THE METHODS OF DATA COLLECTION
AND ANALYSIS
IN EDUCATIONAL RESEARCH

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Basic Aspects of the Erotetic Logic and the Role of Questions in Empirical Cognition in Pedagogical Research Practice

Abstract

The article approaches the basic aspects of the erotetic logic in order to highlight the complexity of the inquiry situation. This complexity is overshadowed by the patterns of everyday communication (after all, everyone has asked questions multiple times). In research practice, the linguistic question form is assumed by the research problem and/or research objectives, and – in cognition based on communication processes – by research tools. The author advocates a clear distinction between questions that determine the examined object and research objectives that justify the examination of this very object. In the context of research tools, she proposes a differentiation between questions about information and questions about experiences, which is relevant to the basic questioning intention specific to quantitative (standardised) and qualitative (non-standardised) research.

Keywords: empirical research concept; cognitive, incognitive and volitional meanings of a question; object of research; research objective.

Introduction

Regardless of the diversity of positions in contemporary empirical research methodology, there seems to be a consensus that acknowledged ignorance is the starting point of the research process. It is the question that is the basic form of revealing such ignorance.[1] We want to find out *about something*, to get to know *something*. Hence, the presentation of the research issues – the questions to which empirical cognition is supposed to provide answers – is an expected element of the research (design) concept in pedagogy. Hypothetical-deductive research concepts are an exception (NB less frequently used in pedagogical research practice), where the necessary element is not questions, but hypotheses.[2] But the absence of the structural element is inherent in questions. i.e., the interrogative particle, the question operator in the research concept, is not synonymous with the absence of a questioning intention. After all, the researcher wants to find out whether the hypothesis results in empirical confirmation or empirical falsification.

Research questions are of particular importance as they determine the scope of the object of the given research, reflecting the (necessary) reduction of the image of reality that has been made. In the positivist paradigm, a further instance of the object is made in operationalising variables and/or hypotheses through the selection of indicators and measurement (Rubacha, 2008). In the interpretivist paradigm, on the other hand, such instance is made in the process of confronting the initial knowledge of the researchers (contained, inter alia, in the research questions) with the empirical material acquired (reflecting the experiences, the image of reality, etc. of the subjects). In pedagogical research, in which the interview or survey technique is used, asking questions is also a way to acquire empirical material (answers to questions provided by the respondents are also the most commonly used indicators of variables and their values). In textbooks on methodology or methods

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[1] 6th March 2020 The Pedagogical Research Methodology Team at the Committee on Pedagogical Sciences of the Polish Academy of Sciences organised a seminar entitled *On questions in science – methodological aspects of understanding questions in the humanities and social sciences* at WSB University in Dąbrowa Górnicza.

[2] It seems, however, that one can treat hypotheses as answers deductively derived from theory, responding questions that were posed earlier when constructing the theory.

of pedagogical research, the issue of questions is considered important, but usually, it is not covered in a very exhaustive manner (Pilch, 1995, pp. 24–25; Rubacha, 2008, pp. 103–112). I propose to devote more attention to it using logico-semiotic analyses (Brożek, 2007; Wojtysiak, 2008, pp. 21–88; Jadacki, 2010; Jonkisz, 2020).[3] I see the relevance of these analyses for research practice not so much in transferring their fruits – i.e., structural patterns of particular types of questions (expressed in formalised language) – as in questioning the obviousness assumed by the aspirating scientists in the processes of everyday communication. Indeed, questions are ubiquitous in everyday discourse and can be easily recognised and posed by the average person. In typical situational contexts conducive to relatively efficacious communication and goal achievement, individuals tend to exhibit habitual communication patterns without reflexively considering the intricate nuances inherent in the processes of posing questions and obtaining answers. Consequently, they do not typically engage in an introspective examination of communication failures, but rather ascribe accountability for such failures to their interaction partners.

With such experience, students embark on their first research – to pose research questions as well as questionnaire questions, and they find it very difficult to understand the suggestions and criticisms of their supervisors. The unveiling of patterns also used in everyday life seems to be one of the conditions for the emergence of a theoretical-methodological awareness of potential researchers, which is especially important today when several theoretical-methodological paradigms co-occur. The intention of this paper is to support this process. This paper is not so much instructive as it is more analytical and reflective: I do not focus on the rules applicable to the formulation of questions;[4] I would like to expose their "layered nature," which is not identified in unproblematic communication, and to address the function of questions in the various stages of designing and conducting empirical research.

