

PHILOSOPHICAL AND METHODOLOGICAL ORIENTATIONS IN GEOGRAPHY. THEIR CONCEPTIONS AND MODELS

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ABSTRACT. The article presents basic philosophical and methodological orientations in geography understood as main conceptions of scientific thinking and activity, in the form of two opposing standpoints: scientism and anti-scientism. The scientistic orientation assumes that the goal of geography is conceptual cognition of objective reality, which is the only form of cognition and its basic value, realized as a uniform research standard common to empirical sciences. The anti-scientistic orientation rejects this assumption, especially the uniform conception of scientific research in geography, and draws a distinction between cognition in the sphere of nature and in the sphere of society. These orientations are the fundamental philosophical and methodological assumptions crucial for the understanding of the state and tendencies of geography.

Philosophical and methodological orientations of geography are the basic ideals of the rationality of geography as a science, which define its cognitive character. This rationality is expressed in the cognitive assumptions which are accepted for a given science. On the one hand, the assumptions determine the principles of the activities that constitute the cultivation of science and the products resulting from these activities which lead to cognitive or extracognitive successes. On the other hand, they allow a recognition of the cognitive nature of a given discipline. These orientations cannot be identified with paradigms in the understanding of T. S. Kuhn, nor with philosophical trends¹. T. S. Kuhn's conception of the paradigm is different for it does not contain any justification of its rationality. Individual

¹ T. S. Kuhn, *The structure of scientific revolutions*, Chicago 1962.

philosophical trends, in turn, although identical with the ideals of rationality, do not lead to explicitly defined methodological standards.

Philosophical and methodological orientations are substantiated in specific methodological conceptions, i.e. in postulated or programme methodological standards, and in methodological models, i.e. real standards which reconstruct the research activities and their results and find their reference to geography's research practice.

A scientific orientation and its opposition — an antiscientific orientation, are the main philosophical and methodological orientations. This dichotomy constitutes the primary properties of the ideals of geography's rationality and determines significant differences among them, thus giving them the character of fundamental, cognitive types which have formed in geography thus far.

I. Scientific orientation

The concept of the scientific orientation of geography proposed here has a methodological character and is the essential ideal of the rationality of geography as a science. The orientation relates to contemporary methodological controversies which pertain to the rationality of science, and especially to the role and value of conceptual cognition and to the unity of science expressed by the opposition "scientism — antiscentism"². Thus, this conception should not be identified with an outlook which was formed under the name "scientism" at the end of the 19th century in the form represented mainly by K. Pearson³. The principle of the 19th century scientism is a non-critical faith in science relying on it to solve all possible problems and satisfy all possible human needs and eliminate all the weak points by which people are afflicted⁴.

The scientific orientation of geography is formed according to the two following main assumptions:

1) conceptual cognition of reality is the aim of geography. Conceptual cognition (a) consists in obtaining true judgements, i.e. judgements which correspond to the state of things they pertain to, (b) is the only adequate form of cognition, (c) is a basic value⁵;

² J. Kmita, *Scjentyzm i antyscjentyzm* (Scientism and antiscentism). In: Z. Cackowski (ed.) *Poznanie, umysl, kultura* (Cognition, mind, culture). Lublin 1982, pp. 140 - 186.

³ Cf. W. Tatarkiewicz, *Historia filozofii* (History of philosophy), vol. 3, Warszawa 1950, pp. 108 - 113.

⁴ S. Sarnowski, *Filozofia naukowa i filozofia nauki. Uwagi o pozytywizmie* (Scientific philosophy and the philosophy of science. Remarks on positivism), *Studia Filozoficzne* 1 - 2, 1982, p. 33.

⁵ The first assumption is formulated according to J. Kmita, op. cit., 1982, p. 141.

2) the cognition is realized in the form of a uniform methodological route of inquiry and the structure of geographic knowledge⁶.

Without going any further into the problem of the scientific orientation in science, I shall limit myself to a few remarks pertaining to the presented assumptions.

Re 1a. The scientific orientation of geography is characterized by an objective interpretation of conceptual cognition. It assumes that the states of things which judgements (statements) pertain to are real or objective, that their existence is not conditioned by any judgement.

Re 1b. The assumption that conceptual cognition is the only form of cognition eliminates all forms of intuitive cognition from this orientation.

Re 1c. The assumption that conceptual cognition is a fundamental value means that it is a final value, i.e. a value which is not subordinated instrumentally to any other value or a value which is indispensable for the realization of the final value.

Re 2. The acceptance of a uniform methodological standard of inquiry and the structure of geographic knowledge, i.e. methodological unism, is not synonymous with naturalism, i.e. a view that natural sciences are the methodological pattern of conceptual cognition, but is only one case of unism or its consequence.

Two main methodological models as real standards have been formed within the scientific orientation: 1) empirical, 2) hypothetic-deductive. Simultaneously, a conception of critical scientism is formed, which, however, only contains certain elements of geography's research programme.

1. Empirical model

The empirical model of geography constitutes the form of the scientific orientation which accepts the view that conceptual cognition has a non-assumptive and source character, hence, is directly based on experience⁷. Perceptive judgements which form the basis of any kind of statements have such a character. M. Bowden states that "an essential characteristic of empiricism, which takes its name from the Greek word for experience (*empeiria*), is its commitment to the position that all knowledge is dependent upon experience, and this remains a widely accepted tenet of contemporary science and education"⁸.

The privileged character of observation which is realized by perceptive judgements is an important consequence of the non-assumptive and source character

⁶ Cf. a different view by J. Kmita, op. cit., 1982, p. 145.

⁷ According to J. Kmita (op. cit., 1982, p. 149) "...that a given cognition is non-assumptive means (...) that true judgements which represent it are obtained without accepting any other judgements, instead they refer to a certain kind of direct confrontation with the states of affairs they pertain to, to the fact of "visualness" of these states of affairs. On the other hand, that the cognition under consideration is to be based on source means that all judgements which do not express this cognition must be — to manifest their truth — justified with the help of judgements of the first kind."

⁸ M. Bowden, *Empiricism and geographical thought*, Cambridge 1981, p. 3.

of cognition voiced by empiricism. This privileged position is of two characters: ontological and epistemological. "These are: (1) that the observation language is ontologically privileged, which simply means that observational statements are the only ones which make direct reference to phenomena in the real world; the corollary of this is that theoretical statements are not privileged, and since they are unable to provide access into some "other" realm then ultimately they too have to refer to phenomena in the real world, but they do so indirectly via correspondence rules; (2) that the observation language is epistemologically privileged, which simply means that observational statements can be declared true or false without reference to the truth or falsity of theoretical statements"⁹.

