible to be useful appropriately. All the more affiliations let's establish much better we will remember.
3. Conservation or Retention of the Information.
4. Evocation or memory of the information.

Four basic mechanisms of the memory

If we had no memory, in spite of the organs of the senses we would not be, conscious of what we had seen, heard or perceived, because the stimuli happen across us of leaving traces. Due to the function of reception or retention in the brain that we call a memory, we know certain stimuli that we perceive. Not we retain everything; when we go for a street we see thousands of faces, hear innumerable noises, and perceive big number of stimuli. More they happen without leaving to us trace, but we retain the general image of the street, perhaps the most interesting picture of an exhibition or the content of a conversation, this is, which it has called our attention.

One of the basic functions of the memory, that of acquisition or retention, is related to the attention. The acquired material is retained; the treasure of the memory preserves for his later use the knowledge that he is acquiring. The retention of the material (memory) is the base of the third function of the memory, the recognition. Only we can recognize a new stimulus if we have already experienced it in advance and if then it was fixed in our mind (fixation) in such a way that to compare it with the new material leads us to recognizing mechanically to the exterior stimuli. We can reproduce intentionally the material that we have acquired and retained, that is to say, possess the function to evoke the past. The evocation takes place by means of the function of the memory that we call a memory or function to remember.

The machine of memorizing

Four basic functions of the memory; acquisition, retention, recognition and memory, they make to think at first sight about certain analogies with a machine that can preserve certain stimuli as the sounds, retain them on a disc and reproduce them. If the same stimulus reappears, a mechanism puts it in movement.

Up to certain grade, it is possible to support the concept of the memory as mechanism. It has been observed that almost 50 % of the children younger than fourteen years, after seeing a picture during brief time, (from 10 until 40 seconds) is capable of describing it with so many accuracy as if they were still looking at it and, sometimes, they can remember up to the minor details.

To this capacity it has called him “imagination eidetic” or, which is the same, reproductive fantasy. In this case, the memory acts as a mental camera registering the mental photography.

The functions of the memory can be disordered to very advanced age being able to come up to the so-called "senile dementia". Aristotle compares the memory with a slat of wax in that, when it is new and soft, it is possible to write easily, but if it is hard and rigid it does not admit new impressions. The function can be disordered because of cerebral injuries or poisonings, as the chronic alcoholism. In the psychosis called Korsakoff the memory retains, remembers and admits everything happened before the illness, but on the other hand it cannot already receive the recent impressions.

In the cases of cerebral injuries as that they produce the shots of firearm; the patient cannot remember the facts happened before a shock, since it happens in the cranial traumatism. In some cases the memory retains certain memories that are repeated repeatedly, like it happens on a streaky disc.

The harsh mnémico is reinforced by repetitions of the same stimulus, in such form that goes so far as to memorize every stimulus or combination. A combination of meaningless sounds goes so far as to get connected with certain reactions, and this way it happens that when a dog hears the sound combination T-A-K-E it comes to his owner. Both the man and the animal develop “reflexes determined”, with that the memory answers immediately to stimuli to which it is syntonized.

The method of affiliation by partners is used to prove the mechanism of establishing linkage, the memory of a member of the pair when there appears other, the duration of the retention, the rapidity to memorize and the retention of a successive series of stimuli or of outlying examples. The memory is stimulated by the resemblance, ***the contiguity, the proximity, the frequency, the contrast and the intensity.***

The stimulant factors change with the individuals, but the proximity is usually more effective than the frequency and this one more than the intensity.

The active factor of the memory is studied also in experiments of relearning. Any material learned previously and turned, to arranging as for his continuity for the second memorizing, is learned more rapidly than the new material.

The emotions are a disturbing factor for the memory, which tends to try the biggest grade of balance. For example, the negligence depends on a dynamic system of the organism, of a fact that it can disorder.

Four basic phases of the memory: ***acquisition, retention, recognition and memory.***

How is it possible to explain and to describe the relation that exists between the thought and the human existence?

Where do they keep or there are stored the mental representations of the individual as product of the stimulus of the objects or facts of the sensitive world?

What is the grade of reliability or veracity of the mental representations that the individual constructs of the objects or facts of the sensitive world?

2. The Human Conscience

As well as the only solid foundation is the sciences of the man for other sciences, this way the only solid foundation that we could give to the science of the man rests necessarily on the EXPERIENCE and the OBSERVATION. The organ of knowing or of the reason it is the conscience.

It is important to know how it obtains KNOWING or THE KNOWLEDGE for OBSERVATION and EXPERIENCE the man across the CONSCIENCE.

What is the conscience?

It is the organ of knowing; it is a heterogeneous process, inside which figure knowing. THE CONSCIENCE is not always a passive recipient. It arranges and prepares all the sensations and emotions and mental processes that enter little by little her.

THE CONSCIENCE is, according to David Hume a species of theater where the different judgments appear happening some to others; they happen, return, leave and are mixed in an infinity of positions and situations.

HE MAKES AWARE OF ONE HIMSELF means to realize our humour (frames of mind) and also our ideas on the humour (John Mayer). It can be also, an attention to states of conscience more interns that this one provokes neither reaction nor judgment sensibility can be also less calm.

THE CONSCIENCE is an essential feature of everything all that exists {…}, an evidence that shows in his coherence and systematical conformity to the law that exhibit the organic totalities. It is possible to suspect that the MATTER only corresponds at a level of the reality;

another level is that of the conscience and his behavioural declarations that do not exclude his coincidence in the matter, but also it she comes out.

The development of the Conscience as the Nucleus of character

Ausubel has described the psychological fundamental capacities of the conscience as "the aspect of the structure of the ego that it treats as the cognitive - emotive organization of the moral values".

These psychological capacities can be related to the purpose of classifying them. When they are compared with the classification of the affective skills, there are perceived other possibilities of action that the teacher has to promote the socialization. It is clear, for example, that the skills and capacities of high level are necessarily complementary, and the possibility of interdependence exists, therefore, between the lowest levels of both classifications.

About this interdependence, in the figure (), it learns the fact that the process of socialization depends on a development adapted in every successive level.

The following descriptions refer, to the development of the Psychological Fundamental Capacities on which the Conscience is based, emphasize the importance that they have for the education comprising the affective and social skills.

1. The aptitude to foresee consequences. Ausubel suggests that the activity of the conscience presupposes aptitude to foresee disagreeable consequences. It is not important that it is the punishment, the insecurity, the anxiety or the fault; the conscience will not be able to drive towards an inhibitory control

of the conduct if the child cannot project in his imagination the consequences of his acts before realizing them.

Although the aptitude to foresee is fundamental for the development of the conscience, in case of many persons his meaning does not disappear but it remains as one of the most important factors that govern his relations with the others. For example, those pupils who have a limited intelligence or a limited system of values, can be placed in a too complex social situation that prevents them from appreciating the consequences of his acts; very often they are punished for what it is not another thing than the ignorance.

In such cases, the legal maxim of which to ignore the law is not an excuse goes against the professional responsibility.

It is necessary to suppose that the skills of receiving and answering will depend on certain grade of stability in the experience that is had to foresee the consequences.

2. The aptitude to tolerate the frustration. The development of the autocontrol implies the existence of certain compensating force. On one hand, it operates the impulse towards an immediate satisfaction, while in the opposite side there is other that justifies postponing it. The child who wants to preserve the approval of his parents learns to postpone the satisfaction of those pleasant impulses that are opposite to the express desires of his parents.

The aptitude to tolerate the frustration is indispensable for the basic mutuality that must exist in an effective disappointment and a response, or, in the relations between the ego and the rest in those who intervenes the affective skills that need this form of self-discipline.

3. Capacity for internalizar values. This psychological aspect is considered to be the aptitude to assimilate external norms or to create others that, in a case or other they will influence directional internal relatively stable the conduct … The process of Internalización as regards the development of the conscience differs from the Internalización of any other value only in the fact that it takes control of a moral factor.

The Internalización of the values can be carried out in several forms: across the emotional identification with another person (for example, of the child with the mother who proves to be to him a sweetheart): across the adoption of values for utility or expediency; or as result of the rational evaluation or subsequent adoption of the same ones for considering them of profit. It is this situation, the most important variables are the quality of the relations of the ego with the others and the values expressed in the conduct of the persons with whom the individual interacts. And so, the pupil who thinks that the adults in general are hostile limits his access to many sources of values, which happens also with the pupil proceeding from a hearth where both parents lack a system of integrated values.

The ideas, impressions, sensations and subconscious thoughts redeem a very important role in the world of the thought. It is understood now that in any conscious act, there are many things that belong to the region subconscious.

After the mastery of the conscious thing the big region of the subconscious spreads. This region subconscious shuts up many mysteries that stop the attention of the psychologists and other thinkers. It is believed that less than ten per cent of the mental operations of the daily life occur in the big region of the subconscious. What we call the conscious thought, is only the tops of submerged mountains, which mass remains hidden by the waters. We are as a

forest, during a deep night, with a lantern that projects in our contour a small luminous circle surrounded with an extensive ring of half-light after which darkness stays only, there is carried out a work which results are, when it is necessary, got in the luminous circle that we call A CONSCIENCE.

The memory is principally a function of our mind subconscious. Of the subconscious it is the big region where one finds the big store of deposit of the Memory.

From the moment that we receive an impression up to the moment in which this one returns to the field of the conscious thing, the subconscious faculties are in work. We receive and store an impression; where do we store it?
It is not in the conscious region, but we would have her constantly present, but yes in the depths of the store subconscious, mixed with other impressions, and often with so much oversight that is almost impossible to find it again when we need it to us. Is it where this one hid during the years that often pass between the moment of the storage and that of the return of the life? What way do we use when we want to remember an impression? Simply an order that departs from the will and orders to the workpeople of the store subconscious that they find and extract to light the impression kept therefore time.

Conscience cannot be considered to be like synonymous of mind. If we treat the conscience and the mind as having equal extension and separate the idea of the domain subconscious of the intellect, we will not be able to explain where one finds everything else of the mind during a conscious particular state, where there are all the rest articles of the mental choice out of the particular object used in this moment.

The mastery of the conscious thing in an any moment is very limited; to resemblance of when it looks in a microscope or in a telescope, where it

is seen only what it is in the field of the instrument, everything what nonexistent field is out of this one in this moment. The mind is constantly full of ideas, of thoughts, of impressions, etc., of which we are absolutely unconscious while they do not come to the field of the conscience.

One believes that all received impression, any conceived thought, any executed act is registered in some part of the big store subconscious of the mind and that nothing remains absolutely forgotten forever. Many things that many years seem forgotten, they appear again in the field of the conscience when they are called by some affiliation of ideas, some desire, some need, and some effort.

A lot of mental impressions, they will not appear again in the field of the conscience, because there is no need; nevertheless, they will remain hidden in the depth of the mind, waiting the hour of being used, exactly as the light and the heat future they remain hidden in the coal layers that are discovered in the surface of the ground, waiting the moment to be put in use.

In any moment, we are only conscious of a very small part of what is stored in the mind. Many things that seem forgotten, and that in many occasions we have wanted to remember, return in a given moment, in appearance involuntarily, in the field of the conscience, as for his own movement.

We divide of that the conscience:

- Is unconscious,
- Realizes,
- Has a Corporal base,
- Has a Social base,
- Has a Mental Base,

· Has a base of Psyche (soul),
· Has a base of Spirit (reality that the matter comes out).

The psychology deals with the study of the human conscience and with his behavioural declarations.

What means the concept "psychology ", and when it appeared?

It is said that, psyche derives the term " psychology " from the Greek words, soul, and logos, science; then the psychology is the science of the soul. This term was already in the scientific literature in the X Th century (in addition to the term "neumatología", that was used by major frequency), but it was introduced officially in the second half of the XVIII Th century, when the psychology separated as a branch of knowing independently about the knowledge.

The attempts of knowing the human psyche date back to immemorial times. The first systematical exhibition of psychological facts was made by Aristotle (384-322 B.C.) the one who already generalized the experience of the knowledge of the spiritual piled up life of the men then. It titled his agreement of the soul. Much later, the doctor and naturalist Roman Claudio Galeano, who lived approximately in the years 130-200 of our age, I try to demonstrate with experiments in animals that the brain is the organ of the sensations and of the thought.

Physician believed that the spiritual processes were taking place for a psychic pneuma (pneuma in Greek it means spirit) who circulates along the nerves, that these transmit the sensations from the organs of the senses to the brain, and from this one the orders go out towards the motive organs.

- but it is known that neither the man nor the animals have soul.

How can be a science of what does not exist?

We have to accept that, there cannot be a science of what does not exist. But the denominations of the sciences formed historically: his content changes way continues, and it lacks sense to change the denominations. Then it would be necessary to give a new denomination to many sciences. The content of the physics is only a part of the natural history, although his name comes from the Greek word Physis, nature.

Of course, the soul does not exist in his idealistic and religious conception. But there exist psychic processes, like conscience, sensation, perception, conception, thought, emotions and will.

Since also Aristotle described in his agreement, in major grade, psychic real phenomena, and not the abstract soul, about which he started speaking later the Christianity, prevaricating to a great extent the concepts of Aristotle.

The idealists always tried and they try to interpret the psyches as a declaration of certain spiritual primary beginning, independent from the matter. The dialectical materialism affirms that the psyche is the secondary thing, since it owes his origin to the matter; and that the being, the matter and the nature are the primary thing.

The history of the psychology is the history of the struggle of the materialism against the idealism, and of his victory on this one. Anyone are in the details the concepts of the world, ultimately all of them can split into two groups. If a person believes that the surrounding world exists only in his conscience, it is idealistic. If he believes that the sensitive world, the nature and the being exist out and independently of his conscience, it is materialistic. In a word, for the materialist the primary thing the being is; for the idealist, the conscience.

Many errors have been committed in the comprehension of the psychic phenomena. This way, Baruch Espinosa (1632-1677), philosopher, atheist and Dutch materialist, he was thinking the thought an eternal attribute of the matter. From middle of last century there acquired wide diffusion the psychophysical parallelism, according to which the psychic and physiological phenomena develop in independent form, in parallel one to other. From beginning of our century, in the North American psychology there spread the behaviourisms (of English behaviour, conduct; 1925); this reactionary tendency denies the conscience and the activity conscience of the man.

The time, the conscience and I

The author can say that, in this case I am not merely I, but also I, the reader. And up to more reading than author. And not only because the author is old and the young reader, but also because this book has been a writing for and on the reader.

The time accelerates his career. Carlos Marx wrote that they were necessary millenniums so that the famine that was forcing the people to swallow raw meat with the hands, the fingernails and the teeth, was turning into famine that is satisfied eating meat cooked with knife and holder. Federico Engels wrote that they needed centuries so that the sexual love of the ancient ones was acquiring the moral criterion of reciprocity. But only a few decades of socialistic diet were precise, for example, to transform central Asiatic Soviet, to transform the work, of painful need in rejoiced spiritual demand, to do the simple Soviet worker more intellectual than the bourgeois current intellectual. And this process accelerates to eyes conference.

The epoch in which we live loaded on his backs the whole heredity of the past; and at the same time we already clearly see our communist and capitalist future in our present, as ideological doctrines.

That's why, our conscience not only reflects the present, but also it has accumulated the whole past one and longs for the future. Marx was saying that the individual is a social product, since the conscience and the language develop together in the work.

In different persons, the conscience in his different declarations corresponds to the present, or presents " spots ", survivals of the past, or go forward to today. And this way it can happen in everything: in the interests and aspirations, in the conception of the world and in the conduct, in the customs and the character.

But I want that my conscience of liberal of the bad heredity of the past, which takes of this one only the good thing for the future. I want that my conscience, in addition to going to the unison with the time, surpasses it; it moves my morning to my present. I want to help you in this.

And he us wants to help you and. When more the man strains for obtaining it, so much more conscience considers. It is not chance that "makes aware" the words and "knowledge "have a common root. The wider and deep is the knowledge of the man, the clearer and rich is his conscience and the more conscience is he.

What are the functions of the Human Conscience? ***The functions of the conscience are the perception, the desire, the will and the action***.

What are the psychic facts contained of conscience or substantive states? They are the sensations, images, elementary feelings and the thoughts.
What are the structures of the conscience? The structures of the conscience - some of whose facets are unconscious – they are the body, the mind, the soul and the spirit.