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[3] The erotetic and meta-erotetic literature is very rich. It is not possible for a non-specialist to review it. The works quoted above, and their authors are only an exemplification, which can be considered incidental.

[4] It is worth adding that pedagogy also analyses the role and importance of questions in the context of organising the conditions of the teaching-learning process (Szmidt & Płóciennik, 2020).

I will begin by recalling selected aspects of question analysis conducted by philosophers and logicians, in order to use this to expose the conditions of the research question *sensu stricto*. Referring to the research practice revealed in the publications of educators, I would like to point out that the questioning intention of the research is revealed not only in the research questions but also in the research objectives. In the last section, I will refer to the questions in the research tools, focusing only on one issue – the difference in the basic intention of the question: to seek information from the respondents or to learn about the experiences of the participants in the research.

What is a question?

In the context of erotetic theory, determining what a question is proves to be a difficult task; philosophers have developed several distinctly different ways of defining questions.[5] Preliminarily, it can be said to be both a linguistic expression and a human activity or a mental state. In the terminology of semiotics (the science of signs), questions are analysed: a) in the syntactic aspect – the characteristics of the structure of the question; b) in the semantic aspect – the analysis of the meaning, the sense of the content of the question; c) in the pragmatic aspect – the analysis of the context of use, including the expressive mental act of the asker. In other words, a question "has" three interrelated aspects: the form, the content, and the context in which it is used. The

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[5] When reviewing the erotetic and meta-erotetic literature, Jacek Wojtysiak proposed a basic division into: a) language-related (linguistic, logical) concepts, in which a question is a linguistic expression; b) non-language related concepts, in which a question is not a linguistic expression, it has a different ontic status. Each of these basic types is subject to internal divisions. Within the first one, the author distinguishes idiogenic and allogenic concepts (further differentiated). Within the second type, psychological, intentional, and plural concepts are distinguished (Wojtysiak 2008, pp. 23–24). Wojtysiak proposes that these concepts should be treated as complementary perspectives on the question *sensu stricto*. "starting with one of these, it is possible – through appropriate additions – to obtain a complete characteristics of the question. *Let us assume that a question is a peculiar linguistic expression which […] is accompanied by a corresponding mental activity […]; the ontic result or counterpart of this activity (intention) is a certain intentional […] or ideal ens […]; in turn, each question is correlated with certain […] sets of sentences (assumptions, presuppositions and answers) sentence functions and orders […] that can be named and which can be obtained from the question by simple transformations*" (Wojtysiak, 2008, p. 24). So, a complete question must collectively fulfil all linguistic and extra-linguistic conditions.

form of a typical question is intuitively obvious and in line with the findings of logicians, who usually distinguish between *a questionability indicator* and *a sentence factor* (framework) (Wojtysiak, 2008, p. 51). The questionability is expressed by a question mark, an interrogative particle, an inversion and/or rising intonation. We deal with the clearest situation when a question contains the interrogative particle (in the language of logic – the question operator) because it indicates *the unknown of the question.* If, for example, the interrogative particle is *who?*, an expectation is set for the inclusion of a person as the intended referent in the question. Similarly, when the interrogative particle used is *how often*?, an anticipation is formed for the inclusion of information pertaining to the frequency in the question. In order to provide an answer, it is also important to know *the range of the unknown of the question* ("the range of the variable appearing in the question operator," Wojtysiak, 2008, p. 34). That is, with regards to the first example, it is a matter of identifying the set of persons who can fulfil the condition contained in the framework of the question (in the language of logic: datum quaestionum – "datum of the question" or "known of the question"). With regards to the second example, it encompasses the unit of frequency appropriate to the occurrence. In more general terms, to know the range of the unknown of a question is "to be able to determine the set of objects that are denoted by the substitutable names behind the variable [i.e., the unknown of the question D. U.-Z.]. In turn, the determination of the set is done by enumerating its elements or by stating their common characteristic." (Wojtysiak, 2008, p. 34). In other words, the interrogative particle (e.g., who?) indicates the object of the correct answer (the relevant set of objects – here: persons), but the specificity of this object (the size of the set or the feature of the persons) depends on the context of the question and may or may not be specified in the question framework (choosing a person from among a set of specific persons, choosing a class of persons from among other classes). When a question contains other particles e.g., why? where? – the indication of the unknown of the question and its scope is even less obvious than with the particle who? As for the question framework, it is still worth mentioning that the sentence-like utterance that forms it, can be derived by way of transformation, including the addition of sentences, commands, or names.

