

Paper Title: Trans-Disciplinarity and the “Transcendifying” God

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Abstract:

### **Experience and Language**

The dialectic between the knowing subject and reality obtains a special emphasis with the birth of modern science. The relation between experience and language in science is not static. The dynamic character of this relation is something that has been progressively discovered.

### **Mathematical Rationality. A Plural World.**

Since the 19th century, diverse factors have affected the semantic unity of mathematics. The apparition of non-Euclidean geometries was one of them. Another factor was the development of Algebra and its connection with Logic. Towards the end of the 19<sup>th</sup> and the beginning of the 20<sup>th</sup> centuries, the consistency, completeness, and decidability of mathematical systems were studied. The incompleteness and un-decidability theorems demythologized the aspiration to obtain complete and decidable systems. The base of mathematical rationality itself became plural.

Leibniz proposed to solve conflicts by defining well the concepts inside a formal system of calculation. The participants in a discussion have to sit down and calculate. Today the proposal of Leibniz is naive. We cannot avoid risk.

### **Plurality of Scientific Disciplines**

In the course of the 20<sup>th</sup> century, the methodical and disciplinary discussion about the validity of scientific statements has moved progressively into the discussion about the ethical value of the results of scientific activity. This is a trans-disciplinary discussion.

### **Trans-Disciplinarity is Necessary**

How do different particular scientific disciplines serve the society and its members? This is an open question that affects and impregnates all the disciplines. The answer goes beyond the respective frontiers of the disciplines. It is a trans-disciplinary question.

### **Selection**

The diversity of autonomous systems provides the base for competition in the process of natural selection. The interesting conjecture is that we have two significantly different ways of carrying out thought: Selection and logic. Beyond natural selection, there is the selection of thought systems. Because it selects thought systems, the conscious human being has a non-logical capability, which goes beyond the computer's capability, of creating new thought systems.

### **The “Transcendifying” Relation with God as a Trans-Disciplinary Principle**

The “transcendifying” Christian religious experience is not based on a formal interpretation of reality but on the loving and real presence of God in the multiplicity of things, and in particular, on his loving presence in the multiplicity of empirical data. And for being real, experience needs to be continuously interpreted anew in the different formal systems.

If the systems of thought are conceived from an evolutionary understanding, then, a final thought does not exist. There is neither a closed understanding nor a unique interpretation of said understanding. The presence of religious experiences and the religious formulations of those experiences are dynamic and interact with other experiences and systems of thought.

I have borrowed the word “*transcendificante*” from the philosopher Zubiri because I believe the use of new words is necessary in order to express the deep and real relation between the “transcendent” God and the “immanent” plurality of the world. The word “*transcendificante*” suggests at the same time the idea of “transcendence” and “active presence.”

#### **Biography:**

Fr Javier Leach, SJ born in Valencia, Spain in 1942, obtained the Doctor degree in Mathematics at the Universidad Complutense de Madrid in 1977. He is Director of the Chair *Science Technology and Religion* of the Universidad Pontificia Comillas, Madrid (Spain) and Associate Professor in the Faculty of Computer Science of the Universidad Complutense since 1987. His topics of research are in the fields mathematical logic and computing science, such as, automatic deduction, tableaux based systems, functional and logic programming, hereditary Harrop formulas. He has published a number of papers in specialized journals on the foundations of functional mathematical uses, semantic tableaux for logics systems, and related subjects. He is a Jesuit priest and present chairman of the European Jesuits in Science. He exercises pastoral work

#### **Paper:**

### **Trans-Disciplinarity and the “Transcendifying” God**

The natural sciences are based on empirical observation and mathematical reasoning. Both are plural. Therefore the natural sciences are plural. How can the essentially plural natural sciences offer a common service to society?

#### **Experience and Language**

Scientific knowledge is characterized by the specific relation between two poles of knowledge: The knowing subject and the world. The dialectic between the knowing subject and reality obtains a special emphasis with the birth of modern science. From the world’s perspective, modern science has developed scientific observation as its own way to approach reality. From the perspective of the knowing subject, modern science has been supported by logico-formal and mathematical language that permits the configuration of empirical experiences and their transmission to scientific communities. Research in modern science is based on empirical experience. Experiments and scientific observations have sought to be the guarantors of the perception of reality.

