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Autarchy of Political Science and the Methodological Functions of Object Knowledge. Epistemological Analysis

Abstract: Applying external scientific knowledge – i.e. knowledge achieved in the field of disciplines and sub-disciplines related to political science – in fulfiling such methodological functions as explanation and prevision (forecasting) is frequently approached in meta-scientific and meta-theoretical considerations as conducted on the ground of the family of scientific disciplines constituted by the sciences of politics. These functions can be ascribed to the purely epistemological aspect of scientific activity, not its institutional and organizational aspects. The dispute regarding the explanatory autonomy of political science is fallacious. From the logical and methodological point of view, the institutional "affiliation" of object knowledge, which constitutes a premise in complex inferences, does not play a role in the fulfilment of the assumed cognitive tasks; what is important instead is its epistemological credibility, as well as the goals of the research strategy selected by a given scholar.

Keywords: *political science, methodological functions, research procedures, object knowledge, explanation, logical methodology*

1. Introduction

The history of political science as an academic discipline has seen repeated attempts at methodological self-reflection on the specificity of the research object, the usefulness of the applied research strategies, and the functional role of the scientific knowledge of political phenomena. Attempts to produce a *sui generis* assessment of the achievements of scholars who represent this scientific discipline and the disciplines related to it – attempts which periodically recur in open debates and which include the investigations regarding research directions drawn on to date and the adequateness of the applied methods – have been made

in the countries that have long democratic traditions and a long institutional history of political sciences (Merriam, 1921; Hyneman, 1959; Catlin, 1964; Waldo, 1975; Katznelson, Milner, 1993; Dryzek, 2006; Parenti, 2006; Blondiaux, Déloye, 2007; Farr, 2007; Grant, 2010; Clarke, Primo, 2012), as well as in the countries that were in the process of abandoning the communist system – this is, countries where, in the period of the authoritarian regime, the science of politics had retained relative autonomy in relation to the official ideology and where it had not been supplanted by the mandatory course of the fundamentals of Marxism-Leninism in research practice as much as in academic didactics (Woleński, 1975; Klementewicz, Ryszka, 1989; Klementewicz, 1991; Klementewicz, 2017).

There is a consensus that political phenomena are characterized by complexity and syndromaticity (i.e. multilateral causal connection with other social phenomena). In terms of ontology, objects researched by political scientists are characterized by a diversity of forms and ontic statuses. The research area of political sciences includes agents with varied subjectivity, including a range of institutions and segments of social structure, as well as non-empirical entities, which are of interest to the historians of political thought or specialists of political systems. Therefore, the key questions concern not only the ways of conceptualizing research objects but also the selection of research strategy. If the research object is truly so ontologically complex, is it possible to discharge such methodological functions as, e.g., explanation, based solely on the knowledge developed only by qualified political scientists? However, the debates on whether political science is autonomous in discharging methodological functions – that is, whether it is an autarchy of a kind or whether a scholar of political phenomena is doomed to making use of experts' achievements in other disciplines – are in themselves erroneously conceptualized[1].

The first point to consider is that three notions of science, each of them different as regards contents, are frequently – and unwarrantedly – conflated in the considerations concerning the methodological status of the disciplines of science and the methodological functions of science. These notions are: (a) *science* understood as a cognitive activity subject to certain technical (i.e. epistemological) requirements, leading to the acquisition of a given type of object knowledge (primarily treated as presuppositional knowledge); (b) *science* understood as object knowledge of a given kind, treated as identical with, first and foremost, specific statements (both individual and general) and empirical theories, likewise

[1] The choice between the conception of researching political phenomena within a subjectively and methodologically uniform scientific discipline and the idea of a conglomerate of disciplines dealing with the study of political phenomena (i.e. a pluralistic approach) affects the application of specific research strategies. The dispute between these positions is a meta-methodological and partly meta-scientific dispute (sometimes taking place alongside research practice). In the last three decades, many studies and popular textbooks have been published exploring the diversity of research strategies on political phenomena (see e.g. Geddes, 2003; Box-Steffensmeier, Brady, Collier, 2008; Moses, Knutsen, 2012; Kapiszewski, MacLean, Read, 2015; Kellstedt, Whitten, 2018; Johnson, Reynolds, Mycoff, 2019; e.g. King, Keohane, Verba, 1994; Goertz, 2006; Goertz, Mahoney, 2012; Ragin, 2014).

systems of concepts (including typologies, classifications and systematicities); (c) *science* understood as a scientific discipline, that is, a definite unit of classification serving mainly organizational and administrative purposes associated with conducting research-related and didactic tasks.

The result of this conflation of notions is often the fact that when meta-scientific and methodological considerations are conducted, the differences between the purely epistemic issues and the official and administrative matters associated with the practice of science understood as a cognitive activity often become blurred; or, more precisely, correct differentiations are not always made in those investigations between the following aspects of the practice of science: the subject aspect (referring to the scholar as the subject of cognition); the object aspect (associated with the area of research, i.e. the set of research objects conventionally assigned to the scientific discipline or sub-discipline); the epistemological aspect (referring to the accepted methodological standards and technical norms of solving research problems); the cognitive aspect (encompassing scientific knowledge understood as a product of cognitive activities, having the form of accepted concepts, including classifications and typologies, statements and empirical theories); the institutional and organizational aspect (referring to the existing academic structures or units of classification, such as e.g. university faculties, research institutes, scientific centers and associations, disciplines of science etc.).

