Accounting, From Classic Recognitions to Great Expectations (*)

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Abstract

There are over 50 years, in 1951, the theme of the 11th Congress of the Federation of Chief Executive Accountants held in Bordeaux on 26, 27, May 28, was notably about: "Accounting, what it is, what it should be, what it can become. " It seems that this problem is ongoing. When considering accounting in its deepest roots, the more conventional double-base or its latest developments based on international standards, we can ask whether the accounting followed a parallel course to the other sciences and techno-science or if it situated behind. Despite modern conceptual frameworks and full of good intentions but the narrow limits, can we not discuss the Aristotelian framework of accounting to provide a frame of reference wider and more effective? It has long been opposed the hard sciences and social sciences. In the field of hard sciences, we use the mathematical language that can make forecasts, and from this mechanical forecasting, the results are consistent with what was expected. There is a correspondence between the structure of mathematical language and structure of technical problems. On the contrary, in the social sciences, there is no direct connection between language and facts and it's never easy to predict and to equate behaviors and emotions of humans. In recent years, researchers have proposed ways, highways, on which future accounting could find its path. In a book about the time, E. Klein opposes the space that is the brand and demonstrates the power of man and time which is the mark of his weakness. Time is also the mark of a certain weakness of accounting. The space of accounting, by contrast, presents many opportunities. Accounting standard is almost like Greek tragedy with unity of

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(*) Bu bildiri, 19-22 Haziran 2013 tarihlerinde İstanbul'da organize edilen III. Balkanlar ve Ortadoğu Ülkeleri Muhasebe ve Muhasebe Tarihi Konferansı'nda sunulmuştur.

time, unity of place, unity of action. The multiplicity of actions, complexity, leads to rupture of the unity of time. The accounting system of thought has some way to do, if only because many authors do not distinguish between the ontological status of the nature of income and capital, the epistemological question of the representation, and methodological question of the extent of income and capital. But if the concepts are not clearly highlighted and whether their measurement presents difficulties, we cannot even say they do not exist. In the future, once the sorting is actually done between theories and approaches multi paradigmatic, perhaps it will be easier to distinguish the positive scheme of pure science and pragmatic representation of the subject that professional and academic people are trying to make in their books and in their annual accounts.

Key words: Epistemology, Space, History of Accounting, Pragmatic Representations, Social Sciences, Systemsthinking–Ontology, Methodology, AccountingTheories, Positive Theory, Time.
Jel Classification: M41, M48.

Introduction

Over 60 years ago, in 1951, the topic of the 11th Congress of the Chief Accountants Institute (UNFCCC) meeting in Bordeaux on 26, 27 and 28 May, was including "accounting, what it is , what it should be, what it can become "(Pinceloup, Volume 2, p. 89). It is a time to make, in addition to balance sheets or background of a professional life, a balance of discipline, unpretentious misplaced. We have already written elsewhere and many others before and after us: Accounting in its deepest roots, the classic double-entry or its latest developments based on international standards, has evolved but... is accounting following some parallel to other sciences and techno-science or is it lagged? Despite modern conceptual frameworks and a lot of good intentions, but with narrow limits, despite an extensive definition (accounting and control and auditing) can we discuss about traditional classical accounting system to provide a broader and more effective reference system?

1. Some Topics of Inspiration for Future Accounting

The hard sciences and social sciences have been opposed for a long

time. In the hard sciences, we use mathematical language that allows making predictions and forecasts from these mechanical results are consistent with what was expected. There is a certain correspondence between the structure of mathematical language and structure of technical problems. In contrast, in the social sciences, there is no direct connection between language and facts and it is never easy to predict and equate the behaviours and emotions of humans. In recent years, researchers have proposed pathways, runways or highways, on which the future accounting could find its way. In a book about the concept of time (Klein, 1995, p. 88), E. Klein opposes the space showing and demonstrating the power of man and time showing and demonstrating his weakness. Time is also a mark of weakness in accounting, like Pierre Lassègue said (1962, p. 314-326). Space accounting, however, presents many opportunities. Basic accounting is almost like a Greek tragedy with: unity of time, unity of place, unity of action. The multiplicity of actions, their complexity leads to rupture of the unity of time. It is the same unit instead. The privileged space described by the traditional financial accounting is very similar to the castle of the past time, with its steep single site, its walls, its unique entrance drawbridge. The traditional business economists call "neo-classical firm" is characterized by two elements:

- This is a firm without thickness or dimension, a black box, a company point (Coriat, Weinstein, 1995, pp. 14-15);
- This is a firm that has conditioned, predictable and rational responses, a robot business.