What are the states of conscience?

The states of conscience can be normal (as the wake, the sleep and the deep sleep) or altered (as the states mediativos and not ordinary of conscience).

What are the forms of the conscience?

The forms of the conscience are included by the aesthetics, the morality and the scientist. The development of the conscience includes a wide bogey that goes from the prepersonal thing to the personal thing and, from there, even the transpersonal; from the subconscious to the autoconscious thing and, from there even the supraconsciente, from the id to the ego and, from there, up to the spirit.

There exist two classes of content of conscience

Impressions and representations you (design). The first ones are the experienced sensations, and the seconds, copies that it does the conscience or reproductions of the impressions or sensations.

The impressions (perception or sensation that is achieved across the senses or the world of the senses) in yes, are the given, the last reality; but the representations, as copies or reproductions, need an analysis to know of which impressions stem.

There is so, two classes of impressions

1. Those who contribute Knowledge;
2. The Impressions of the feeling and of the will.

A few and others usually transform in Ideas (this is, representations like contents of conscience reproduced).

An example of ideas there are the geometric figures, the colours, the weight of an object, the form, etc., that are remembered or imagine.
Also Ideas are the sentimental representations of happiness or of pain and of desires or volitions; that as previous, they are a result of a memory or of the imagination.

All the contents of the conscience or perceptions, they are two classes: impressions and ideas. The first ones are properly sensations (to hear, to see, to feel, to wish, to push back …); the seconds, representations you (design), good that debilitated, of the first ones. To his shift, the impressions subdivide in two groups:

1. Impressions of the sensation and,
2. Impressions of the reflection.

Is here an impression that makes feel heat or I fry, be or famine across the senses. Next the conscience produces a copy of her, copies that usually remains softened once the sensation. To this copy Idea is called, and the impression wherefrom it comes, an impression of sensation. On having presented to him in the soul, later, such a accompanied idea of pleasure or pain, (or represented by an emotion), there can arise new impressions of desire or distaste, happiness or fear, etc. impress The above mentioned they are impressions of reflection.

All the objects of the knowledge split into two groups:

1. Representations (done) and,
2. Reflective relations of these.

Mechanisms for the Construction of the Ideas or Representations

For what mechanisms do the ideas form in the individual?
Plato was thinking that the reality is divided in two.

a) A part is the world of the senses, on which only we can obtain imperfect knowledge using our five senses (approximate and imperfect). Of everything what exists in the world of the senses, we can say that everything flows and that nothing remains. There is nothing that is in the world of the senses, only it is a question of a heap of things that arise and perish.

b) Another part is the world of the Ideas, on which we can obtain true knowledge, by means of the use of the reason. Consequently, this world of the Ideas cannot be recognized by means of the senses. On the other hand, the Ideas are eternal and immutable.

According to Plato, the human being also is divided in two parts. We have a body that flows, and that, therefore, is indissolubly tied to the world of the senses, and it finishes likewise all other things belonging to the world of the senses (as for example a pomp of soap). All our senses are tied to our body and are, therefore, of entrusting little. But also we have an immortal soul, the residence of the reason. Precisely because the soul is not material it can be the world of the Ideas.

The process of Acquisition of the Knowledge as Index of the Conditions

The mind has to face an avalanche of information proceeding from two sources: 1) the situation - problem of the moment, of which information is obtained across the senses, and 2) the storage of knowledge across process of recovery or of rememorizing. If this information is conceited in terms of the simplest element that the mind can distinguish by

means of some of his senses, the entire number of such elements of information of a situation problem that come to the mind is astronomical. For example, the entire possible information in relation to the colours of a picture would involve several millions of this type of distinguishable elements between yes.

The volume of these would be such that the head office congestion. Let's bear in mind that the mind not only has to process the input but also the product in the skill that we call a communication.

Prosecution of the Information

The mind creates very effective forms to handle or to process this stream of information. For ends of the school classroom it is adapted to consider them like discriminates or of selection; classification or of grouping and generalizantes, or that goes beyond the information received in the moment-

Nevertheless, although it is proper to speak about the discrimination, classification and generalization of the information that comes and goes out, it is a question only of three aspects (although basic) of the complex skill of the informative process. This stability includes not only these three aspects, but all the cognitive skills that take part in the development of the intellectual capacity, which is a fundamental worry of the pedagogies.

Members of the intellectual capacity

The intellectual capacity is composed of:

1. ***Knowledge*** - the information accumulated about the previous experiences can be available when an individual needs to solve a problem. It is necessary to speak about the knowledge in terms of:

a) ***Quantity***: the number of elements of information relative to a problem, and

b) ***Quality***: the utility of the knowledge to solve problems on having allowed that the new problems should be considered to be special cases of the already well-known thing.

2.- ***Cognitive skills*** - types of operation that act on the information that is had about previous experiences. For pedagogic intentions we can group them in:

a) ***Skills of the thought***: a number of complex skills that are applied isolated or jointly, and
b) ***Skills of communication***: related to the organization and presentation of the information destined to report and to understand another individual, or systematizing the information for proper use.

John Locke uses the Introspective Method as two different routes, to describe the experiences in the human being.

1. The External experience comes from the SENSATION and PERCEPTION (the world of the senses in accordance with Plato) that is the modification that experiences the soul when the senses it her excites directly (external factors, stimuli).

2. The Internal experience is the way of the reflection that is the autoperception of the soul of his own one to happen (the world of the ideas as Plato).

Locke before the entanglement and the disorientation caused by the erroneous reigning methods of thought in his time, tried, in his Essay on the human understanding, to establish the limits of the reason. Argue

Locke that the truth must be limited what can be deduced or logically constructed across the sensory experience; that the infallible test of the love to the truth is in "not taking in consideration any proposition with major safety than the one that could facilitate the test on which this one is constructed", with the object of that the grade of establishment that we give to a certain point of view rests on the existing essentials of probability on his favor.

And, since it is that the metaphysical speculations and the theological dogmas have not such a base, the above mentioned speculations and sayings dogmas must not be taken in consideration. If such hypotheses are accepted as real truths, we are then "living plunged in a species through light sleep" to "a state of illustrated ignorance".

During the XVII Th century, several philosophers belonging to the philosophical current of the Empiricism (John Locke, George Berkeley and David Hume, between others) adopted the point of view of which we do not have absolutely any content in the conscience before acquiring our experiences by means of the senses Since an empiric wants to make to derive all knowledge on the world what our senses tell us.

John Locke (1632-1704) tries to clarify two questions. First of all he asks wherefrom the human being receives his ideas and concepts. Secondly if we can rely what our senses do not count. Locke is sure that everything what we have of thoughts and concepts are only reflexes of what we have seen and heard. Before receiving with our senses, our conscience is like a "table razes", or slate in target.

There is a line that goes from Socrates and Plato and happens for San Agustin before coming to Rene Descartes, Baruch Spinoza, and Leibniz. During the XVII Th century all these philosophers were ***RATIONALIST***. They were thinking that the REASON is the only sure source of knowledge. Yes, ***a RATIONALIST believes in the REASON as source of***

knowledge. He thinks that the human being is born with certain ideas, which exist therefore in the conscience of the men before any experience.

Plato says that we cannot know anything with safety about anything that changes constantly. On what it belongs to the world of the senses, that is to say, what we can feel and touch; only we can have ideas or slightly sure hypotheses. Only we can have sure knowledge of what we see with the reason. The proper visual faculty can change from one person to other one. Nevertheless, we can rely about what he says to us the reason, because the reason is the same for all the persons; the reason is the opposite of the opinions and the appreciations. We might say that the reason is eternal and universal precisely because only it is pronounced on eternal and universal matters. Only we can have vague ideas on what we feel, but yes we can obtain true knowledge on what we recognize with the reason.

What is the reasoning?

The reasoning is a logical operation by means of which, departing from one or more judgments, there stems the validity, the possibility or the falsity of another different judgment. In general, the judgments on which reasoning is based express already acquired knowledge or, at least, postulated as hypothesis.

When the operation is realized rigorously and the derivative judgment detaches with logical need of the judgments precedents, the reasoning receives the name of inference. The judgments that serve as starting point are named premises and they redeem the function to be the conditions of the inference. The result that is obtained or, the judgment inferred as consequence, it is called a conclusion.

The inference allows to extract of the already established knowledge, another knowledge that one finds implied in the premises or that turns out to be possible in agreement they. When in the conclusion it goes over to knowledge less general that the expressed one in the premises, will have carried a deductive inference out. When the conclusion constitutes a synthesis of the premises and, consequently, knowledge of major generality, an inductive inference will have been practised. And, when the conclusion has the same grade of generality or of peculiarity as the premises, then an inference will have been executed transductiva. The execution of the inferences is realized in accordance with certain rules that have been elucidated in the experience and formulated in a strict way for the logic.

In any case, which is obtained as conclusion of an inference is simply a judgment of possibility, or what is the same, a hypothesis.

Periods of the development of the Child, Jean Piaget (1896-1971)

How does the individual acquire knowledge?

1. ***Period of the Intuitive Thought (4 – 7 years)***

The children who are in the stage of the intuitive thought modify at random the circumstances; observing what happens in particular cases without deducing general any beginning. As in the previous stage, it is considered to be more trustworthy what is perceived (information that receives across the senses and the perception) that the product of the thought (the world of the Ideas or the Reason).

2. ***Period of the Concrete Operations (7 – 11 years)***

This type of thought is characterized by the aptitude to analyze the problem, but also by the ineptitude to face the problem of the integration. Everything tends to remain disorganized by virtue of the worry on the parts. This way, in this stage, a pupil can have several

partial solutions to a problem without being able to continue the way that should take it to the integration that gives him the global response.

3. ***Period of the Formal Operations (11 – 15 years).***
Only up to this period, the child can realize and carry out purely scientific investigations, notifying the factors in accordance with all the possible combinations and in a systematical order.

4. ***Stages of Transition***.

In accordance with the periods of the Development of Piaget. It is important that the teacher knows the limitations that to certain age the thought of a pupil has to dominate a mathematical concept.

The child is not a passive being and without character, to which the teacher can form arbitrary. The child is never a mere object of education, but it is always an active and independent being faced by personal concepts, desires, feelings and reflections. The teacher or facilitator must always treat the child as a personality that he learns creadoramente and to whom it is necessary to face the education.

According to D. Hume (1711-1776), if all the scientific knowledge could be explained by the beginning of Identity, would simplify his explanation epistemology; but in the knowledge that are a part of the sciences many, unyielding relations de facto intervene to such beginning.

It is necessary to study these fundamental relations; who can explain oneself as two groups of a whole of seven.

1. Of resemblance,
2. of Mishap,
3. of quantitative and numerical Proportion,

4. of Qualitative Grade,
5. Spatial and temporary relations,
6. Identity (objective or metaphysics),
7. Causality.

The four first ones uncover at first sight, and belong rather to the Mastery of the Intuition than to that of the Demonstration. Only they depend on the Ideas, and can be an object of knowledge and of certainty. In the perception of colours and of the qualitative and quantitative resemblances between the objects, the materials are given by the sensation of the sight. These relations constitute a sufficient guarantee to the sciences that are based on them. The last three relations, on the other hand, allow understanding other disciplines.

He needs to accept that there are sciences as the mathematics (arithmetic, geometry, algebra), based on mere relations of quantitative or numerical proportion. His truth does not depend on the empirical existence of the objects; they do not need to be confirmed by the experience. The physical sciences are based on the spatial and temporary relations, but they are less true, because in them they intervene the relation of cause and effect, and only they have scientific value while they do not exceed the field of the experience.

The limitations of the human understanding

This understanding is compatible, neither in the extension of his generalizations nor in his conceptions, with the big speculative systems of the philosophy. “All these sublime thoughts that go back over the clouds, coming up to the same sky, are born and have his base here; in all this vast extension for the one that is digressing in wings of these remote speculations that seem to rise up to sublime regions, the mind does not move not in line beyond those ideas that the sensation or the reflection have given to the contemplation”. But, unfortunately, this is

the only antidote of permanent value against the sprouts of mysticism, of irrationality, of troublemaker verbalisms and of simulated depth with which, in the evening in evening, of vein infected the philosophers.
John Locke lived in a similar epoch, in certain aspects, through ours, especially in these explosions of religious emotion and in resorting to instinctive and emotional platforms in an attempt of basing the credence; platforms, those, which are not but the expression of "an obstinate self-assurance, confidence generated for ostensible interior lighting". The critiques of Locke against this tendency are so valid and pertinent today since they it were in last times.

Locke tried to distinguish and to separate the rational convictions of "the inclinations, fantasies and deep-rooted certainties" that, abjuring of the reason, re-connect this one with "the free and arbitrary imaginations of the brain of the man, to which they take for foundation of the judgment and of the behaviour". The lighting, the inspiration condemned, Locke, roundly what he was calling "without the corresponding investigation and the certainty without subjection previous to test". All this is, in Locke, an immense and permanent value, not limiting itself his influence only his country (England), but, come up to France, these ideas constituted a powerful impulse for the French Enlightenment (1789).

"With our word and our pen we can do that the men are more illustrated and better". This way Voltaire was writing. Without being a deep thinker, I do not stop Voltaire experiencing an admiration without limits for John Locke, whose ideas it assimilated, turning into the most effective propagandist and popularization of the new philosophy between the reading public. Said ideas were new and revolutionary; it was, that one, an epoch of transition, and the critical thought of Voltaire was fitting perfectly in his time.

We must recognize that the common sense of thinkers of the shaft of Diderot, D`Alembert, Voltaire, Helvétius and Holbach; his comprehension of the facts, as clear others, relative to the human suffering, his hate towards the mystification and to the trick they had the effect of a moral and intellectual bath for the world of his time. We will never be able to be grateful sufficient for the good that these man did to us. His movement did not consist only of the combat of the reason against the injustice, but of the opposition of a skeptical reason of a speculative reason, of a reason that had constructed the whole philosophy of the existence with the first beginning arising from the rational intuition and from the pure logic. Locke and Hume were the principal protagonists of this skeptical position in England; and, to a little time, the spirit of the critique propagated France.

The philosophers of the French Enlightenment directed his attacks first against the church and then against the society. They inaugurated the new age of the European thought, paving the way for the French Revolution and for the Marxism.

Simple, Compound and complex Ideas exist.

In England, David Hume took the skepticism still. It divided the permissible exhibitions in mathematical truths and in positive facts. “When imbued with this beginning, we leaf through of the books of our libraries: of what a lot of ravages we turn out to be exposed to being victims! If we throw hand, for example, of an any volume on theology or metaphysics, the first thing that it is necessary to do is wondering: does any abstract touching reasoning contain this book to the quantity or to the number? Is any experimental reasoning in him about positive facts and the existence?

If the response is negative, then there is not but to throw it to the fire, because similar book cannot contain any more than a collection of sophistries and of illusions.

Hume begins for stating that the man has two types different from perceptions, which are impressions and ideas. With impressions he wants to say the immediate perception of the external reality. With ideas he wants to say the memory of an impression of this type.

For example. If an individual burns himself in a warm stove, it receives an immediate impression or he believes in his mind an image of the event. Further on he can think about that time that is burned. It is to this what Hume calls an Idea. The difference is that the Impression is stronger and more alive than the memory of the reflection on the memory. It is possible to say that the sensation is only the original one, and that the Idea or the memory of the sensation is only a pale copy. Because the impression is the direct cause of the Idea that one hides in the conscience.

- Objectives Qualities or primary qualities of the senses according to John Locke, it refers to the Extension of the things; his weight, form, movement, number. As for these quantitative qualities we can be sure that the senses reproduce the real qualities of the things.

subjective Qualities or secondary qualities of the senses according to John Locke, are ***qualitative qualities*** as colour, flavour or sound, although not always they reflect the real qualities that are inherent in the things themselves, but only they reflect the influence of the exterior reality on our senses.

Where from do we receive our ideas and concepts?

Is it really the world as we perceive it?

Locke was saying that little by little we are joining and interlacing the sensations forming concepts during our experiences. But the whole material of our knowledge (content of conscience) on the sensitive world enters after all the sensory organs. Therefore, the knowledge that cannot stem from simple sensations is false knowledge and it must be pushed back.

The Scientific thought

What is the science?

