

Methodology and Method in Scientific Research

M. Şimandan

Matei Şimandan

“Aurel Vlaicu” University of Arad

Abstract: The aim of this article is to operate the conceptual distinctions between the methodology of research and the methods, techniques, procedures and instruments of research. In the first part of the article, we make an analysis of the interpretations given to methodology, insisting upon the distinctions between general methodology and the specialized methodologies of the different fields of research. The second part of the article tries to highlight the principles that stand at the basis of the functioning of research methodology (the unity between theory and practice, between theory and practice and between the deductive and evaluative judgments), as well as the distinctions between qualitative and quantitative methodologies. In the last part of the article we systematize the characteristics of the research method and the different criteria according to which they can be used in the practice of scientific research.

Keywords: methodology, method, scientific practice, methodological principles, methodological control.

The content of methodology

Methodology can be defined as the systematic study of the principles, methods, rules and procedures which govern a scientific intercession. Having a normative characteristic, methodology formulates strategies of investigation, it indicates the possible difficulties of past research experiences and suggests ways of obtaining valid results from the scientific point of view (cf. Vlasceanu, 1998; King, 2005; Moscovici si Buschini, 2007; Chelcea, 2010). It is

important to highlight the fact that research methodology defines the scientific theory of the research methods, namely the principles on which the means and types of action in a certain field of reality are conceived.

The interpretations given to research methodology regard a number of analysis plans. Sometimes, it is considered a branch of science philosophy, developed next to epistemology and the logic of research. This situation admits the existence of a general methodology, whose aims would be the problems of all the scientific research. Although we can't speak about a general methodology of scientific research, the communication between particular methodologies ground themselves as factors of convergence of the research strategies and a means of highlighting the unitary feature of scientific knowledge.

On other times, there is talk about methodologies specialized on disciplines, whose functions refer to defining the studied object, identifying the principles and rules of investigations, to the instruments of collecting and analysing data or the processes of validating the results of research. From this perspective, methodology includes: the assertions admitted as references for that particular science and converted into methodological norms; the methods and techniques of collecting empirical data (observation, experiment, modelling simulation etc); the techniques and procedures operating the empirical information and data, as well as collecting them to ground decisions; procedures of analysis, interpretation and theoretical construction based on the empirical data in order to elaborate descriptions, explanations and predictions (cf. Chelcea 2004; Popescu si colab, 2006; McQuin si Knussen, 2007; King, Keohane si Verba, 2000).

Last but not least, research methodology is regarded as “a system of methods, procedures, techniques, postulates, principles and instruments, as well as the afferent know-how engaged in the process of scientific knowledge (...). It confers to research the characteristic of efficient action because it involves a way of use, a know-how fit to the methods, techniques and instruments which can be used, the latter being most known. Understood as something that teaches us how to use research methods and instruments and, most of all, how to apply what we know, methodology provides us with the rules, norms, methods and practices through which we can get to know “how to do” and “how to apply” something we know we had learnt, how to walk the way from a vague idea, a hypothesis to a solution, a generalization or a scientific theory” (Zait si Spalanzani, 2009, p.127).

Starting from these assertions, we can state that research methodology involves a wide variety of realising the scientific process, grounded on a number of criteria:

- The theoretical concept according to which we elaborate the definitions of the object being studied;
- The orientation of research towards formulating conclusions or grounding decisions;
- The predominantly theoretical form of research or grounded on observation or experiment;
- The set of objectives associated to research – description, understanding, explanation, prediction and control;
- The accent on quantitative methods or qualitative ones;
- The diversity of hypothetical methods of formulating a research strategy;
- The difference between the methods of investigation;
- The possibilities to operate with the concepts used in the research of a certain field of the socio-economical reality;
- The theoretical and valuable foundations of the researcher's report on the reality he is studying;
- The quantitative and qualitative meanings of the data used to formulate explanations.

The main conclusion drawn from this presentation refers to the main themes used by the methodology of scientific research. Thus, we can make the following distinctions:

- Delimitating the object of study in empirical research, since not all socio-economical facts, phenomena and processes have the same importance in determining explanations, just as not all aspects of reality can be investigated at the same time.
- Understanding the meaning given to the concepts used in research and in the analysis of the means of fitting the methods, techniques, procedures and instruments of investigation to the object of study.
- Choosing the methods of research, an activity which depends on the nature of the phenomena being studied and the accessibility of the methods, the period of time given to the study, the financial resources and the conclusions.
- Convergent application of more means of investigation and optimum articulation of the methods, techniques and instruments of research in a strategy which can surpass the limits of each method and technique.

- Checking the means of systematizing and using data in field research (constituting series of data, organizing the information in statistic classes, establishing the application limits of statistical numbers according to the level of measuring used etc.), as well as the attempt to formalize statements.