Nevertheless, scientific experiments cannot be separated from the formal, logical, and mathematical language used to express them. Scientific experiments are methodical, that is, they involve actions and they use instruments that can be described by means of a precise and therefore formal language. We can say that scientific experiments and empirical observations are inseparable from mathematical language. Observation is the window from which the subject perceives reality, and language is the structure through which the subject receives reality and transmits it to the scientific community.

The separation between subject and reality as the two dimensions or poles of knowledge finds its origin in the beginnings of modern science. With the advent of modern science in the 17<sup>th</sup> century, the reality pole of observation has moved away from the formal pole of language. Observation provides the basis of reality on which the formal edifice of modern science has been built. Galileo is a symbolic figure we can use to characterize the birth of modern science. Basing himself on telescopic observations and mathematical calculations, Galileo formulated new hypotheses about the universe that denied the traditionally admitted hypothesis that the earth was its center.

### **An Objective Foundation**

The relation between experience and language in science is not static. By means of observations we obtain data that serve to advance hypotheses and (scientific) theories about the behavior of certain models (atomic models, big bang, economic models, models of behavior, social or political models, psychological models, etc.) and to verify them experimentally.

The dynamic character of this relation is something that has been progressively discovered. In the 20<sup>th</sup> century this dynamic character has become all the more evident. At the beginning of the 20<sup>th</sup> century, the logical positivism, logical empiricism, and neo-positivism of the Vienna School were nourished by the then existing optimism to establish a clear relation between experience and scientific language in order to found science as objective knowledge. The foundation of science as objective knowledge intends to establish a clear function that determines the relationship between scientific statements and the empirical objects to which they refer. According to the neo-positivist approach, the two poles of scientific knowledge, namely, language and experience, are clear and autonomous, and a clear relation can be established between them by means of a truth function.

### **Crisis of the Objective Foundation of the Experience-Language Relation**

Quantum physics placed in crisis the objective foundation of the experience-language relation. In classical physics, to measure is not a problem. It is simply to verify a fact. In quantum physics mutually exclusive possibilities coexist until the probability collapses in a singular measure. The Uncertainty Principle of Werner Heisenberg (1901–1976) establishes the indeterminacy of the quantum world. The more precise the determination of the position of a particle, the less precise is the knowledge about its momentum, and vice versa. Another quantum principle that placed in crisis the classical and naive relation between observations and the statements about these observations is the Superposition Principle. According to the Superposition Principle, electrons behave as particles and as waves simultaneously. How can the quantum elements, whose behavior is sporadic, be in relation with the deterministic macroscopic

world? For John Polkinghorne, “it is intelligibility (rather than objectivity) that is the clue of reality—a conviction that is consonant with a metaphysical tradition.” But this affirmation does not resolve the problem of the relation between experience and language: What does it mean to say that something is intelligible? What is the real basis of intelligibility?

### **Resistance to the Criticism Criterion of the Experience-Language Relation**

The difficulty in establishing a clear criterion of verification led the philosopher Karl Popper (1902-1994) to seek an alternative that is more resistant to criticism, the criterion of demarcation for science. For Popper, falsifiability constitutes a criterion for the demarcation of hypotheses with empirical content. This criterion is based on the fact that we can verify experimentally that a theory is false but we cannot verify experimentally that it is true. Every statement about an experimental observation can be proved false by another observation. The criterion of falsifiability has a clear logical basis but it does not explain the basic experience-language relation that causes an experience to falsify a theory.