The semantic and pragmatic aspect of a question is best explained from the perspective of the communication process. In this perspective, a question

is a message, having a creator-sender who wants to achieve something and a receiver who decodes the message according to the intention of the sender or not. Anna Brożek (2007, p. 66), when describing the communicative function of questions, which she reduced to the characteristics of the experience motivating the posing of a given question, distinguished a) cognitive, b) incognitive and c) volitional components of the meaning of a question. That is, a question expresses at the same time: a) a certain belief – knowledge of something, which the author calls *a picture of the situation*; b) a lack of certain beliefs – a gap in the possessed knowledge, i.e., a gap in the picture of the situation; c) a desire to acquire certain beliefs – which is an expression of interest, needs, etc., and which justifies activity directed at completing the picture of the situation. It is worth emphasising that from a communicative perspective, the issue of the grammatical form of the question is less important (unless the particular form is flawed and is a source of misunderstanding), and its intention is of a higher significance. When referring to the experience of everyday life, we can give examples of utterances having the grammatical form of a question, which are not accompanied by a questioning intention, expressing, for example, surprise, displeasure, or other emotional states (we probably all remember rhetorical questions from school literature analyses). The intention of a question *sensu stricto* is to fill a gap in the picture of the situation, i.e., to eliminate the ignorance identified by the question sender. Brożek (2007, pp. 67–68) proposes an important distinction for the further argument between a question being *the product of an utterance* (written or oral) and *an inquiry*, i.e., the complex *three-aspect experience* characterised above. If an utterance lacks a concomitant inquiry, it does not qualify as an act of questioning. In other words, the absence of a corresponding inquiry renders the activity devoid of the essential characteristic of questioning. The author, when quoting examples of simple questions (e.g., Who composed the Revolutionary Etude?), gives two reasons for the lack of inquiry: the asker knows the answer (he knows who composed the piece), or he/she does not want to know the answer at all (the utterance serves something other than filling a knowledge gap[6]).

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[6] This is the case with so-called didactic questions when the teacher or other person posing them knows the answer. See also Szmidt & Płóciennik, 2020.

The distinction of inquiry as a condition of questioning (posing a question *sensu stricto*), is even more important, as it highlights not only the will of the subject, but also the creating function of questioning. This interpretation of mine is confirmed by another term proposed by Brożek – namely, the **issue**, which is *a picture of a situation containing a gap*. Brożek introduces this term by shifting the focus of analysis from the idiosyncratic, individual experiences of the question asker to a broader, more general level of experience. By doing so, the analysis transcends the specific context and delves into the universal or typological experiences associated with questioning. The cognitive content of each question is limited. The source of the limitation is primarily the *assumptions of the question*[7] and its *cognitive context*, which is formed by the beliefs of the asker that do not belong to the cognitive content of the question itself (Bożyk, p. 138). In the literature on the methodology of empirical research, the issue of assumptions accompanying questions was pointed out, among others, by Stefan Nowak (1985, pp. 32–33).[8] When posing a genuine question, it implies an underlying assumption that the object of inquiry exists, and the aim is to elucidate and flesh out its characteristics. The asker's belief may be either justified or unfounded. In the latter case, the question is predicated on a false assumption of existence, rendering it incapable of receiving a valid and direct response. If, however, the investigator planning research is not aware of the falsity of the assumption made, he or she creates a picture of the situation that is inadequate to reality (which, of course, he or she is also unaware of). A prerequisite (which, however, is not sufficient) for leaving this closed circle is awareness of the factors that impact the content of the question. The issue being explored is also created by what is omitted. Nowak points out that we exclude from the field of vision the items that we do not ask about, and in this sense, we omit their existence – thus making assumptions of their non-existence. The conscious making of such assumptions, resulting from the need to limit the object of research, is accompanied by knowledge of the aspectuality of cognition, limiting the scope of conclu-

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[7] By "question assumption" I mean a sentence communicating a judgment corresponding to the cognitive component of the question" (Brożek 2007, p. 269).

[8] In the philosophical literature, this issue is much more nuanced. See Brożek (2007, pp. 142–145). Using the terminology of semiotics, Wojtysiak divides the assumptions of a question into syntactic, semantic, and pragmatic ones (2008, pp. 37–50).

sions. Unconscious assumptions of non-existence, on the other hand, can be a source of unauthorised generalisations.