Born during the first Industrial Revolution in England, refined in the books of Adam Smith and David Ricardo, almost contemporary of Newton, it seamlessly integrates its activities in standard and reversible time and very similar to that of the quantum theory. But this ectoplasm company located in a single space, single producer, encircled as accounting and comprehensively described no longer exists. It has mutated in a carcinogenic manner and it was not always possible to delineate its boundaries, identifying their living space because it is no longer unique. In the twenty-first century, a company can not

develop in a single geographical area and firms who do not die are condemned to work in three main creditworthy areas of the world, where money and technology rule: the upper North America, the Northwestern countries of the European Union and part of Asia including Japan are the center of gravity. The ambitious firm which does not exist in the three areas does not actually exist. It is possible that this picture is not geographically fixed: what will Russia become a thousand billionaires in China or the billion and a half of economic agents? India and the billions of misfortunes? The monolithic multinational company in its culture and accounting is now a dangerous fiction. One of the only solutions for a large realistic company is splitting into legally distinct companies, each suited to a medium, a particular space, but all connected to a holding company, with interests in financial capital. We know that the holding company and its subsidiaries form a group. The group is a machine without life. To animate it, it must be given a spirit, a soul. The mind is given to the machine by multiple networks. At least a logistics network able to handle the problems of transportation, storage, insurance and customs from one place to another group and an information network able to describing what is happening at any time. A group is therefore a set of nodes and/or connected by a set of links. By nature accounting lacks the ability to grasp the totality of what is happening in the group, because it has great difficulty in understanding the dynamic spatial streams and thus describe the links. It follows a little better what happens to the nodes. Each company is identified and therefore it can apply legal principles and accounting of his original country. But in this case, the group will not have a homogeneous representation. It is generally preferred to apply to all companies with the rules defined by the IASB principles, generally accepted by American professionals (US GAAP) or the French accounting principles or settlements on consolidated financial regulation. But whatever solution is chosen to make comparable and consistent accounts from one country to another, it runs quickly to another problem description of the group space, the duplication. The parent company and its subsidiaries have multiple entries, cross into each other. These interests often change, as opportunities are sometimes hidden,

located in tax havens or areas of lawlessness. International accounting organizations and national authorities require groups that do not exist in a legal perspective, to present consolidated financial statements rid of all the dross that is reciprocal transactions, cross-shareholdings, purely operations on taxes, and therefore to give the image of something that does not exist as the sum of the economic potential, financial and accounting statements resulted from something that exists: the parent company, society as a whole and fully formed and its subsidiaries, and entire societies entirely constitutive. More dense network of subsidiaries, more consolidation operations are numerous and arbitrary and must be abstractions of reality. This leads to the accounting paradox that eliminates all parts of the group who are its substance not to double-count assets and liabilities, income and expenses. In the simplest case, the accounting describes something that does not exist because she eluded all that really matters. In reality the situation is even more intractable, because of cross and multiple shareholdings and, making algebraic calculations necessary. Accounting shows great difficulty managing multiple rational spaces. Given this methodological void, it is tempting for leaders to dress up the balance sheet, make creative accounting. Well managed, a group is a set of communicating vessels. One can empty a subsidiary of its substance and transfer to another that can be assigned to a dependent company the full cost of research group and make him make losses, to make profits to subsidiaries in countries with strong currencies or with favourable taxation and corporate losses to high-tax countries or with big political risks, etc.. A group that is financially healthy is a particularly effective war machine and escapes easily accounting in terms of information and the tax authorities for payment of taxes. The company is not limited to real spaces. But aside from the real world, due to buildings, inventory, machinery, docks, aircraft, roads, there is an entire virtual world which multiplies the real world to the infinite. It is the world of market theory, stock markets and their derivatives, the electronic world, the world of hypertext. The entanglement that we have described and which is the basis of the structure of modern enterprises is lined with a large number of links, which are a multitude of virtual networks and virtual

