

NOTES ON THE COMPLEX METHOD AND THE CHALLENGES OF RESEARCH¹

Maria da Conceição de Almeida

Abstract

Based on fragments of Edgar Morin's works, which treat more specifically the researching activity, the article discusses the importance of the researcher's creativity in using his own "vias of approach" to the researched reality. It highlights the difference between method as *program* and method as *strategy* and it makes a brief reference to a research which has been developed during the last twenty years. To abdicate from the researching recipes and to bet on strategies which are able to reduce science's well established paradigm of fragmentation in regards to research, are the main focuses of this article.

Key-words: research, complexity, complex method.

¹ Publicado em Research on scientific research: A transdisciplinary Study. (Org MALDONATO, Mauro; PIETROBON, Ricardo). Great Britain: Sussex Academic Press, 2010.

THE DESIRE OF ORDER

What is a scientific research? Is it to look at what nobody else has looked at and see what nobody has seen? To look at what the others have looked at and see what they haven't seen? To look at what others already looked at, see what it has been seen and understand dimensions which haven't been understood? Is it to observe systematically new indexes about phenomena already studied, aiming at understanding their transformations?

Even if it oscillates among these postulates, the research can be considered as a top activity in the construction of scientific narratives about the world phenomena. No matter whether physical, metaphysical, cultural, micro or macroscopic they are. It's through this activity that the accumulated knowledges are broadened, transformed, they gain historicity and keep themselves alive – because they are in permanent metamorphosis.

From an anthropologic perspective, that is, in what concerns the human ability of duplicating and representing the world, of assigning meaning to things and relating information, the research comes to life from the curiosity and the desire to bring order out of chaos. To ask and to answer *why and how things are as they are*, as well as to establish causes, dynamics, directions and duration of the phenomena reveal altogether, the wider horizon of investigative attitude in human beings. Such attitude, which earns differentiated contexts and outlines in the production of science, exceeds this domain once it also feeds other narratives and aesthetics of the constellations of thought, such as the philosophical speculation, the myths and Art. Once things are well seen, one could possibly say that, in the science domain, the research is the metamorphosis, in hyper-complex levels, of curiosity and of the desire of order, which are in the basis of human condition.

However, as every human construction, the construction of what is to be researched changes according to the historical development of science, articulated to the arising of problems and phenomena which show a new face, or a face until then impossible of being conceived. Certainly the principles that guided the systematic treatment of a theme or problem in René Descartes time differ, fundamentally, from the principles in construction nowadays in the scenario of a complex and multidisciplinary science. We are, mainly since the first decades of the last century, living a time of bifurcation concerning the way information is articulated to build knowledge. Such bifurcation is moving away from the strictly analytic positions of the “Old Western

Paradigm”, which consecrated the myths of scientific neutrality and the separation between subject and object, and elected the sequence observation/ demonstration/ verification/ proof as the pattern to access reality.

The desire of imposing order to chaos, so important in the mythic and scientific narratives, sometimes is converted into a *feeling of order*. This conversion of desire into feeling occurs in an analog way to that which happens in the *idea of truth* when it is transformed into a *feeling of truth*, as it was discussed by Edgar Morin in *O Método 3* (1999, pp. 160-162). Thus, during the consolidation of modern sciences – born in the 17th Century – an obsession for the search of order takes place as a non negotiable principle of the subject of knowledge. The order, once not seen as a construction of thought, came to be understood as an evidence, which ends up offering the scientist an “infinite peace, infinite joy”, as Morin says. For him, “In Descartes, the evidence is born from the agreement established between order of spirit (the clear and distinct ideas) and the order of the universe. It can be that, in the basis of every intellectual knowledge, the harmony which seems to be established by ‘an adequacy between the intellect and the thing’(classic definition of the truth) contains the feeling of evidence.” (Morin, 1999, p. 162).

Furthermore, as an outcome and extension of the feeling of order and of the evidence defense, two scenarios end up setting the common patterned protocols of the investigative practices. We will inquire these scenarios now.