Empiricism realizes the model of Bacon's "research-worker — bee" who, using the metaphor about a spider and a bee, claimed that science does not need speculations spinning out like a spider's web. It needs to collect (facts) and process what has been collected, just like pollen, processed by bees, gives honey.

It would be difficult to present, even in an outline form, the development and transformations of empiricism. It has its modern source in F. Bacon's views, who formulated a programme of empirical science and justified it methodologically linking it to the method of inductive generalization¹⁰. A. Comte's positivism and J. S. Mill's empiricism as well as neopositivism (logical empiricism) of the Vienna Circle, also belong to this trend.

In geography the empirical model has assumed two formulations: a) traditional-empirical, b) empirical-inductive.

a) Traditional-empirical approach. The traditional-empirical approach in geography assumes a maximum empirical justification of statements or, in other words, the diminishing of the risk of their falsity. It aims at the description of individual objects and phenomena, or their historically and spatially localized classes, as interesting in themselves. In this cognitive situation the scope of phenomena under research corresponds to the scope of reality which is the subject of research for a student. Observation of facts and their classification, as well as typology and induction, are the main methods.

R. Hartshorne, who consciously formulated the programme of the traditional-empirical approach, is its main representative. "If we consider "science" not in the passive sense of "knowledge"... but in the active sense of seeking to know, it is to be distinguished from other forms of "knowing" by methods which it uses in seeking to establish knowledge and understanding of reality"¹¹.

The question "What are the essential characteristics which geography shares with other fields in seeking to establish reliable knowledge of reality?" is answered by R. Hartshorne in the following way: "Geography seeks (1) on the basis of em-

pirical observation as independent as possible of the person of the observer to describe phenomena with the maximum degree of accuracy and certainty; (2) on this basis, to classify the phenomena, as far as reality permits, in terms of generic concepts or universals; (3) through rational consideration of the facts thus secured and classified and by logical processes of analysis and synthesis, including the construction and use wherever possible of general principles or laws of generic relationships, to attain the maximum comprehensions of the specific interrelationships of phenomena; and (4) to arrange these findings in orderly systems so that what is known leads directly to the margin of the unknown"¹².

According to R. Hartshorne, "These statements describe a form of "knowing" that is different from the ways in which we "know" by instinct, intuition, a priori deduction or revelation. It is a description which includes all parts of the fields which are commonly called "science", and for which we have no other term to distinguish them from other forms of "knowing". If we may use this description as an empirical definition of that term, we can replace the question, "Is geography a science?" by the much more useful question, "What kind of science is geography?" Geography is a field whose subject matter includes the greatest complexity of phenomena, and at the same time is concerned more than most others with studies of individual cases — of the innumerable places of the world and of the unique case of the world itself"¹³.

R. Hartshorne's empiricism has both a common sense and a phenomenistic character, which gives geography, in his formulation, a type of ordinary knowledge.

b) Empirical-inductive approach. The empirical-inductive approach in geography emphasizes the increase of the economical character of statements, thus the maximization of the degree of their generality, and aims at the presentation of the phenomena being investigated in universal or historically general categories, i. e. in the form of scientific laws or historical generalizations. In this cognitive situation, the phenomena being investigated are interesting as representations of the general type of phenomena and the investigated individual objects or events are only the basis of justifying general statements. In such a formulation, methods of induction, including statistical ones, are put to the fore. Through induction, students aim at the construction of scientific laws as universal statements (strictly general) or as historical generalizations (numerically general).

This formulation is a continuation of F. Bacon's and J. S. Mill's inductive conceptions, forming the basic trend of the so-called quantification of geography in the statistical formulation. As A. G. Wilson claims, "The inductive method involves theorizing from a mass of observations. In its most refined form, this is more or less coincident with statistical analysis"¹⁴.

⁹ D. Gregory, *Ideology, science and human geography*, London 1978, p. 55.

¹⁰ Cf. W. Tatarkiewicz, *Historia filozofii* (History of philosophy), vol. 2, Warszawa 1947, p. 136.

¹¹ R. Hartshorne, *Perspective on the nature of geography*, Chicago 1959, p. 168.

¹² R. Hartshorne, op. cit., 1959, p. 169.

¹³ R. Hartshorne, op. cit., 1959, p. 170.

¹⁴ A. G. Wilson, *Theoretical geography: some speculations*, Transactions, Institute of British Geographers, 1972, 57, pp. 32 - 44.

The development of the inductive-statistical empiricism in geography was stimulated by two trends. One was a severe criticism of traditional empiricism in geography, and especially of Hartshorne's exceptionalism, and the formulation of the programme of scientific law construction in geography, ascribed to F. Schaefer, which realizes the assumptions of neopositivistic philosophy. The development of quantitative methods connected with a rapid computerization which facilitates a more effective application of statistical techniques, was the second trend.

The quantification of geography in the statistical formulation is thus a realization of the assumptions of empiricism in contemporary geography. The statistical approach was not the only trend in geography quantification: a model-theoretic approach was the second trend. However, it is not an expression of empiricism but hypothetism. The empirical-inductive formulation in socio-economic geography found expression basically in the so-called spatial analysis.

B. J. L. Berry and D. F. Marble, characterizing the methodological foundations of the main methods of statistical analysis in geography presented in the articles contained in *Spatial analysis* state that they "emphasize the postwar predilection for building accurate generalizations with predictive power by precise quantitative description of spatial distributions, spatial structure and organization, and spatial relationships. Mainstream research is unashamedly empirical; the new interests are frankly theoretical"¹⁵. This characterization is an accurate formulation of the tendencies of inductive-statistical empiricism in geography.

Progress as regards statistical analysis embraced four sets of methods and procedures: 1) taxonomic methods, 2) regression analysis, 3) factor and principal components analysis, 4) simulation methods. Apart from these methods, cognitive in character, which perform descriptive-informational as well as prognostic functions, methods of a practical-planning character in the form of optimizing and decision-making methods based on the programming principles and game theory, were also developed.

It should be noted that within the empirical-inductive formulation, the traditional interests, mainly as regards taxonomic methods, were also continued.

At the same time, the applications of models based on physical analogies, especially the so-called gravity and potential models, were developed in socio-economic geography. This was a realization of the postulate of social physics, strongly popularized under the influence of neopositivism. In the probabilistic interpretation, however, these models assumed an extra-physical character.