cobwebs. We might think that this lot of theoretical spaces causes the fall, the decline in accounting. Paradoxically it is the opposite. Computers and the underlying mathematics may be the salvation of accounting more than its loss. Let us give a few quick examples already applied as matrix accounting, accounting hypertext, or in the process of being, such as Catastrophe theory or Chaos theory.

Matrix accounting (Degos and Leclere, 1990) has the advantage to overcome the double-entry bookkeeping and its principles to increase the effectiveness of the decisions of the manager. It would have remained a mere intellectual curiosity without the advent of computers. As Basil Yamey points out (Littleton and Yamey, 1956, pp: 7-8), the three main advantages of double entry bookkeeping on previous methods are that:

- Records are easy to understand and orderly;
- Control of the ledger is comprehensive;
- The financial statements (balance sheet, income statement) derived easily from ledger.

We often find these qualities in matrix systems which allow a concise and efficient accounting problems, saving calculation based on this representation, highlighting causal relationships for the analysis and forecasting including use of computers. In the double-entry system of bookkeeping each transaction is classified twice, once to debit and once to credit. In matrix accounting, each transaction is classified as row and column. To record a transaction we formally find the column number of the account is debited and the line number of the account that is credited and records the transaction in a box that is at the intersection of the two. More generally, if there is a number already entered in the cell of the matrix, you can add the amount of the new operation to the former.

Matrix accounting is better suited to computer equipment than the traditional system because its mathematical structure optimizes the use of the computer. They are more of a higher level analysis, system modelling, simulation or a fully integrated system diagnosis. It is towards this integration effort that modernized matrix techniques must carry. The matrix technique

is a virtual node of communication between the bare facts to the accounting statements which one seeks to optimize the writing and not to transform nature. More raw facts are complex, as in the case of the consolidation, more matrices is made difficult to develop. It goes even further in hypertext accounting but the difference lies in how to design and use information. In the hypertext system data organization is dynamic. It references a node that can be done, a text, an article, an account, an accounting statement and this reference has a link that allows the user to find his way in the database, a node another, by subsequent research. The great advantage of hypertext structures compared to classical databases is that they are not necessarily closed. They can be (information copied to a non-rewritable CD-Rom), but they can also be opened and allow users the ability to create new relationships and thus allow the hyperlink to learn. We mentioned earlier the delicate problem of groups of parent companies and subsidiaries and that conventional accounting has difficulty describing their relationships. Hypertext in accounting can be the solution of these problems. Accounts, balances, balances of subsidiaries and holding company are hypertext nodes. From a company to another , one can therefore create hypertext links and thus facilitates consolidation of technical operations, despite the complexity generated by the structures. These links may be of the same level, but there can also be hierarchical links, inclusion and exclusivity links, easing the making summary report. But hypertext in accounting is not the ultimate weapon; casing successive fractal has the disadvantages of its benefits. Theoretically, we can know everything but this knowledge is not exhaustive in two-way, it is easier to go down the analysis than to fly in the synthesis and the gained level of details are often paid by a loss of relevance. The power of a tool will increase the experience necessary to become an expert who wants to dominate this tool. One day or another, accounting should also take account of two families of theories mentioned above: the Catastrophe theory and Chaos theory.