Fundamental methodological functions, such as e.g. description, explanation, prevision (forecasting), are performed only by scientific knowledge (i.e. by definite portions of object knowledge of a given type, together with a set of ontological assumptions, and sometimes also epistemological assumptions, accepted specially for the purpose), not by scientific disciplines. To ascribe methodological contents to the concept of a scientific discipline is unwarranted (Woleński, 1981, p. 4). From the logical and methodological perspective, the debate on the so-called "explanatory autonomy" of science disciplines, including political science and the disciplines related to it, is not so much futile as fallacious. In the current study, an attempt will be made to elucidate the mentioned issues and present the inferential structures characteristic to research procedures applied in the sciences of politics. The mentioned sciences of politics are understood here broadly as a specific family of disciplines and sub-disciplines, i.e., a collection of sciences related primarily in terms of subject matter, but also methodology; this set includes primarily political sciences, sociology of politics and political psychology, as well as political history, philosophy of politics and history of political thought.

The current considerations are made consistently from the position of the analytical epistemology of science, and more precisely – from the perspective of the logical methodology of social sciences. The latter focuses on analyzing cognitive operations and those operations' products, including studying scientific language through specific tools. The paper shows new epistemological approaches to analyze methodological problem under consideration. In this work, among other instruments, methods of analysis of argumentative structures

developed based on contemporary logical semiotics, philosophical logic, and the logical theory of questions (i.e. erotetic logic) were applied.

The paper's main aim is to present the actual logical and methodological foundations, upon which the researchers studying political phenomena fulfill the mentioned functions of science as identified with definite research procedures, particularly with an explanation. The analysis of inference examples is an intermediate aim of this work. The article attempts to show how the cognitive situation and the possessed knowledge resources determine scientific explorations and solving research problems. In other words, it shows the relationships and dependencies (in the context of the study of political phenomena) between the possessed portions of object knowledge, the rise of research questions and the structure and the course of specific research procedures.

The article consists (apart from the introduction and the conclusion) of three substantial components: presentation of the epistemological background of the discussed dispute, theoretical part devoted to the logical tool used, and analysis of model examples. Supplementary comments and additional terminological explications (mainly for those who do not specialize in analytical philosophy of science and logical methodology) are included in the footnotes.

2. Institutionalization of Scientific Research versus Methodological Functions of Scientific Knowledge

Historically, the development of scientific knowledge and the establishment of definite fields of knowledge and their attendant disciplines and – further on – sub-disciplines of science, never occurred in parallel, at least in terms of practice. Scientific knowledge (both of the kinds), object knowledge – acquired by concrete subjects of cognition (i.e. scholars), and methodological knowledge[2] – accrued independently from the development of the institutional and organizational structures of scientific activity conducted by those subjects. No officially established faculties, departments or research institutes were in existence; neither were universities (there were only some loose corporations of thinkers, such as Plato's Academy or Aristotle's Lyceum) – yet since Antiquity and the Middle Ages, and then in the early-modern and modern periods, this knowledge continued to accrue – e.g. in the areas of logic, mathematics (especially geometry and algebra), natural sciences and the humanities – and underwent various corrections or, in the case of concrete portions of knowledge, a complete refutation.

A general picture of these changes can be captured by looking at the particular phases and stages by which specific patterns of research work (or paradigms, in a very broad

[2] This is, above all, procedural knowledge of the *know-how* type (Ryle, 2009).

meaning of the term)[3], obligatory for natural scientists and humanists, respectively, were formed. Let it be remembered that the current model of science, and the scientific approach (i.e. scientificity, in other words, an ideal of scientific investigation and scientific knowledge), began to be developed in the late 16th and the early 17th century and was associated with the conception of the mathematization of physics as introduced by Galileo. Yet, it was only the legacy of René Descartes and Isaac Newton that became the foundation for the model of science known today in reference to natural sciences. The emergence of the Cartesian/Newtonian model of science on the ground of natural sciences in the strict sense was of crucial importance to the formation of the contemporary model of empirical sciences *per se*, even though not all the features of the model of the empirical natural sciences and the model of empirical social sciences are identical.

Meta-scientific and meta-theoretical debates and the analysis of the research practice in itself have contributed to the formation of specific ideals of science and the scientific approach and the emergence of epistemological patterns, on the ground of humanistic sciences. Various epistemological patterns in the form of specific theoretical-methodological orientations, research schools and currents emerged alongside the process of developing organizational structures brought into being at the institutions of higher education. Those patterns, being supra-theoretical objects, exist outside the rigid divisions into the disciplines of science. Such theoretical-methodological orientations as, for instance, Marxism, functionalism or structuralism, or research currents, such as behaviorism, are practiced by representatives of various social sciences disciplines. Of course, there also exist those epistemological patterns that can be associated with scholars who represent only one scientific discipline or a family of such disciplines; this is the case of New Economic History or neo-realism. Yet whereas epistemological patterns are supra-theoretical entities, the ideals of science – being sets of views concerning the aims of scientific activity, as well as the preferred and accepted research methods that set the patterns for scientific knowledge and the model rules of practicing science (Amsterdamski, 1992, pp. 19–26) – are supra-paradigmatic objects. It can be said, therefore, that the structure of social sciences is not only a poly-paradigmatic – which feature is revealed as the polarization of concrete epistemological positions – but also a multi-ideal one: in social sciences, various, often somewhat competitive, ideals of science, and the scientific approach, are valid and binding at the same time.