The science as general and logistic concept is the methodical investigation of the natural laws for the determination and the systemizing of the causes of a phenomenon or certain fact.

For Aristotle, the science or epísteme consists, not so much in a series of knowledge targets, but in an intellectual virtue that is defined as a demonstrative habit, then we can conclude that this proper aptitude of the scientist has, as instrument of formation, precisely the syllogism, operation that demonstrates rigorously the proposed dissertations. And, finally, with this one concludes that the Logic is the proper instrument of the scientist and of the philosopher.

The biggest impulse that generates the science is the desire of systematical explanations and controllable for the empirical evidence. The distinctive intention of the science is the discovery and the formulation in general terms of the conditions in which events of diverse classes happen, and the widespread propositions of such determinant conditions that serve as explanations of the corresponding events.

The science is one of few realities that can bequeath the future generations. The men of every historical period assimilated the scientific results of the previous generations, unrolling and extending some new aspects. Of the double element of the epoch, the immutable thing and the fixed thing, still not verified and the established thing definitively, only the last thing is accumulative and progressive.

Those elements that constitute a good part of the science and that are the ephemeral and transitory part, as certain hypotheses and theories, get lost in the time and preserve, when more, certain historical interest.

Every epoch prepares his theories as the level of evolution in which he is, substituting the ancient ones that happen to be considered to be like overcome and consequently anachronistic.

What allowed the science to come at the current level was a nucleus of skills of practical order, the empirical facts and the laws that form the element of continuity, and that has come being perfected and extended along the history with the evolution itself of the man.

The science in the models in those who are represented today, is relatively recent. Only in the modern age of the history he acquired the scientific character that shows today. But already from the beginning of the humanity, the first rudimentary lines are as traces of knowledge, of skill, and that then would be constituted in science.

The scientific, in strict sense revolution, it registers in the XVI Th and XVII Th centuries with Copérnico, Bacon and his experimental method, Galileo Galilei, Descartes and others. It did not arise, so, by chance. Any occasional and empirical discovery of skills and knowledge regarding the universe, the nature, and the men, from the ancient Greeks, Egyptians and Babylonians, the contribution to the creative spirit Greek synthesized and extended by Aristotle, the inventions done in the epoch of the conquest, prepare the emergence of the scientific method and the spirit of objectivity that it is going to characterize to the science from the XVI Th century, before indefinite form and now in a rigorous way.

Years later, already in the XVIII Th century, the experimental method is perfected and applied to the new areas of the knowledge. There develops the study of the chemistry, of the biology, knowledge arises

more target of the structure and functions of the alive organisms. In the following century a general modification happens in the intellectual and industrial activities. There arises new information relative to the evolution, to the atom, the light, the electricity, the magnetism and to the nuclear energy.

Already in the XX Th century, the science with methods targets and exact, develops investigations in all the fronts of the physical and human world, obtaining a grade of surprising precision, not only in the field of the space travel, of the communications, cybernetic and the transplants, but also in the most diverse sectors of the social reality.

The empiricism and the modern science

Much is what owes to him the modern science to the Empiricism in what it contains exclusively to the observation and to the experimentation. The constant progress of such inquiries, the extension of the same ones to the alive beings, the achievements of the theory evolutionist, the development of the biochemistry, the cybernetics, the artificial intelligence, the robotics, the mecatrónica have been gaining constantly area to the supernaturalism and to the " vital forces " of the nature as the science conceives her.

At present he does not believe already, in an effective way and with the largeness of earlier, in the interference of a supernatural (invisible) world in the world in which we live. If the device of radio or the car have a breakdown, if a child has fever or shows other symptoms of illness, if a plague of insects destroys the crops we already do not attribute such events or facts to intangible or spiritual causes. We already even attribute the mental illnesses, the infantile crime, the anxious neurosis, the sexual abnormality or the tense conjugal relations to psychological causes. Every time we believe more that the inquiry of the cause of many things or events is of the exclusive obligation of the SCIENCE. In spite of

everything, the mysticism keeps on disorienting many people, mysticism that constitutes the crooked method of his way of thinking; for what it is not necessary to move back in the critical attitude, earlier well it is necessary to intensify it more and more. But, after everything, we can make sure that the supernaturalism goes of conquered.

The science in his evolution has undoubtedly as driving axis, the methods and instruments of investigation that they increase and perfect, united to the scientific, perspicacious, rigorous spirit and target.

What is a general problem?

In general terms, for problem we understand any difficulty that could not be solved automatically, that is to say with the alone action of our instinctive and determined reflexes, or by means of the memory of what we have learned previously. Therefore, continuously the most diverse problems are caused in us, whenever we face unknown situations, before which we lack specific sufficient and necessary knowledge. "Then we turn out to be forced to look for the solution or the behaviour adapted to be able to face successfully such situations."

What is the knowledge Target?

It is that one that allows reproducing in the abstract thought the aspects and essential relations of the reality. The different ideologies can facilitate or make difficult the discovery of the essence of the processes and objects, of the laws that explain his emergence, development and transformation. The ideology as false conscience, as deformed representation of the reality, which emission is, precisely, to conceal, distorting the real causes and consequences of the relations of the investigation.

The science tries, since, to approach the truth objective in order to discover the relations, dependencies and essential structures of the reality as the only way for the establishment of scientific laws; but in the sciences, especially in the social sciences, the values of the individuals (fundamental elements of the ideology) it is present in the process of investigation and in his products and they can make difficult or facilitate the discovery of the truth objective. The ethical and moral values have a practically insignificant influence in the making of the knowledge in the science natives since what is of interest here is to reach a knowledge more finished and precise target as the only form to have an every time major mastery of the nature, although the values are present in the selection of the problems that are studied and in the use of the products of scientific chore, who will answer to a great extent to the interests of the class that the investigator should represent.

The scientific production in social sciences cannot, on the other hand, be subordinated completely to the interests of one or another social class.

For it, the contributions of other theoretical approaches must happen, first, for the critical optics of the theory and the methodology of the dialectical materialism.

How are the problems structured?

To approach a little more the comprehension of what they are the problems it is convenient to analyze the aspects that are present in all of them, independently of the class to which they belong. Following Mario Bunge, it is possible to distinguish in any problem the following aspects:

1. The problem itself, the explanation that is needed.
2. The act of asking, the psychological of the problem.
3. The expression of the problem, the linguistic aspect, the questions.

There exist three types of problems (reasoning, difficulty and conflict)

The problems can qualify of very different ways. Some authors distinguish three types of problems.

1. ***The problems of reasoning***, where the important thing there are the use of the logic and his operations of arrangement and of inference. Example: solve the following equation: The X – Y + 5 = 0
2. ***The problems of difficulties***. In this case we know that the response to a problem but we have opposition or difficulty to execute it. For example, we want to give return to a screw and this one does not advance.
3. ***The problems of conflicts***. They are problems that we take as the opposition of the will of the others, be already because they do not understand us or because they are opposed with animosity to our projects. The emotional aspect, in this type of problems it plays an important role. And also it can bring as consequence a discrepancy.

The problems also can qualify in convergent and divergent

1. ***The convergent problems***, they have the only solution or a set of definite solutions, for example, to solve an equation, to conclude a formal reasoning, to find a definition in a dictionary, to answer some memory.

2. ***The divergent problems***, they have an indeterminate number of possible responses that depend on the creativity of the person, for example: how to do a good publicity for a few new

chocolates in bar? How many forms can I extract of a currency that fell down in a well?

CRITERION OF RATIFICATION OF THE SCIENCE

"A full clarity is the measurement of all the truth"
Hursserl

When a thing is clear for yes same, there is no major difficulty; but, ordinarily, the majority of the things are not clear for yes same and they need a demonstration. The science costs so much all that is capable of trying, but the science cannot demonstrate everything, since they depend on other previous, indemonstrable knowledge and that they are clear for yes same.

Martinez (1989) mentions that in last century, one was emphasizing the empirical base of the evidence; in this century, preferably in the last decades, the epistemology has emphasized more importance of the rational evidence.

Nowadays, we must become very alert at the time of accepting something as more or less "clear", have to do a systematical critique to reduce the margin of error of our knowledge. Martinez proposes six criteria of ratification of the science:

1. We cannot start thinking from zero, since others have thought before me, and I am taken by his thought. There can exist several hypotheses, theories or coherent bodies of credence that, even if some of others are very different, give sufficient reason of all the facts known in a certain field of a discipline.
2. It is possible to overcome the concepts of "objectivity" and "subjectivity "with wider and rational one, which is that of "approach" since there represents a mental perspective, a

collision, or an ideological approach, a point of view from a personal situation, which suggests not even the universality of the objectivity not the personal prejudices of the subjectivity; the proper appreciation only.

3. The concept of approach takes us there is extremely rich other, that of complementarity. If every approach offers us an aspect of the reality and an interpretation of the same one from this point of view, several approaches, and the dialogue between his representatives, they will give us a wealth of much major knowledge.
4. It is necessary to revalue in our academic means the intuition and more concretely the so-called tacit knowledge. The intuition is so much at first as at the end of any cognitive process and all scientific knowledge. At first in the postulation of hypothesis and promising guesswork and in the end in the "cross-check" of each of the results and conclusions. Any demonstration, any reasoning and any test are not but a chain of minor intuitions, of “intellectual visions” that indicate that the things are of a certain way. And although the above mentioned process realizes partly, it is never fully.
5. In the majority of the designs of investigation of court classic there is used the analytical logic (derivative of the beginning aristotlelics, joined a vision determinist derived from the English empiricist as D. Hume and J. Mill), has been demonstrating increasingly that the above mentioned logic is unable to understand the complex problems of the human sciences, since the human systems work neither with the sequence of this ordinary logic nor with the coincidence of only one sense, but they are systems with circular reciprocal and influenced interaction; that is to say, it is necessary to transfer the step to a logical structural, systematical and dialectical piece of news. In a system, as L. Von Bertalanffy (1981), a set of interrelated units

happens in such a way that the behaviour of every part depends on the state of all others, since they all are in a structure that interconnects them. In the human beings there happen structures of the highest level of complexity, which are constituted by system systems which comprehension defies the keenness of the most privileged minds.

6. The truth has only a provisional character. Our current knowledge cannot happen; in the strict sense more that we can do is to confirm them with tests or conclusive contrasts that reaffirm us in our current ideas, but that will not last any more than the approach or recognized paradigm lasts. The truth has a historical sense, and process of formation will always be in continuo. “The today truths will constitute the errors of the tomorrow …”

4. THE NATURE, THE CULTURE AND SCIENCE

Of what way does it influence the scientific and technological thought, in the Individual and the Culture?

Philosophy of the Culture

It is called a Philosophy of the Culture to the discipline that you propose to explain to him the phenomenon of the Culture, departing from his most essential laws, investigating the causes of his genesis, the norms of his transformation, the conditions of his growth and decline, the contents and the forms of his phases: and the remote ends of his tendencies you become close.

Between one of his purposes there is to face us critically on the development of the intellectual life, as well as on his ends, ways and a half.

The Philosophy of the Culture creates neither the science, nor the right, nor the education, neither the art, nor the religion or the scientific and technological thought. All these phenomena have been products of the human conscience that has reflected on facts and natural or cultural phenomena.

These facts of the Culture are the starting point of the philosophical reflection. The philosophy of the Culture takes them as something produced by the Mind of the man and they limit itself to being described, telling them and it tries of determining the forms or general structures for which they have taken place. He looks for the values of the culture: the truth, the kindness, the beauty, the justice, the holiness, realized in the cultural products, like cultural concrete creations.

Evaluation of the Culture

With regard to the evaluation of the culture the following currents can differ: the optimist who affirms that they have to eliminate the lacks of the spirit and of the nature up to coming to a state of perfection.

The Scientific spirit in the Development of the Culture

If we consider the activity of the scientific spirit across his declarations, it is easy to warn the pendulous movement that has characterized it in relation to the creation of the Culture across the scientific and technological development.

When there have been difficult the conditions of the human existence it has directed for itself to create the means to understand and to use the resources of the nature, when this situation has been overcome thanks to the current scientific and technological development, it has turned his worry on yes same.

This way we think that the scientific and technological spirit as cultural entity they have ranged of a materialistic, worried realism for the mastery of the science and of the skill, to a scientific humanism centred on an autoimproving producing the best thing to allow the man to reach the happiness and to try to amend and to solve partially all his needs and plans so that it reaches his spiritual elevation.

Nature, science and culture

Although the distinction is already implied between nature, science and culture in the concepts previously spilt, it is necessary to clarify it moreover for the distinction between the concepts: the naturalistic

concept of science; and the concept of the scientific and technological spirit as cultural entity.

The naturalistic concept of science considers this one to be a simple natural development, or, a spontaneous deployment of the human nature.

The concept of science as cultural chore, he meditates to the scientific and technological thought as a human activity on which a direction has been printed and one has indicated to him a goal planned consciously, for what one affirms that the science and the technology are cultural entities that are produced and take root in the human spirit, and is not a natural entity.

For Nature we understand the set of the beings like they are for his origin and birth and that we find in our world, in our cosmos, without no human intervention has come up.

Nature of the scientific spirit

This spirit that is existed awakening and prepared along the history of the humanity, now is imposed in an inexorable way, to all the incursion in the search and they honour in a faithful way the scientific legacy of the past, extending his borders and saving all kinds of resistances.

The scientific spirit is, first of all, an attitude or subjective disposition of the investigator who looks for serious solutions with methods adapted to the problem that it tries to solve; this attitude, certainly that is not innate to the person, conquers him along the life at the cost of work and even of sacrifices. It can and must be learned, any more it is never, inherited.

The scientific spirit, in the practice, is translated by a critical mind, objective and rational.

The critical conscience will lead the investigator to perfecting his capacity of judgment and to unrolling the discernment, qualifying it to distinguish and to separate the essential thing of the accidental thing, the important thing of superficially or secondarily.

Criticizing is to judge, to distinguish, to discern, to analyze for better to be able to evaluate the elements components of a problem.

The conscience objective, in turn, implies a courageous breakage with all the subjective, personal positions and badly based of the vulgar knowledge. To conquer the scientific objectivity, it is necessary to escape from the whole subjective vision of the world, established in the proper biological and psychological organization of the subject and, also, influenced by the social fear.

The objectivity is the basic condition of the science. This it costs is not what any scientist imagines or thinks, this is what really is. The objectivity returns the scientific work in impersonal; only the problem and the solution is of interest. Any other it will have to be able to repeat the same experience of investigation if this way he wishes it and the result will be the same, because it does not depend on subjective conditions.

The objectivity of the scientific spirit does not accept solutions by half nor solve scarcely personnel. “I believe”, “I might be like that”, they do not satisfy to the objectivity of the knowledge, because the scientific spirit has his sustenance in the rationality. The explanatory reasons of a problem can be only intellectual or rational.

The reasons that the reason does not know are the reasons of arbitrariness, of the feeling that explain nothing they do not even justify in the ambience of the science. The qualities that they characterize to the scientific spirit are:

- Intellectuals:
  Taste and precision for the clear ideas and the truth
  Daring imagination been ruled by the need of the cross-check
  Curiosity that leads to entering on the problems
  Keenness and power of discernment

- Mulberry trees:
  Attitude of humility before the knowledge
  Recognition of limitations
  Possibility of error
  Impartiality
  Veracity in the information and the information
  Scrupulous regard on the truth
  To face with fortitude the obstacles and the dangers that an investigation could present
  He does not recognize borders
  It does not admit interfering of the authority.
  It defines freely the analysis of the problems.

THE SCIENCE AND THE IDEOLOGY

What is the relation that target and ideology exists between knowledge?

In the sciences, fundamentally in the social ones, the ideologies cannot be excluded – as already it has been demonstrated – from the process of investigation and from the products of the scientific chore since in them the relation is present fastened cognoscente-object of

knowledge. The activity of the investigator is located in a social certain context and answers to an interest of class that could be that of him or that of another social class.

What is an ideology?

It can be said that every man they have an ideology, as conception of the world, of the things, and that there are ideologies more scientific than different as soon as they rest on the information proveniences of the sciences to have a more finished and correct vision of the reality, and which face to the human beings in his daily practice, as well as inside a field of the science.