Catastrophe theory was considered, for a long time, independent, but now integrated in the theory of chaos, is due to René Thom (1972, 1974, 1989), French mathematician (1923-2002, Fields Medal 1958). Catastrophe

theory - a "catastrophe" is a stable point and not a dramatic or disastrous event - to describe the discontinuous phenomena using continuous mathematical model. It can be used in many disciplines in general, and accounting in particular. We proposed to use it to describe relationships, conflicting or not, auditors and business leaders, or to describe the process of resignation of the auditor[1]. It can also be used to describe the relationship between corporate shareholders (*Shareholders* in English or *stockholders* in American English) and other stakeholders of the company. The problem of vulnerable companies to bankruptcy is also his favourite. Catastrophe theory is not centred on the analysis and explanation, but rather understanding. It is a theory of action, namely the reaction of a system with multiple stimuli. René Thom studied seven states representing basic catastrophic forms and each is associated with a set of catastrophe represented by a surface. The first five types are processed using differential equations, whose complexity grows with the rank of exhibitors. The fundamental theorem of the theory of catastrophes limited in dimension 3 (three external parameters) states that there are five sets of elementary catastrophes. Each of them is associated with a system described by a potential dependent on one or two internal variables. It then passes four parameters by introducing two new forms. The first representation, the Fold catastrophe is associated with a potential of the form: $F_p(x) = x^3 + p_1 x$. If we apply the rule of delay (hysteresis), the surface representing the set of catastrophes is $p_1 = 0$, the second representation, the Cusp catastrophe is associated with a potential $G_p(x) = x^4 - p_1x^2 - p_2x$. There is a two-dimensional cusp and applying the rule of delay and a crease in three dimensions. The Swallowtail catastrophe potential is $H_p(x) = x^5 + p_1x^3 + p_2x^2 + p_3x$. Then Thom describes the Hyperbolic umbilicus that looks like a wave, Elliptic umbilicus point-shaped three-sided, Butterfly catastrophe, with wings crumpled, and finally the Parabolic umbilicus, mushroom-shaped, with the equation: $M_p(x_1, x_2) = x_1^2 x_2 + x_2^4 + p_1 x_1^2 + p_2 x_2^2 - p_3 x_1 - p_4 x_2$.

1 See: J.G. Degos, "Catastrophe theory, a relevant model for auditors' behaviour", forthcoming article in: International Journal of Critical Accounting, 2013.

René Thom has been much criticized for the fact that the restricted catastrophe theory is primarily a theory of action, maybe not universal. But the catastrophe theory is not a theory of systems, the system is given, and only its reaction to external factors is focused on. The theory does not bring knowledge of the system itself or knowledge of the environment, stimulation and disturbances from outside, but a description of the system's response to its multiple external stimuli. The theory does not have much external validity as the knowledge of a situation is not transferable to another: for example the result of a conflict between an auditor and a manager doing criminal acts has nothing to do with the ratio analysis to predict bankruptcy, but it has a large internal validity: if we consider any system and if we can model it, using 2, 3 or 4 well-chosen parameters varying simultaneously, we can predict *a priori* forms that take graphs associated with catastrophes. This ability to forecast the contrary is impossible with chaos theory.

Chaos theory has gradually built an essential idea that changes everything: the initial conditions of a situation are never the same and never come back, if you take enough decimal places to the initial situation. System when it is dynamic and not simply mechanical may have a high sensitivity, even stronger to initial conditions that the said system, even if it is recurrent, not only never returns to its original state but still is never completely predictable[2]. This recent evidence for physics and the other hard sciences is not yet for accounting. And yet, more than any other discipline, it needs forecasting. Chaos theory, which allows reconstructing a hidden order in apparent disorder, has an essential break with the past: the mechanical

2 In initial conditions, we mostly chose the metaphor of the butterfly, also called "Butterfly's Wings effect". In 1972, Lorenz gave a lecture at the American Association for the Advancement of Science: "Predictability: Does the Flap of a Butterfly's Wings in Brazil Set off a Tornado in Texas?" where he wondered if the beating of a butterfly's wings in Brazil can cause a tornado in Texas. But this metaphor, precisely because it's in chaos theory, should not be taken causally, mechanical flapping wing can cause nothing says it actually causes a tornado, because in this case, all flapping wings of all butterflies in the world would do the same.

determinism disappears before the probabilities. Trends and increases of classical differential and integral calculus functions give way to non-differentiable or non-integrated functions , with simple and stable attractors or strange and unstable and fractal dimensions of reality. Physics is especially concerned by this new approach, but accounting, as a social science, presents promising opportunities (Degos, PhD dissertation, 1991). Between the surface of dimension 2 and the space of-dimension 3, there are an infinite number of intermediate sizes, fractal dimensions that can be used to model the complex and invisible reality.