Geographers who represent this trend are convinced that the application of statistical methods to appropriate collections of facts is the fundamental way of discovering scientific laws and of constructing theories, thus realizing the programme of making geography theoretical. I. Burton's claim that "Quantitative techniques are

most appropriate methods for the development of theory in geography"¹⁶ is an example of such views.

The development of geographic research based on empirical-inductive conceptions did not, however, fulfil hopes as to a serious theoretical progress in this direction. The reasons for this condition are both general and specific for geography.

This approach to the creation of theories is generally characterized by low effectiveness. It is worth quoting the criticism of the inductive method given by R. P. Moss, who sees three main weaknesses in it: "First, there is a logical hiatus between fact and idea, where it is impossible to specify the logical steps by which the generalization is derived from the observations. This is still true even when sophisticated statistical techniques are used to process the data, as is increasingly common in geographical study. Second, the generalization refers only to the data set from which it has been derived. By no device can it be made to refer to classes of fact, and thus become generally applicable. The best that can be done is to accumulate evidence by replicated case studies. And, third, there always remains within the process of thought an undefinable, uneliminable element of subjective judgement which remains ultimately dependent upon the psychology of the person making the generalization"¹⁷.

According to a leading contemporary methodologist M. Bunge, "Empirical induction, i. e. generalization of observed cases, has been grossly overestimated by philosophers who have concentrated on the early (pretheoretical) stages of research. (...) Inductivism, which accounts for certain routine procedures, fails to explain the posing of original problems and their solution by the invention of entirely new hypotheses, and precisely of hypotheses that refer to objective facts or to idealized models of them rather than to immediate experience"¹⁸.

Substantiating the criticism of inductionism as regards the role of statistical methods in the discovering of scientific laws, M. Bunge says: "the computation of correlation coefficients and the fitting of regression lines should not be taken for a law-finding method, as is so often the case in the behavioral sciences. When a linear regression model is assumed and the parameters are computed from the data, the central law that is supposed to run through the "noisy" (scattered) information is not found but is assumed beforehand. No amount of statistical data processing produces new hypotheses by itself, let alone laws; in general no amount of technique, whether empirical or mathematical, saves us the labor of inventing new ideas, although it can effectively conceal the lack of ideas"¹⁹.

Relating the empirical-inductive conception to the so-called spatial analysis, which limited the research field of geography mainly to the discussion of its problems in the spatial aspect, was a specific cause of the conception's weakness. The identi-

¹⁶ I. Burton, *The quantitative revolution and theoretical geography*. In: B. J. L. Berry, D. F. Marble (eds.), op. cit., 1968, p. 20.

¹⁷ R. P. Moss, *On geography as science*, Geoforum, 10, 3, 1979, p. 224.

¹⁸ M. Bunge, *Scientific research I*, Berlin 1967, p. 245.

¹⁹ M. Bunge, op. cit., 1967, p. 317.

¹⁵ B. J. L. Berry, D. F. Marble (eds.), *Spatial analysis*, Englewood Cliffs 1968, p. 6. Cf. also D. F. Marble, Z. Chojnicki (eds.), *Perspectives on spatial analysis*, Geographia Polonica, 25, 1973.

fication of spatial patterns and not of processes governing their formation and changes was basically a result of such an approach. This gave a phenomenalist character to research results.

The empirical-inductive formulation found its main justification in neopositivism. Its leading representative R. Carnap claimed: "if some object could not be reduced to a sensory quality (...) this would mean that it possesses no perceptible signs. A statement about it would be suspended in a vacuum; in science, at least, there could not be a place for them"²⁰. Some years later, however, R. Carnap admitted that his conception of confirmation (realizing the assumptions of inductive empiricism) does not allow the confirmation of the theory of physics²¹.

2. Hypothetic-deductive model

The hypothetic-deductive model of geography opposes the non-assumptive and source conception of cognition based directly on experience, and assumes the view that basic (observational) statements which are equivalents of statements directly based on experience (perceptive judgements) are based on extraobservational statements which are the assumptions of observational statements. According to J. Kmita, "in order to accept an observational sentence it is necessary to accept other logically adequate extraobservational (extrabasic) sentences; the extraobservational sentences accepted earlier (in the logical sense) are the assumptions of observational cognition: if they are questioned then it is even possible to question such a basic sentence which seems obvious to individuals in the "visual"—empirical sense"²². Hypothetism may be considered a subtle form of scientism.

K. R. Popper is the main representative of hypothetism or deductivism. His methodological views comprise a strong criticism of inductivism and his own programme of scientific cognition which is a counter-standpoint of inductivism as a neopositivistic conception²³.

K. R. Popper's programme of hypothetism is as follows²⁴: firstly, it opposes the thesis of inductivism about the empirical genesis and empirical criteria of acceptabil-

²⁰ R. Carnap, *Der logische Aufbau der Welt*, Berlin 1928, p. 92.

²¹ According to J. Życkiński, *Język i metoda* (Language and method), Kraków 1982, p. 113.

²² J. Kmita, op. cit., 1982, p. 156.

²³ K. R. Popper, *Logik der Forschung*, Wien 1934, (in English): *The logic of scientific discovery*, London 1959, *Objective knowledge. An evolutionary approach*, Oxford 1973.

²⁴ This characterization is based mainly on the works by K. R. Popper, op. cit., 1959 and op. cit., 1973, and on the following works: J. Giedymin, *Indukcjonizm i antyindukcjonizm* (Inductivism and anti-inductivism). In: *Logiczna teoria nauki* (Logical theory of science), Warszawa 1966, pp. 269 - 294; M. Bunge, *The critical approach to science and philosophy*, London 1964. A critical analysis of K. R. Popper's conception and of hypothetism may be found in, among others, J. Kotarbińska, *Deductivism versus inductivism*, In: M. Przełęcki, R. Wójcicki (ed.)

ity and sensibility which claims that knowledge about the world comes from perceptual experience and perceptual sentences are its basis, as statements which are justified directly by perceptual experiences. Instead, K. R. Popper assumes that pure observation which does not presuppose theories and hypotheses does not exist, as observation is always observation in the light of a theory. There is no purely "phenomenal language" distinguishable from a "theoretical language", no way to talk about something perceived and not interpreted²⁵.

Secondly, Popper considers false the thesis of inductivism which claims the acceptance of nomological statements which are sufficiently justified by inductive inference. This is due to the fact, among others, that inductive conclusions inferred in this way are always phenomenalist sentences, i. e. sentences in which next to logical constants only observational terms occur, although a number of hypotheses and theories have a non-phenomenalist character. K. R. Popper rejects induction as a method devoid of any justifying value and points to another method, the deductive one, called the method of criticism of hypotheses or the trial-and-error method.