Neither the divisions into disciplines nor the epistemological patterns are durable over time; but the reasons why they were determined to differ. The division into epistemological patterns is linked with the fact that certain groups of scholars share certain assumptions

[3] Further on, the term "epistemological pattern" and, respectively, "theoretical and methodological orientation", "research school" and "research current" will be used instead of the rather ambiguous concept of "paradigm" as proposed by Kuhn (Kuhn, 1996), or the concepts of the "methodological research programme" (Lakatos, 1978) and "research tradition" as proposed by Laudan (Laudan, 1977, pp. 78–81), which are hardly applicable to the research practice of social sciences.

regarding the theory of cognition – and therefore they apply standardized research strategies – and, in many cases, also with the assertion of certain sets of object statements; it is not linked strictly with the given objects of research as identified with the research areas of the given disciplines[4].

In the field of social sciences, including the sciences of politics, cognitive questions are formulated within the notion apparatus proper to the given epistemological patterns (excepting the cases of blatant methodological eclecticism). The selection of the notion apparatus to a certain extent influences the manner of solving the given issue, although it does not decide on the result of the undertaken epistemic endeavors (Ajdukiewicz, 1985, pp. 42–44; Dąmbska, 1975, pp. 68–111). The conceptual framework assumed on the ground of the given epistemological pattern determines the departure point for cognitive activities and the approach to the object of research; this, to a certain extent, influences the epistemic construct, which is the object of cognition viewed as the final product of epistemic endeavors (Niżnik, 1979, pp. 27–52).

Separate disciplines of science were determined by observing certain research practices and the process of selecting certain sets of research objects, as well as the sets of research methods and techniques used in the cognition of these sets of objects when subjected to epistemic activity; the standard criterion of object-and-methodology was applied in the process (Kamiński, 1981). Ultimately, the scientific disciplines, the sub-disciplines singled out from them, and the emerging narrow research specialisms arose – and still arise – from the individual and collective explorations conducted by groups of scholars – who, incidentally, from the middle of the 19th century onwards have always formally belonged to some organizational structures, i.e. to research institutions or institutions concerned with both teaching and research (most often, universities).

The radical change in the organization of scientific activity – understood as an endeavor of a cognitive nature subject to definite technical requirements – occurred in the middle of the 19th century concurrently with the emergence of the full-time (read: paid) research work; the official career paths for a scientific researcher were designed at the same time. Besides, the professional ethos of scientists, encompassing definite norms of the obligations they were expected to fulfill, and the rules of permissible and impermissible behavior while conducting research work, began to develop in this period as well. From the moment the professional deontology of scientists had been formed, and the academic degrees in

[4] The notion of a research area of a scientific discipline, or sub-discipline, as a certain set of research objects must be differentiated from use of the term of "object area", which is rather generally, if colloquially and incorrectly, used in reference to the disciplines of science. Domain is a set- theory unit denoted by a given statement. Domain (i.e. semantic model) of a given statement (object thesis) or a systemic set of statements – which empirical theories are – points to the scope of applicability (range of nonfulfillment) of those statements, and therefore to the possibility of applying them in the undertaken research procedures in the role of premises in inferences.

given disciplines, and professional titles at particular courses of study (which were usually identified with specific academic disciplines), began to be conferred – that is, from the moment the scientific and didactic activity received an official form – the administrative structure and the normative sphere were cemented. (The administrative, organizational and normative aspects of scientific activity are not identical with the logical structure of scientific knowledge). The institutionalization of social disciplines progressed rapidly from the latter half of the 19th century onwards. Academic sociology and economics emerged at that time; political sciences, among many others, did so at the very end of the 19th century and in the first years of the 20th century. Psychology detached itself from philosophy in the inter-war period (and finally only after the Second World War), and thus quite late. Associations and societies – ones that grouped researchers representing a specific discipline as well as ones that encouraged multidisciplinary contacts – were established parallel to the emergence of academic structures in the form of faculties, institutes and research centers.

The institutional and organizational aspects of scientific activity must not be overlooked. Scientific research always is carried out in a specific institutional environment and the given formal and legal conditions. Those who practice science belong to some scientific associations; they serve as supervisors and reviewers in concrete procedures aiming at academic degrees, as well as academic and professional titles, at definite research units; they assess prospective employees at research units and centers; they are members of research councils; they are members of opinion-making bodies and consultation groups, and so forth. Finally, they are employees of given research institutions; a certain type of a collective identity linked with their employment, social contacts, participation in scholarly conferences and symposiums and the academic career path they had completed is important to the course of research work conducted in teams, to the selection of research topics, and to their further professional advancement[5]. However, it is not the above aspect – that is, in practice, the administrative and socio-psychological one – but the purely epistemological one that ultimately decides on the worth of the given inferences. This is the case even if a particular scholarly milieu is, for a time, unwilling to accept some conclusions or to assert some theses and to include them as true, or highly probable, into the accepted body of object knowledge.