Edward N. Lorenz was the first who shown in 1963, the chaotic nature of weather, using a nonlinear dynamical system with three degrees of freedom and using the Lorentz's strange attractor, he showed that an initial difference of one thousandth leads, over time, very different results, and that the complexity is not related to items outside a system, but some systems, even very simple carriers are inherently complex. Many other authors, quoted by J. Gleick (1989) and I. Ekeland (1995) have made many confirmations. Accounting, if it can be flexibly and common sense to use new technology is quite capable of going the distance, albeit virtual.

2. System of Classical Thought, Evolution of the Man and the World

Let us go back in the past. In the beginning, there was the ancient logic, built on rigid principles that wanted to assert a natural dichotomous order. Gilles Gaston Granger in Science and Sciences (*La science et les sciences*), Chapter II (Granger, 1993) points out: "The first level of knowledge, fundamental in the opinion of Aristotle, is sensation, immediate contact with the world, not spontaneously articulated in symbolism such as the language, nor requires a basis for discourse and reasoning. Attached to the memory trace of repeated sensations, it is experience (*Empeiria*), which already involves a judgment of perception individual to a generic image. It is the source and science and "art" This already goes beyond simple image generic concepts it introduces. If, says Aristotle (Metaphysics, A, 1, 981 a 10), determines that such remedy has relieved the man called Kallias from

such disease and he also relieves Socrates and others suffering from the same disease, it's an experience., but if we judge that this remedy has relieved all those who suffer from the same disease - then regarded as a unique concept as phlegmatic, bilious ... - this is art. Science (*Episteme*) will differ from the first in *Techné* that more accurately and more completely than "art", it must be expressed in a language and be communicable by teaching (Nicomachean Ethics, VI, 1139 b 25). But she will be distinguished primarily by the nature of the objects to which it applies "What is the object of science is necessarily." It is not that Aristotle refuses to admit a science of movement and change (physics), but there is science then which is invariant in changing things and their patterns of change. Art, however, concerns the changing itself, and therefore the contingent aspects of the individual, to the extent that it is "the generation of a work, and the knowledge of how to create things that may or may not be, and whose principle of existence is the creator and not the created thing "(Nicomachean Ethics, VI). The Aristotle's *Techné* is no less a form of knowledge, and even "rational knowledge" (*Meta Logou*), but that science is superior in that it concerns the necessary and allows the demonstration". But its climax lies in the principles that have lasted until today. Ancient logic was founded and supported by first principles and assumptions which some philosophers call "laws of the mind" (Lalande, 1926, 1st ed., 1986, 16th ed. p. 585-587). The first of these principles is the principle of identity (Foulquié, 1962, 1st ed., 1986, 5th ed. p.572-574) which is complemented by derived principles.

- The basic principle is the principle of identity: "What is, is and what it is not is not" or other form "A is A" (Foulquié, 1962). For philosophers like Paul Foulquié, it is the ideal type of analytic judgment: the attribute is not only contained in the subject, it is the same as the subject. E. Meyerson had already noted in " De l'explication dans les sciences" (Payot, 1921, p. 138-140) that A = A is never a true tautology, but is often followed by a caveat: A = A , but ... As a result, for the epistemologist F. Van Steenberghen (L'épistemologie, ISP, 1925): "Aristotelians ignore the principle of identity and the main principle for Aristotle is the principle of non-contradiction";

- The principle of non-contradiction states that the same thing can not both be and not be. “The principle of non-contradiction in Aristotle work” has been particularly studied by Polish Jan Lukasiewicz, and in chapter 16 of his book, he shows that the notion of non-Aristotelian logic is mostly in the sense of questioning the principle of bivalence when it comes to statements about the future (Pouivet, 2000).