Thirdly, K. R. Popper rejects the thesis of inductivism which claims that the method of testing hypotheses and theories consists in their verification, or at least confirmation, based on possibly the most extensive and diversified observational material which makes them probable to a great degree. These requirements are so weak that they can be satisfied with respect to almost every hypothesis. In place of verification Popper formulates the postulate of a reliable falsification of hypotheses and their corroboration. Before a hypothesis is accepted, one must think about what would testify against it rather than in its favour, and arguments must be looked for which would speak against the hypothesis in question rather than against rival hypotheses.

Although K. R. Popper's conceptions (anti-inductivism, deductivism and hypothetism) clearly have an antipositivistic character, adherents of antisocialism and neopositivism interpret it positivistically and treat it as a form of positivism. The view about the positivistic character of K. R. Popper's conceptions is accepted in a number of works devoted to the philosophy and methodology of geography²⁶.

The following views, based on the positivistic theory of cognition, lie at the basis of neopositivists' recognition of hypothetism as a form of positivism:

1) The conviction that despite the declared opposition to inductivism (neopositivism) hypothetism did not do away with the problem of induction. This is stated by, among

Twenty five years of logical methodology in Poland, Warszawa 1977; T. Dąbrowski, *Metodologia Poppera: ocena krytyczna* (Popper's methodology: a critical evaluation), *Zagadnienia naukoznawstwa* 3 (59), 15, 1979, pp. 399 - 420; H. Mortimer, *Logika odkrycia naukowego Karla Poppera* (K. Popper's logic of scientific discovery), *Studia Filozoficzne* 4, 1978, pp. 171 - 176.

²⁵ K. R. Popper, *The logic of scientific discovery*, London 1959, p. 59.

²⁶ Compare, among others, D. Gregory, *Ideology, science and human geography*, London 1978; R. J. Johnston, *Geography and geographers, Anglo-American human geography since 1945*, London 1979; R. J. Johnston, *Philosophy and human geography. An introduction to contemporary approaches*, London 1983.

others, H. Mortimer: "...inductivists do not question in any way the hypothetic-deductive method promoted by Popper. They think that induction is just the crucial element of this method"²⁷. The view that "in Popper's conception deduction itself gives only the abolition of some hypotheses which were put forward, though not all hypotheses which were put forward and were not abolished become part of science"²⁸ is an argument for the indispensability of induction. However, as J. Kmita notices, K. R. Popper did not attempt to "construct a criterion for the selection of scientific claims as best justified hypotheses. (...) Corroboration is not confirmation and the criterion of falsifiability is used only for the specification of the kind of sentences which come into consideration, not during the justification but during the elimination of the hitherto accepted hypotheses in favour of new hypotheses. What is being sought is not the validation of individual claims (or their systems) but the validation of the act of replacing an existing hypothesis with a new hypothesis, the answer to the question of what the development of knowledge consists in"²⁹.

2) The conviction that K. R. Popper's hypothetism has a positivistic character, as his programme, which assumes the confrontation of theory and experience, distinguishes between scientific and metaphysical activities³⁰. One should notice here, however, that distinguishing between scientific and metaphysical activities (also artistic, ideological or political ones) is not so much the component of the positivistic theory of scientific cognition as of scientific conception. Contemporary positivism represented by logical empiricism with its empirical-inductivistic and physicalistic programme is only one version of scientism. Antiscientists also identify scientism with positivism as this allows them to burden scientism with the weak points of positivism.

The transition from empiricism to hypothetism is a turning point in the development of scientism (antipositivistic in character) and is an attempt to take geography from the pretheoretical stage to the theoretical one. Thus, hypothetism is a programme of the construction of theoretical geography³¹.

A methodological conception of geography close to the assumptions of the hypothetico-deductive model was presented by D. Harvey in his well-known work *Explanation in geography* (1969)³². D. Harvey assumes the following:

1) The conception of explanation examined by logic is the fundamental methodological problem connected with the organization of scientific knowledge and scien-

²⁷ H. Mortimer, *Logika indukcji* (The logic of induction), Warszawa 1982, p. 125.

²⁸ H. Mortimer, op. cit., 1978, p. 174.

²⁹ J. Kmita, *Popper i pozytywizm* (Popper and positivism). *Studia Filozoficzne* 11, 1978, p. 89.

³⁰ J. Kmita, op. cit., 1978, p. 90.

³¹ Cf. J. Kmita (ed.) *Zagadnienie przełomu antypozytywistycznego w humanistyce* (The problem of the antipositivistic turning point in the humanities), Warszawa-Poznań 1978; Cf. also A. Pałubicka, *Orientacje epistemologiczne a rozwój nauki* (Epistemological orientations and the development of science), Warszawa-Poznań 1977.

³² D. Harvey, *Explanation in geography*, London 1969.

tific method. As D. Harvey states, the basic aim of this work is to "... elaborate the criteria that can be developed with respect to explanation in geography, and to analyse the various ways in which we can ensure sound and consistent explanations"³³. "...Explanation is (...) very much a logical procedure, and can be subjected to deep logical analysis"³⁴.

2) Explanation as a formal procedure is realized through the so-called standard model of science, i. e. the hypothetico-deductive model of Popper-Hempel. D. Harvey focuses his attention on the logical structure of explanation on the basis of the hypothetico-deductive model. According to D. Harvey, "Explanation of any intrinsic worth ought to be rendered as the necessary conclusion to some deductive argument. (...) Such an argument requires the use of law-statements or something equivalent"³⁵.

3) The character of geographical knowledge and research practice introduces limitations as regards the application of the standard model and permits the application of the methods of inductive inference. "Scientists seek to organise knowledge by way of a hypothetico-deductive system and (...) to apply that knowledge by way of deductive explanations. But there are many instances where the ideal deductive form of argument cannot be applied. Some instances arise because of lack of information, incomplete understanding, or because of the need to use probability statements. The most important case of all is in confirming and verifying scientific theories. In all these instances inductive inferences are important"³⁶.

4) Hypotheses, models, scientific laws and theories are the basic elements of scientific knowledge which have an explanatory character. According to Harvey, "There is no reason in principle why laws should not serve to explain geographical phenomena, or theories of considerable explanatory power be constructed. (...) the main difficulty comes with the implementation of this conclusion. Given our lack of understanding and the extreme complexity of much of our subject-matter, it will be a long time before we possess relatively complete theories of any great explanatory power. Explanations which rest on partial and incomplete and inadequately specified theories are bound to be relatively weak and inefficient"³⁷.