The cognitive context of questions formulated in scientific research is formed by the corpus of existing knowledge of both epistemic (objective) and epistemological nature (referring to ways of perceiving the objects to be learned), as well as the values shared in a given community (what is worth learning and for what purpose), with which the researcher identifies. This context is complemented by non-scientific considerations.

Research questions and research objectives

Research questions differ from questions asked in everyday life due to the specificity of their cognitive context. Considering the question structure presented, I would like to highlight three differences:

- Firstly, research questions differ in the specificity of knowledge, making posing a meaningful question possible. This is not the knowledge resulting from the experiences of the individual formulating the question but – more or less objectified – disciplinary knowledge concerning the object in question. Such knowledge is a prerequisite for avoiding trivial questions or questions about obvious issues that have already been described in detail; it is a prerequisite for spotting the gaps, the filling of which serves the development of the discipline and the solution of practice-related problems.
- Secondly, research questions differ in the "addressee" of the question: unlike in everyday life, they are not addressed to a certain person but to a selected fragment of reality. The representatives of natural sciences pose questions to Nature, while the representatives of social sciences pose questions to the socio-cultural world (or, in traditional terms, to the Culture). This metaphorical formulation means that the researcher puts these questions "in front of himself or herself" and it is his or her task to provide an answer to them, which is preceded by a thorough analysis and interpretation of the acquired empirical material. A significant proportion of potential researchers preparing their first research study tend to address research questions to male or female respondents by merely changing the grammatical form of the question. For example,

the research question is: "Which parenting methods are used by parents with different levels of education?" And the questionnaire question addressed to the mother is: "Which parenting methods do you use?" A prerequisite for avoiding such an error is to remember that "parenting methods" is a theoretical concept, becoming a variable in research conducted in the positivist paradigm (so its values must be determined), the manners of empirical expression of which must be developed by the person planning the research. Only once the researcher has established the manners in which the parenting methods are manifested, can he or she construct an interview or a survey questionnaire, asking about specific parental behaviours and the circumstances in which they are undertaken Jan Lutyński (2000) posits that the foundation for the development of questionnaire items (which will be expounded upon subsequently) is the compilation of desired information that the researcher aims to acquire in the course of formulating the research questions. The ordered set of questions, "to which the researcher wants to provide answers that are as legitimate as possible" (Lutyński, 2000, p. 80), forms the research issue, which constitutes a precise representation of the segment of reality being explored. Graphically, this ordered set of questions takes the form of a branching tree: if the main question indicates a relationship between variables, then at the next level, two questions are formulated, related to the individual variables, and at the subsequent level, each of these questions is further detailed; this process continues until the questions indicating specific information is obtained, the acquisition of which will initiate the reverse process, i.e., moving from answering specific questions to answering more general questions (for more on the relationship between questions (Lutyński, 2000, pp. 80–89).

- Thirdly, the intention of asking a question genuinely in everyday life usually stems from the personal concerns, needs, interests, etc., of the person posing it. The intention of formulating research questions stems (ideally) from a desire to fill the gaps in disciplinary knowledge or provide information that can be the basis for planning practical activity. (In research practice, there are also non-scientific considerations for posing such and not other questions, but that is a completely different issue).

The intention of asking a question touches upon the issue of research objectives. It is worth paying more attention to this issue because observation of research practice shows that the purpose is often identified with the main research question. Do they, therefore, both serve the same function in the research process? There is a consensus in the literature that indicating an objective comes down to informing about the effect that the researcher wants to achieve, which is moreover in line with the commonplace understanding of the word. However, there is no consensus on the naming of this effect and the way it is presented. For example, the sociologist Earl Babbie (2003, pp. 111–113), when indicating the objectives of empirical research, mentions: exploration, description, and explanation, which is close to the general objectives of science. Krzysztof Konarzewski (2000), when instructing on how to plan and conduct educational research, links objectives with types of research. For him, the basic criterion for distinguishing between the research types is the type of the source domain for the questions, which is also the reference domain (application) of the acquired knowledge: namely the domain of theory or the domain of practice. Accordingly, he distinguished between theoretical research pursuing theoretical objectives and practical research pursuing practical objectives. Two specific objectives are possible in each of the two basic types. The achievement of the first one is oriented towards the recognition of "how things are." A specific theoretical objective is exploration, when the researcher perceives the lack of a theory explaining some process, phenomenon, or specific behaviour, etc., and undertakes research to provide "clues for the construction of theory" (Konarzewski, 2000, p. 12). The specific practical objective is the diagnosis. The researcher perceives in institutional practice or in the practice of social life a state of affairs that is significant from some point of view (e.g., threatening the successful development of children or, on the contrary, effectively supporting this development), which needs to be recognised in order to find a rationale for planning preventive action or for reconstructing the structure of a specific method of action practised successfully. The second specific objective in both types of research is aimed at checking whether "things are done in a certain way." In theoretical research, the objective consists of the verification of a specific theory, while in practical research in the evaluation of the effects of a previously performed action (Lutyński, 2000, p. 13).