- The principle of the excluded third away any assumption that “A = A” and “A = non-A.” “With two contradictory propositions, one true, the other false. They can be neither true nor false at the same time” (Foulquié, 1986, p. 573). Note, however, with P. Foulquié, even if there is no middle ground (no bridge) between “this is true” and “this is not true” that are absolutely contradictory, there is one between “this proposal is true “and” this proposition is false “which are simply opposites that leave room for doubt, the probability (false with probability p = 0.7 or true with probability q = 0.3 for example). The variation of these three principles of identity, non-contradiction and the excluded third helped build the first ancient civilization and then European then on bases of characterized opposition: the right and wrong, good and evil, the winner and the loser, the faithful and the unfaithful, the master and the slave, the general and the soldiers, the intellectual and the manual, body and spirit. Even if it is largely offset, this opposition is still present in our society generally, especially in academic life: the good and the bad student, the exact result and incorrect, the admitted candidate and rejected candidate, the success and failure. Accountants also know these oppositions: the certification or not certification, the balance or imbalance, positive cash or negative, net present value greater than zero or less than zero, possible investment and not feasible investment.

The structure of inevitable scientific revolutions, so well discussed by Thomas Khun (1962) that the ancient order, rigid and closed was replaced, without being totally eradicated by an organized order where the mechanical nature is illustrated by laws: laws of physics to Newton and Leibnitz, astronomical laws by Copernicus, Galileo, Kepler, Descartes to logical laws, Arnold Geulincx (*Ethica*, 1665), Nicolas Malebranche, Joseph Glanvil

(Höffding, 1906) or, last but not list Blaise Pascal and the Port-Royal school of phylosophy (*La logique ou l'art de penser*, 1662). We are tempted to say as accounting rules for Luca Pacioli (1494, 1523) and Benedeto Cotrugli (1573). The logic of the ancient Manichean struggle succeeded the principle of sufficient reason (Leibniz, Principles of Nature and Grace, p. 7), the principle of causality, the principle of determinism, the principle of substance and the principle of finality (Foulquié, 1962, 1986).

The principle of sufficient reason implies that everything has its reason for being everything real is rational, everything has a reason and everything is explainable, understandable. This principle of universal understanding overcomes the science of Aristotle and multiplies scientist ways: Copernicus, Newton, Galileo, Descartes point out the power of science and reason. We can associate the principle of sufficient reason and its derivative, the principle of causality: every beginning has a cause, any change has a cause. Without cause, the beginning or the change would result. Subtly, Meyerson, in "Identity and Reality" (1921, p. 39) derives the principle of causality, the principle of identity to assert that there is in the root cause as well as the side effects, and vice versa otherwise it would not, or what would not. This reasoning assumes that the time has no effect on things. In his doctoral thesis in literature, *Esquisse d'une philosophie de la structure* (Outline of a Philosophy of the structure), 1930, p. 285, R. Ruyer complements Meyerson stating that the principle of causality, is the principle of identity carried in space-time. Four additional principles give to rationality a model solidly constructed:

- The principle of law: This means that the same causes produce the same effects in the same context. If the same causes do not produce the same effects, a difference in the effects would be without sufficient reason (Foulquié, p. 574);

- The principle of determinism is that things are closely linked to each other and in relation to a given situation there is a resultant. If there are multiple results, a plurality of resultant would be without sufficient reason;

- The principle of substance: any change implies that something changes. Any new onset assumes a new life. One often illustrates the principle of substance by the Kantian notion of "noumenon" Greek word

used by Plato to describe the intelligible reality perceived by rational knowledge. Note that for Kant, the noumenon is somehow the intrinsic nature of the facts, the primary cause of the phenomena. Any phenomenon requires a noumenon, otherwise it would be without sufficient reason; - Finally, to top it all the finality principle assumes that any coordination means a goal requires intelligence, otherwise it would be without sufficient reason, and conversely any intelligent activity is directed towards an end. In recent years, thanks to teleology, the study of systems accepting different ranges of structural stability and can, in general, aims to develop or modify their goals, the principle of finality has been remarkable applications and teleonomy[3] which is the study of systems finalized by stability; searching for structural stability and not change. There is a large gap between these principles, we have just mentioned, and accounting principles, which are of a different nature.