5) The proper strategy of research activity in geography in the conditions of a low level of theory consists in the utilization of theoretical ("a priori") models. According to D. Harvey, "Given the present situation in geography there can be no doubt that the key to strategy is provided by the notion of a priori models. Such models have a dual advantage. In the first place they allow us to venture some predictions (even if rather suspect ones) in the absence of complete theory. Secondly, a priori models can indicate the appropriate theory or an extension or modification of some existing but incomplete theory. (...) Geography is probably in the stage of

³³ D. Harvey, op. cit., 1969, p. 6.

³⁴ D. Harvey, op. cit., 1969, p. 5.

³⁵ D. Harvey, op. cit., 1969, p. 75.

³⁶ D. Harvey, op. cit., 1969, p. 42.

³⁷ D. Harvey, op. cit., 1969, p. 173.

development when almost all explanation statements make some use of a priori models" ³⁸.

The interpretation of this conception, however, is not often hypothetistic in K. R. Popper's sense since, as it seems, D. Harvey does not notice the significance of the controversy between inductivism, connected with the method of verification-confirmation, and anti-inductivism, which stresses the method of falsification-corroboration. He combines the two trends in one uniform model and assumes that it is based on the principles of the logical theory of science.

A. G. Wilson, on the other hand, consistently formulates the conception of the hypothetic-deductive model based on the assumptions of hypothetism. According to Wilson, "the essence of the scientific method is the construction of theories and the continual testing of these by comparing them with observation. The essence of such testing is an attempt to disprove a theory — to marshal observations which contradict the predictions of the theory" ³⁹. This manner of theory construction has a deductive character.

The crucial role of the deductive method in geographic research is stressed by R. P. Moss. He justifies this as follows: "If geography makes any claim to the status of an empirical science, then there should be movement towards the employment of a more overtly deductive methodology. This would seem to involve at least the four following movements. First, there must be increasing rigour in thought. (...) Second, there should be a more thorough structuring of ideas, both in their internal relations and in their relations with other ideas. This will involve, as well as the use of verbal logic, the more extensive use of symbolic calculi as tools of thought. Only in this way can rigorous theory of the formal sort be developed. Third, there could be a greater attempt to consciously develop deductive strategies of problem solving and theory development. (...) In the deductive mode an increasing use of formal calculi, and the conscious setting up of deductive sequences and experimental situations, seems to be required. Fourth, there ought to be a more definite search for criteria for falsification rather than the mere accumulation of supportive fact. No amount of supporting evidence can finally confirm an idea, but a very little contrary evidence can often serve to refute an idea finally and irrevocably; confirmation thus proceeds as contrary evidence fails to falsify, and the idea progressively stands up to more and more critical testing under experimental conditions. In these ways geography would develop as a rigorous empirical science, and formulate its own body of theory, exhaustively tested against appropriate data sets in experimental conditions" ⁴⁰.

The hypothetic-deductive model was realized in geography in two complementary variants: 1) analytical theorizing, 2) mathematical modelling.

³⁸ D. Harvey, op. cit., 1969, p. 175.

³⁹ A. G. Wilson, op. cit., 1979, p. 32.

⁴⁰ R. P. Moss, *On geography as science*, *Geoforum*, 10, 1979, pp. 225 - 226.

Analytical theorizing concentrated on working out concepts which constituted pretheories of geography. They have different degrees of generality ranging from the theory of systems to T. Hägerstrand's conception of the living time-space ⁴¹.

Mathematical modelling consists in the construction and development of the so-called mathematical models, i.e. using mathematical assumptions and formal means. This approach in A. G. Wilson's terminology corresponds to "model" revolution ⁴². A. G. Wilson derives the "model" revolution in geography from the works by T. Hägerstrand, P. Haggett, R. J. Chorley, model studies conducted within urban geography and from the general theory of systems ⁴³. This horizon is probably more extensive and does not limit itself to English, American and Swedish geography alone.

It is not possible to present the problems of mathematical modelling and the application of mathematical means and mathematical rigour in a short outline. The characterization of models presented by R. J. Chorley and P. Haggett in their classical work shows that only some conceptions of models and modelling are connected with the hypothetic-deductive assumptions ⁴⁴. On the grounds of the hypothetic-deductive conception only such understanding of mathematical models is significant which consists in the semantic and essential interpretation of formal (mathematical) formulae in order to put forward and test hypotheses ⁴⁵. Thus, formalization of the specific research domain or its fragment, i.e. the indication of certain formal (mathematical or logical) formulae from which, through appropriate essential interpretation, it is possible to obtain a hypothesis (theory) of this domain, is the basis of mathematical modelling ⁴⁶.

From the point of view of the character of formalization, mathematical modelling may assume a twofold form: 1) ex ante modelling taking place when formal formulae as mathematical or logical models precede the determination of appropriate synthetic statements; 2) ex post modelling, when synthetic statements composing

⁴¹ Cf. W. J. Coffey, *Geography. Towards a general spatial systems approach*, London 1981; T. Hägerstrand, *The domain of human geography*, In: R. J. Chorley (ed.) *Directions in geography* London 1973, pp. 67 - 87.

⁴² A. G. Wilson, op. cit., 1979, p. 97.

⁴³ A. G. Wilson, op. cit., 1979, p. 97. This concerns the following works: P. Haggett, *Locational analysis in human geography*, London 1965; R. J. Chorley, P. Haggett, *Models in geography*, London 1967; T. Hägerstrand, *Innovation diffusion as a spatial process*, Chicago 1967; works pertaining to urban geography, e.g. I. S. Lowry, *Model of metropolis*, Santa Monica 1964, and others.

⁴⁴ R. J. Chorley, P. Haggett, op. cit., 1967, p. 25; cf. also: R. Minschull, *An introduction to models in geography*, London 1975.

⁴⁵ Cf. Z. Chojnicki, *Zastosowanie modeli grawitacji i potencjału w badaniach przestrzenno-ekonomicznych* (The application of gravity and potential models in spatio-economic research), Warszawa 1966.

⁴⁶ L. Nowak, *Zasady marksistowskiej filozofii nauki* (Principles of Marxist philosophy of science), Warszawa 1974, p. 108.

a theory are already determined and the formal formulae hidden behind them are only reconstructed.