The first one concerns the supposition of the observer’s immutable, autonomous and independent reality. From this perspective, the observing and experimenting techniques would be good and rigorous enough to show the phenomena’s underlying order. Well, every observation is dated and only permits to expose the present moment of the phenomena dynamics under certain circumstances and contexts. The things and the phenomena have a history, evolve, transform themselves partially, self-eco-organize themselves intrinsically. Thus, every generalization is dangerous, once it is, frequently, an inappropriate magnification of time and space scales relating to an eventual, partial, phenomenal situation. The research, in this sense, is a knowledge contrivance which momentarily freezes the reality, as a condition to build interpretative narratives. As for the real phenomenon, it continues its flow, its history, its evolution. As it is for Edgar Morin, this idea is also in the basis of Ilya Prigogine’s thinking, for whom “Even in the fundamental sciences there is a time, a narrative element, and this constitutes the ‘end of certainties’ (Prigogine: 2001, p. 16). Moreover, Prigogine says, there is creativity in nature’s heart, and the human creativity is an emergence of general creativity. In the

context of the complex thinking and the complexity sciences, the researching activity could only be, therefore, ‘a dialog with nature’ (Prigogine) and never an autopsy of a corpse, of a dead stuck fragment.

The second scenario is characterized by the super-valorization of redundancy and repetition of phenomena, which means to suppress or reduce the importance of disorder, variations and deviations. In most scientific researches, the methodologies and approaching techniques are restricted to assumed categorized limits and variations which have the aim of ‘capturing’ the general dynamics and the pattern of the studied phenomena. The help of statistics techniques, which treat with ‘precision’ the standard deviation, the representative coefficients and the error reduction, are understood as real passports to the ‘finding’ of how the phenomenon exists and develops itself. Although such techniques of assessing the non-variation are fruitful for determined phenomena of low complexity, they do not allow one to understand the complex system in which life flows, which operates far from equilibrium (Prigogine). Order-disorder, standard-deviation, repetition-variation are inseparable pairs, according to the complex sciences. Moreover, once we deal with cultural phenomena, it is, above all, what appears as a borderline and deviated element (thus what the obsessed by order and pattern researches do not take under consideration) which constitutes a probable tendency to become a pattern in the future. Human History is full of examples: small minority groups with new religious, moral, ethics or ecologic ideas (exemplified by Jesus Christ, Gandhi and the feminist and ecological movements in the 1960’s and 70’s) help to visualize the importance of deviation and disorder in human history.

In a daring way, Ilya Prigogine amplifies the argument. He highlights the individual actions, without reducing the power of the collective, to the unpredictable and the unexpected. “The role of the British pilots was crucial to decide the ending of the Second World War.” For Prigogine, we live a time of uncertainty, fluctuations and the dice have not been thrown yet. Thus, that is why “the individual actions are still essential” (2001. pp. 19-20). Would the historians be able to, in the Second World War, predict the role of the British pilots? Certainly not. There is always the unpredictable, inaccessible, the deviation and the disorder that drives to new orders. To conceive the reality from the previous perspective can diminish the illusion that the research is an X-ray of the living history, of life, of the phenomena, of societies, of Men.

Two important fragments of Edgar Morin’s works strongly show some fork points on what refers to the conception of both order and the research practice moved by the complex thinking. The first fragment discusses the constitutive dialogic of the three-

party order-disorder-complexity and opens the second part of the book *Science with Conscience* in its Portuguese edition (1982). The second fragment begins at chapter 3 of the book *Sociology*, in its Spanish edition (1995) and exposes the author's reflections about a research on the community of Plozévet in the year of 1960. Let's go bit by bit.