### **Historical Foundation of the Experience-Language Relation**

The radical changes introduced in science by the relativity and quantum theories are not unique facts in the history of the science. The philosopher T. S. Kuhn (1922-1996) in the book **The Structure of Scientific Revolutions** (1962) shows that science is structured by different models or patterns (paradigms) that vary in the course of history. A paradigm is comprised of an ensemble of theoretical assumptions and experimental procedures that are taken for granted and accepted by a scientific community. Examples of paradigms are those established for Physics in the **Principia** (1687) and **Optica** (1704) of Isaac Newton (1642-1727). Other examples are those established in the **New System of Chemical Philosophy** (1808) of John Dalton (1766-1844) and in the **Principles of Geology** (1833) of Charles Lyell (1797-1875). Sometimes new paradigms usher in new interpretations of observations. They are the origin of new scientific traditions. “Normal science” develops inside a tradition supported by a paradigm. “Normal science” is not rigid and mechanical because paradigms are not mere sets of hypotheses. They are schemes of interpretation that the user should apply creatively. Scientific revolutions are produced by problems in the theoretical interpretation of scientific experiments. At times the parallelism between scientific and social revolutions has been emphasized. Defenders of rival paradigms live in different worlds. Astronomers observed changes in the firmament after the Copernican theory was proposed—changes they “did not see” before because they lived, as it were, in another world.

### **Mathematical Rationality. A Plural World.**

Since the 19th century, diverse factors have affected the semantic unity of mathematics. The apparition of non-Euclidean geometries was one of them. Another factor was the development of Algebra and its connection with Logic. Towards the end of the 19<sup>th</sup> and the beginning of the 20<sup>th</sup> centuries, the consistency, completeness, and decidability of mathematical systems were studied. The incompleteness and un-decidability theorems demythologized the aspiration to obtain complete and decidable systems. The base of mathematical rationality itself became plural.

During the 19<sup>th</sup> and 20<sup>th</sup> centuries, there have been developments and profound changes in the epistemology of mathematical language. These changes have, in my opinion, influenced science's mode of reasoning, and consequently, the scientific vision of the world. I am going to describe the general characteristics of these changes by approaching them from the viewpoints of Geometry and Algebra.

### *New Perspectives in Geometry*

For Immanuel Kant (1724-1804), the object of mathematics was space and time. For him, space and time are a priori forms of sensibility. They comprise the structure of the knowing subject. The knowing subject applies the forms of space and time to the data, unifying them in the empirical experience. Mathematics describes the forms of space and time. Geometry describes space. Arithmetic describes time.

It is not my intention to discuss here if the object of Mathematics was clear and univocal for Kant. The only thing I want to affirm is that neither before nor much less after Kant has the object of mathematical reasoning been clear and univocal for all mathematicians. A significant and pioneering case for the discussion on the object of mathematical reasoning is Euclidean geometry.

Numerical and geometrical perception has been, since antiquity, the base of Mathematics. Euclid (365 - 300? B.C.) formulated in **The Elements** the fundamental statements of Geometry in the form of axioms or hypotheses. In the 19<sup>th</sup> century, the book **The Elements** of Euclid was paradigmatic for the study of Geometry.

The Fifth Postulate of Euclid, included in **The Elements**, affirms “that, if a straight line falling on two straight lines makes the interior angles on the same side less than two right angles, the two straight lines, if produced indefinitely, meet on that side on which are the angles less than the two right angles”. An equivalent and briefer way to formulate this postulate was advanced by Proclus (411-485) : “From an exterior point to a straight line one can draw one and only one different straight line parallel to the first one”.

The Fifth Postulate of Euclid differs from the other postulates because it refers to the behavior of a straight line in infinity. And the intuition (perception, experience) of infinite objects is conceptually different from the intuition of finite objects. This Fifth Postulate has particularly attracted geometry scholars in the course of history. Proclus (411-485) wrote a comment to Euclid's proposal in which he tried to derive the Fifth Postulate from other postulates. The problem of determining if Euclid's Fifth Postulate is an axiom independent of the other postulates, or stated equivalently, of determining if it can be deduced from them, continued to intrigue geometry scholars, among them the Italian Jesuit Sacheri (1667-1733) and the German philosopher Lambert (1728-1777). In his work **Euclides ab Omni Naevo Vindicatus** Sacheri tried to test the truth of the Fifth Postulate by supposing that it was false and trying to derive a contradiction from its falsehood. In the first half of the 19<sup>th</sup> Century, the Russian mathematician Nicolai Ivanovich Lobachevski (1793-1856), following the steps of Sacheri and Lambert, assumed the hypothesis contrary to the Fifth Postulate of Euclid, that is, “from an exterior point to a straight line one can draw at least two straight lines parallel to it”. Lobachevski developed a new geometry based on this new hypothesis that contradicted