Both ways of modelling realize hypothetic-deductive assumptions in geography and lead to the construction of a theory and its development. The first way (ex ante modelling) consists of the utilization of specific mathematical means (e.g. equations) as assumptions whose essential interpretation is connected with its justification on the basis of empirical consequences. This type of modelling also utilizes various methods of statistical approximation. Some methodologists assume that the use of mathematical means connected with formalization leads to the simplification of a problem, thus by referring it to idealised, simplified conditions, constitutes idealization⁴⁷. The second way (ex post modelling) consists primarily in the utilization of formal means in order to restructure a theory into a more general form or into a formalized one through the determination of the deductive construction of the theory or its consequences.

Mathematical modelling in geography basically comprises a reconstruction procedure which aims at establishing patterns of reality; however, it also includes an optimizing-normative procedure. The ever-increasing range of mathematical means and the level of mathematical rigour requires the mastering of these means and frequently leads to mathematical technocentrism, i.e. the selection of essential problems from the point of view of the possibilities of their solution with the help of specific mathematical methods⁴⁸.

It should be stressed that the difference between the inductive-statistical approach and the mathematical modelling one, exists in the understanding of the mathematical model and its application.

3. The conception of critical scientism

The conception of critical scientism comprises different methodological views which have not been formed yet into a coherent conceptual system that would make a philosophico-critical model of geography.

These views are related by a critical attitude towards the previous forms of scientism in geography on the one hand. The attitude expresses itself in the conviction that scientistic models do not fully realize the principles of conceptual cognition as the basic value, mainly due to the inadequate interpretation of science on the grounds of which various controversies arise which are solved in an unsatisfactory way, e.g. controversies between cognitive and extracognitive practice, facts and theories, description and valuation, the structure of knowledge and its development,

⁴⁷ Cf. L. Nowak, *Wstęp do idealizacyjnej teorii nauki* (Introduction to the idealizational theory of science), Warszawa 1977.

⁴⁸ Cf. P. Gould, *Mathematics in geography: conceptual revolution or new tool*, International Science Journal, 1975, 2, pp. 303 - 328;

etc. On the other hand, the views are related by the approval of conceptual cognition and of a uniform understanding of science, on the grounds of the principles of the philosophy of sciences understood in a broad sense.

Undoubtedly, a strong antipositivistic opposition underlies the conception of critical scientism. However, a critical attitude towards hypothetism, which finds support in both T. S. Kuhn's and S. Toulmin's relativist views and I. Lakatos' conception of research programmes⁴⁹, also lies at the basis of this conception. P. K. Feyerabend's views, called methodological anarchism, are most characteristic here. P. K. Feyerabend criticizes these methodological views which, while pretending to popularize the progress of science, hinder it. This criticism comprises: 1) a bilingual model of science consisting of the observational language and the theoretical language, 2) the thesis about the certainty of observational sentences, 3) the principle of the notional unchangeability of claims of well-confirmed theories, 4) an instrumentalistic interpretation of theories, 5) the conception of intertheoretical reduction, i.e. that older theories arise from new theories, 6) the conception of the explanation of facts based on scientific laws and initial conditions, 7) the condition of the agreement between new theories and old ones as regards observational sentences, 8) monism of theories and cumulativism⁵⁰.

In the domain of geography, the critical attitude towards the scientistic orientation, although contained in it, is presented by G. Olsson⁵¹. He is mainly concerned with the critique of conventional thinking and modalities in scientistic practice in geography and especially with the relation between the structure of thought, action and language, and with the critique of all attempts made thus far to solve the dilemmas which arise in connection with this. The classical dilemma is the problem as to what relationship exists between indicative propositions and normative propositions. G. Olsson does not solve the dilemmas but stresses their importance and points to the weaknesses and shallowness of the formulations existing hitherto and to the need for maintaining a critical attitude.

The criticism of scientism in geography pertaining to its different models, conducted both from the position of scientism and antiscientism, provides a great many arguments which testify to the unsatisfactory effectiveness of the methodological models of geography existing hitherto which are based on the scientistic orientation. This criticism simultaneously opens new methodological perspectives before geography providing foundations for the solutions which are closer to the research practice of geography and creating further cognitive possibilities before it. Such premises

⁴⁹ See T. S. Kuhn, op. cit., 1962; S. Toulmin, *Human understanding*, Oxford 1972; I. Lakatos, *Falsification and the methodology of scientific research programs*, In: Criticism and growth of knowledge, Cambridge 1979.

⁵⁰ P. K. Feyerabend, *How to be a good empiricist - A plea for tolerance in matters epistemological*. In: B. Baumvin (ed.) *Philosophy of Science*, The Delaware Seminar, vol. 2, New York 1963.

⁵¹ G. Olsson, *Birds in egg (eggs in bird)*, London 1980.

will comprise: 1) a consistent reliance of the research activities and the resulting knowledge on the pretheoretical assumptions of geography which determine the complex (systemic) character of geography's domain, 2) a harmonious realization of cognitive and practical functions in the form of a socially committed science, which allows the use of cognitive achievements in the solution of socially useful problems, 3) observing the intersubjective empirical control and the objectivity of results, 4) maintaining the intersubjective communication of knowledge, 5) taking into consideration the axiological component in selecting problems and the structure of results. These premises do not yet form a new methodological conception of geography but may constitute significant elements of its programme.

II. Antiscientistic orientation

The antiscientistic orientation of geography questions different components of scientism placing in opposition to them views which conflict with the theses of scientism. The antiscientistic orientation of geography opposes: 1) the principle of conceptual cognition accepted by scientism, 2) the principle of unism. However, since this orientation became evident in geography in the sphere of man and in the socio-economic sphere, antinaturalism became its main element, which rejects a uniform conception of scientific research and accepts the separate character and specificity of cognition in the case of the problems of man and society.

Two major programme conceptions originated on the grounds of the antiscientistic orientation of geography: 1) humanistic, 2) radical, each of which interprets the separate character and specificity of cognition differently.

1. Humanistic conception

The core of the humanistic conception of geography is based on two assumptions: 1) it gives cognition a "deobjectified" and subjective character, 2) it recognizes (in a certain version) the intuitive type of cognition.

The above formulations must be supplemented with the following remarks:

Re 1). In accordance with M. Heidegger's existential phenomenology, which represents the antiscientistic orientation, the "deobjectifying" cognition, i.e. cognition which does not introduce a barrier between consciousness (concept) and the object, in a way synthesizes the consciousness with the object of which it is being made conscious, and has a deeper character allowing one to grasp the nature of man in the world. It is better than the "objectifying" cognition which assumes the opposition of consciousness and the object and is typical of the conceptual cognition accepted in natural science and common sense thinking⁵².