The search of the truth objective, the precise, finished and deep reconstruction (in the abstract thought) of real, as the only way to discover the laws of the development and functioning of the social life in every social concrete formation.

The knowledge I criticize and target of the contradictions and fundamental instances of a social particular reality, it will allow to serve as base for his correct comprehension and his transformation.

Also it is possible to say that, in the same individual or social group there interweave different types of ideologies (ideological spheres: religious, political, artistic, etc.) and who are in different planes.

The ideology of a social group is determined by the interests of class, but also the different ideological spheres can be influenced mutually (for example, the political ideology can receive influence of the religious one) with which the position pushes back reduccionista that consists of thinking that any idea is a product necessary and unavoidable of the relation that is had by regard, although the set of ideas on the life and the society has a direct and indirect reference in

the material conditions of existence of every social group. Also, the ideology, as already it has been mentioned, faces the action of the men allowing them major or minor possibilities approaching the knowledge target of the social reality.

The ideology is:

1. A set of ideas about the world and the society that
2. He answers to interest, aspirations or ideal of a social class in a social given context and that
3. It guides and justifies a practical behaviour of the men according to these interests, aspirations or ideal.

The conception that has of the society, of his structure, organization, processes, institutions, relations, answers to a great extent to an interest of class which is present (in the shape of ideology) during the process of investigation and in his results.

The ideology of the scientist demonstrates in the selection of the problems that he studies, in the theoretical conception to which it resorts to locate them, in the selection of the skills to gather the empirical information, in the interpretation of the information, in the recommendations that it raises to solve the problems, in the form in which the results of the investigations are used.

The ideological positions influence major or minor measurement the emergence, content and use of the social knowledge. His influence is major in his genesis and formation that in his content where the requirements of cientificidad impose restrictions to the ideology; major influence exercises the ideology in the use or function of the social science, in that the subordination of this one is made clear clearly, as form of human activity, to social needs.

The science tries, since, to approach the truth objective in order to discover the relations, dependencies and essential structures of the reality as the only way for the establishment of scientific laws; but in the sciences, especially in the social ones, the values of the individuals (fundamental elements of the ideology) are present in the process of investigation and in his products and can make difficult or facilitate the discovery of the truth objective.

The values have a practically insignificant influence in the making of the knowledge in the natural sciences since what is of interest here is to reach a knowledge more finished and precise target as the only form to reach a knowledge more finished and precise target as the only form to have every time major mastery of the nature, although the values are present in the selection of the problems that are studied and in the use of the products of the scientific chore, who will answer to a great extent to the interests of the class that the investigator should represent.

5. Forms and types of scientific investigation

What is a scientific problem?

The variety of the thoughts is already daily or scientific, it is infinite. The same happens with the problems. To the methodology of the science the scientific problems worry him in a preferable way.

But "not any problem, since it is obvious, is a scientific problem: the scientific problems are exclusively those that appear on a scientific background and are studied by scientific means (scientific method and scientific instruments) and with the primary target to increase our knowledge".

If the target of the investigation is practical more that theoretical, but the background and the instruments are scientific, of that time the problem it is of applied science or technology, and not of pure science. Nevertheless, it is not a rigid line the one that separates the scientific problems of the technological ones, since the same problem raised and solved with any end, it can give a solution that has both values, the cognitive one and the practical one.

When it goes away to solve a problem in scientific form, it is very suitable to have a knowledge of the possible types of investigation that can follow. This knowledge makes possible to avoid mistakes in the selection of the method adapted for a specific procedure.

In accordance with the immediate intentions that the author of the investigation chases, this one has split into two forms and three and types, of which they get rid or the different studies of investigation can be included.

5.1. Forms of scientific investigation

1. Pure investigation.

Also acquaintance as basic or fundamental investigation rests inside a theoretical context and his fundamental intention is of developing theory by means of the discovery of wide generalizations with a view to hypothetical formulations of possible later application.

2. Applied investigation.

It is the study and application of the investigation to concrete problems. It depends on the technological discoveries, and his fundamental intention is that of the pure investigation, looking for his immediate application and to confront the theory with the reality.

Types of investigation

1. ***Historical investigation.***
   It is a question of a critical search of the truth that sustains the events of the past. It is applied to all scientific disciplines.

2. ***Descriptive investigation.***
   He understands the record, analysis and interpretation of the current nature and the composition or processes of the phenomena. It works on realities de facto and his fundamental characteristic is that of presenting to us a correct interpretation.

3. ***Experimental investigation.***
   It is that one that appears by means of the manipulation of an experimental not verified variable, in conditions rigorously

controlled in order to discover of what way or for which cause produces to itself a situation or particular phenomenon.

Characteristics of the scientific investigation

Several types of investigation exist, since it has been mentioned previously; from the elementary one and the daily one that consists of broadening the horizons of the well-known objects, up to the scientific investigation that possesses already certain aspects that give him a character of top level.

The scientific investigation differs in the following characteristics:

In effect, to investigate in the scientific area means to look by means of readings, experiments, interviews, polls and remarks for the necessary information of the particular and general causes of some phenomenon. But the above mentioned search and investigation will have to submit to the following qualities like they are:

1. ***Sistematicidad***

   This wants to say that, it is realized from a program or more or less detailed plan; that there is an explicit intention of advancing in the field of the truth and that establishes a rhythm of work adapted to the investigated topic.

2. ***Objectivity***

   He wants to say that, it tries to leave of the arbitrary thing, the subjective thing, and the fortuitous thing, which depends on personal opinions or prejudices that do not have a solid foundation. An investigation is objective, only when it

establishes a fact, a relation or an explanation of way cost for any subject. The science treats of knowledge cost for all.

6.- THE PROCESSES OF ABSTRACTION

Of what does the process of abstraction consist?

"In the process of abstraction, the thought does not limit itself to standing out and isolating any obtainable property and relation of the object to the senses …, but it tries to discover the secret and unattainable connection to the empirical knowledge."
To carry out this process of abstraction it is necessary to think about dialectical form, since the thought owes apprehender a world in continuo movement in which the contradiction is the engine that impels the development of the processes and objects of the nature and the society. The essence, the structure of the things is not revealed in direct and immediate form, "the thing itself – points out Kosík – does not demonstrate directly the man. To receive her it is needed not only to do an effort, but also to give a detour. "

The starting point of the process of abstraction, of the formation of concepts, categories, is the reality as it appears to the sensory organs (I specify sensory), but this reality is infested of appearances, of pseudoconcretions, then it cannot be the real, but apparent concrete one. It be remembered what Marx was saying: " Any science would be of more, if the way of there demonstrating the things and the essence of these they were coinciding directly ". The real concrete one is only possible to discover it by means of the thought, when I went in search of the initial determinant abstraction, separating as if it was webs, the phenomenon or illusorily of the processes and objects in study.

Done this, the following mental operation in the process of abstraction consists of constructing the concrete one of thought (mental abstract or concrete thought), with the help of the analysis and the synthesis. This means to rise from the concrete to the

abstract thing. “Precisely in the process of this elevation, the thought reproduces the object in his integrity.”

This "separation" will allow apprehender better the processes that are studied since the thought, across the analysis and the synthesis, will eliminate the aspects and not essential or secondary relations that conceal the characteristics and basic relations of the processes, in order to be able to establish scientific explanations on the same ones.

In the process of abstraction, the analysis implies going from the concrete thing to the abstract thing. By means of him there is dismantled everything (certain reality: a structure, the social one, for example; a process or set of processes) in each of his parts and relations to analyze them in more finished and deep form with the intention of emphasizing those aspects, elements and more important relations for the construction of the scientific knowledge.

The synthesis allows reconstructing in the thought everything in accordance with certain mental makings in order to understand better the characteristics, elements and essential connections of the processes and objects. This implies going from the abstract thing to the concrete thing with the intention of apprehender the object of study in his multiple determinations (aspects, relations, connections).

If it breaks of that the knowledge begins, in the first moment, with the contact of the sensory organs with the external world and of here the raw material arises for the conceptual makings, which will be confirmed in turn with the concrete reality across the scientific practice, there can be observed in this process the link of four methods described previously.

The contact with the reality across diverse methods and skills as the observation, the interview and the poll allows to obtain empirical

information to initiate the knowledge of the parts and interrelations of the objects and processes (analysis).

This contact realizes with base in an idea, a concept or hypothesis previous (synthesis) achieved in previous analyses. These hypotheses of work are a preliminary guide that faces the analysis in order to look for those empirical facts and relations excellent to construct more consistent and precise hypotheses. The results of the analysis materialize in partial syntheses that allude to the empirical obtained knowledge.

From these syntheses and by means of a process of induction richer generalizations of content are established compared to the hypotheses of work that served as base for the study. The new synthesis (hypothesis) has been obtained across a generalization of particular facts, but also it has strained with the existing knowledge in the frames of the respective science. We have left with the hypotheses or laws as if they were definitive truths it would imply falling down in the field of the metaphysics.

We depart that the reality is a process and therefore all knowledge with regard to her is also a process that goes from less complex synthesis to more complex others. But these syntheses even if they are complex and are widely based, have to be confirmed with the empirical reality across a deductive process that allows to derive consequences that are verifiable in direct or indirect, mediate or immediate form.

To realize analysis without resting on synthesis (hypothesis, laws and theories) limits us in the wide and deep comprehension of the processes of the universe. Simultaneously, to carry out synthesis from other syntheses without resorting to the analysis can drive to incorrect or absurd conclusions.

Equally, the induction has to exceed the particular facts of which it breaks and establish affirmations of general character since the science does not become exhausted with the observation and measurement of the empirical facts. Also, these generalizations (hypothesis, laws and theories) serve as handlebar to explain the behaviour of concrete phenomena and to face other empirical investigations by means of the deduction of particular consequences.

The process of abstraction in the construction of the knowledge

What sound the scientific abstractions? Of what does the process of abstraction consist?: What is the criterion to demonstrate the veracity of the abstractions of the science?

In the daily life, the abstract thing makes a mistake frequently with the cloudy thing, with what it does not belong to the reality. It is said, for example, that certain person has an abstract conception of the things when it wants to devote being understood that his way of thinking is removed from the reality.

The abstractions that the common man carries out, in contrast to those of the scientist, do not allow to reveal the essence of the things, the law of the phenomena; in other words, to penetrate the appearances, the phenomenon or, in terms of Kosík, to destroy the world of pseudoconcretion to penetrate in the thing itself. It is necessary, therefore, if one tries to reproduce the processes and objects of the reality in the abstract thought to discover his essence, or, the aspects and relatively stable and fundamental relations, to realize abstractions of scientific character.

The scientific abstractions (sound) those widespread concepts prepared by the human thought, abstracted of the concrete, direct character proper, of the fact or of the investigated phenomenon, of

his features and peculiarities not essential, which allows to reveal the most important and essential aspects of the phenomena that are investigated, to know his causes objectives, to reveal the laws that govern these processes and phenomena.

In accordance with this definition, the scientific abstractions are the concepts, the categories and his relations (laws, hypothesis) that the human thought prepares with base in the concrete reality and in whom emphasize the aspects and fundamental relations of the processes or objects with the intention of knowing the laws for which they exist, they develop and transform.

The scientific concepts, that are to say, the abstractions, they take place in a certain theoretical and historical context and they are being a part of theoretical systems, of laws. “The abstractions do not exist separatedly, to the margin of the connection with other products of the human thought. A series of interrelated concepts of a special way can form a new concept, a new, more concrete, and more exact and finished knowledge, which describes more exhaustively one or another phenomenon.

The realism aristotlelics, from point of view of the knowledge, pushes back the existence of the innate ideas. “Everything what is in the intelligence has happened for the senses”, it says his famous motto of Aristotle.

The intellectual knowledge is obtained from the sensitive knowledge. And it is not that this one only serves as occasion so that the idea arises, but the sensitive fact brings with it the intelligible information, which are inadvertent for the senses, but then, illuminated and received for the intelligence. This one is, grosso way, the process of abstraction.

The general concepts (categories) involve other concepts, for example, it includes that of social class, in accordance with the definition of Lenin, concepts as: system of social production, means of production, social organization of the work. The mathematical equations imply the interrelation of concepts: where E = energy, m = mass and c = speed of the light. The laws are relations between concepts to explain a certain plot of the reality for example, the Law of the Universal Gravitation of Newton: " Every particle of the Universe, it attracts to each of other particles with a force that is directly proportional to the product of the masses of the particles and inversely proportionally to the square of his distance.

The concepts, the categories, are abstract representations of the reality that they reproduce by means of the thought for the aspects and essential relations of the processes and objects.

The content of the concepts is a target and historical, that is to say, there corresponds to the reality objective that, as has already been said reiterated, he is in movement and transforms in his occurring historical. For it, with the concepts it has an adjustment to the reality and not this one to those, which implies a permanent investigation of the processes and phenomena to adapt the content of the concepts to the situation from which they are extracted, in order that they serve as instruments in the concrete investigation; otherwise, the abstract representations of the processes prove of little or no utility in the scientific chore.

The categories are the most general concepts inside a particular branch of the science (in physics: mass, energy, atom; in biology: life, species, heredity, etc.).

The philosophical categories of the materialistic dialectics are applied to all the sciences since they have validity for all the

processes and natural, social objects and of the thought: cause and effect, content and form, essence and phenomenon, the singular thing and general, need and causality, possibility and reality, the contradiction, etc. The categories, as the concepts, are prepared in the process of the practice sociohistórica of the individuals. "The categories as other concepts do not remain stagnant, invariable. They change, develop, prosper with a new content. This happens first of all, because it changes the reality itself and, in second, because our knowledge develops on her" across the practice linked to the abstract thought.

The categories and the concepts serve as instrument in the cognitive activity of the man, since they provide the aspects and essential connections of the processes and objects that must be investigated in order that the process of investigation is not erratic or of few utility in the discovery of the truth objective. The construction of knowledge presupposes the attachment between the abstract thought and the reality that is studied to be able to corroborate the concepts, laws, theories, as well as to obtain a wider new knowledge and I require that it should allow to reproduce in the abstract thought the processes in his essential aspects.

The scientific abstractions are the most finished product of the human thought and, for the same, the process of his making is complex and dialectical since it breaks of simple abstractions up to going so far as to construct theoretical complex systems showing a constant improvement in the expositions.

The analogy

It consists of inferring of the resemblance of some characteristics between two objects, the probability of which the remaining characteristics are also similar.

In the daily life we use frequently analogical reasonings. Almost we all understand for analogy, for example, that an electronic device of certain nationality must be of good quality, for the fact that we have dyed other of the same mark that made us satisfied. But it can happen that the electronic device, in spite of everything, does not have the awaited quality. The analogical reasonings are not always valid. His conclusions have major or minor grade of probability.

There exist, for Copi, several criteria by means of which it is possible to judge the probability of the analogical reasonings.

1. The number of cases that present resemblances. If the not one, but several times that an automobile of certain mark has trumped and, also, if this has happened with some frequency the grade of probability of which a new car of this mark goes out defectively is major than if it will be a question of only one case.
2. The number of aspects that present analogies. Insisting on the example of the automobile, we can say that the analogy will have major probabilities if it is of the same mark and of the same style; if it was bought in the same agency, he will support the same dealing started to the previous one.

3. The force of the conclusions with regard to the premises. If a student takes a medicine that takes a stomachache from him in 10 minutes, the analogical reasoning of another student, it is the sense of that this medicine also will take a stomachache from him in a little time, it will perform big probability (it would bring over in any nearby minute). It will diminish his grade of possibility, if it infers that his pain will come out in eight or in twelve minutes (the time is restricted). And it would be even less the probability if it reasons that will take him from him also in 10 minutes, the same that to another student.

The latter it represents only a probability; the first two reasonings represent major make possible.

4. The number of differences between the examples of the premises and the example of conclusion. The previous conclusion of the example of the students diminishes his probability if there is between them big difference of age and of organic conditions; it could be that one has suffered during much more time that other this discomfort, and has become less sensitive to the medicine. This difference diminishes the force of the conclusion of the previous criterion.

5. The differences in the examples of the premises. The analogical reasoning has major probability meanwhile it is more different the examples of the premises. Big probability exists in the conclusion that an automobile will be of good quality because other twenty it were. But there will be still major force in the probability if there exist a lot of differences between they such as that of that belongs to different model, to different year, of having been submitted to different dealings, and being used in very diverse climates.