the Fifth Postulate of Euclid. Lobachevski called this new geometry “imaginary” because he did not find a “real” model for it.

The strength of Lobachevski’s argument was not based on the “traditional” intuition of “real” space but on the logical coherence of his arguments. The work of Lobachevski stated that the Euclidean geometry is not the only possible one, and consequently, other new geometries began to be developed: Projective, affine, hyperbolic, spherical, etc. Felix Klein (1849-1925) showed that the Euclidean geometry is consistent—i.e., a contradiction cannot be deduced from its hypotheses, if and only if the non-Euclidean geometry is consistent.

*New Perspectives in Algebra. Connection with Logic.*

The apparition of non-Euclidean geometries in the 19<sup>th</sup> century was one of the factors that provided the basis on which the intuitive semantics of Mathematics was established. Another important factor was the development of Algebra and its connection with Logic.

The origin of this last development brings us back to Leibniz (1646-1716). Leibniz’s mechanicism is well known. For Leibniz, nothing in the world is indeterminate. Everything follows a plan that is clear in the mind of God; according to this plan, God has created the best of all possible worlds. For Leibniz, all the different events of the world—the natural and the supernatural—are related by logical connections that can be disclosed by means of rational methods. From this perspective, Leibniz thought that to discuss any problem among men of “good will,” it is sufficient that they formalize the problem and say, “Calculemus.” These calculations would need to be supported by some type of formal logic. Nevertheless, although the scholastic and stoic philosophers had somewhat developed the work of Aristotle, formal logic in the middle of the 17<sup>th</sup> century was basically just as Aristotle had left it.

We need to go to the 19<sup>th</sup> century to find the important advances that connected Logic with Algebra. George Boole (1815-1864) applied algebraic methods to Logic and developed it as a part of Algebra. Gottlob Frege (1848-1925) developed the first logical system that included all the deductive reasoning of ordinary Mathematics. In 1979 Frege published **Begriffsschrift**, with the subtitle “A Language of Formulae for Pure Thought to Image and Resemblance of that of the Arithmetic”. Frege intended to build Mathematics as a superstructure that has Logic as basis. He introduced specific symbols for logical relations in order to avoid confusions. He utilized quantifiers as special symbols. The **Begriffsschrift** allowed the presentation of logical inferences as mechanical operations—called inference rules—based on the form according to which the symbols are arranged.

*The Foundations of Mathematics*

The integration of Logic in Mathematics and the diversification and multiplication of geometrical models of Mathematics made Mathematics more and more independent of the classical arithmetical and geometrical models. In 1898 Hilbert (1862-1943) gave a course entitled “Elements of Euclidean geometry.” He emphasized that the theorems of Geometry should be deduced from axioms by means of pure logic without any dependence on geometric intuition. According to a famous anecdote, the theorems

should continue to be valid if, instead of points, lines and plans, they refer to “tables, chairs and jugs of beer,” and provided that these objects obey the axioms of Geometry.

Finally Hilbert showed that the axioms of Euclidean geometry are consistent, that is, that a contradiction cannot be deduced from them. His proof showed that the inconsistency of the axiomatic system of Arithmetic follows from the inconsistency of the axiomatic system of Geometry. Thus Hilbert had reduced the inconsistency of the Euclidean geometry to that of Arithmetic, leaving the problem of the inconsistency of Arithmetic for another occasion.