[5] Conducting research work is, in its essence, a communal activity, i.e. it has the nature of endeavours naturally undertaken in a team. Its communal nature manifests itself not only in various forms of scholarly cooperation that can be undertaken, but also in mutual rivalry (between individuals as much as teams). Research cooperation usually brings tangible cognitive benefits (de Sola Pierce, 1966; Shrun et al., 2007; Okada, Simon, 1997; Knor Cetina, 1999), whereas rivalry does so when it serves to verify acquired knowledge and when it is not a personal attack against an adversary. Importantly, for a particular discovery to be recognised as a scientific fact (i.e. a generally biding state of knowledge regarding the given issue), its broad acceptance within the relevant scholarly milieu is required (Fleck, 1979; Kitcher, 1993).

3. Science as the Non-Algorithmic Solving of Research Problems

Science as a cognitive activity aims at, on the one hand, seeking information (Szaniawski, 1981), and on the other, removing the existing epistemic gaps (Rainko, 2011, p. 112), while these gaps may concern both object knowledge and methodological knowledge. The solving of research problems, often considered to be the fundamental aim of scholarly activity, is, in essence, a derivative of the cognitive aspirations of scholars expressing their attitude to the current state of knowledge[6]. The body of object knowledge current at a given period of history and the resources of methodological knowledge (knowledge of the *know-how* type) and the known epistemic gaps contribute to generating research problems and directions for future research. This process needs to be examined now.

Facing a concrete research problem, a student of political phenomena explicitly or implicitly refers to the accepted methodological rules within the framework of the ideal of scholarly approach as recognized by this scholar and the object knowledge recognized as true or highly probable. From the purely cognitive point of view, the scholar's institutional affiliation is of tertiary importance. At this point we arrive at the core of the issue presented herein. Solving such problems, under pain of the ineffectiveness of the undertaking, often requires the application of non-standard research strategies (*RS*); and such a strategy is the function of cognitive aims ($a_1, \ldots, a_m$) assumed in the given epistemological conditions and the means ($m_1, \ldots, m_n$) selected to achieve those aims:

$$RS = f(\{a_1, \ldots, a_m\}, \{m_1, \ldots, m_n\})$$

Research aims put forward by scholars are linked with epistemic questions, whereas the search for answers to those questions is associated with posing additional questions, but this time ones of a practical nature.

Undertaking cognitive operations, including solving research problems, a scholar concerned with political phenomena depends on a set of definite situational factors. It is because each case of scientific research is carried out in a definite, historically shaped epistemic situation. This situation determines the general conditions in which academic research is carried out, and it encompasses the body of object knowledge and methodological knowledge accepted in the given historical period, the existing and applied notion apparatus, the applied set of research instruments in the shape of devices used in measuring, observation and data conversion, as well as such artifacts as, e.g., archives or libraries with their resources, as well separate problem fields (Znaniecki, 1925, p. 42–43; Kirsh, 2009). A problem field is

[6] The concept that the main aim of science is to explain (Popper, 1972), popularized in the 1970s by K. R Popper, is difficult to reconcile with the realities of research practice, in particular in the field of social sciences and humanities, which are largely descriptive and typological sciences. Moreover, explanation is one of the procedures closely related to the main aim of scientific activity, which is the mentioned searching for information and solving cognitive problems.

understood as a given set of epistemic issues in the shape of definite questions expressed in the given notion apparatus, existing in the given epistemic situation and referring to definite branches of object knowledge and methodological knowledge[7].

Solving research problems is not fully algorithmizable and, from the psychological perspective, does not differ much from the ways of solving problems of daily life (Simon, 1966, 1969, 1992; Simon, Langley, Bradshaw, 1981; Doroszewski, 2015). Wishing to solve a scientific problem effectively, a research scientist of political phenomena undertakes actions which (a) aim at providing answers to the questions that have been asked, and which are delineated by the current state of knowledge and the research aim, and (b) yield results in the shape of sentences (statements) that answer these questions, which answers are acceptable to the scholar himself and the milieu, i.e. are recognized by other scholars.

4. The Epistemic Situation versus the Formation of Research Questions

The epistemic situation determines the framework for the research inquiry. As accepted at the given stage of the development of scholarly activity, the body of object knowledge and methodological knowledge contributes to the emergence of potential research questions. Such a problem may be treated as a request for information containing an operative or imperative operator (Hintika, 1974, 1978; Åqvist, 1975). The answer to this question, preceded by an epistemic operator of the "I know that *A*" type, is to allow the person posing the question to expand, broaden or verify the available knowledge[8]. The erotetic situation is a derivative of the existing cognitive situation.

Questions derive from our knowledge as much as from the lack of it. Yet they may also be formulated without stating the semantic foundation that had led to their formulation[9]. Object knowledge available to the cognitive subject (or to the members of research teams) and the posed assumptions are components of erotetic inferences. In other words, what contributed to the rise of questions is a set of statements that are ascertainments of a specific kind, that is, our object knowledge, as well as the given assumptions – but this set may also encompass questions (although not autonomously, but together with other statements).

[7] It is not only impossible to directly equate a problem field either with a research area of the given discipline of science (or a family of such disciplines), or with the particular areas of science. This field changes as successive cognitive issues and methodological questions are solved and as new problems to be solved emerge.

[8] An analysis of the manner in which research questions arise is helpful in researching the context for a discovery, including the formulation of scientific theses and theories (Kleiner, 1988; Sady, 1990).