6. The relations of the analogies with the conclusion. The conclusion will have more force when the analogies are more narrowly related to the conclusion. In case of the automobile, the potency, the engine and the electrical system they make mainly his good quality possible, that the mark of the rims, the colour of the garb or the accessories. If someone was reasoning that his automobile has to make it satisfied because it has the same colour as another car, it might not obtain force in his conclusion. This one will have major visors of probability if it is based on only one analogy related to the conclusion, and with the good functioning of the automobile.

The analysis and the synthesis

All the phenomena that appear to the consideration of the man are too many complexes if one examines them thoroughly. They are simple only at first sight. If the causes want to be investigated, it becomes necessary to separate in parts the phenomenon to study it of better way. But since in this separation errors could be committed, it is essential to join again the parts completely separated in order to see if it is possible to turn to integrate of equal form. If one entrusts us to decide on the quality of a book, first we will have to separate it in parts to be able to study it; we might consider separately the literary style, the thematic aspects and the facility to be understood. This would facilitate to penetrate more to the work. Once completed this study, there will meet in everything what we observe separately, which will be our verdict with regard to the quality of the book.

This procedure used as for the book, repeats itself daily in all the matters of the life.

The scientific investigation is not foreign to these procedures. The scientific method uses this decomposition and repairing. To the decomposition there is called he an Analysis, and the repairing is named a Synthesis. The analysis is the intellectual operation that considers separately the parts of everything; the synthesis assembles the parts of the quite separated one and considers them to be a unit.
The concepts of "everything" and “parts“ are interrelated. Everything presupposes the parts and the parts they presuppose everything.

They all, as composition of parts, are diverse. There exist “ all “ who only add parts, like a heap of oranges; and all the unitary ones, that like units depend on diverse organizing beginning. They can be organized by physical relations, since it is the case of the atom. It can, in another case, be considered to be a unit by human or spiritual relations; such is

the case of a painting or a building, where the physical elements receive felt only according to the man that it is simultaneously one of his parts and his organizing beginning.
They "all" can join in wider "all". The cells form textiles and these integrate organs. The organs compose devices and these you compose systems; systems that are reports of "every" so-called human being.

It stays for saying something with regard to the "part". The parts can be considered like: " you divide all " when they "all" form " parts " of major "all"; the word is " it divides everything " of the phrase.

" Reports - elements " that are parts that do not integrate " all " for lacking simultaneously " all "; such would be the case of the lettering with regard to the words. " Reports - pieces " are arbitrary parts that do not result from his internal structure, but of the caprice of our will. It is logical that a quarter splits into flat, walls and roof. It is arbitrary that splits into dividing walls, cement and rods, which would result from his demolition; these would be " reports - pieces ".

To the analysis that we consider, obviously he is not interested in the " parts pieces "; " separable parts " are that they can be considered separately, as the engine and the bodywork of an automobile. " Inseparable parts " cannot treat separately of another object; such would be the case of the colour that is inseparable of the extension. " Genetic parts " consider the time and the change; they go on from one object to different other. The oxygen and the hydrogen are not present "parts" in the water, in the sense of other examined parts. Both are gases and as such they are not present in the water.

"The analysis and the synthesis that studies the logic – say Rosemary and Pucciarelli – is intellectual, not material procedures. It is not a question of putting really separately the components, but of considering them separately. The material analysis, which removes one of other the

components, is only the auxiliary one of the intellectual analysis, and it does not coincide with him completely, since in the analysis it goes over of ordinary to not material aspects, since we will see immediately. It would be a rude error to conceive any analysis on the model of the chemical analysis, or of any other analytical material procedure.

The analysis and the synthesis can be studied in two planes: the empirical one and the rational one. In the empirical plane, these procedures are applied, for example, in the decomposition and repairing of the mineral water, from the oxygen, hydrogen, calcium, sulphur, lithium, etc.

With the purpose of clarifying the relative thing to the analysis and the synthesis, it is suitable to be necessary to what extent they intervene in the scientific thought.

All scientific knowledge is, actually, the synthesis of a lot of other previous knowledge. The hypothesis they gather synthetically the results of the experiments. The scientific theories represent the synthesis of the whole set of knowledge of very general relations. In any scientific investigation the analysis is used frequently in order to know better the recondite nature of the phenomena. But this analysis does not consist only of the separation of the elements of everything. The analysis tries to be dynamic; one does not happen without other one.

“First the immediate declarations of the existence are analyzed, discovering his fundamental aspects. Then these elements are synthesized in the rational reconstruction of the existence, which is formulated by means of an explanatory hypothesis. ”

Later, when the hypothesis has turned theoretically, there is analyzed the evolution of this synthetic simple form, discovering this way the necessary elements to practise a top synthesis. And this way it is

continued continuously in the advance of the scientific knowledge, which passes from the rational synthesis to the experimental analysis, of the synthesis realized in the experiment to the employment of the reason analogized, from the analysis of the experiment to the synthetic development of the reasoning, of the rational analysis to the experimental synthesis.

Process of the scientific resource

For consensus, let's give known that, on having alluded to a process, we will be doing it to the temporary, tidy and systematized sequence of steps continuing to achieve an end subject to foreseeable, typical results of this process and not of other.

The process begins with a question tied to a problem of investigation, in fact, which has the characteristic of practicality, in turn that is related to a tentative or probable affirmation from a theoretical sustenance, which puts the investigator in the central point of the probable assumptions.

The real knowledge does not rest on the simple apprehension of the things, the same that if this one is carried out separately as if it is obtained across statistical sets. Therefore, the illation and the deduction constitute the only base of the knowledge. The important thing there is the secret that lies I conceal behind the disconcerting evidence. To think scientifically there means not to take the things such a which they present us to him, but it consists of formulating questions and of giving them shrewd and persistent responses up to managing to cross cluttered plot of the experimentation and the truth.

7. THE SCIENTIFIC METHOD AND THE GENERAL METHODS

Nevertheless, whereas the representatives of the " way more raised towards the truth " toil to demonstrate that the procedures – disciplined and positive - of the science limit his radio of action up to the point of excluding the undoubted aspects of the reality. And on what do these base such a point of view?

His argument rests, first of all, on the presentation of the scientific method as interested only the physics and the chemistry (experimental sciences), that is to say, on the measurable thing (what can measure oneself, weigh and count), excluding aspects of the reality as the life and the human mind, which remain limited – and to this they give it discounted - exclusively to the material thing, to the corporeal thing, to the external thing. Secondly, they have to demonstrate that the scientific reasoning constitutes a strict process of deduction, process from which the imagination and the intuitive thought are excluded.

In other words, the scientific method has his base and position on the theory mechanicist (everything is considered to be a machine, and to understand everything we must decompose it in small parts that they allow to study, to analyze and to understand his connections, interdependence and connections between everything and his parts), and, consequently also the same character.

If it was really like that, it is clear that there would stay out of the scope, the scientific reasoning vast fields or plots of the reality, of the truth; being then necessary to find a new way that takes us up to the same truth.

Any more the science is not in any way limited to the measurable thing. "The role redeemed by the measurement and by the quantity (quantitative qualities) in the science – says Bertrand Russel - is in very

important reality, but I believe that sometimes he is overvalued. The qualitative laws can be so scientific as the quantitative laws. " The science is not limited to the physics and to the chemistry either; more for the defenders of the " high way towards the truth " it is convenient for them to believe that it is like that. For them it is necessary, in effect, to present to the science as be limited, for the same nature, to the task of preparing the stage so that the entry in he a higher form of knowledge.

But the sphere of the action of the science is already quite wide, not already to include to the biology and to the psychology, to the economy and to the anthropology, to the sociology and to the history, but also his methods are capable of going being modified to if same, with the object of better to be adapted to each of the studied fields.

What does that the scientific reasoning is, first of all, the method of observation, the experiment and the analysis, and, later, the construction of hypothesis and the subsequent cross-check of these. This procedure not only is valid for the physical sciences, but it is perfectly applicable to all the fields of knowing.

Along the history, the man has faced a innumerate of obstacles and problems to unravel the secrets of the nature, so much to live with her, as of her in "perfect" harmony. To overcome these problems it has used very diverse strategies, which passed to the formalization of procedures that, ultimately, are not but the proper scientific method.

The scientific method is the raised procedure that follows in the investigation to discover the forms of existence of the processes targets, to unravel his internal and external connections, to generalize and to deepen the this way acquired knowledge, to go so far as to demonstrate them with rational rigor and to verify them in the experiment and with the skills of his application.

After targets refer to the forms of existence of the processes, Elí de Gortari is doing it to the diverse ways in which the processes of for yes existing develop and only to them; and when he says that the purpose is to redeem his internal and external connections, it is referring fenomenológicamente to the natural process of the events of the nature, but not to all, only to those that still do not have a finished explanation that they realize precisely of how they happen such or which phenomena, and of that, laws, theories stem, models, which later will be a starting point for the search of new knowledge.

The scientific method is used in order to increase the knowledge and consequently to increase our well-being and our power (objectivity extrinsic or utilitarian).

In rigorous sense, the scientific method is only, both in his generality and in his peculiarity. To the scientific method also he is characterized as a feature typical of the science, both of the pure one and of the applied one; and by his familiarity it can be perfected by means of the estimation of the results to which it leads by means of the direct analysis.

Another characteristic is that, it is not autosufficient: it cannot operate in one it emptied of knowledge, if not that needs from some knowledge previous that could then readjust and reelaborated; and that later could complement each other by means of special methods adapted to the peculiarities of every topic, and of every area, nevertheless in general the scientific method becomes attached to the following principal stages for his application:

1. To enunciate formulated well questions and believable fertilize.
2. To arbitrate guesswork, founded and contrastables with the experience to answer the questions.

3. To derive logical consequences of the guesswork.
4. To arbitrate skills to submit the guesswork to contrastación.
5. To submit in turn to contrastación these skills to verify his relevancy and the faith that they deserve.
6. To carry out the contrastación and to interpret his results.
7. To estimate the pretension of the truth of the guesswork and the loyalty of the skills.
8. To determine the domains in which they cost the guesswork and the skills, and to formulate the new problems caused by the investigation.

Described from another point of view, we can say that the scientific method is the way for which we try to give response to the questions about the order of the nature. The questions that we raise to ourselves in an investigation generally are determined by our interests, and determined by the knowledge that we already possess. On these two factors there depends also the "class" of response that we will have to consider to be like "satisfactory", once found.

The scientific method is the general used, tacit logic or explicitly to value the merits of an investigation. It is, therefore, useful to think about the method scientific as constituted by a set of norms, which serve as bosses that must be satisfied if some investigation is estimated as responsibly guided investigation which conclusions deserve rational confidence.

The scientific method continues that a univocal direccionalidad that him is typical, because the as such method is in yes a procedure directed to a target, trying to achieve it takes implied a dynamics that for the case of the scientific method begins with the Phase of the Observation, where the subject expert (scientist) contacts the phenomenon, and it is known about him a little, a little that he induces it to keep on looking; in the second big moment, level supposes of that one true phenomenon really,

this is, in the second phase, or Phase of the Exposition of the hypothesis, which based on knowledge previous and on the information for gathering, might be demonstrated; finally we have the Phase of Cross-check, which depends on the grade of generality and sistematicidad on the hypothesis. The evidences that they verify or disapprove are equally estimable.

The postulates of the Functionalisms are:

a) That of the functional unit of the society,

b) That of the universal functionalisms, and

c) That of the indispensability.

Of these postulates one can detach that the society:

1. It is a totality of parts interdependent and interrelated (that work harmonically).
2. As complex structure of groups and individuals, stays joined by a jumble of social relations.
3. It is a system of institutions related between yes and that react reciprocally.

4. It can be considered as everything who works, or a system that operates, and that.
5. The different components of the society constantly act and react between yes, adapting itself for yes same or being prepared of different ways for the changes or processes that take place in other segments of the society.

The functionalisms has influence of the metaphysics as soon as that accepts the change of some parts of the system so that this one keeps

on working, but it pushes back the change or transformation of the whole system. His idealistic robes are in the fact of considering to the social structure as the result and the particular way of the mutual effects of dispositions, feeling and emotions of the human beings and therefore, do not hold to laws objectives.

It is preferable, to name to the theory the theoretical conception or general theory, which is a set of concepts, categories and general laws on the processes and objects of the reality. From this general theory the general method of conceived knowledge stems – although in fact he is inserted in her – this one as the way of tackling the object of study and which is a general for a certain theoretical conception.

Yes he considers to the phenomena of the nature and of the society in movement, in constant development, that is to say in his past, present and future; in his connections and interaction; in his internal contradictions, and it is considered that the quantitative changes transform in certain moment and conditions, in qualitative changes, the method of knowledge will be a dialectical materialist; but if it is conceived to the phenomena and objects as something finished, immutable, that is to say, without change, and each of the aspects of the reality are analyzed in outlying form, and there does not exist interest to know the essential causes for which the phenomena arise, they develop and transform, then in approach it will be metaphysical.

Any general theory or theoretical conception involves certain concepts and his interrelations that realize of the form as the processes and objects are conceived. In case of the dialectical materialism, the concepts, categories, beginning and general laws, they are: the matter, the movement, the contradiction, cause and effect, essence and phenomenon, form and content, appearance and reality; the beginning of the historicisms, and of the connection and interaction of the phenomena, the laws of the dialectics, between others.

These categories and general laws – that are a part of the Marxist philosophy: the dialectical materialism – they realize of a certain conception of the reality and, in turn, they are methodological instruments that face the apprehension of the phenomena of the concrete reality.

Also, the theories, laws and hypotheses that are prepared in the different fields of the science (for example, the theory of the classic mechanics, the Marxist theory of the social classes), they allow to tell the causes of the phenomena or the relation between them, but simultaneously, such laws or theories turn into methodological instruments that guide the process of knowledge of the particular phenomena object of study.

The matter of the relation between the theory and method must be docked, in his first moment and level, as the relation between the theoretical conception or general theory of the processes and objects, and the way of tackling the study of such processes (general method of knowledge, which for us is the dialectical one that possesses a truly scientific character as soon as that allows to discover the essence of the objects and processes to formulate scientific laws. The dialectical materialism supposes that everything is linked and in interaction.

In the process of the scientific investigation there is used diverse methods and skills as the particular science about which it talks each other and in accordance with the concrete characteristics of the object of study.

There exist, nevertheless, methods that generals can consider for all the branches of the science while they are procedures that are applied in the different stages of the process of investigation with major or minor emphasis, according to the moment in which this one develops. These

methods are the analysis and the synthesis, the induction and the deduction.

7.2. The Analytical Method

The analytical Method is that method of investigation that everything consists of the dismemberment of, decomposing it in his parts or elements to observe the causes, the nature and the effects.

The analysis is the observation and examination of a fact in particular. It is necessary to know the nature of the phenomenon and I protest that it is studied to understand his essence. This method allows us to know more of the object of study, with which it can: to explain, to do analogies, to understand better his behaviour and to establish new theories.

What does He mean to analyze?

To analyze means to disintegrate, to decompose everything in his parts to study in intensive form each of his elements, as well as the relations between if and with everything.

The importance of the analysis resides in that to understand the essence of everything is necessary to know the nature of his parts. Everything can be of different nature: the quite material one, for example, certain organism, and his constituent parts: the systems, devices, organs and textiles, each of which can separate to carry out a deeper analysis (this does not mean necessarily that a device or organ has to separate physically of the rest of the organism; in other words, to isolate an organ or device means here that do not take in account other parts completely). Other examples of everything the material one is: the society and his parts: economic base (productive forces and social relations of production) and the superstructure (political, juridical,

religious, and moral). The society is the quite material one while it exists out and independently of our conscience.

Everything can be also rational, for example, the products of the mind: the hypotheses, laws and theories. We decompose a theory as the laws that integrate it; a law or hypothesis, according to the variables or phenomena that they link and the type of relations that they establish, therefore, one can speak about empirical analysis and rational analysis. The first type of analysis drives necessarily to the use of the second type; by it he is considered to be an auxiliary procedure of the rational analysis.

The analysis goes from the concrete to the abstract thing since it supports the resource of the abstraction one can separate the parts (to isolate itself) completely as well as his basic relations that are of interest for his intensive study (a hypothesis is not a material product, but it expresses relations between material phenomena; then, it is the concrete one of thought).