BEYOND ORDER

Through the metaphor of the three looks, Edgar Morin (1982, pp. 71-72) summarizes the evolution of the sciences of matter, life and Men in its relations with order and disorder. Regarding the sciences of matter, the first look only notices the disorder: when one looks at the sky, one sees a 'bunch' of stars scattered by chance. Looking a second time, one can notice "an uninterrupted cosmic order, - each night, apparently always and forever, the same starry sky, each star in its place, each planet doing its impeccable cycle. But then a third look occurs: because there is an injection of new and formidable disorder in that order, then we see a universe in expansion, dispersal; the stars are born, explode, die. The third look requires us to conceive jointly order and disorder. " (Morin, 1982, p. 71). As for the sciences of life, "at first sight, it was the fixity of species, reproducing themselves impeccably, so repetitive over the centuries, for millennia, in an impeccable order. Then, the second look, it seems that there is evolution and revolution. How? By bursts of chance, accidents, and ecological and geo-climate disruption... and here we are faced with the need for a third look, that is, to think together the order and disorder to design the live organization and evolution. Regarding human history, conversely, the first look was not the order, but the disorder one. History was conceived as a succession of wars, attacks, assassinations, conspiracies, battles: it was a Shakespearian history, marked by *sound and fury*. But then, in came the second look, namely from the last Century on [in this case, the 19th], which discovered infrastructural determinisms that seek the laws of history, in which the events become epiphenomena. Moreover, most curiously, since the last century the 'anthropossocial' sciences, whose goals are rather extremely random, struggle to reduce the chance and the disorder, establishing (or believing they are doing so) economic, demographic and sociological determinisms."(id., *ibid.*).

Thus, one can see that, while the natural sciences discover and try to integrate disorder to order, the human sciences try to expel it. From this conclusion, Edgar Morin suggests the need to conceive "a fourth look, a new look, therefore, a look driven to our own look, as Heinz von Foerster well said" (Morin, *id.*, p. 72). This fourth look regards

both a new concept of order and the fact that we include ourselves in our vision of the world. The concept of order is not simple, nor monolithic, says Morin. The notion of order exceeds, by its richness and diversity, the old determinism and ideas of immutable laws, stability, consistency, regularity, repetition, structure. "This means that the order got complex" that there are several forms of order. It is not anonymous and general, but it is linked to singularities" (ibid., pp. 72-73). The new idea of order calls for the concepts of organization, interaction, system and, above all, it calls for a dialogue with the idea of disorder'.

It is then understood that "the concept of order became relative. The acts of complexifying and relativizing go together. There is no longer an absolute, unconditional, eternal order "(id., ibid.). As for the disorder, it also has changed and it goes beyond the contingency of chance, although disorder contains chance. "I would even say that the idea of disorder is richer than the idea of order, because it necessarily involves an objective and a subjective pole. In the objective pole it manifests itself in the unrest, dispersions, irregularities, instability, disturbances, random encounters, accidents, disorganization, noise and errors "(ibid., p. 74). In the subjective pole it is expressed by the unascertainability and uncertainty of complex systems and the human spirit.

It is impossible, thus, to conceive either order without disorder, or disorder without order. A universe being only order would be a universe without becoming, innovation, creation. Similarly, a universe that was only chaos would be unable to build organization, therefore would be unable to keep the novelty, to evolve and to develop, argues Edgar Morin.

This long reference to the dialogic that constitutes the pair order-disorder opens the way for the construction of the *tetragrame* order-disorder-interaction-organization, an important cognitive operator of the complex method designed by Morin. This *tetragrame*, far from foreshadowing a pragmatic model for the construction of knowledge through research, requires and depends on a person who can understand and put into action the "dialogic between organization and environment, object and subject." From the point of view of the sciences of complexity, we face a reconsideration of what the field of knowledge is. "The real field of knowledge is not the pure object, but the object seen, noticed and co-produced by us. This phenomenology is the reality of our beings in the world. The comments made by human minds include the uneliminable presence of order, chaos and organization in microphysical phenomena, as well as in macrophysical, astrophysical, biological, ecological, anthropological ones...and so on.

Our real world is a universe in which the observer can never eliminate disorders, and in which he can never eliminate himself" (Morin, id., p. 78).