In his doctoral thesis, Kurt Gödel (1906-1978) showed that all the inferences admitted as correct by first-order logic can be obtained by means of the rules of language. This result is called the “completeness of first order logic.” Leibniz had dreamt of reducing human reason to calculations, with mechanical engines carrying out the operations. Frege had built for the first time a system of rules capable of representing deductive human reasoning. Gödel in his 1930 doctoral thesis had shown that the rules of Frege were complete. But the completeness of Logic gave rise to a subsequent concrete problem, the problem of decidability (*Entscheidungsproblem*): Given some premises and a possible conclusion, can the conclusion be decided in an effective way if it is deduced from the premises? Gödel showed further that independently of the additional axioms added to the system of Arithmetic, provided that the new axioms are specified by means of an algorithm and provided that they are not contradictory, there is a sentence “U” that is un-decidable in the system of Arithmetic. That is, it will be not be possible to deduce in an effective way, within the system of Arithmetic, if “U” follows from some premises or not. Therefore it will not be possible “to decide” if “U” belongs to the system or not.

Reducing human reasoning to formal rules is a challenge that underlies the mechanistic idea of Leibniz, and also underlies the idea of a computer in which all formalized human reasoning could be represented. The computer can execute orders enunciated in a formal language; it can also execute any formal reasoning correctly specified within a system.

Towards the end of the 19<sup>th</sup> and the beginning of the 20<sup>th</sup> centuries, the revision of the foundation of mathematical rationality was so profound that diverse conceptions of the “truth” of mathematical statements were developed

The more classical concept of mathematical reasoning is based on the traditional principle of the “*tertio excluso*” according to which any mathematical statement is true or false. This classical concept also admits as valid the reasoning about infinity. Nevertheless other conceptions, like the intuitionist constructivism developed by the Dutch mathematician L. E. J. Brouwer (1881-1966), are stricter in admitting the truth of mathematical theorems and the existence of mathematical entities. Constructivism only admits as true those mathematical statements built by means of a demonstration using finite objects.

At present, the controversy between constructivism and classical Mathematics during the first half of the 20<sup>th</sup> century no longer exists. Both coexist. The classical conception of Mathematics is usually adhered to by normal mathematicians because of its simplicity. Nevertheless a constructive vision is often used in the context of the formal

automatic systems of deduction performed by computers. Constructivism reflects the computer's mode of thinking. Both constructivism and classical Logic can coexist because they are not contradictory. They have different approaches to Logic, and one cannot show the falsity of the other's theorem.

Data processing has emphasized the hitherto unknown dimensions of languages and formal models such as pragmatism, experimentation, implementation and efficiency. Different logics have a plurality of usage, each one of them adequate for different purposes. The existence of a plurality of logics opens new perspectives for scientific language, because each one of them reflects a partial dimension of scientific reasoning.

### **Coexistence of Reason and Risk. The Inevitable Conflict.**

Today we can say, in remembrance of Galileo, that nature is written in a rational language. But unlike Galileo, we do not reduce this language to triangles, circumferences and other geometric figures. We can say that science's vision of the world has evolved because scientific axioms have lost their character of being definitive and unique explanations. As a consequence of this, the value of scientific statements has become relative and their importance is conditioned more by the value of their technological application.

At present science is characterized by its great capacity to create models that describe autonomous and different aspects of the world on which diverse scientific communities base their theories. The different scientific communities are autonomous. Different cosmologies provide different theories about the origin and development of the world by means of different models of the Universe. Microphysics develops models that describe the ultimate constitution of matter. Biology applies its own models to describe other dimensions of the world related to life. In scientific psychology we find different models that describe the behavior and the nature of men and women. We even have different models of the historical development of the different conceptions of science.