[9] Research questions should not be directly equated with scientific problems. This is because there exist problems (e.g. conceptual, empirical, theoretical, technical or other difficulties that arise in the process of cognitive activities) which are not conceptualised or do not lend themselves to verbalisation. Not every scientific problem is a question expressed by a specific statement, although every research question expresses some problem.

Thus, erotetic inferences assume three forms: evoking and generating on the one hand, and implication on the other[10].

Evoking and generating are represented by the following set:

$$\langle X, Q \rangle$$

where X is a set of sentences that constitute premises in the erotetic inference, while question Q is the conclusion of this inference. Q is here evoked or generated by X.

The implying of a question through a question on the basis of a set of sentences formulas is represented by the set:

$$\langle Q_1, X, Q_2 \rangle$$

where Q_1 is a question constituting the erotetic premise, X is a finite set of sentences (sentence formulas) constituting the assertory premise, and Q_2 is a question constituting the conclusion. Q_2 is implied by Q_1 and the set of sentences X.

In the case of formulating research questions, statements constituting scientific knowledge (K_S) constitute an essential part of the set X:

$$X \cap K_S$$

Let us refer to a few examples of erotetic inferences that are simple yet representative of the sciences of politics:

(Ex.1): "Since the pre-election polls indicated a stable predominance of Candidate A, why did Candidate B win?".

(Ex.2): "If the middle class is the stabilizer of democratic regimes, and if in highly developed democratic countries a large percentage of voters belong to that class and at the same time these voters constitute the majority of citizens entitled to vote and also actively participate in the elections – then, considering the high turnout, why do members of populist parties proclaiming anti-democratic slogans win the elections in those countries?". The enthymematic premise is here, e.g., the sentence: "In highly developed democratic countries elections have been won by populist parties proclaiming anti-democratic slogans".

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[10] Evoking and generating are technical concepts, and their detailed definitions have been proposed for narrowly understood formalised languages; however, given appropriate syntactic and pragmatic assumptions, these concepts can also be referred to statements expressed in a natural language (Wiśniewski, 1995). The difference between evoking and generating is reduced to determining the conditions assumed for the semantic value of the premises and the logical value of direct (proper) answers as conclusions in an erotetic inference. For the primary conceptions on how questions arise, see e.g. (Harrah, 1966, 1984; Kubiński, 1980; Belnap, Steel, 1976).

(Ex.3): General statements: "Every representative organization undergoes the process of oligarchizing" and "All mass parties are representative organizations", lead to the question: "Do all mass parties undergo the process of oligarchizing?".

(Ex.4): From the statement: "A national state is a fundamental and most important actor in international relations", the statement: "International corporations are becoming increasingly influential actors in international relations" and the assumption: "International corporations are aiming to assume the position in international relations currently held by states", it is possible to arrive at the question: "Do international corporations constitute a threat to the position in international relations currently held by states?".

(Ex.5): The question: "Who was the political paymaster of Lee Harvey Oswald?" arises when we seek that answer to the question: "Who assassinated President John F. Kennedy?", with the ascertainment that "Lee Harvey Oswald assassinated President John F. Kennedy" and the assumption: "Oswald had political paymasters".

Incidentally, the content of a question may be understood in various ways depending on the interpretation of the meaning of the question's constituent expressions. Hence, in the analysis of questions, attention must be given not only to the semantic but also the pragmatic aspect of communication. Here is an example:

(Q): "Did the leaders of the Conservative Party (CP) contribute to the ending of Margaret Thatcher's political career?".

(Q'): "Were it actually the leaders of the CP, and not another political entity, that contributed to the ending of Margaret Thatcher's political career?".

(Q") "Did the leaders of the CP cause the ending of Margaret Thatcher's political career or did they not contribute to it at all?".

Depending on the way question *Q* is understood, i.e. as its Q' and Q" versions, answers that differ as to their contents can be assumed to be proper (direct) for this question.

Let us now proceed to a research procedure that is fundamental to empirical sciences, namely, explanation.

5. Systems of Scientific Explanations

The explanation relies on giving the logical reason for a (known) logical consecution having the form of a single occurrence (i.e. a detailed fact) or definite regularities described by a sentence (statement) of a given type. The explanation is a research procedure associated with giving answers to a specific problem query of the "Why *P*?" type or a specific broad problem queries, such as, e.g., "Why *P* and not *Q*?" or "Why *P* and not *Q* or *R*?" (Bromberger, 1966, pp. 86–108; van Fraassen, 1980, pp. 97–157; Lipton, 1991), or to the problem query "Why *P*?" re-formulated as paraphrases of the "What for?", "To what end?", „For what reason?", "For what purpose?" and similar types (Kuipers, Wiśniewski, 1994; Grobler, Wiśniewski, 2002)[11].

[11] Prospective reasoning is a research procedure associated with giving answers to questions concer-

In research practice, every scientific explanation has a systemic, or, more precisely, a "crypto-systemic" form, and is incomplete, in the sense that the process of explaining does not run *ad infinitum*; it is not always possible – or, in fact, necessary – to state all the premises of the inference, including the possible intermediary conclusions[12]. A certain *explanandum* (*EM*) or its fragment deriving from one explanation often constitutes an *explanans* (*ES*), or (if that *ES* is not a single sentence but a set of sentences) a fragment of that *ES* in another explanation. It must be noted that in very many cases fragments of complex *ES* in specific explanations are enthymemes. It also happens that specific premises from the given *ES* fulfill the role of premises in the *ES* of another explanation (Nikitin, 1975, ch. 5). Many explanations formulated in the field of social sciences have numerous elements in common; moreover, those are not only some ontological and epistemological assumptions but also concrete object statements. A system of explanations may have several variants, depending on which explanations are primary and derivative (both in the logical and diachronic aspects). This fact must be differentiated from explanative pluralism, i.e. the process of deliberately combining varying models of explanation within one system of explanations (Mantzavions, 2016).