⁵² J. Kmita, op. cit., 1982, p. 161.

Re 2). The intuitive character is typical of W. Dilthey's conception of "understanding" (verstehen) in the humanities, as a contrast to "explanation" accepted in the domain of positivistic scientism.

The humanistic conception of geography stems from two mental trends: 1) a general humanistic trend and 2) specific philosophical directions.

The general humanistic trend does not refer to any specific philosophical direction and exists, in a way, beyond philosophy, deriving its ideas from the history of humanistic thought. As Yi-Fu Tuan states, "Historical usage thus allows us to define humanism as an expansive view of what the human person is and can do"⁵³. The humanistic thought comprises different value concepts and philosophies of life connected with the place and role of man in the world.

The humanistic conception of geography which refers to a specific philosophical stand finds its ground in the field of phenomenology, existentialism and idealism. In the attempts at justification which occur in the geographical literature, these stands are combined, thus, argumentation is created which derives assumptions from all three philosophical directions.

From among these philosophical directions, geographers' attention is drawn by phenomenology which is treated as the philosophic-epistemological foundation of the construction of the humanistic programme of geography⁵⁴. The devising of such a programme is made more difficult by the fact that phenomenology is not a coherent philosophical direction for which a uniform set of assumptions may be accepted as there are various divergences among phenomenologists as regards both basic and detailed matters.

The founder of phenomenology was E. Husserl, according to whom phenomenology is the basic philosophy providing the basis for all science, but it is not antiscientistic⁵⁵. It has a descriptive and decidedly atheoretical character as it is concerned with the insight into and description of what is given and how. It assumes an eidetic form when it concerns what is given in its being or idea, or a transcendental

⁵³ Yi-Fu Tuan, *Humanistic geography*, Annals of the Association of American Geographers, 66, 2, 1976, p. 266; cf. also: Yi-Fu Tuan, *Space and place. The perspective of experience*, London 1977.

⁵⁴ See E. Relph, *An inquiry into the relation between phenomenology and geography*, Canadian Geographer, 14, 3, 1970, pp. 193, 201; Yi-Fu Tuan, *Geography, phenomenology, and the study of human nature*, Canadian Geographer, 15, 3, 1971, pp. 181 - 192; D. C. Mercer, J. M. Powell, *Phenomenology and related non-positivistic viewpoints in the social sciences*, Monash University Publications in Geography, 1972; D. J. Walmsley, *Positivism and phenomenology in human geography*, Canadian Geographer, 18, 2, 1974, pp. 95 - 107; J. N. Entrikin, *Contemporary humanism in geography*, Annals of the Association of American Geographers, 66, 4, 1976, pp. 615 - 632.

⁵⁵ E. Husserl, *Idee czystej fenomenologii i fenomenologicznej filozofii* (Ideas of pure phenomenology and phenomenological philosophy), Book 1, Warszawa 1967; Book 2, Warszawa 1972; see also: R. Ingarden, *Z badań nad filozofią współczesną* (On studies of modern philosophy), Warszawa 1963.

form when it treats the given transcendental objects as correlates of the intuition of the new consciousness.

According to phenomenologists, any investigation must be commenced after a direct cognitive contact has been obtained with what is given. Individual types of objects have their own kinds of direct cognition. The description of what is given should not be burdened with notional assumptions, thus it should not be extra-theoretical. The eidetic approach leads to the cognition of the contents of the idea of something, of what is significant. Knowledge obtained in this way does not refer to individual, real beings but to the ideal sphere of pure necessities and possibilities.

Phenomenology in E. Husserl's formulation had undergone far-reaching transformation and later became the object of controversy among its followers. The controversy pertained mainly to the problem of the introduction by E. Husserl of the so-called transcendental reduction, as a considerable number of phenomenologists rejected this approach. Three trends appeared in the phenomenological thought: 1) the idealistic transcendental phenomenology represented by E. Husserl's views which belonged to the last stage, 2) objectivistic eidetic phenomenology represented, among others, by M. Scheler and R. Ingarden, 3) M. Heidegger's, M. Merleau-Ponty's and J. P. Sartre's existential phenomenology. However, as Tatarkiewicz states, "despite differences dividing individual phenomenologists and despite transformations which were continually taking place in their views, phenomenology had certain constant features. It was always in opposition to naturalism and empiricism, regarded the naturalistic image of the world and the empirical image of cognition as false or at least incomplete and superficial. Thus, it differentiated among different forms of being and cognition. It claimed that the ideal objects and values are not less objective than real. And that we do not know the a priori truths less than the empirical ones"⁵⁶.

Geographers mainly focused their attention on existential phenomenology. The latter has a decidedly antiscientistic character, and provides a basis for the humanistic conception of geography. Existential phenomenology is a trend which links the phenomenological approach with existential conceptions and is also treated as phenomenological existentialism⁵⁷.

Existentialism, initiated by S. Kierkegaard, is a philosophical direction which focuses on the problems of human being as human existence. The properties of

⁵⁶ W. Tatarkiewicz *Historia filozofii* (History of philosophy), vol. 3, Warszawa 1950, p. 310.

⁵⁷ R. Ingarden, a continuator of Husserl, who represents an objectivistic trend of eidetic phenomenology, said during a lecture given at Oslo University in 1967: (*Wstęp do fenomenologii Husserla* (Introduction to Husserl's phenomenology), Warszawa 1974, p. 30): „In America, when phenomenology is spoken about then Heidegger's ideas, i.e. existentialism, are meant. Husserl, on the other hand, is almost unknown. (...) Personally, I think that Husserl radically surpassed all his followers and that the seriousness and scientific precision of phenomenological analyses of both his own and first generation phenomenologists stands (...) higher than the whole scientific output of Heidegger and his followers.”

human existence in the light of existentialism are as follows: 1) it “is a being which cannot be derived from any general conception, idea, nature, necessity, thus, it is a primary fact”, 2) it “is the being of conscious creatures, thus not only existing but having a certain attitude towards their existence”, 3) it “is the being of creatures who care for their own being and who, in a way, determine it”, 4) “the being (of man) is not isolated but combined with the world, primarily with other people; if it exists, it is in the world (Heidegger's “*Mitdasein*”)", 5) “man not only exists in the world but he also gets to know it: being aware not only of his own being but also of everyone else's, is an inimitable feature of human existence. (...) The world which surrounds man consists of other human existences and also of “things” whose being is different, unconscious of itself. This is no longer a being “for its own sake” but “in itself” (*en soi*), as it is called by Sartre”⁵⁸. These assumptions form the basis for considerations about the human lot, fate and destiny which, in tragic or critical situations, reveal the tragedy of mankind.