In the 20<sup>th</sup> century there has been an important progress in the field of formal languages. Formal languages permit the manipulation of statements as objects by computers. They approach the matter of human thought from the perspective of computer processing. On February 20, 1947, Turing gave a conference to the London Mathematical Society, asking if it was possible, in principle, for a computer to simulate human activities. This led him to propose the possibility of a computer designed to learn and to which could be permitted mistakes. The incompleteness and un-decidability theorems affirm that if we expect a machine to be infallible, then it will not be intelligent. Turing said in his conference that those theorems do not say anything about how much intelligence should be exhibited by a machine that intends not to be infallible. Given the fact that we cannot deduce mechanically all the statements of a system from a given set of axioms, it is necessary to try different sets of axioms and to reject them if they do not serve our purposes. Turing concluded his conference with an exhortation to "fair play" with computers. That computers are more infallible than human beings should not be expected.

The fair play that Turing asked of us consists in accepting the necessity of risk. We have to risk making statements that are not deduced from other statements. A sufficiently complex formal system that does not need risk does not exist.



Leibniz proposed to solve conflicts by defining well the concepts inside a formal system of calculation. The participants in a discussion have to sit down and calculate. Today the proposal of Leibniz is naive. We cannot avoid risk.

Risks are assumed by the individual and by communities. Individuality has an interior that cannot be fully understood from the outside. The experience of an individual consciousness is different in each case. Only the individual knows it from inside. To interpret the internal sense that a symbol, fact, and data has for an individual or a community, we should enter the “inside” of the individual or of the community.

Science pays attention to the public meaning of language; individuals, as such, and communities, as such, attend also to the internal meaning that language has for them. Public and internal meaning cannot be separated. Public meaning is submitted to the strict rule of method; it needs to be justified by public norms accepted by the scientific community. Internal meaning is based on the internal coherence of the individual and of communities, and is always private in some ways.

The internal impulse that moves one to take risks and the external method are two necessary dimensions of knowledge. Impulse moves; method controls. Public meaning and internal sense are two poles of language. Every statement can be studied from the outside, its meaning submitted to methodical observation in order to achieve a public meaning. On the other hand, the public meaning of statements needs to have an internal sense that supports it.

Turing’s intelligent machine can simulate formal thought and it can perhaps be more intelligent than any human in the use of formal language. But it will always have an intelligence based on formal methods. The comprehension of the subjective sense depends on subjects and communities. The perception of different senses by different individuals and communities causes conflicts. Leibniz intended to resolve the conflicts by means of calculations. But conflicts of thought cannot be solved by a mere formal dialectic of words. Conflicts of thought are necessary because there are diverse subjects assuming diverse risks.

### **Plurality of Scientific Disciplines**

Science is at present characterized by a great capacity to create different mathematical models that describe different aspects of our experience of the world. Scientific models are based on methodical observations and mathematical formulations. Methodical observations and mathematical formulations are justified within a scientific community of peer researchers. The different scientific communities are autonomous.

Plurality in science has changed the social attitude towards science. Science has changed its role. From being the guarantor of objective knowledge, it has become an activity that has to be evaluated based on its results. This change of attitude has not diminished the confidence in the capacity of science and technology to transform the world, but it has conditioned the confidence in the ethical and moral value of any technological development to the results of this development. Techno-science is applied science that is measured by its results.

In the course of the 20<sup>th</sup> century, the methodical and disciplinary discussion about the validity of scientific statements has moved progressively into the discussion about the ethical value of the results of scientific activity. This is a trans-disciplinary discussion.

### **Trans-Disciplinarity is Necessary**

How do different particular scientific disciplines serve the society and its members? This is an open question that affects and impregnates all the disciplines. The answer goes beyond the respective frontiers of the disciplines. It is a trans-disciplinary question.

The methodical and disciplinary discussion can be reduced to formal and systematic methods. Logic is the prototype of systematic thought. Logic is essentially pluralistic and produces necessarily a plurality of disciplines. We could seek a meta-logical relation among the different disciplines. It is a legitimate search but is necessarily insufficient. It is not enough to have a new discipline that interrelates the different disciplines.

Besides logic, does another way of organizing thought exist?

The interesting conjecture is that, besides logic, there exists another way to structure thought: This alternative is selection.