The general structure of a system of explanations is as follows (Fig. 1):

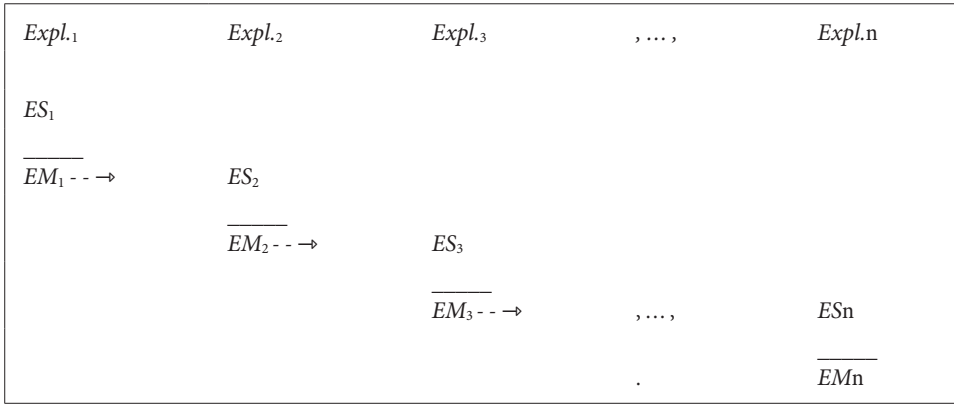

Fig. 1. A model structure of a system of explanations

ning the course of the future states of affairs, such as "What state of affairs (or regularity) will occur at the time *t*?" or its paraphrases.

[12] The end of a given research procedure is determined primarily by the methodological standards accepted by the cognitive subject and the research material collected and used.

Symbols $Expl._1$, $Expl._2$, $Expl._3$, … $Expl._n$ represent here a sequence of successive explanations. Symbol - - ⇾, in turn, represents the instance of adapting the entire *EM* or its fragment coming from one explanation for the *ES* of another explanation.

In the field of social sciences, the general logical structure of an explanation has the following form, regardless of what its specific methodological model may be (Hempel, Oppenheim, 1948; Salmon, 1984, 1990):

Explanans		*Explanandum*
Si or $S_g \wedge GA_O \wedge PA_O \wedge GA_E \wedge PA_E$	$\models$	S_g or S_g

where the premises are: *Si* – individual (factual) statement(s), *S*g – general statement(s) (laws of statistics or historical generalizations), GA_O – general ontological assumptions, *PA*O – particular ontological assumptions, GA_E – general epistemological assumptions, PA_E – particular epistemological assumptions. The conclusion of such reasoning is either an individual statement (*Si*) or a general statement (*S*g). The symbol „ ⊨" indicates the logical probability of *EM* by *ES*. In social sciences, sentences constituting GA_O and GA_E most often appear as enthymemes, whereas sentences belonging to *PA*O and PA_E usually appear as elliptical sentences. The case of a prevision is analogous[13].

Let us now analyze a set of simple example explanations: $Expl._A$, $Expl._B$, $Expl._C$, $Expl._D$, $Expl._E$, where $Expl._E$, refers directly to political phenomena (Fig. 2). Solely the logical order of inferences is taken into consideration in presenting this system of explanations. In particular *ES*, the premises are shown in a standardized manner (some are formulated in an enthymematic form). The explanations will correspond to the research practice of social sciences and the explanation models encountered in these disciplines. They could also be formulated on the grounds of comparative historical research (economic history, institutional economy, or economic sociology), macro-economic analyses, micro-social empirical research (social psychology or micro-sociology), or comparative studies of political systems (the science of politics, sociology of politics).

These explanations answer the following research questions: ($Expl._A$): "Why did a structural social conflict occur in country *X*?". ($Expl._B$): "What (set of factors) hampers economic development?". ($Expl._C$): "Why do economic recessions occur?". ($Expl._D$): "Why (for what reasons) are people affected with relative deprivation?". ($Expl._E$): "Why (for what reasons) a socio-political revolution has broken out in country *X*?". The last explanation is an example of a causal and structural explanation combined with an intentional one. ES_E points to a set

[13] Prevision, or, more precisely, prognostic reasoning (prospective reasoning) is an inference in which, on the basis of knowledge (general and factual) concerning the past and current states of affairs and additional premises, we infer the course of future states of affairs. The discussed inferences are carried out on the basis of presuppositional knowledge expressed in a specific type of general or individual sentences.