3. System of Scientific Thought and Specific Changes in Accounting

Pierre Lassègue, reader of E. Meyerson and G. Bachelard published in 1962 in the *Revue d'économie politique* (1962, p. 314-326) an outline of an epistemology of accounting (*Esquisse d'une* épistémologie *de la comptabilité*) where he shows that "accounting bears the stamp of its origins as such, it is marked by legal and tax concerns (p. 314) that quite distorted it ... It is a language (a form) in which observations reflect (pp. 315, 326). It can not be equated to an economic explanation which incorporates causality, time and value (p. 315). It is a technique that gives "a poor image and artificial time". Similarly, the causality is not expressed either by accounting partly for lack of an adequate translation of the time, and partly for other reasons. There are

3 Teleonomy is the quality of apparent purposefulness and of goal-directedness of structures and functions in living organisms that derive from their evolutionary history, adaptation for reproductive success, or generally, due to the operation of a program. Teleonomy is related to programmatic or computational aspects of purpose.(Wikipedia definition)

temporal relations of causality between human phenomena of or there can be a causal relationship between the numbers of account, since it is not a dynamic equation between variables dated reacting on each other, but a set of numbers added together. This first critical accounting hardly perceived as a scientific discipline may be supplemented by analysis of the conditions scientists through the reading grid Gilles-Gaston Granger (1993). What distinguishes science from any other mode of knowledge is the originality of his "sighting" of his mind, his epistemological position can be summarized by the following three proposals:

- "Science is referred of reality" (p. 45). Production of science are not those of the art science manipulates abstract objects but it is in line with reality.

- "Science is objects to describe and explain, not directly to do." (p. 46). Granger, said that scientific activity in the pure tradition of the Aristotelian theory opposes knowledge and action and would therefore separate *theoria* and *praxis*.

-"Science wants to validate criteria" (p. 47). Knowledge about the experience is scientific only if it is accompanied by guidance on how it was obtained, sufficient so the conditions can be reproduced".

It is no longer that accounting has scientific pretensions. Spanning over 6000 years there is little more than 120 years since the first American theorists establish the first foundations of a trulymodern science. One of those who has best studied, Richard Mattessich, class schools as follows[4]: "In the first half of the twentieth century Schmalenbach and most practitioners have opted for the historical cost accounting, while others, such as Kovero (Finland) Limperg (Holland), and especially Fritz Schmidt (Germany) have privileged accounts in current replacement costs as the primary basis for evaluation. Later, some researchers have focused on transfer values (values current sales) and other present values (discounted net cash flow) or a basket of securities including all or part of these methods.

4 We quote here, summarized, the text given by R. Mattessich when he was elevated to the diploma of Doctor Honoris Causa of the University of Bordeaux Montesquieu, France, originally written in English and translated by us (Booklet #17 CRECCI, University Bordeaux IV, "The diversity of current research in accounting, evaluation and representation", R. Mattessich).

“But the central theme of modern accounting is the valuation “because it is closely linked to other fundamental accounting concepts such as accounting information, accounting practice, the classification of operations, resource allocation, etc.”.. As stated in R. Mattessich, after decades of controversy among researchers and some progress in the field of accounting, it is necessary to choose “a way between the realism of modern precision and exaggeration of simplification. Another signal that we must alert is to find answers to a complex social science and applied, such as accounting, imposes on us, and treats a less accurate but more pragmatic.

“Formerly, Alfred N. Whitehead reminded to Bertrand Russell that there are two kinds of scholars, which are “simpleminded” (they have an analytical approach) and those who are “muddleheaded” (they are more intuitive). We may wonder if the accounting researcher type is not one that would use a rigorous mathematical approach when it is essential, but sometimes accept approximations, and even intuition. René Thom suggests it in his works on the theory of catastrophes. Often, on accounting, mathematical approach is relevant, but it can not always fight against blur naturally attached to the human condition in all its aspects as fundamental and social. But accepting that accounting, such as law, medicine, engineering or applied rather than speculative discipline does not exempt us to discuss some accounting theories. Critical interpretative theory has been developed in the late 1970s and early 1980s in Britain by authors such as Hopwood (1974, 1979, 1988), Bromwich (1975, 1977a, 1977b), Tinker (1980, 1985), Macintosh (1981, 2002), Tinker, Merino and Neimark (1982), Chua (1986), Puxty, Willmott, Cooper and Lowe (1987). It draws preferably philosophy and social and behavioral sciences and is wary of the economy. This is the most “political” or “committed” accounting theories and the general problem of the usefulness of accounting policy, a vast subject that can be treated in a radical, conservative, liberal or even Marxist manner. In contrast, we find the conditional normative theory which unites many authors as Bonbright (1937), Edwards and Bell (1961), Solomons (1966), Ijiri (1967), Baxter (1975), Bromwich (1977), Barth and Landsman (1995), and of course Mattessich