For Morin, if from these ideas one cannot infer a direct lesson or a pragmatic recipe, "there is yet a direct call to break with the mythology or the ideology of the order. The mythology of the order is not only in the reactionary idea according to which every innovation, every novelty means degradation, danger and death but it is also in the utopia of a transparent society without conflict and without disorder "(Morin, id., p. 79). These considerations do not allow us to infer disincarnated abstractions of an intellectual lacking of experience in researching. Neither it opposes life and ideas, nor separates its epistemological reflections on the method from the complex thought of their investigations, as it is the case of the research on "the rumor of Orleans" (which deals with the mysterious disappearance of women in clothes shops owned by Jewish businessmen), or on the performance of the French youth, or near the community of Plozévet in 1965, from which it discusses the question of method and the technical approach in 'field' research.

THE LIVE METHOD

It is interesting to observe how the construction of the six volumes of *O Método* - first volume published in 1977 - appears to have been in the incubation period in the research undertaken by Edgar Morin twelve years before, in the community of Plozévet. In the book *Sociology* (1995), a field researcher Edgar exposes the double face of the mythological Jano when reconnecting the ethnographic practice (observation, daily records in the field, interviews, questionnaires, recordings) with a reflection on the epistemological labyrinths of research. But the perspective from which our Jano-Edgar begins differs, significantly, from the postulates of a "dominant sociology which reduces society to the exclusive concept of a post-industrial society, which underwrites the singular life in descriptive monographs and quite simply eliminates possibility, considering it as an accident, as quota that must be discarded to design the true social reality, which tends to repetition, to regularity and thus, to structure (Morin: 1995, p. 186).

The eventful in the sense of an event or of a minor and non-regular phenomenon, is of crucial importance for the approach of the process of social change, according to Morin. It is an 'active test' on the system in which it operates, and at the same time it intervenes in a multiple and decisive way in human history. "That which was excluded

because insignificant, unpredictable or statistically minority, that which disturbs the structure or the system, all this for us is extremely significant as revealing, as a trigger, an enzyme, yeast, virus, accelerator, modifier" (ibid., p. 189).

It is exemplary the detailed narrative on how the group of researchers made use of Morin's technical approach called the "process of approximation" of reality (phenomenographic observation, interviews and participation in community activities, showing of films etc.). A superficial reading of this fragment of the book *Sociology* would make one tempted to see a recipe for how to do "field research" in communities. We know, unfortunately, that there are hundreds of recipe books on research in all areas of knowledge. In the social sciences these 'Methodology Manuals' cause fascination, are consumed at large and they constitute a true editorial profit. Far from a recipe, Morin's centrality of narrative lies in the exhibition of the reflective elements about the limits of a paradigmatic, monolithic and inflexible sociology in its investigative practices. Speaking about the researcher's diary, he says: "the diary is not an accumulation of notes, it is a relation which includes, in itself, a chain remembrance of events registered unconsciously (impressions, feelings), which may be a second look of the researcher himself, a matter which allows to delude the relationship observer-phenomenon, that is, elucidate the key problem of every effort for focus: the pair subject-object of research" (ibid. p. 195).

The researchers team self-critique, permanent evaluation of the scripts and anticipated ways, initiative, flexibility, affective involvement and, especially, the use of personal sensitivity, are betting risks of multidimensional investigations. On the basis of such betting is a "method that allows the development of a thought fit to go from the concrete singular to the totality in which it is incorporated, and vice versa" (ibid., p. 192). That is why the observation should be both overview and scrutiny, says Morin.

Making use of literature, usual narrative strategy throughout his work, Edgar Morin uses precious images here to talk about the researcher and the research. For him, we sometimes act as Balzac (encyclopaedic description of reality), sometimes as Stendhal (see the 'significant detail'). In this scenario, the opposition between micro and macro-research loses meaning. Morin Asks: "Is it a paradox to say that the more particular a study is, the more general it should be?" (ibid., p. 204).