Expl.$_{A}$	
P_{A1} *Low social mobility closes paths of social advancement and enhances social divisions.*	
P_{A2} *Social divisions are a conflict-generating factor*	*ES*$_{A}$
P_{A3} *In country X, social mobility was limited and paths of social advancement were closed in the long term*	
======================================	
C_{A} *A structural social conflict has occurred in country X.*	*EM*$_{A}$
Expl.$_{B}$	
P_{B1} *If the economy of a given county is characterized by long-term low innovativeness and the low level of investment expenditure* (and)	
P_{B2} *If at the same time the society of this country is characterized by the low level of public confidence (*and)	
P_{B3} *If at the same time ownership rights and civil rights are not durably guaranteed in this country* (then)	*ES*$_{B}$
======================================	
C_{B} *Economic development is hampered in this country (at the time t).*	*EM*$_{B}$
Expl.$_{C}$	
P_{C1} *Economic development is hampered*	
P_{C2} *The level of savings decreases*	
P_{C3} *An expansive monetary policy is implemented*	*ES*$_{C}$
=====================================	
C_{C} *An economic recession occurs.*	
Expl.$_{D}$	*EM*$_{C}$
P_{D} (If) *the individual's actual level of satisfaction of needs and fulfillment of aspirations is lower than the expected level* (then)	*ES*$_{D}$
=====================================	
C_{D} *The individual is affected by relative deprivation.*	*EM*$_{D}$
Expl.$_{E}$	
P_{E1} *In country X, recession has occurred at the time t*	
P_{E2} *Recession limits demand opportunities (decreases the scale of the consumption of goods and services)*	
P_{E3} *In country X, a structural social conflict has occurred*	
P_{E4} *In country X, relative deprivation occurs on a mass scale*	*ES*$_{E}$
======================================	
C_{E} *A socio-political revolution has broken out in country X.*	*EM*$_{E}$

Fig. 2. Exemplification of a system of explanations (contents-related aspect)

of relevant factors substantiating the phenomenon described in EM_D. (These mentioned factors make logically probable the phenomenon described in EM_D). Factors given in ES_E are not separated into main and indirect ones, but a direct factor is shown in premise P_{E1}. *Expl.*$_B$, *Expl.*$_C$ and *Expl.*$_D$ explain a regularity, while *Expl.*$_A$ and *Expl.*$_E$ explain individual facts. The term "country *X*" indicates a random but definite state to which the explanation refers, e.g. some state in Central Europe.

The contents-related presentation of the example system of explanations requires a brief methodological commentary. In real sciences (and social sciences, including the science of politics, belong to this group), numerous object statements and relevant sets of concepts are subjected to simplification processes in the shape of idealization (Nowak, 1992). Apart from idealizing statements (often appearing in the form of general statements) and factual statements, we encounter conceptual networks consisting of typological concepts (mainly of pure and modal types). In our example, statements found in, e.g., premise P_{A1} and P_{A2} and in P_{E2} can be considered idealizing statements. The concept of relative deprivation (*vide* *Expl.*$_D$) is an example of an ideal type. Incidentally, the thesis that constitutes the conclusion of explanation *Expl.*$_C$ (C_C) must be considered to be a so-called nomological formula, i.e. a framework regularity (Kmita, 1988, 1990), not an universal law.

The main assumptions and enthymemes in the presented system of explanations must be pointed out. One of the essential epistemological assumptions – A_C, indicates the co-reference (co-extensiveness) of statements C_B and P_{C1}. Assumption A_E indicates that the phenomenon referred to in C_D is universal in its ontological property (it does not admit ontic exceptions). In *Expl.*$_A$, the thesis that a structural conflict occurs resulting from low social mobility and the emergence of social divisions is an enthymeme of (P_A^{EN}). In *Expl.*$_E$, the statement that deprivation occurs due to the occurrence of recession on the scale of country *X*'s entire economy is an enthymeme of (P_E^{EN}); together with C_D, A_E and P_{E4}, it permits to formulate C_E.

Some premises present direct inferences; other premises are identical for specific explanations. For instance, for the final explanations, that is *Expl.*$_E$, the issue of the identicalness of premises or inferences appearing in earlier explanations and then present in ES_E is as follows:

$$ES_E = \langle \{P_{E1}\}, \{P_{E2}\}, \{A_E\}, \{C_A = P_{E3}\}, \{P_{E4}\}, \{P_E^{EN}\} \rangle$$

The example given in Fig. 2 has been introduced to illustrate object statements' functions in methodological procedures, in this case – in explaining; hence it omits the possible additional ontological and epistemological assumptions that might be made while formulating the final conclusion C_E.