### **Selection**

The theory of natural selection has its origin in Darwin and is not a theory about the laws of thought, but about logic. Natural selection was traditionally understood as a theory about how the more developed and most complex beings appeared. Nowadays the theory of selection also can serve to explain how thought is produced. Selection is not carried out inside a system; rather, selection is achieved through the adaptation of the system to its environment. The variation or diversity among the individuals of a population provides the base for competition in the process of natural selection. Those individuals that are adjusted better to the environment are selected.

The diversity of autonomous systems provides the base for competition in the process of natural selection. Those that are adjusted to the environment are selected. The diversity and plurality of thought systems also provide the base for the selection of the better thought-system. For example, within a computational context, a constructive logic is more adequate, while a classical logic is normally selected within a conventional mathematical context.

The theory of the evolution of species based on natural selection has been studied up to now through the optic of closed and unique systems of thought. Formal and mathematical systems are essentially closed. For example, inside a computational system it is possible to run an evolutionary program that simulates natural selection, but a computer always carries out the selection inside a system. Even if it utilizes a language and a meta-language, it will always execute each calculation within the same language.

## What Occurs in the Brain When We Think?

The interesting conjecture is that we have two significantly different ways of carrying out thought: Selection and logic. Computers are governed by logic. The brain is not only governed by logic, but also by selection and logic. Reality exists before its description. Selection exists before logic. In the development of thought, action precedes logic. Consciousness is a physical process transpiring in each private individual, and its individual existence cannot be substituted by a logical description. Logic is the formal part of thought. Logic governs computers by means of a code.

After the emergence of the brain during evolution by natural selection, each individual brain operates by means of a process of natural selection. But beyond natural selection, there is the selection of thought systems. Because it selects thought systems, the conscious human being has a non-logical capability, which goes beyond the computer's capability, of creating new thought systems.

## Trans-Disciplinarity and Ideologies

The word "ideology" can be understood in diverse ways. Here I understand it as any global non-disciplinary interpretation of reality that serves to unify a plurality of scientific knowledge. Different visions or understandings of political, cultural, and social realities are deeply rooted in different ideological conceptions. Ideologies are trans-disciplinary. Ideologies serve to unify theories. But ideologies pay only lip service to the unification of scientific knowledge, if they are systematizing and alien to modes of thought that accept the element of risk.

## The "Transcendifying" Relation with God as a Trans-Disciplinary Principle

Mystical experience is global and affects all human experiences. "Never, not even in the supreme access of the great mystics, does one have access to God without the things of the world or outside of them."<sup>1</sup> The relation with God is plural and multiple insofar as it is based on the active and personal presence of God—who "desires to give himself to me"<sup>2</sup>—in the multiplicity of empirical data. At same time, it is also global and unitary because it transcends the multiplicity of empirical data. The Spanish philosopher Xavier Zubiri calls this simultaneously transcendent and active presence of God in the world "transcendifying" (*transcendificante*).

The "transcendifying" Christian religious experience is not ideological because, due to the real Incarnation of the Son, this experience is not based on a formal interpretation of reality but on the loving and real presence of God in the multiplicity of things, and in particular, on his loving presence in the multiplicity of empirical data. And for being real, experience needs to be continuously interpreted anew in the different formal systems.

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<sup>1</sup> Xavier Zubiri, *El Hombre y Dios* (Madrid: Alianza Editorial, Fundación Xavier Zubiri, 1998), p. 186.

<sup>2</sup> Ejercicios Espirituales de San Ignacio de Loyola [234] Sal Terrae (Bilbao).

If the systems of thought are conceived from an evolutionary understanding, then, a final thought does not exist. This is because the same evolutionary understanding of the systems of thought is itself in evolution also. Therefore, there is neither a closed understanding nor a unique interpretation of said understanding. The presence of religious experiences and the religious formulations of those experiences are dynamic and interact with other experiences and systems of thought.

I have borrowed the word “*transcendificante*” of the philosopher Zubiri because I believe the use of new words is necessary in order to express the deep and real relation between the “transcendent” God and the “immanent” plurality of the world. The word “*transcendificante*” suggests at the same time the idea of “transcendence” and “active presence.”