7.3. The Synthetic Method

The synthetic method is a process of reasoning that tends to reconstruct everything, from the elements differed in the analysis; it is a question of doing consequently a methodical and brief explosion, in short.

In other words we must say that the synthesis is a mental procedure that takes the complete comprehension of the essence as a goal of what we already know in all his parts and peculiarities.

The synthesis means to reconstruct, to integrate the parts again completely; but this operation implies an improvement with regard to the analytical operation, since it does not represent only the mechanical

reconstruction completely, so this will not allow to advance in the knowledge; he implies going so far as to understand the essence of the same one, knowing his aspects and basic relations in a perspective of totality. There is no synthesis without analysis Engels pronounces himself, since the analysis provides the raw material to realize the synthesis.

With regard to the rational syntheses, for example, a hypothesis, they link two or more concepts, but he organizes them of a certain form; on having linked, the concepts undernourishment and industrial accidents can give for turned out a hypothesis: as it increases the undernourishment of the workers, the valuation of industrial accidents increases. The hypothesis is a synthesis that can be simple or complex. Also, all the materials can be simple (an organism unicellular) or complexes (a mammalian animal); the societies can be relatively simple (a primitive community) or complex (an industrial society).

The synthesis, be material or rational, it is understood in the thought; for it, it is necessary to point out that the thought, if it does not want to incur arbitrarinesses, cannot assemble in a unit but those elements of the conscience in which – or in whose real prototypes – the above mentioned unit already existed.

The synthesis goes from the abstract thing to the concrete thing, or, on having reconstructed everything in his aspects and essential relations, allows a major comprehension of the constituent elements.

When it is said that it goes from the abstract thing to the concrete thing it means that the outlying elements meet and there is obtained the real quite concrete one (for example, the water) or the quite concrete one of thought (a hypothesis or law). In other terms,

The concrete thing (that is to say the permanent movement towards a more and more concrete theoretical comprehension) there is here the specific end of the theoretical thought, while it is an end of such a nature, the concrete thing defines as a law the way of acting of the theoretical one (it is a question of a mental action naturally) in every particular case, for every taken separate generalization.

The analysis and the synthesis are opposed in certain moment of the process, but in other they complement each other, prosper; one without other cannot exist since both are articulated in the whole process of knowledge.

7.4. Induction and deduction

We must bear in mind that, in any area of the scientific knowledge the interest takes root in being able to raise hypothesis, laws and theories to reach a wider and deep comprehension of the origin, development and transformation of the phenomena and not to remain only with the empirical facts received across the sensitive experience (it be remembered that in the science there is not true that one about which the facts speak for yes alone).

Also, to the science it is interesting to him to confront his truths with the concrete reality since the knowledge, since it has been said, cannot be considered to be finished, definitive, it is necessary to fit continuously, in minor or major grade as the area about which it talks each other, to the concrete reality which is in permanent change. In this process of going from the particular thing to the general thing and of this one to return to the particular thing we have the presence of two methods: the induction and the deduction.

The induction refers to the movement of the thought that goes from the particular facts to affirmations of general character. This implies going

on from the obtained results of remarks or experiments (that always refer to a limited number of cases) to the exposition of hypothesis, laws and theories that include not only the cases of which it broke, but to others of the same class; that is to say it generalizes the results (but this generalization is not mechanical, rests on the theoretical existing formulations on the respective science) and on having done this, there is an improvement, a jump in the knowledge on not having remained in the particular facts but we look for his deepest comprehension in rational syntheses (hypothesis, laws, theories).

This generalization is not achieved only from the empirical facts, since of already reached knowledge it can be obtained to (generalize) new knowledge, which will be more complex. We insist again: the scientific work does not go from the mechanical step of the empirical facts to the abstract thought; levels of intermediation exist and as it is promoted, the generalizations are losing contact with the immediate reality since they rest on other knowledge which yes have direct or indirect relation with the reality.

To be able to think about the possibility of establishing laws and theories with base in the induction, it is necessary to depart from the beginning of the regularity and interconnection of the phenomena of the nature and the society, which allows to go on from the description (that refers fundamentally to the empirical facts) at other levels of the science: the explanation and prophecy across laws and theories.

It can be said that the conclusions obtained across the induction have a probable character, which increases as there increases the number of particular facts that are examined.

It is necessary to emphasize that the procedures of the induction only allow to establish relations between empirical facts (empirical laws); to formulate theoretical laws that they explain to those, it is necessary to

rest on other theoretical existing expositions on the frames of the science about which it talks each other.

The deduction is the method that allows to go on from affirmations of general character to particular facts. It comes of deductive that means to descend. This method was widely used by Aristotle in the syllogistic where from certain premises conclusions stem: for example, all the men are mortal, Socrates is a man, then, and Socrates is mortal. Nevertheless, the same Aristotle was attributing big importance to the induction in the process of knowledge of the initial beginning of the science. Therefore it is clear that we have to go so far as to know the first premises by means of the induction; because the method for which, up to the sensitive perception it implants the universal thing, is inductive. ”

The deductive method is present also in the axiomatic theories, for example in the Geometry of Euclides where the theorems are deduced of the axioms that are considered to be beginning that do not need demonstration. They exist another related method from the logical point of view: the hypothetical one - the deductive one. The difference with regard to the axiomatic one rests on that the hypotheses of which particular expositions are deduced are prepared by base in the empirical material gathered across diverse procedures as the observation and the experiment.

In this deductive process one has to take in account the form as there are defined the concepts (the elements and relations that they understand) and it is realized in several stages of intermediation that allows to more particular others to go on from general affirmations up to approaching the concrete reality across warning or regarding empirical. This procedure is necessary to be able to verify the hypotheses with base in the empirical material obtained across the scientific practice.

The deduction redeems a very important role in the science. By means of her the beginning discovered to particular cases is applied. The role of the deduction in the scientific investigation is double:

a) First he consists of finding unknown beginning, from other acquaintances. A law or beginning can come down to other one more general that includes it. If a body falls down, we say that it weighs because it is a particular case of the gravitation.
b) Also the deduction serves scientifically to describe unknown consequences, of well-known beginning. If we know that the formula of the speed is we will be able to calculate with facility the speed that develops a plane. The mathematics is the deductive excellent science; part of axioms and definitions.

Immediate and medium inferences. In the deductive reasoning there are recognized two classes of inferences (taken like synonymous of conclusion, although some authors reserve the name of conclusion for the complex inferences). The immediate inference of a judgment extracts other from only one premise. In the mediate inference the conclusion is obtained from two or more premises.

Example of immediate inference:

"The books are a culture."

"Consequently, some cultural declarations are books."

Example of mediate inference:

"The Englishmen are punctual."

"Therefore, William is punctual."

From Rene Descartes, the Philosophy continues two main, clearly opposite currents: ***the rationalism*** (centred on the reason) and ***the empiricism*** (which base is the experience). Whereas the Germans and Frenchmen cultivate preferably the rationalism, the English authors are the classic empiricist, which, already from Roger Bacon, in the Middle

age (1210-1292), show a determined inclination towards this type of thought. In the Renaissance, Francis Bacon (1561-1626) is the promoter of the empiricism, and then it is even continued by John Locke and George Berkeley, to his culmination, by David Hume, in the XVIII Th century.

The central idea of Bacon is the critique against the syllogism and the apology of the induction. He says that the first thing that it is necessary to criticize and to push back, if a solid certainty is tried in the scientific investigation, it is the serious one of prejudices that usually slip in in our ordinary knowledge. Bacon is right, on having indicated with all precision four types of prejudices, which plastically, are called idols: idols of the species, idols of the cavern, idols of the forum and idols of the theater.

Bacon detects the abuse of the syllogism aristotlelics as the principal cause of the stagnation of the sciences. He criticizes clearly to Aristotle and his work. In his place, it proclaims the inductive method (generalization from the observation of particular cases) as the key to make to progress to the sciences.

The inductive method in modern version was developed by the Englishman Francis Bacon (1561-1626) and he is tied to the empirical investigations. Bacon pushed back the syllogistic of Aristotle on which the scholastic one was resting (doctrine of the medievo) and which disdained the sensitive experience. In his place, Bacon emphasized the importance of the observation and the experiment in the securing of the knowledge, but it minimized the role of the hypotheses by which it has been widely criticized.

About the science, Bacon has an idea completely utilitarian (john Dewey). Whereas the empiricists – he affirms - are like ants, which only accumulate facts without any order; the rationalist ones or the

theoretical ones are like chandeliers, since only they construct beautiful theories, but without soundness. The real scientist must be like the bee, which digests what it receives, and produces honey for the community to which it belongs.

To construct science it is necessary to proceed by means of experimentation, in order to observe the causes of the phenomena, and to be able to understand the processes of the nature and society. To interpret it, first it is necessary to be docile to her.

The observation can give us the form, or the law of behaviour of the studied phenomenon. The form is like the intimate essence of the phenomenon; but it does not perform metaphysical, but physical and social order, or, observable experimentally.

Undoubtedly, it is necessary to give an affirmative vote of the inductive method. Thanks to him as they can discover the laws that govern the nature and the society.

Nevertheless, it was not necessary to dazzle so much for the efficacy of the induction, as to despise or to leave of side the deductive reason. The correct thing is to be able to use each of two processes: deduction and induction, as be the nature of the science and of the treated matter.

One notice how there is the methodological topic the one that affects often in the philosophical thought of these times. Whereas one inclines Descartes towards the deductive method, the current empiric will incline towards the experimental - inductive method. The true thing is that each one has his own zone of application, without it is necessary to spoil one or another method as soon as such.

7.5. The Cartesian thought in the Contemporary world

Rene Descartes (1596-1650)), has been the most famous genius of the XVII Th century. With him the first dividing stone is placed in the History, with regard to the thought ancient and medieval, and that's why one usually calls him the " Father of the modern Philosophy ", nevertheless of him other thinkers shone also revolutionary, as, for example, Nicolas de Cusa (1401-1464) and Francis Bacon (1561-1626).

His central idea is the creation of a completely unassailable philosophical, free system of the critiques of the subsequent thinkers, and perfectly guaranteed in his truth and in his logical order, suitability to what was happening in the Mathematics, solidly structured mental and immune building to the simple opinions of any layman in the matter.

7.5.1. The rules of the method

To avoid the error, the intelligence is not enough, it is necessary to be able to apply it appropriately, that is to say, it needs a method from itself. Descartes puts special emphasis on the need of a Rational Method, which for beginning liberates the man of the easy fall in the error. In the Speech of the Method (the Second Part) it describes his famous four methodical rules, as it continues:

a) ***Rule of the Evidence:*** Not to accept like really but what is clear. Or, in other terms: to try to receive intuitively the proper object of the intelligence, to knowing, the clear and different ideas. When one manages to perceive the notes typical of an idea and when one manages to distinguish these notes with regard to other ideas, a clear and different idea is possessed, and this is already a guarantee of the truth of the possessed knowledge. For that it is necessary to avoid the prevention and the precipitation. In a word,

only it is possible to possess the truth when the spirit receives the ideas with all his evidence, of an easy way, immediate, serene and clear. This evidence cannot already shut the doubt and the error up.

b) ***Rule of the Analysis:*** "To divide each of the difficulties that go away to examine, in so many parts as it is possible and necessary to solve them better." That is to say, to decompose the complex ideas in his simplest parts; but, also, to go back to the simplest beginning, on which there depends the matter that is examined.

c) ***Rule of the Synthesis:*** " To lead for order the thoughts, beginning for the simplest objects, easier to know, to rise gradually up to the knowledge of the most complex ... " talks each other about the operation opposite to the previous one, and it is complementation. Once divided into parts matter, for his best comprehension, is necessary to reconstruct everything, from the opposing beginning. It coincides, as it has been studied in Logic, with the Deduction. The important thing consists of the gradual procedure that advances logically (with chaining and natural congruity), from the simple of the beginning, to the complex of the conclusions, theorems and other consequences of the first truths.

d) ***Rule of the Enumerations and Repetitions***: " To do so finished enumerations, and so general reviews, as for to be sure of not omitting anything. " With this there chases a global intuition of the treated matter, in such a way that the intelligence possesses and dominates the matter from the beginning up to the end, which supposes the repetition or revision of the walked way.

This way, simple and coherently, Descartes proposes to the intelligence the four most important rules that it is necessary to bear in mind if an effective result is wanted in his functioning. Therefore, we must allow that the mind should notice, for yes same, the treated matter, which the effort should split into sufficient parts like to

simplify the work, which reconstructs the totality of the effort, and which checks globally the result.

7.5.2. The Methodical doubt

As soon as the method continuing was established, Discard it proposes to build a perfectly structured Philosophy, like the mathematical sciences. For it will be necessary to depart from an absolutely undoubted truth, and from which it is possible to derive the whole philosophical building.

To find this first truth, it is necessary to erase, in advance, all knowledge that is not properly based. Therefore, attention is necessary to pay omits, or better, doubt, of everything what we perceive for the senses, and of all the scientific knowledge.

The doubt that Descartes proposes takes as a purpose the foundation of the new philosophy on undoubted bases. Therefore, it is not a question of a skeptical doubt, where the end is to doubt for doubting. It is a methodical doubt, put only as a method or way, to come to a completely clear beginning.

In these conditions, with a certain ambiguity with regard to the seriousness of the methodical and universal doubt, Descartes it is thrown to the search of his first beginning. If I doubt (he reflects this way in the Fourth part of the Speech of the Method), ***it is that I think, and if I think, the fact is that I exist***. From this way comes to what looks like to him his first fundamental beginning: ***"I think, and then I exist". (Cogito, ergo sum).***

7.5.3. The first Cartesian beginning

It is not so original Descartes on having announced his fundamental beginning: “Cogito, ergo sum”. San Agustin had already used a similar weapon, against the skeptics: " If fallor, sum” (if I am wrong, I exist). Nevertheless, the innovation, in Descartes, consists of the fact that, for the first time, tries to erect on this truth the whole body of philosophical truths. His beginning will work like the axioms of the mathematical sciences.

The "Cogito" (this way one usually calls to the first Cartesian beginning, for briefness) is, since, a fundamental intuition. Everybody will be able to doubt on what he wants, but he will not be able to doubt his own existence. If he doubts, it is that he thinks, and if he thinks, the fact is that it exists.

For his{your} part, Holy Thomas never speaks about this intuition of the proper one I; what is known is the effect, the fruits, and by means of them, but already in a mediate way, we can step back even the substance, which is inferred as the cause is inferred from the effects, and not for intellectual intuition (direct and immediate vision of the object).

7.6. The procedures of the induction, John Stuart Mill (1806-1873), it exhibited them in the shape of rules:

1. Method of resemblances: " If two or more cases of the phenomenon submitted to investigation have of common only a circumstance, then this circumstance – in which only they reconcile all these cases – it is the cause (or consequence) of the given phenomenon. ”

The importance of this procedure takes root in that it allows an approach the knowledge of the real cause since it helps to eliminate diverse factors, because they do not keep relation, although it is possible to incur error this point. Secondly, it indicates that certain factors seem to happen jointly. In the third place, he allows us to observe that, in the concrete situation, the factor.

2. ***Method of the difference:*** " If the case in which there appears the given phenomenon and the case in which it does not appear they are similar in all the circumstances, except in one, which they find in the first case, this circumstance in which these two cases differ only, it is the consequence or the cause, or the necessary part of the cause of the phenomenon."

3. ***Combined method of resemblance and difference:*** " If two or more cases of emergence of the phenomenon have in common only one circumstance, and two or more cases in which this phenomenon does not arise have in common only the absence of the same circumstance, of that time such a circumstance in which only both types of cases differ, it is the consequence or the cause, or the necessary part of the investigated phenomenon."

4. ***Method of concomitant changes:*** "Any phenomenon that changes somehow whenever another phenomenon several in a particular way or it is the cause or is the effect of this phenomenon, or it is connected with him by some cause."

5. ***Method of residues:*** "To separate from the phenomenon such part, which is known by previous inductions, that it is the effect of certain precedents and the rest of the phenomenon is the effect of other precedents."