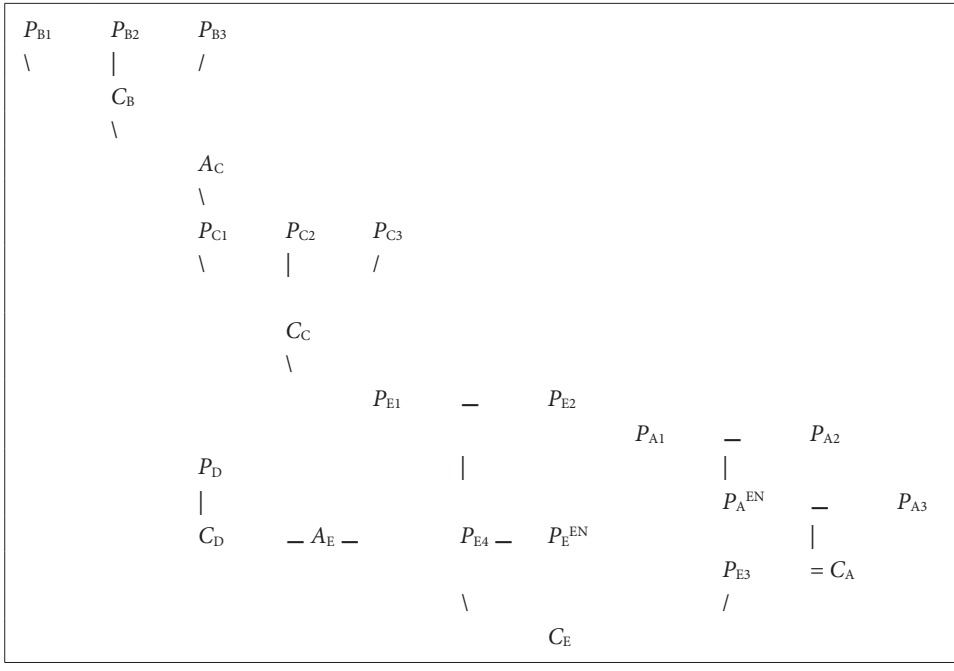

Fig. 3. Exemplification of a system of explanations (structural aspect)

The logical structure of the inference conducted within the system of explanations under analysis is presented in Fig. 3. The manner in which logical connections between particular premises are presented in Fig. 3 corresponds to the conventional approach to presenting the structure of reasonings in philosophical logic (Govier, 1985; Thomas, 1986; Toulmin, 2003).

Each of the premises constituting *ES* in any explanation of empirical phenomena constitutes an element of the inferential structure of a given research procedure, regardless of the "institutional" provenance and affiliations of the subject of cognition who initially formulates it. In the case of an explanation, premises constituting *ES* and at the same time entering an inferential connection with *EM* must be statements that are empirically well-grounded, and in the case of additional premises – they should be epistemologically justified. Premised that are properly (i.e., well) grounded are expected to be true or at least highly probable. Components of *ES* should consist of epistemologically credible knowledge[14].

[14] Epistemological credibility of the components of *ES* is to guarantee a high logical probability of *EM* in the degree *p*. The concept of logical probability as referred to herein was formulated by K. Ajdukiewicz (1974, p. 121).

The selection of the detailed research strategy associated with the realization of a given methodological function, and the selection of premises constituting the components of the given explanation or, respectively, prevision, is connected with the proper assessment of object knowledge and with adequate conceptualization. The marginal condition for the proper use of separate portions of object knowledge as premises in inferences is to maintain semantic homogeneity and semantic cohesion (this refers to, respectively, the same predicates occurring in theses and assumptions and to the same object references occurring in statements, assuring the co-extensiveness of given statements), as well as pragmatic coherence (meaning that, in a given statement, certain words are used in definite meanings in correct linguistic contexts) in statements constituting those premises. All premises that are object statements should have empirical content. Among necessary conditions that guarantee the conclusiveness of a given inference is the cohesion of general and detailed premises, as well as the non-contradictory character of factual statements (*resp*. idealizing statements) that constitute the premises. The selection of the source of object knowledge depends on the researcher, his methodological preferences, and the research aim in question.

From the logical and methodological point of view, one more issue that must be noted is the role of metalinguistic statements in the description, assessment and evaluation of cognitive activities and those activities' products. Metalanguages used in these cases (the semantic, syntactic and pragmatic ones) not only cannot be directly ascribed to any disciplines, but even those notion apparatuses that are used in formulating metalinguistic statements can rarely be ascribed to some concrete epistemological patterns. Moreover, metalinguistic statements are usually multi-level statements, i.e. they are expressed in the metalanguage of a given type and on varying levels.

Metalanguage (*ML*), understood as a multi-level structure (level $n + 1$), is richer as to semiosis than the object language (*OL*), as described by the following:

$$ML^{n+1} > OL$$

Utterances formulated in *ML* serving to verify object knowledge, to assess descriptions, to compare explanatory hypotheses or to test the correctness of prognostic reasonings, are either *sui generis* generally methodological or semiotic glosses or they may use specialist terminology referring to specific denotations, but this terminology is often provided with a jargon (informal terminology) used to comment on and analyze object statements.

6. Concluding Remarks

Scientific disciplines cannot be equated directly with scientific knowledge, particularly with object knowledge with specific content. Political science is not the same as scientific knowledge of political phenomena. Scientific understanding of politics cannot be directly equated with political science or the entire family of disciplines – the sciences of politics.

When it comes to cognitive activity, autonomy refers to the scholars themselves and their freedom to conduct scientific research. It does not refer to the discipline of science which they represent.

Fulfilling certain methodological functions is linked with an attempt to provide answers to specific types of research questions, that is, with solving definite cognitive tasks. Methodological functions, such as description, explanation and prevision (forecasting), are fulfilled not by scientific disciplines, but by portions of scientific object knowledge (in the shape of, above all, individual and general statements, or empirical theories), and also by additional assumptions accepted in the course of research (mainly ontological ones, but, in relevant cases, also epistemological ones). Scholars having an institutional affiliation and formal education carry out these functions, but the success of the undertaken cognitive action is determined by logical and methodological aspects of scholarly work, not by its formal and organizational ones. A full and comprehensive realization of cognitive tasks undertaken by researchers specializing in the study of political phenomena, regardless of their institutional affiliations, is possible on condition of their making use of all the justifiably acquired methodological, theoretical and factual knowledge suited to the given object of research and expressed in a semantically cohesive object language.

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