It is worth noting that the quoted typology of objectives is formal in nature, as giving the name of the objective without complementing it with the content related to the object of the given research is insufficient, and it does not complete the research design. If, for example, a student preparing a thesis informs that his/her research will aim to diagnose the physical fitness of students of a given primary school, it would be worth considering and answering why *this* diagnosis is to be carried out. What justifies it and how can the results be used? The results can be compared with the developmental norms of children of a given age to assess the children's level of development. If they turn out to be lower than the norm in some areas, their identification will serve as a guide for the planning of physical education lessons.

I have already mentioned that in many publications, the objective of the research coincides with the research question, which is revealed in the typical formulation: the objective of my research was to answer the question… Such a content identity of these two elements of the research concept is found in the examples presented in Janusz Gnitecki's textbook (2007): "Example 1. Research objective: To investigate the awareness of AIDS and the prevention of AIDS-related risks among schoolchildren. Theoretical problem: What is the awareness of AIDS and the prevention of AIDS-related risks among school children?" (Gnitecki, 2007, p. 351). "Example 8. Research objective: To investigate how children behave in difficult situations. Theoretical problem: how do children behave in difficult situations?" (Gnitecki, 2007, p. 357). Twelve analogous examples were given by the author. In doing so, he does not use the term "research question" but "theoretical problem," which raises additional doubt as to whether the questions posed are indeed *sensu stricto* theoretical in nature, i.e., if they refer to or derive from a specific theory (usually this is difficult to determine just from the formulation of the question, but, for example, the question about the role of the "District Labour Office in overcoming unemployment in the region" is certainly not theoretical. The questions presented also raise other doubts). Identifying the research objective with the research question makes one of these elements redundant. The abandonment of the objective in the quoted examples from Gnitecki's textbook results in the lack of the desired significance for the organisation of the research process (2007).

Heliodor Muszyński (2018) pays much attention to the research objectives, and indirectly to their relation to the research questions. He does fo-

cus on the issue in more detail than Gnitecki quoted above, but it seems that the essence of the two authors' thinking converges. As Muszyński informs: "By research objectives, we mean the formulations by means of which the researcher determines what kind of **knowledge** he or she intends to arrive at through specific research activities" (Myszyński, 2018, p. 73). In other words, objectives inform what the researchers want to find out, and which questions they are attempting to answer. Thus, the objectives specify the researched object in more detail, define the content scope of the research, and thus perform the same function as the research questions. For example: the teacher as a significant person in the students' opinions was taken as the object of research. The proposed objectives: "to determine the qualities which students attribute to their teachers, who are persons significant for them […]; to investigate which impact on themselves the students attribute to teachers considered to be significant persons […]" (Muszyński, 2018, p. 95 – emphasis D. U.-Z.) With this way of formulating the objectives, posing the research questions (or research problems) is indeed straightforward, as the author explicitly notes: "One is now left with the relatively simple task of formulating the research problems, i.e., posing questions about the various elements that one has identified and selected that are worth asking about. If all the steps have been performed correctly so far, the task to be performed now consists of a skilful selection of the right form of a question" (Muszyński, 2018, pp. 120–121). In Muszyński's and Gnitecki's perception of the relationship between the research objectives and the research problems (questions), their content identity is similar, while their role in the research process converges. Both the objectives and research questions define the content scope of the research. If the research problems were to differ from the objectives only in their form of utterance (they contain the interrogation mark and the framework of the question is the same), one may ask again why we should duplicate the same content in the research concept? When analysing the examples presented in Muszyński's textbook, one can see that the objectives are more general than the research questions. For example – the author specifies the issue: the image of the school and the teacher in the students' attitudes and postulates.