The principles of methodology and methodological control

From the debate of the aspects connected to methodology and the methods of research, authors such as King, Keohane, and Verba (2000), Chelcea (2004), McQueen and Knussen (2007), suggest a double perspective of approaching methodological principles. On the one hand, this involves a structural model which makes distinctions between:

- The principle of unity between theory and practice, a principle which includes, at the same time, field theory and observation, induction and deduction, estimating indicators and interpreting them, formulating hypotheses and empirical generalizations, elements of theoretical construction and their application in scientific practice.

- The principle of unity between explanation and understanding, according to which the explanation of socio-economical phenomena and processes involves the understanding of the functioning mechanisms of different structures of organizing social life and individual and group behaviour.

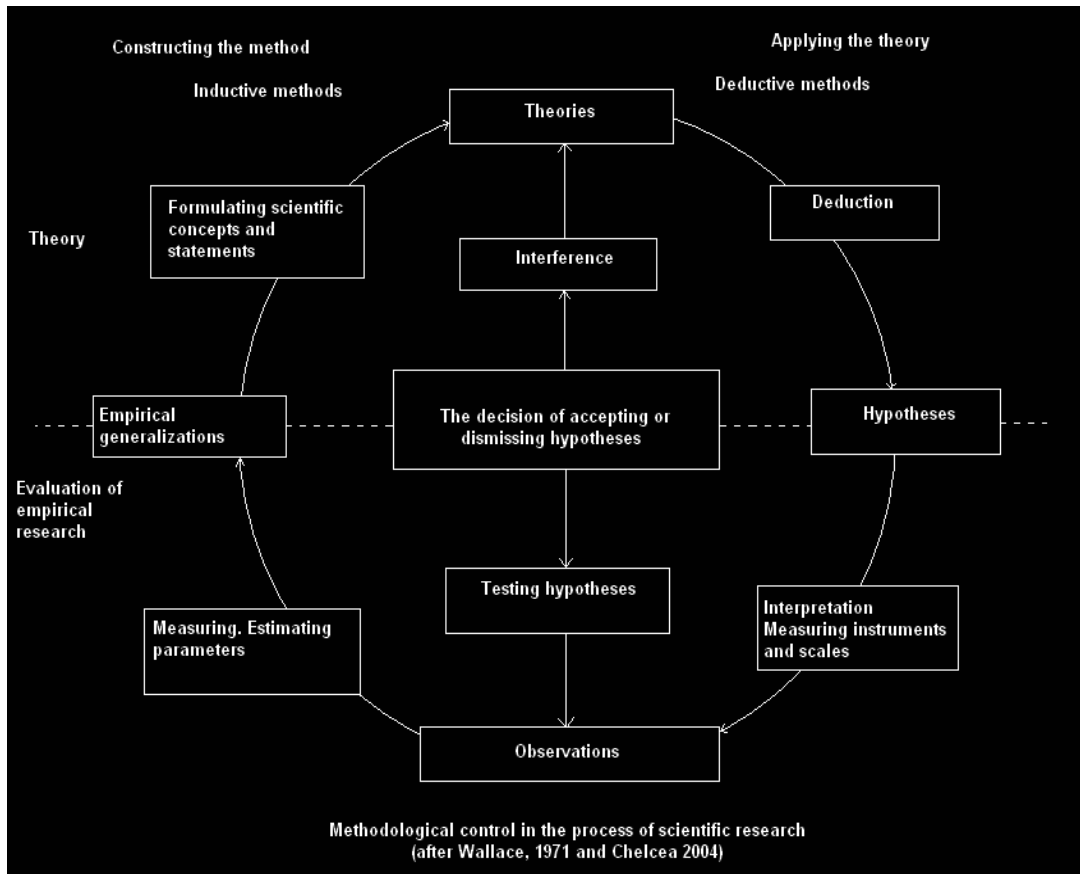
- The principle of unity between concluding and evaluating judgements, which says that the researcher can't be free of values, interests, ideologies or certain cultural influences, having to act according to certain moral commitments which he must share.

On the other hand, we can make a distinction between the methodology of quantitative research (associated to the process of collecting and analyzing numeric data) and qualitative methodology (especially connected to collecting and analyzing information based on interpretation). Summed up to the essentials, qualitative methodology means collecting standardized data from previous research carried out with the help of questionnaires or measuring scales or through the statistical analysis of information obtained during the process of observation and experimenting.

As opposed to quantitative methodology, the objectives of qualitative methodology involve the study of the meaning of social facts and understanding the reasons why social actors act in a certain way. The techniques employed – observation, interview or behaviour analysis – involve not only the researcher, but also the analysed subjects in a relationship of continuous definition of research. Obviously, the two means

of operating are more flexible than they seem in theoretical development, and the different research methods and techniques are in a continuous process of interaction and reciprocal support.

Willing to go beyond certain unilateral approaches of the principles of methodology, Septimiu Chelcea (2004) adopts the analytical model of Walter Wallace (1971) for the specific of social research. Following the direction of methodological control, the chart below tries to present the way in which theory serves to formulate deductions and hypotheses which, in their turn, help to build measuring instruments and scales for the phenomena observed; hence, the emergence of a process of evaluation of the parameters and the creation of an empirical generalization, which lead to new theoretical concepts and statements. The model also suggests the elements of theory application and the construction of methods and techniques of research with the help of deductive and inductive procedures, as well as the way in which the mechanism of accepting or dismissing the hypotheses formulated works in different moments of the explanation stage.