Next to a science of the sensitive, the phenomenological attitude exposes the horizon of investigations fed by the complex thought. "It is, therefore, out of a phenomenological impulse, to offer food to the theory and to the concrete, both

correspondingly shrivelled, underdeveloped, suffocated in a middle range between theory and the concrete, poor of one and mutilated of the other" (ibid., p. 187).

A live method, in permanent reconstruction, able to articulate objectivity and subjectivity. General principles that call and require the researcher's creativity, sensitivity and inventiveness, at the same time that it permits one to distinguish rigidity of scientific rigour. This may be a provisional synthesis of the complex activity in the research method's challenge. Furthermore, far from the divorce between theory and practice, basic research and applied research - so tasty for the agencies which sponsor researching – it is appropriate to listen once again to Edgar Morin: "the more empirical a research is, the more reflective it should be " (ibid., p. 206).

METHOD AND CREATIVITY

I flag now for central arguments on the matter of the method, methodologies and techniques of research. I limit myself to two references of the author of Volumes 1 and 3 of *O Método*. We read in the first book that the method "is opposed to the conception called 'methodological', regarded as recipe techniques. The Cartesian method is based on a fundamental principle or paradigm. But here [in the complex method] the difference lies precisely in the paradigm. One is no longer to obey a principle of order (which excludes the disorder), clarity (which excludes the obscure), of distinction (which excludes adhesions, shareholdings and communications), of disjunction (which excludes the subject, the antinomy, the complexity) that is, a principle which links science to logic simplification. But rather, from a principle of complexity, to link what was scattered "(1979, p. 26).

In *O Método 3*, Edgar Morin is more determined to make the distinction between method and methodology. "Should it be reminded here that the word method does not mean in any way, methodology? The methodologies are guides *in advance* scheduling researches, whereas the method derived from our journey will help the strategy (which comprises lately, it is true, scheduled segments, that is, methodologies, but it will necessarily include discovery and innovation). The goal of the method is helping to think for themselves so as to answer the challenge of the complexity of the problems "(1999, p. 38).

The proposal construction of Edgar Morin's complex method gives rise to a conception that allows one to differentiate between two meanings of the word *method* within the scientific knowledge. So when we talk about method as a program (pre-set

sequence of steps that must be respected in research), we are referring to the scientific method that emerges from the Cartesian paradigm of science, of fragmentation. When we talk about method as strategy (flexibility and change in the original scripts), we refer to the complex method that relates to a science in progress.

It is to the strategy that the complex thought appeals. The creation of "vias of approach" (expression which replaces 'methodologies' to Morin) is what is expected from the sensitive subject towards the complexity of the theme or phenomenon he wants to know, with which he wants to dialogue. Here, surely, the researcher refuses the recipe books presented by research manuals and creates her/his own approaching strategies, her/his cognitive operators. Producing relevant knowledge is what is expected from her/him: linking the fragment to the context, the local to the global is the art expected in the multidimensional and complex research. "This is why the local investigation requires much research strategy, invention and, if you want it to be science, it must also be art" (Morin: 1995, p. 185).

RESEARCH AS KNOWLEDGES RECONNECTION

It would be at least contradictory to discuss the challenges of a complex and multidimensional basis research without having experienced these challenges. It is, therefore, with the intention of placing other bets, risks and challenges that I refer to a research that has been carried out by me and a variable team of doctoral, Master and undergraduate students, since 1986. I have said (and I'm convinced of it) that beyond the paradigmatic concept of scientific research, this is a life project. The context of empirical reference is the scenario of Piató Lagoon (in the state of Rio Grande do Norte, Brazil), its inhabitants, its ecology, the vulnerability of the climate system, changes in fishing activity and the traditional knowledge about the environment, the history of the place, the natural medicine, etc. A background and critical history of the research is in Almeida and Pereira (2006).