Objective: to explore the students' attitudes towards their school
Research questions:
What is the student's emotional bond with the school?

What feelings does the student associate with the fact of attending school?

In which categories does the student characterise his/her school? […] (Muszyński, 2018, p. 123).

If we return to the previously mentioned structure of the research issues in Lutyński's approach, we see that Muszyński does not formulate the main research question, which is "replaced" by the objective.

The conclusion of the considerations carried out is not aimed at considering the solutions proposed by one of the authors as correct and the ones proposed by the other as incorrect. The point is to draw attention to the need to reflect on each research activity performed and to realise what it serves within the framework of the adopted research model. It should be ensured that the activities performed are not just the implementation of a "recipe for research," but that each subsequent activity serves to refine the concept. I am closer to adapting a positivist paradigm in relation to the conducted research (due to my research biography: readings, mentors, etc.), to specifying the object of research by means of a hierarchically constructed research problem rather than a detailed list of objectives indicating the scope of knowledge to be gained. In order to separate the function "performed" by the objective of the research and that performed by the research questions, it is more beneficial to assume that defining the objective (or objectives of research) is to determine *why* or *what for* specific knowledge should be gained, i.e., to pose such and not another research questions. One can then use the typology of objectives quoted earlier after Konarzewski. In my understanding, the objectives reflect the overarching intention of a given research project, and they result from the contexts for posing the research questions. The process of crafting compelling research objectives necessitates either familiarity with the current state of knowledge and the capacity to identify shortcomings and discrepancies, along with a theoretical acumen (in the case of theoretical goals), or a keen involvement in diverse social practices, which enables one to detect indicators of change and individual or group predicaments (in the case of practical goals).

Nowadays, in the wake of various methodological or paradigmatic shifts, research is also conducted that is not guided by an elaborate research issue or a list of detailed objectives, but only by a main objective reflecting the overarching intention of cognition, which is, for example, to induce change in so-

cial practice. It is the so-called participatory research with varying degrees of participation by the research organiser in the social practice being explored and of participation by the participants in that practice in developing the research design and its conduct (Reason & Torbert, 2010). This type of research deliberately avoids the prefiguration of the researched section of reality, so that it can be presented from the perspective of those who co-create it. The knowledge contained in the stories and collaboratively developed questions, identifying the gaps in information that need to be filled, comes from people's everyday life experiences. Neither questionnaires nor observation sheets are formulated for such research. Contrary to what inexperienced persons may think, conducting such research is difficult and the results are uncertain. Its primary objective is to induce social change and not to develop disciplinary knowledge. Therefore, in order to incorporate the results of such research into the body of scientific knowledge, the researchers need to implement additional procedures beyond the essence of this research stream, i.e., the procedures that show the "contribution" of the results obtained to the discipline. The result may be a reconstruction of what "happened" – i.e., the conditions or structure of change, but then the cognitive intention will no longer be directed towards local social participation, but towards the body of the discipline.

Question in questionnaires

Questions play a fundamental role in the research tools used to organise communication between those conducting the research and those participating in it, i.e., interview and survey questionnaires. The largest number of publications on this subject appeared in the 1970s and 1980s, and their authors were mainly sociologists. They analysed in detail the structure of questions (in structural and semantic terms), their importance for the quality of the data obtained, and the impact of the order in which questions were asked on the information obtained, etc. (Gostkowski & Lutyński, 1971; Lutyńska & Wejland, 1983; Lutyńska, 1984). During this period in Poland, not only in sociology, but also in pedagogy and other social disciplines, efforts were intensified to increase the objectivity of empirical research conducted on their basis (or, more generally, to bring them up to the standard set by the scientific method; more on this issue can be found in Urbaniak-Zając (2019). This

is done, among others, by standardising the data acquisition scenario. If persons' statements are the source of the data, standardisation of the conditions of data generation is sought. The use of closed questions is a way of technical standardisation. In addition to the interrogative sentence, they contain response options submitted to the respondents. The underlying assumption is that everyone understands the question sentence and the response options in the same way and that this understanding is in accordance with the sense assigned to them by the researchers. This is because the researchers are not interested in just any data, but in data of a specific type, the understanding and scope of which they have established by creating the research problem.