The method – methodology relationship

As seen in the presentation above, research methodology is generally normative, being built from theoretical principles, methods and techniques of collecting data and processing information, as well as from logical procedures of analysis, organization and generalization of the new knowledge and theoretical constructions.

The method, on the other hand, is a system of research rules and principles, which are used to underlie knowledge and the action of transforming reality. It can be defined as a rational way which permits the ascertainment of the distinctions between true and false, real and unreal, objective and subjective etc, as well as the limits between acceptable and non-acceptable in scientific practice.

Other characteristics of the method of research refer to the fact that it is the most active theoretical background of science and it leads to acquiring new knowledge. As the same time, method draws its sources from objective reality and comes to life through the conversion of the theoretical field of science into normative elements and is tightly connected to the theory and practice of knowledge.

Referring to the field of social sciences, Septimiu Chelcea (2004, p.31-33) points out that the term method is used with different meanings, which gives it a certain ambiguity. To get over it, the author suggests a classification of the methods of scientific research according to the following criteria:

- According to the time criterion, there is a difference between transversal methods (which concern the social phenomena and processes at a given time) and the longitudinal methods (which study the social phenomena and processes in their temporal evolution).
- According to the degree of intervention of the researcher in producing the phenomenon, there are experimental methods (the experiment, the simulation, modeling), near-experimental methods (the inquiry and the Gallup poll) and observation methods (observation, documentary study etc.).
- According to the number of social units being studied, there is a difference between statistical methods (which involve the investigation of a large number of social units) and casuistic methods (which thoroughly study a few socio-human units or phenomena).
- According to the place occupied in different moments of the scientific intercession, the methods can be: methods of correlating information (statistical recording, field study, inquiry etc.), methods of

processing information (quantitative and qualitative methods) and methods of interpreting research data (comparative, interpretative methods etc.).

The same author tries to operate a few useful distinctions between method, technique, procedure and research instrument. While the technique designates the complex of rules and procedures for an efficient action regarding the operational level of the approach of the studied phenomena, the procedure represents the means of action and use of research instruments (interview guide, registration paper, observation paper etc.). The background idea is that the same method consists in more techniques, just as each technique can be applied in different procedures.

By stating the meaning of the terms method, technique, procedure and research instrument, we can say that methodology is the science of methods or that methodology is the interface between theory and method. These relationships between method and methodology meet in all the stages of scientific research, whether they start from a theory which is to be verified (like in the positivist tradition of quantitative research), or they start from the qualitative observation and interpretation of the phenomena (which give the researcher the opportunity to develop a systematic research and to elaborate new explanative theories).

Conclusions

From the presentation above, one can conclude that methodology is concerned with the general approach of the hypotheses of social sciences and with the study of the way in which researchers operate when selecting and using certain methods of investigation. While methodology analyzes the principles of research, the possibility to explain the social processes and phenomena or whether one can establish causal or functional relationships, the methods are concerned with the practical and explanatory aspects of research. Whether we talk about content analysis, comparative analysis, case or observation analysis, interview, or sociological investigation, the method still relates with research methodology and its principles of operation. In other words, method and methodology determine and support each other, thus accomplishing the actual communion between theory and practice, between explanation and understanding, between quantity and quality, as well as between the different stages of the scientific process.

Bibliography:

- Chelcea, S., 2004, *Inițiere în cercetarea sociologică*, București, Editura Comunicare Ro
- Chelcea, S., 2010, *Metodologia cercetării sociologice. Metode cantitative și calitative* (ed. a III-a), București, Editura Economică
- King, G.; Keohane, R., S. Verba, 200, *Fundamentele cercetării sociale*, Iași, Editura Polirom
- King, R.F., 2005, *Strategia cercetării. Treisprezece cursuri despre elementele științelor sociale*, Iași, Editura Polirom
- McQueen, R.; Knusses, Ch., 2007, *Metode de cercetare în științele sociale*, Iași, Editura Polirom
- Moscovici, S.; Buschini, F.; 2007, *Metodologia științelor socioumane*, Iași, Editura Polirom
- Popescu, C-tin; Ciucur, D.; Răboacă, Gh.; Iovan, D.; 2006, *Metodologia cercetării științifice economice*, București, Editura Academiei de Studii Economice
- Șimandan, M., 2002, *Teoria cunoașterii sociale*, București, Editura Academiei Române
- Vlăsceanu, L., 1998, *Metodologia cercetării sociologice*, în C.Zamfir și L.Vlăsceanu (coord.), *Dicționar de sociologie*, București, Editura Babel, p.349-351
- Zait, D; Spalanzani, A., 2009, *La recherche en économie et management. Reperes épistemologiques et méthodologiques*, Paris, L'Harmattan