(1964, 1995). All these authors, far from being conformists, have a normative and realistic approach on accounting. The work of Ijiri (1967, 1975, 1981) defends the traditional method of cost and also accepts general adjustments in the price level, and those of Edwards and Bell (1961) proposed the replacement cost identifying the constant values and common replacement as well as the current values. For all these authors, accounting is an applied science in which value judgments are important, but they must be clearly articulated. The idea that accounting is a positive discipline (eg physics and other "pure" sciences) is to reject it and remember the dominant idea of a normative accounting, not purely normative, prescriptive but conditional. That is to say, we can neutralize the normative stating first the specific objective and then exposing the necessary means to achieve the goal sought. "The advantage of this theory lies in its careful analysis of specific objective information and means-ends relationship (instrumental hypothesis) that connects the rational techniques of achieving goals. Consequently, practical considerations such as the cost-benefit analysis play a decisive role. Another advantage lies in the design of a general conceptual accounting framework. Here are some principles valid in all accounting systems while other statements of located interest, would be checked for operational assumptions (pragmatic) based on the relationship between means and ends that are designed for specific purposes "(Mattessich, 1964, p. 232-239, 430).

Humanity, bathing in reality, has not always been conscious of the awakening of the consciousness of the reality of the environment and has gone through the obligation to exploit representations of this reality and this environment. Obviously, accounting is not as shown to represent reality but a symbolic way. But the critical question we must ask is: is this representation scientific? And if not, what accounting, and why do we teach accounting in the universities? And most importantly, what, specifically, accountants try to measure and represent, and how do they do it? The reality is - and has - in most minds, a limit blurred. An interesting metaphor is the onion

and its layers of skin and pulp[5]. First, there is the core of the ultimate reality with its features and its energy loops on which even philosophers and physicists can only speculate, can only follow the different layers of physical, chemical, biological, mental, and social reality with many sub-layers (each of which produces new emergent properties). And this is the last layer, the more volatile, which especially attracts the attention of accounting, as we try to represent social realities such as property rights, relationships between customers and suppliers and preferences (or *pro forma* preferences) quantified as values. Naturally, we are also concerned with the physical realities such as the accounting inventory, machinery, buildings, and so on. The attitude of the various accounting theories face the problem of representation, it is not widespread. One of the few references, occasionally, the "reality" or the "representation" is in Christensen and Feltham (2003, 2005).

4. Conclusion

The system of accounting thought that we know and that we practice still has progress to make, if only because many authors do not distinguish between the *ontological status* of the nature of income and capital, the question of *epistemological representation*, and the *methodological question* of the measurement of income and capital. But if the concepts are not clearly highlighted and if their measurement presents difficulties, we can not even say they do not exist. As recalled by Mattessich (2005), "Obviously, something can exist without being measured or even represented in the same way that fiction can be conceptualized not exist so far." In the future, no doubt, once the sorting is actually done between theories and multi paradigmatic approaches once all the confusion and approximations are well taken into account, it should be easier for standards of accounting, theorists, preparers and investors with only a basic knowledge of the

5 Mattessich, Richard (2003) "Accounting representation and the onion model of reality: a comparison with Baudrillard's order of simulacra and his hyper-reality", Accounting, Organizations and Society 28: 443-70.

techniques to distinguish the positive portrayal of pure science and practical representation of sales people trying to give their books and in their annual accounts. Conditional normative theory, based on a thorough review of the economic theory of information, will be one more step on the path to finding the structure of accountant scientific revolution.

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