This type of data collection is nowadays referred to as quantitative research or as research falling within the positivist paradigm. In contrast, the collection of empirical material through open-ended questions is considered qualitative research. Such an approach reduces the disparity in organisational and technical differences. Still, the differences resulting from different assumptions defining the specific characteristics of the reality being researched and the possibilities of learning about it are much more important (Malewski, 1997; Kubinowski, 2010). However, these issues will not be addressed here, as they go beyond the subject matter of this paper. Coming back to questions as an element of communication between the researchers and the research participants, it is worth considering whether it is possible to discern their proper orientation, resulting from the specific characteristics of the research paradigm.

I mentioned earlier that the person creating a detailed research issue aims to establish a list of types of information sought. If the way to obtain such information is to be an interview or a survey, the questionnaire will consist of questions concerning this information. The obtained answers are a source of individual information. In order for them to be of cognitive value, there must be a reality outside the interview to which they refer (the issue of the veracity of the assumed existence). When treating the answers as information, the questions should only address the issues the respondents are aware of (after all, they cannot report on what they do not know). Information can be assessed as being in line with reality (true) or not (false), and it can be assessed by comparing it with information from other sources.

But in pedagogical research, the object of interest is frequently the opinions of a particular category of people on a particular topic, e.g., the opinions of parents and teachers on the place of religion in school. It might seem that their answers to the survey questions also inform about something. But about what? About their knowledge, beliefs, views, shared values or perhaps attitudes? The answer to this question has to be made at the stage of specification of the object of the research and creating the questions for the research issue. It will determine which of the questions in the questionnaire will be aimed at eliciting information (e.g., the correctness of knowledge can be tested) and which will have a different role – providing indicators of some state of affairs. The indicators are the answers (cafeteria-style checklists) accompanying the interrogative sentences. If I ask a question: "Did you get married in church?," the answer to this question is informative, but it can also be a (partial) indicator of an attitude towards religion. The informational component of the answer makes it possible to assess its truthfulness (it can be verified in the parish books). However, when I ask: "Do you accept the presence of crucifixes in schools?," I will not assess the truthfulness of this answer by using other sources of information, but it can still be a (partial) indicator. In conclusion, when the conditions for obtaining empirical material are standardised by asking closed (or semi-open) questions, their common focus is to obtain information or indicators of latent variables or accepted theoretical constructs, e.g., attitudes. Of course, information can also be extracted through open-ended questions. However, if their content is planned in advance, the form of questions often indicates the expected answer (the questions starting with the particles who, where, when, how often, etc.) and does not encourage more extensive statements.

The questions that are directed at reconstructing the perspective of those involved in social practice on the world and themselves take a different form. It is worth mentioning that some researchers (Silverman, 2007) consider only the (recorded) naturally occurring interactions and self-paced utterances of people, produced without interference from the researcher, to be truly cognitively valuable. Adopting such a rigorous requirement would significantly limit the subject matter of social research, but even if it is not universally complied with, it indicates a principle that is followed in qualitative research of a reconstructive, interpretative nature. The idea is to elicit statements that

reflect the perspective of the participants in social practice rather than that of the researchers. The different qualitative research methods, depending on the theoretical assumptions made, capture this perspective differently and allow for varying degrees of interference by the researchers in "eliciting" it. When trying to disregard these differences, it can be said that in reconstructive research, the material reflecting the course of events important to the researched person and his or her situational contexts is considered cognitively valuable. Thus, the interview questions are directed at revealing experiences that include memories of actions and behaviour (personal and those of other persons), as well as experiences and reflections. It is important to reconstruct how things were, rather than to elicit arguments (Przyborski & Wohlrab-Sahr, 2008, pp. 88–91).

When planning the course of a free-form interview, which is supposed to fulfil two conditions that are difficult to reconcile, namely, not to impose a way of thinking on the respondents and to elicit predetermined content (which may turn out to be insignificant), leading questions and follow-up questions are usually prepared. In the research dedicated to reconstructing the conditions of professional activity of educators, one of the leading questions was: What has been your professional path like? This was accompanied by several supplementary questions, grouped thematically, for example, the first group of questions was as follows: "Please tell us how your job search went. What were your expectations/wishes with regards to your professional activity? Have they been fulfilled? Have they changed?" (Urbaniak-Zając, 2016, p. 273). The follow-up questions were asked after the leading question had been answered – their content and form depended on that answer. It should be emphasised that the question form written in the questionnaire indicated issues considered potentially relevant by the researcher, whereas in the context of specific experiences, they may not have been relevant and then there was no point in asking about them. The last of the quoted questions are detailed resolution questions, which, as is well known, are closed questions (with "yes" or "no" answers). In this case, they were not accompanied by an expectation of a "yes" or "no" answer. They were an indication to the interviewer, a sensitisation to signals of changing expectations; if this occurs, it is worth trying to develop this thread.