8. - THE PHASES OF THE SCIENTIFIC METHOD

Characterization of the problems

The expressions of the thought constitute questions and problems for resolving, or, responses and solutions to the realized investigations. In this sense, the course of the scientific knowledge consists of an uninterrupted succession of problems that arise from the results obtained in the previous investigations and are solved by means of the reasoning and the experimentation.

To find the solution of these problems, the scientific activity has established suitable procedures and unrolls continuously new others. Between they find the experiments that they inform us, so exact and completely like there is possible, about the natural and social processes, the same that on his active connections and his mutual causality. Also there are the theories, which allow us to assemble the results of the experiments in a common, necessary and sufficient explanation. Finally, we have the application of the above mentioned theories to intervene, in a direct and concrete way, in the behaviour of the processes of the society and of the nature, doing that produce the satisfaction of the human needs and solving practically, this way, the problems that impel the proper scientific activity.

In general terms, for problem we understand any difficulty that cannot be solved automatically, that is to say, with the alone action of our instinctive and determined reflexes, or by means of the memory of that we have learned previously.

On the other hand, in addition to the problems that impose on us directly the natural and social conditions in which we live, constantly we are creating or inventing other problems; like with, for example, the explanation of the newly open processes, the demonstration of

theorems, the cross-check of hypothesis, the decision between two or more theories of battle, or, the transformation of the nature and the society.

ELECTION OF THE TOPIC

In the election of the topic it will materialize, as much as the object of knowledge is possible; also there will have to be structured the tentative title of the project of investigation, tentative because it might do him to him some small precisions during the process of the investigation.

The object that tries to be reached on having delimited the topic is finally to avoid deviations as soon as the process was initiated, that's why from the beginning it is necessary that the topics are conceived by some fundamental characteristics that assure the success of the work, and that are those who are suggested next.

EXPOSITION OF THE PROBLEM

The problem is the fixation of the contradictions that happen in the proper reality, contradictions that are fixed in the theory and that conclude once "clarified" with the exposition of a new problem, which solution might be solved by other investigators. For a suitable exposition of the problem it is needed of, to eliminate of the problem any deceitful addition, or, to identify those difficulties that collide with the theory.

The process of solution of any problem, he supposes as necessary condition, the suitable and scientific formulation of the question that one finds in the base of the problem. If the problem is formulated scientifically, the way for the solution is more clearly definite. A correct exposition of the problem, also it must make clear the premises that allow to solve it, from the reality as condition for his solution united to

the assumption of a theoretical examination, fixing logical - methodological certain forms.

One of the most important heuristic rules for the solution of problems consists of the fact that this one could resolve oneself using initial, clearly included and stipulated idealizations, which simplify his complexity without prevaricating the reality showing the general tendency of the development of the investigated object, since it is in the reality in the one that finds his possible solution.

Another heuristic rule, it is the demand of solving on parts the problems, this condition is the relative one to the differentiation of the conceptual device (conceptual frame) that consists of doing from now a clear distinction between the concepts involved in the problem itself, since think the absence of differentiations them the scientific treatment of the problem makes possible. This conceptual differentiation for his essence represents the process previous for the making of the hypothesis, which in yes same realizes of the problem.

Delimitation and place of the problem

Mario Bunge recounts that: “fallible recipes are not known to prepare correct solutions to problems of investigation by means of the mere handling of the ingredients of the problem”. Nevertheless there can take in account some suggestions that they allow to delimit and to locate the problem of investigation as the following ones:

Elements of the problem

The problems as such do not exist, it is the investigator who them raises given his worries, capacity of observation and knowledge.

This affirmation rests on the fact that before a phenomenon or given situation, we all might spend them for high place, but only one stops and one raises the questions that this one wakes up him.

Design of the investigation

This one consists of indicating with all clarity and precision the course and the goal. So to need the field to which the problem belongs would be at first the first step; to determine with all his characteristics the problem to resolve; it would be the second step; to fix the target that thinks about how to be reached, or rather to establish what will be the end that tries to be reached by the investigation; for this the procedures will have to be defined, this is, the methodology and all kinds of requests that will allow to obtain the information by means of the processes if this was the case.

Structure of the scheme

The scheme is the graphic systematized representation, which takes as a principal function to structure a set of ideas and the necessary and essential information of way synthesized with the minor number of words, in a logical order, which allows to receive in only one blow of sight the detached subject-matter.

Immediately after the project of the investigation has been designed and approved, there is structured the scheme that also one meets him as plan of work or sketch; the importance of this section resides in that by means of his structure split into chapters and these in turn in subchapters, they allow in a tidy way to develop his parts with a certain order, or to take it as a base for possible modifications. Generally the first paragraph of the scheme is destined to an introduction, the immediate following chapters, they do a review of the precedents, this is of investigations that they precede the one that is realized. The

intermediate chapters correspond to the development of the investigation in yes, and the last chapters fade to concluding on the results of the investigation.

THEORETICAL FRAME

The theoretical frame is the set of theoretical beginning that guide the investigation establishing excellent units for every problem to investigate,

It is necessary to mention that with certain frequency in the literature the terms are used indistinctly: Marco Theoretical, Marco Conceptual, Marco Theoretical Conceptual, and Marco de Reference. Although it is true that some are understood in others or that they are related between yes, it is worth while doing a precision on this matter. The Theoretical Frame is the paragraph that understands the theoretical relative and exclusive delimitation that gives sustenance to a topic of investigation of logical form, where his conceptual elements are inherent in the theory (s) in study.

Tamayo and Tamayo establishes that the Theoretical Frame fulfills the following functions.

- ✓ Delimitation the area of the investigation; for it will be necessary to select the facts that have relation between yes, by means of a theory that gives response to the problem in question.
- ✓ To suggest handlebars of investigation, to find alternative piece of news of solution of the problem.
- ✓ To summarize existing knowledge in the area that is investigated.
- ✓ To express theoretical general propositions, postulates, laws that will have to serve as base for the most "suitable" formulation of the hypothesis, his operacionalización, and even for the determination of the indicators.

The points earlier above-mentioned can be combined to say that the principal function of the Theoretical Frame constitutes it the intention of giving consistency, unit and coherence to the theories with the investigation in process. The Theoretical Frame, it is so a conceptual methodological instrument that is constructed on the base of the pertinent information to the problem of investigation, more precisely with or the theories that gave sustenance to other resources.

To the chosen information that shows us the advance of the achieved in previous investigations and that are related to the problem of investigation, he is named, State of the Art, and that will be the one that serves as base for the construction of Marco Theoretic. Of the State of the Art it is needed to know what will be the theory that will serve as base to sustain the work in question.

For the making of Marco Theoretic, there be analyzed the theory or the most related theories themselves, that will allow him to formalize the work by means of the reduction of the phenomena to logical propositions, and this way to be able to relate as precisely as possible the theoretical body to the reality to face the search.

Summing up, for the making of Marco Theoretic it will have to be considered to be basically the following thing:

a) The problem of investigation.

b) The reference to the related studies of investigations fundamental and recent, related to the problem of investigation.

c) Place of theorizes or theories base to give sustenance to the investigation in process.

d) Conceptual definition.

e) The theoretical and methodological implications that might allow to determine the theoretical, methodical and methodological limitations.

f) Of previous works, to establish the system of hypothesis that gave them sustenance, and the role that they redeemed in them, and to consider them to the moment to structure the proper hypothesis of work.

g) To outline the variables and of being viable, the indicators.

MAKING OF HYPOTHESIS

In any investigation it is necessary to establish the hypothesis of investigation. The hypothesis must agree with the definition of the problem, as well as with other elements of the design. His principal function is that of producing as an axis handlebar of the investigation, because concerning her they will have to turn all the operations that are realized, this means, that during the process it will not have to lose of sight his functionality.

Definition of scientific hypothesis

The word `hypothesis` derives from the hiccup: down, and thesis: position or situation. Abiding by his etymological roots, hypothesis means a supposed explanation that this one under certain facts, to which it serves as support. The hypothesis is that early explanation that allows the scientist to appear to the reality.
Another definition of hypothesis that the previous one extends, says to us:

A hypothesis is an assumption that allows to establish relations between facts. The value of a hypothesis resides in his aptitude to establish these relations between the facts, and that way to explain ourselves why it takes place.

The hypothesis is an assumption of the existence of an entity, which allows the explanation of the phenomena or of the studied phenomenon. The hypotheses are the tentative propositions that were relating the empirical information to the set of theories adopted and provisionally analyzed in the Theoretical Frame.

In yes to preparing the hypothesis, the investigator does not have the entire certainty to be able to verify it. " The hypotheses will have to be propositions prepared correctly from the formal point of view (not tautological, coherent and contradictory, etc.) and they have to, from the formal correction, provide some meaning, that is to say, they must say something as regards the facts to which one alludes. Secondly, they must be based on the scientific preexisting knowledge or, ultimately, not to be in opened contradiction with what the science knows already about the structure and behaviour of the nature and of the society. In the third place on having raised a hypothesis, it will have to be born in mind that it could be verified appealing to the methodological and technical procedures which the science has.

In effect, the hypotheses forged by the scientists can be directed to explain a set of phenomena, as in case of the ether, or to explain only one fact, like the hypothesis that allowed to discover the existence of Neptune and Pluto.

The purpose of these hypotheses is not different that that of explaining, of giving account of the events by means of the interpolation of facts that might have been observed, in suitable conditions.

What is an explanation?

We can define it as a set of statements of which we deduce the fact or the facts that it is desirable to explain. The explanation allows us to eliminate the problematic character of the things.

The function of a descriptive hypothesis consists of symbolizing the connection been ordained as the facts. An example of this type of hypothesis will be found by us in Ptolemy, in measurement in which this astronomer provided a geometric representation of the celestial bodies, and, on the other hand, the hypothesis of the ether, conceived as a fluid without friction and as solid completely elastic, is actually a descriptive hypothesis.

The analogical hypotheses are those by means of which we formulate a hypothesis basing that what is real in a set of phenomena, can be also real about another set, because both have in common certain formal properties.

The hypothesis is a provisional truth and never definitive. Actually, the science quite can be considered, ultimately, as one continues hypothesis capable of happening and of there being corrected (a wide sense of the term hypothesis). Nevertheless, in the process of the science, it is necessary to distinguish between hypothesis, law and theory.

The hypothesis has provisional character; but it can be purifying and to fit up to turning into a law and later into a scientific theory, which has being a more finished explanation of a set of phenomena, and in turn, being able to include several laws.

When a hypothesis is verified, he acquires the character of law that can be defined as that “constant and necessary relation between certain facts” as it happens, for example, with the laws of Newton's movement.

It is clear that before these laws become verified, Newton formulated hypotheses in which it was presuming what had to happen, and which he remained confirmed on having done the experiments.

The scientific investigation, it does not remain with the external aspects of the processes or problems, but it tries to discover the essential elements that explain these empirical hypotheses, which only can be realized raising theoretical hypotheses that, for the same, are more general and in which those fundamental relations stand out between the phenomena.

Since it has been seen, the descriptive problem refers fundamentally to the declarations or external aspects of the processes and structures and the hypothesis that he tries to answer to this type of problems can link two or more variables, but, this is not sufficient to determine his causes.

8.9. Objectives laws and scientific laws

The changes and the transformations to which the existing processes are subject are regulated by certain constant relations to whom we name laws. The laws objectives constitute this way the general forms of the relations of change and represent the internal and necessary connections in which there takes place the change of the processes and of his properties.

Therefore, in the laws there is made clear the only thing that is invariable inside the flow it continued of changes and transformations, that is the relation of his change. This way we have that the behaviour of the processes is regulated according to laws and, that's why same, the laws exhibit the regularity of the universe.

Certainly, the laws objectives, they apply independently of our will or our conscience, because they are inherent in the nature and the society.

Now then, when the man manages to discover a law objective, it expresses it in the form of a scientific law. Consequently, the scientific law is a rational reconstruction that it reflects to the law objective. The above mentioned reconstruction is improved by the advance of the knowledge, approximately increasingly to the law objective corresponding, but without it could never go so far as to coincide completely with her. Once established, the scientific law expresses a necessary relation that is fulfilled in certain conditions and which effects demonstrate in certain actions that take place in the processes.
We must understand that, the behaviour of the processes is not determined by the laws, but simply regulated by them. This way, the man transforms the effects of a law changing the conditions of the affected processes.

For his part, the scientific laws do not determine to the processes, but they constitute the rules of his determination. This is, that the scientific law does not express what will happen in a certain process, but what will happen when they are fulfilled such and which conditions. In this sense, the scientific laws redeem the function to predict the unknown thing, with base in the well-known thing. Equally, the scientific laws serve as instruments of the subsequent investigations and, meanwhile they fulfill this function, are constituted in integral parts of the scientific method.

In any case, the scientific laws allow to explain the behaviour of the processes, when the conditions of his fulfillment are known. In other words, the scientific laws serve us to answer the principal questions of the science, or, what, where, when, how and why of the existing processes.

Function of the Law

Since the laws are formulated once the cross-check has done and they express constant relations between the phenomena, his principal function is to explain a fact with base in the relation that this one keeps with other.

A singular fact is explained by means of a law, to the effect that such a fact is a particular case of her; it is deduced of her. In other words, a singular fact is an interpretation of a scheme of law or it formulates legaliforme and, therefore, any formula legaliforme can receive a multitude of interpretations, since it specifies a class of possible facts.

The laws are discovered (they are not invented) and show us a relation that happens in the reality, this is, they are schemes targets. The formulae on the other hand, they are constructed but not arbitrarily but expressing these schemes targets.

Recounted to the facts, a formula legaliforme has a limited mastery of validity, beyond which it turns out to be false.

Examples:

- An impossible movement for a plane that flies at uniform speed.
- A possible movement for the same object.
  This means that, although the trajectory is logically possible A, physically it is impossible; which limits the mastery of validity of the formula.

The laws condense our knowledge of the current thing (what is) and what (what can be), and thanks to this they allow us to predict what will happen with a certain phenomenon that has the necessary

characteristics to be an element of the relation expressed by the formula.

Summing the previous thing up, it is possible to say that, the functions of the law are the proper ones of the scientific knowledge: to explain and to predict the course of the phenomena or facts that happen in the nature and in the society.

Two classes of Law exist

Since the formula is the reflex of the reality objective, while more nearby he is to this reality, and better it should express it, in the measurement in which faithfully it should reflect her, it will be considered to be a deeper law or, to say it with technical language, will be considered to be a Law of high level (axiom or postulate). Since the science takes the objectivity as a goal, he must aspire to laws of high level, to formulae legaliformes that do not depend on the circumstances.

On the other hand the laws of low level (theorems) limit themselves to the frame of reference; that is to say, they are formulated according to the circumstances in which there happens the phenomenon that is the element of the relation. Although they are laws of low level and his scope is limited, they fit in a scientific system and stem from laws of high level, on which they are based.

As conclusion, it is possible to say that, <u>the concept of law</u> can mean the following thing:

- Scheme target.
- It formulates (function proposicional) that tries to reproduce a scheme target.
- Formula that it recounts (or it relates) to a scheme target with experience.

- Metastatement (statement of another statement) that refers to a statement legaliforme.
- Rule based on a statement legaliforme.

Finally, since already it has been said that, any fact expires with a set of laws or, if it is preferred, that quite made he might explain oneself by means of a set of formulae legaliformes and, of course, across a set of empirical information, of that time, more than a free law, there is needed a system (chaining, cohesion) of laws to explain a fact. Also it is possible to add that, a system of laws constitutes what is called a "theory ".

Principal target

Will it have to describe and define the principal target and final goal (the material and formal cause) of the investigation?

It is important to develop the aptitude to arrange the ideas and the obtained information; and this way to tune in and to relate a few information to others, giving sense to him coherent and forms, which is translated in significant information for the investigation.

Will it have to describe and define the specific targets of the investigation?
We must achieve that the investigation has or at least it is provided with the following information:

- ✓ A structure interns or body of the investigation.
- ✓ Your arranging of the information of coherent and systematical form.
- ✓ And his connection and relation of the elements that integrate it, can be provided with relations between if.

Must we know that type of investigation will be?

What will be the method that was sustaining the above mentioned investigation?

To define appropriately the methodology of the investigation

To define the theoretical body with some Theory (s) that identifies or several theories that they allow to identify and to define the object of study?

With base in the different "types of ideas" to which one has alluded, the following suggestions do for his application.