As a living laboratory that calls for the production of new knowledge and for the reflection on science in the areas of biology, medical sciences, history, literature, ethnomathematics and ecology, among others, the research has already brought to life four of doctoral theses, three Master dissertations, some undergraduate students' monographs, as well as some books that record the knowledge of part of that population on various topics. *The nature told me* (2007), authored by a fisherman-farmer and builder of boats, may be an example of the complexity of a thought which inquires itself about

cosmology, climate prediction and the uncertainty of knowledge both in local and global levels.

A diagnosis and critical study about the ecological conditions / economic and fishing activity techniques, which began with the exchange of researchers in the areas of biology, history and anthropology, led to a fork of interests and objectives over time. Focusing on the challenge of making the scientific knowledge dialogue with the 'tradition knowledge', the research has invested, primarily, in developing approaches among different strategies of thought concerning world phenomena.

An open, but persistent, design regarding the complexity of knowledge, the reconnection of knowledges and the multidisciplinary activity weave the carpet of the various particular researches. I, thus, summarize this conception, as it presents itself up to this moment - because it has been self organized according to the moving of theses, Master dissertations, etc. The macro-conception, from which we began, advocates the need to diversify the bets in the reconnection of knowledges. Not restricting itself to the dialogue between the areas of science - science of matter, life, and man - the reorganization of knowledge in complex levels requires the inescapable dialogue and complementarity between science and other cosmology narratives about the world.

A true new alliance between scientific and humanistic culture is only possible from an *ecology of ideas* that embraces the knowledge of the ancient tradition of which many people on the planet make use. This ecology is far from the relativistic principles of a disciplinary anthropology that insists to translate one knowledge into another, insisting upon reducing the multiple strategies of one into the interpretative and analytical codes of the other. Utopia? A disproportionate expansion of our mission nowadays? Perhaps. But if that is a distant horizon there is no reason not to open the first marginal routes. Researches and occasional or minority speeches can get schools to read, understand and interpret the world in different ways. A way that is not dealt with in the pragmatic and monolithic educational curricula. Children, adolescents and teachers open to surprises and mysteries of the world and knowledge shall then understand the words of Michel Foucault for whom "there are more ideas on earth than the intellectuals imagine." Moreover, if we take an intellectual person as every subject who is able of assessing the phenomena around her/him in a systematic, ongoing, stubborn and uncertain way, then we must enlarge the space of this character of culture.

Far from the sacralization of science or the sacralization of the knowledge of tradition, the bonding between these two strategies for knowledge – diverse and multiple in their own fields - will open up major loopholes in the 'monoculture of mind'

(Vandana Shiva) that characterizes the 'great paradigm of the West' (Morin). The particular (pin-pointed) researches, fuelled by the multidimensional perspective, and attentive to the dialogic local-global and particular-universal, have an important role to play in that direction. Moreover, sometimes the particular (pin-pointed) researches are the matrix to which one refers to, permanently, to support broader reflections of reality. This phenomenological attitude offers the living substance often missing in the theoretical listings.

References:

- ALMEIDA, Maria da Conceição; PEREIRA, Wani Fernandes. Lagoa do Piató: fragmentos de uma história. Natal: EDUFRN, 2006.
- MORIN, Edgar. O Método 1: A natureza da natureza. Portugal: Europa-América, 1979(?).
- MORIN, Edgar. Ciência com consciência. Lisboa: Europa-América, 1982.
- MORIN, Edgar. Sociología. Madri: Editorial Tecnos, 1995.
- MORIN, Edgar. O Método 3: o conhecimento do conhecimento. Porto Alegre: Sulina, 1999.
- PRIGOGINE, Ilya. Carta para as futuras gerações. In: Ciência, razão e paixão (Org. CARVALHO, E. de A.; ALMEIDA, M. da C. de.). Belém: EDUEPA, 2001.
- SILVA, Francisco Lucas da. A natureza me disse. (ALMEIDA, M. da Conceição e CENCIG, Paula Vanina). Natal: Flecha do Tempo, 2007.