The "procedure for using" the questions written in the interview questionnaire, which has been signalled, highlights two related issues: the difference between the role of open-ended questions in reconstructive research and in classical research that is more or less based on the rules of the positivist paradigm, and the different requirements imposed on the interviewer. In the positivist paradigm, the questions written in the questionnaire are usually asked in the same wording to all the respondents. The content of the answers is important – information is expected. The form of the utterance (how it was said) is generally ignored. In reconstructive research, the leading questions – to put it metaphorically – are the "skeleton" of the interview and the supplementary questions are the "supports' for the interviewer" it is the interviewer who decides whether they are worth using in the context of the interview. The form of the answers is as important as the content, as reflected in the recommendation to transcribe the recorded interview. The difficulty of the interviewer's task arises from this treatment of the questions written in the questionnaire. He or she has to listen attentively and encourage the development of self-propelled utterance threads (topics taken up "independently" by the interviewees), while keeping in mind what was initially considered relevant, and ask or not ask the follow-up questions, depending on the course of the interview. In a classical free-form interview, the interviewer asks follow-up questions, verbally and non-verbally signals his or her interest in the answers and possibly notes down or records them.

Conclusion

To highlight the complexity of the questioning in research, I have reviewed the basic aspects of the erotetic logic in the first part of this paper. A proper question is characterised not so much by a specific linguistic form as a desire to inquire, stemming from ignorance, which the asker wants to eliminate. Ignorance is about something, so its context must be some kind of knowledge. When we relate this argument to questioning in empirical scientific research, the context for identifying ignorance is the body of disciplinary knowledge. People who are not familiar with any section of this knowledge cannot formulate a good question – herein lies the basic reason for the great difficulty of some students in formulating research questions. It is also trouble for

them to define the purpose of posing such and not another research question, the intention justifying the effort of inquiry. The statement that the purpose of the question is to acquire knowledge (to eliminate the knowledge gap) is tautological. In the literature, the issue of research objectives is presented in different ways. Personally, I accept (in principle) the typology of objectives quoted by Krzysztof Konarzewski (although there is no place there for the signalled objective of participatory research, consisting of the induction of social change) (Konarzewski, 2000, pp. 12–14).

Questions in empirical social science research have a twofold role, which is fulfilled differently, depending on the paradigmatic context of the research in question. Firstly, the questions related to specific researched issues specify the object of research and they define the set of issues that forms it. Secondly, the questions in survey or interview questionnaires (or in interview scripts) are the primary means of communication with the researched persons and serve to obtain empirical material. The parallel occurrence of several theoretical and methodological paradigms in contemporary methodology, revealed in the differences in research practice, allows us to perceive certain aspects of scientific knowledge that half a century ago were not taken into account at all when working on empirical research projects (which does not mean that they were not important at the time), namely the philosophical and theoretical assumptions that form the basis of these paradigms. They are the source of justifications for methodological solutions and the basis of the diversity of research practice, reflected, among others, in the ways in which research material is obtained and, thus, also in the forms and manners in which questions are asked to obtain empirical material and in their overarching intention. From this perspective, I distinguished between (questionnaire) questions aimed at eliciting information, the importance and significance of which have been established by the investigators, and questions aimed at reconstructing the experiences of participants in social practices, which aim to reveal what they consider important and meaningful. From this analytical distinction, one should not conclude that using different material collection tools in a single research study is impossible. However, one should be aware of their differences and the resulting consequences and therefore justify the purpose of doing so. Nowadays, mixed methods are being developed (Creswell, 2013), aiming at a different objective than the narrowly defined

triangulation, which is oriented towards comparing the results obtained by different methods in order to assess the convergence of these results, indicative of their reliability. Such inference is criticised by many (Ecarius & Miethe, 2011) and is also untenable on the basis of the above analyses. (It is not possible to treat the presented experience as information, evaluated from the perspective of truth and falsity.) Mixed methods, on the other hand, are geared towards multi-level cognition of objects and phenomena. The variation in results is expected, and it is not treated as an error in the research, but as an expression of a multifaceted reality.

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