General idea: Qualifications or general paragraphs …
Principal idea: Qualifications of questions or important ideas …
Secondary idea: Parts of a paragraph, classifications …
Details: Parts of the parts …

TIMETABLE

It is the paragraph of the design of the investigation prepared by whom it will have to realize the investigation, and in the one that indicates to himself the different stages of achievement of the project as regards the dear times.

To the timetable he is met also like: I chart of Gantt or Calendar of Activities; be which will be the name, the most important thing is that in him there remain registered all the activities of the investigation and the time estimated to realize each of them, must be placed in a logical order, in accordance with the process and the requests of the proper investigation.

8.10. Compilation of the information

It is essential on having made investigation know how to locate the works previous relative to the area of investigation of his interest, for that he must know:

1. The sources of information that contain the previous works or information about them.
2. The organisms that they generate compile or organize this type of information.
3. The form in which it is possible to have access to this information.
4. The corresponding procedures to obtain it, so much in the fatherland as abroad; the time that would be late in having it in his hands and,
5. Approximate cost of the most immediate services to obtain the information.

Skills and instruments

In general many people lose a lot of his valuable time in the bibliographical search and in the compilation of pertinent information, this can owe to the absence of mastery of skills of documentary investigation: handling of convalescent information, record of information, and lacks in the reading skills, between others. While this is a part of the process of the investigation of supreme importance, which helps to give sustenance to the content and to the stages of the above mentioned process

Skills of documentary investigation

The skills of documentary investigation, they centre his principal function on all those procedures that bear the ideal and rational use of the documentary available resources in the functions of information.

Of between the most common cards the principal ones are described and exemplified:

- Bibliographical Card (book).
- Card Hemerográfica (I articulate of magazine, periodic).
- Card Audiográfica (sonorous material).
- Card Video graphic (material of video).
- Card of Electronic Information (information extracted from electronic means, for example Internet.)

Skills of field investigation

After having established it with all precision (s) hypothesis and having defined the variables operationally, by means of diverse resources of compilation of information and with base in the type of investigation, (confirmatory, experimental, etc.), one is in the moment itself to define the Skill of investigation of corresponding field, this is, to develop the type of instruments ex-I profess, as well as the form and conditions in which the information necessary for every case will have to be gathered.

Then, to design the suitable instrument and to establish the form and conditions in which the information was getting up, it is an activity for others the most important that needs from all the attention, they cannot be mistaken in such activity, because as he says commonly: " The errors cost, time and money "; that is to say, we must foresee the consequences that would exist in case of being wrong in the election of the instrument and in his structure, since the type of awaited information, and the times of his application must be needed to measure the behaviour of the variables, and consequently to be able to prove the hypothesis.

OBSERVATION

The observation is a stage of the process of scientific investigation that re-dresses big importance by means of his process, apart from is a major approach in order to study, one is in the moment to take of him, information that are the essential base to quantify and to qualify to this object of study of a scientific way. Observing is to warn the facts such and since they present us to him in the reality of a natural and spontaneous way; as procedure we have to of her knowing about the following way: " I process by means of which deliberately certain existing features are perceived in the reality by means of a conceptual scheme previous, and with base in certain intentions defined generally by a conjecture on which it is needed to investigate something regarding the observable object".

In the above mentioned process of knowledge it breaks of the relation subject - object, where the doubts of the subject are going to be the starting point to investigate about the object. More of this first process, very little or almost not at all it might say of the object, so only we were remaining in the merely contemplative plane, we must go further away and investigate why, how and when a phenomenon is caused, what are the causes and his origin, what elements compose, if his behaviour is sporadic or systematical, these and other questions are those that will allow us to find solutions to problems that for his applicability they would contribute to the process of the humanity.

When the researcher defines his object of knowledge, it is because it already has the intention of knowing something more about him, and when he has already analyzed it is in conditions to say something more about his behaviour.

The observation is the fundamental method of securing of information of the reality (exterior and physical world), everyone it consists of

obtaining information by means of the deliberate and selective, illustrated and interpretive perception of an object or of a phenomenon or certain fact.

The procedure of reception of information by means of questions has predominance in the social sciences, because it re-collects her of information it is realized in an interrogative way, more commonly by means of the interview that is the form in which it is possible to be known in a way more direct than it is necessary to know of the subject.

8.13.2. He interviews

The interview is the practice that allows the investigator to obtain information first hand. The interview can be carried out in direct form, for telephone route, sending questionnaires by mail or in meetings groups.

Personal interview

This one can be defined as an interview every to face, where the interviewer asks the interviewee and receives from this one the pertinent responses to the hypotheses of the investigation. The questions and his sequence will mark the grade of structure of the questionnaire, object of the interview.

The personal interview has the advantage of which the interviewer can direct the behaviour of the interviewee, which will allow him to obtain better interview, that those who do by mail or telephone route.

The personal interview has both advantages and disadvantages in his application. One of his advantages is the depth and the detail of the information that it is possible to obtain. Another advantage is that the interviewer has a major control on the interviewee (if it has the skill)

with regard to other methods, in addition to which it is possible to extend or to clarify the question.

With regard to the disadvantages, two principal ones can distinguish oneself: the cost for interview and that is frequent to meet interviewees who are not desirable to treat very much with strangers, especially when they raise questions of personal type.

Questionnaire

One of the instruments most used for the compilation of information, it is the questionnaire; his validity and structure is going to depend on the capacity and skills of the investigator. The content of the questions invariably will have to be related to the hypothesis, or that, the questions will have to be focused towards the key points, that once the responses are spilt, these contain the information directly related to the hypothesis, but especially, that once codified and interpreted, they allow to confirm or to refute the hypothesis.

But: what is the procedural function of the questionnaire inside the process of the investigation? To give response to this question, it is necessary to have present in the first instance that up to this moment of the investigation, had not been contacted by the reality, because the whole process had been come developing in a strictly theoretical plane and that it is up to the moment in which the questionnaire is structured, when the concepts "are" "translated" to contact the reality, to take of her the necessary information.

Every investigation needs from a “dressmaking to the measurement” of your own questionnaire; the type of questions will be according to the nature itself of the type of investigation, of the problem to resolve and the level of certainty that is claimed, by it, on having prepared the questionnaire, aspects must be born in mind, both of form and of fund,

for it, at once there appear multiple questions that they can contribute to his best structure.

- Was every question derived from the variables established in the hypothesis?
- Did he structure to the beginning of the questionnaire a brief satisfactory explanation, directed to polled explaining the intentions of the same one?
- Did it realize a preliminary test of the questionnaire (pretest) to value his level of reliability?
- Did there consider any guy of scale that should allow him to measure the level of attitude that is wished?
- Do alternative responses admit the questions into sufficient quantity as so that the polled one could express oneself freely, but simultaneously exactly?
- Are the questions simple, brief and written in a language understandable and devoid of unnecessary technolism?
- Are there included questions that for his premeditation they could irritate or offend the polled one?
- Are the first questions of the questionnaire the conductive thread for the remaining questions?
- Are the questions arranged and grouped so that they attract the attention and neutralize the resistance?
- To the beginning of every block of questions, do the instructions corresponding to this block express themselves with clarity?
- Is the questionnaire structured in a such way that facilitates the codification of the responses?
- Are each and everyone of the questions necessary?
- Was each of the questions defined exactly, so that the possible responses generate the type of information that is looked?
- Do the questions cover completely the fundamental aspects of the investigation?

- Might the questions to generate responses, of which the polled one could not answer for not having the required and necessary information?

- Is it needed that the questions it is more concrete as to obtain precise and clear responses?

It climbs

For scale we understand a system of graduation that represents the principal characteristic of the variable that we want to measure, for example: a scale of noise that serves to measure the grade of tolerance that a worker supports in the factory.

Since in the process of investigation the statistical part is tackled and occurs with sets, in general these possess a certain number of units, these units in turn have certain characteristics that it is necessary: to count, assorting or to measure.

Four levels of measurement exist (you climb):

1. Nominal or classificatory.
2. Ordinal.
3. Of interval.
4. Of Reason.

The nominal scale is that one that uses number as "letterheads ", with the purpose of characterizing or of codifying something to facilitate his handling. In this case the order does not have any meaning.

The ordinal scale is the one that serves to order in categories corresponding to the value that acquires the variable (s) that it is considered.

The scale of interval is characterized by his representation across a unit of measurement. An important feature is that in this type of scale the difference proportionality is the same for several scales. Also the order always has a specific meaning.

The scale of reason is that one that represents a proportion or reason of the quantity considered as unit model of the measurement (arbitrarily established). In this scale the order has a meaning.

Test and pretest

Both are instruments destined for the securing of information. His denomination is more usual in the sciences of the behaviour. The test (test Psicométrica) has his equivalent one in other areas of the knowledge with a questionnaire, or, that also applies himself with the purpose of obtaining by means of this one the pertinent information. The pretest (pretest) there will correspond to the test pilot, who applies herself for a sector of the sample (between 15 % and 20 %), to modify the items that will have to allow to measure of a better form the components of the variables.

He polls

The poll is an interrogative process that farm his scientific value in the rules of his procedure, uses him to know what the people think about a situation or problem that involves it, and since the only way of knowing it, it is asking, then there are proceeded to poll to who it involves, but when it is a question of a very numerous population, only this one is applied to him to a subcommittee, and here the important thing is in being able to choose the persons who will be polled so that the population is represented that will be polled so that the whole population this one represented in the sample; another point of

considering and of treating carefully, they are the questions that will be given them.

The type of information that is gathered by this way in general corresponds to: opinions, attitudes and credence, etc.; therefore, it is a question of an opinion poll of opinion. Only when the governmental entities need from the opinion of the whole population, they come to the referendum or to the raising of a census.

8.13.8. Field newspaper

This one arranged captures his name of the act of extracting in a systematical and controlled way the information of the reality, as they happen. This activity centres on the stage of field investigation; his value consequently owes to the fact of allowing the investigator to be the mediating only one between the behaviour of the phenomenon and the information that are gathered.

His structure will be according to the number of necessary remarks, as well as of the type of facts or acts to observe, established to priori, and of the conditions in which the information will take.

In the natural sciences and in the applied sciences the precision with which the information must be gathered needs even from the support of precision instruments, while in the science social there are different the conditions that are needed, not less important or lacking in scientific value; for example, to observe the behaviour that a group of children presents the first day from his revenue to a nursery school, it will be foreseen that the ambientación is the same for all the children, and that she is his mom who delivers them to the babysitter.

Open questionnaire (across him the information will be obtained)

1. What aspects have influence and prevail in the conduct of the teacher and the student?

2. How to be useful and to direct the intellectual and emotional capacities in the student?

3. What activities allow and encourage the development of the intellectual and emotional capacities in the student?

4. What activities do the reason and the conscience allow and develop in the student?

5. How can it develop and make suitable use the student of the perception and of the intuition?

6. What activities do they allow to develop and to encourage the curiosity for the reason and the state of conscience in the student?

7. What activities do they help to develop and strengthen the use of the perception and of the intuition in the student?

8. How can it develop and use the capacity of analysis and of criterion the student in his daily life?

The object of the investigation or topic, matter of the investigation. It is the axis on the one that turns the investigation, from the beginning up to the end.

Nevertheless, the object of study or of investigation; it always exists inside a wider and complex set, since we cannot analyze and study the totality "quite", only we can study a part or a plot of the knowledge " divides everything ". Therefore, the object of study can be understood, be analyzed and explain itself across the Analysis and the Synthesis, since there exist a totality of which the investigation is a part.

Therefore, we must ask ourselves about the following thing:

What is desirable to be investigated or what wants to be reached or to know or to determine with the investigation (final goal and the scope and limitation)?

To analyze, to tell, to identify and to describe the qualities and determinations about the object that were not known or confused before initiating his systematical investigation. Departing from the general thing to the particular thing (from the abstract thing to the particular or concrete thing)

What are the elements that are considered inside the investigation or object of study (he wants to say all the parts or elements " you divide everything " that are related and have an interdependence, and connection between if, and it describes or they identify with the object of study)?

The hackneyed prayer or the statement of the object of study; it expresses, in brief and general form, the intention or the final goal to reaching in the investigation on the part of the researcher.

Will he have to know which are the scopes and limitations of the investigation?

Will there have to be known the sector of the population who has to be investigated or related in order to study, and will it have to establish more strict limits as for the level of the concrete of his causes?

This is an example:

The statement will be the following one:

"The influence of the ACTION - WILL of the Pupil (emotions, feeling, desire, interest and intention) in SCHOOL LEARNING AND HIM WAKE UP OF THE CONSCIENCE"

GENERAL TARGET:

TO IDENTIFY, TO ADMIT AND TO ANALYZE the influence of the EMOTIONS in the States of Conscience and School Learning of the pupil

SPECIFIC TARGETS:

To observe and to describe the influence of the Emotions of the pupil, during his stay in the Educational Institution.

To relate and to identify the attitudes and frames of mind of the pupil and the Teacher during the class

To measure and to evaluate the conduct and personality of the Teacher and of the Pupil, across mechanisms of Psychometric

Categorize and to evaluate the emotions that appear in the Teacher and the Pupil, so that we identify those who mainly prevail in the teacher and in the pupil

Key question:

1. What are the factors (educational, familiar or personal) particular and general that influence the emotions (desire, feeling, interest, intention) of the teacher?

2. What are the factors (educational, familiar or personal) particular and general that influence the emotions (desire, feeling, interest, intention) of the pupil?

Final goal or target of the Investigation:

a) To recognize, to identify To be useful and to develop the capacities and intellectual and emotional skills in the pupil; and this way this way in certain moment suitable use of these could make hardware, in any situation or circumstance during his life.

b) To identify and to describe how they demonstrate and of what way there are interpreted and canalized the emotions (desire, interest, intention, feeling) in the states of conscience of the teacher.

c) To identify and to describe how they demonstrate and of what way there are interpreted and canalized the emotions in the states of conscience and learning of the pupil.

We must recognize than, on having been provided with a sufficient source of information; which present qualitative and quantitative characteristics on the teacher and the pupil. There will be had the aptitude to choose the most appropriate hardware that they allow to develop and to strengthen the intellectual, emotional, affective and social skills in the pupil.

The Words Keys will have to be enclosed, method (inductive, deductive), methodology and the instruments (polls, questionnaires, interviews, etc.) that will serve for the compilation of the information, and finally a summary will have to do to itself or abstract of the investigation.

Key words:

Brain, brain reptile, mammalian brain, neomamífero brain, left lobe, right lobe, occipital lobe, parietal lobe, frontal lobe, side lobe, memory, fleeting memory, memory of work, memory of long term, conscience, unconsciousness, mind, reason, intelligence, emotional intelligence, intellectual intelligence, multiple intelligence, mental processes, sensation, impression, representation or idea, emotion, intuition, perception, instinct, the world of the Ideas, the world of the senses, theory of the unconscious one, theory of learning, materialism, idealism, empiricism, rationalism, theory of the education, Theory of the motivation, Theories psichopedagogycal, neurophysiology, neurolinguistics, sociological Theories, society, ideology, community, happiness, anxiety, fear, fear, depression, anger, desire, pleasure, will, egoism, control, power, resentment, determined reflex, undetermined reflex, psyche, spirit, matter, significant learning, traditional learning, dogma, superstition, doctrine, endogenous drugs, intrinsic motivation, extrinsic motivation.

Reflection:

> " We must recognize and accept, that the human thought across the top skills (intelligence, thought, etc.) of the man to constructed the scientific, technological and artistic thought: why does not it have to be capable of creating a national and international ambience which is subordinated to the justice, peace, happiness and brotherhood? The human nature has created men like Socrates, Plato, Aristotle, Leonardo Da Vince, Newton, Beethoven, Mozart, Pascal, Lutero; heroes and geniuses in whom we find a peculiarity, which is the use of the intelligence and of the processes of abstraction. Therefore, ***the history and evolution of the scientific thought*** are processes of an arduous work and sacrifice of struggle and men's delivery that have recognized his cognitive faculties; qualities of the human nature, and especially of accepting with the force of the scientific spirit and the reason, into which only the nature and the society can transform the human being; and simultaneously, it can transform to yes same".
>
> ***RAMON RUIZ***

Culiacan, Sinaloa, Mexico, on September 12, 2006.

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