Despite important differences, especially in the field of Husserl's conception, between phenomenology and existentialism, there occur strong relations. As J. Legowicz states, “phenomenology provided (...) a method which, in turn, was comprehensively used by existentialism in its attempt to justify ametaphysically the reality of the human being and, indirectly, the reality of the world. As a result, phenomenological philosophy brought reality to intentional states of consciousness; existentialism, on the other hand, subjected it to consciousness”⁵⁹. This found special expression in the trend of existential phenomenology, or phenomenological existentialism, which is the application of the phenomenological method of describing what is given directly in order to reveal what is hidden, so that the understanding of human existence, the formulation of “human being in the world”, is possible. The shift of the centre of gravity from metaphysical problems to the problems of philosophical anthropology takes place here.

A certain influence on the humanistic conception of geography was also exerted by idealistic philosophy, to which some geographers refer⁶⁰. This concerns the understanding of idealism which is accepted by historians-idealists such as R. G. Collingwood, and which assumes that the rational action of man may be explained through the understanding of the thought that is hidden behind this action⁶¹.

⁵⁸ W. Tatarkiewicz, op. cit., 1950, p. 481.

⁵⁹ J. Legowicz, *Zarys historii filozofii* (History of philosophy. An outline). Warszawa 1983, p. 431.

⁶⁰ The following, among others, belong to them: C. Harris, *Theory and synthesis in historical geography*, Canadian Geographer, 15, pp. 147 - 172; L. Guelke, *An idealist alternative in human geography*, Annals of the Association of American Geographers, 64, 2, 1974, pp. 193 - 202; L. Guelke, *Philosophy of idealism*, Annals of the Association of American Geographers, 66, pp. 168 - 169.

⁶¹ R. G. Collingwood, *The idea of history*, New York 1956; cf.: L. Guelke, *Historical geography, and Collingwood's theory of historical knowledge*, In: A. R. H. Baker, M. Billinge (eds.), *Period and place*, Cambridge 1982, pp. 189 - 196.

L. Guelke, a representative of this conception in geography, states that "In the idealist view human geography derives its autonomy as a field of geographic enquiry from the fact that it is largely concerned with the rational actions and products of human minds"⁶². (...) "The human geographer simply attempts to reconstruct the thought behind the actions that were taken. He does not need theories of his own, because he is concerned with the theories expressed in the actions of the individual being investigated"⁶³. These views strengthened the subjectivistic tendencies of the geography of man.

Both the general humanistic and philosophical assumptions, mainly those of existential phenomenology, provide the basis for the humanistic conception of geography.

In humanistic geography, different trends and interpretations occur; yet, as is stressed by J. N. Entrikin, all human geographers: 1) "...maintain the importance of the value man attaches to the world prior to the abstractions and objective meanings established in scientific geography", 2) "...hold that the study of human behavior cannot be modeled after the physical sciences", 3) "...reject the positivist claim of the isomorphism of social and physical science, because they are dissatisfied with, among other things, two related dichotomies: the subject-object distinction and the fact-value distinction. These distinctions are related in that by viewing the world as separable into the objective world of things and the subjective world of the mind, one can then separate the knowledge of that objective world as factual knowledge, and the subjective elements as emotion, value and meaning"⁶⁴.

Humanistic geography, understood in this way, finds itself clearly opposed to scientific geography, and attacks it for its dogmatism, abstraction and limitation of the approach. It differs from the scientific geography in: 1) the acceptance of knowledge based on intuition; 2) the description of direct experience⁶⁵.

The views presented above show what great significance is attached by the advocates of the humanistic conception to the opposition as regards the "objectification" of conceptual cognition and giving cognition a "deobjectifying", subjective and intuitive character.

The humanistic conception of geography finds expression in humanistic geography which, according to Yi-Fu Tuan, 1) "...reflects upon geographical phenomena with the ultimate purpose of achieving a better understanding of man and his condition", 2) "...belongs with the humanities and the social sciences to the extent that they all share the hope of providing an accurate picture of the human world", 3) "... achieves an understanding of the human world by studying people's relations with nature, their geographical behaviour as well as their feelings and ideas in re-

⁶² L. Guelke, op. cit., 1974, p. 193.

⁶³ L. Guelke, op. cit., 1974, p. 198.

⁶⁴ J. N. Entrikin, op. cit., 1976, p. 625.

⁶⁵ J. N. Entrikin, op. cit., 1976, p. 629.

gard to space and place"; 4) "... specifically tries to understand how geographical activities and phenomena reveal the quality of human awareness"⁶⁶.

The usefulness of humanistic geography understood in this way is connected with the competence and function of the human geographer; "the humanist's competence lies in interpreting human experience in its ambiguity, ambivalence, and complexity. His main function as a geographer is to clarify the meaning of concepts, symbols, and aspirations as they pertain to space and place"⁶⁷.

Accepting the separateness of humanistic and scientific knowledge (science), Yi-Fu Tuan recognizes mutual relations existing between them. On the one hand, "Humanistic geography builds, critically, on scientific knowledge. The rules and laws formulated in science are perceived to function as fate in the human drama. (...) The humanist geographer must be keenly aware of the constraints on human freedom"⁶⁸. On the other hand, "Humanistic geography's contribution to science lies in disclosing material of which the scientist, confined within his own conceptual frame, may not be aware. The material includes the nature and range of human experience and thought, the quality and intensity of an emotion, the ambivalence and ambiguity of values and attitudes, the nature and power of the symbol, and the character of human events, intentions, and aspirations"⁶⁹.

Humanistic geography is not synonymous with the geography of man as the former also entails the interpretation of natural phenomena, which, however, are considered from the point of view of man.

Even the firm advocates of humanistic geography admit that its essential role consists in criticism. This criticism "seeks to stimulate our reflection on what we are doing,"⁷⁰ and "is one of a number of means by which geographers can be made more self-aware and cognizant of many of the hidden assumptions and implications of their methods and research"⁷¹.

2. Radical conception

The radical conception of geography is connected with socio-economic problems considered in the antiscientistic formulation. Methodologically, it is characterized by two theses:

- 1) conceptual cognition is based on specific philosophy of life and ideological assumptions which pertain to extracognitive aims,
- 2) the realization of these aims, mainly a radical restructuring of the society, is the criterion of the value of cognition.

⁶⁶ Yi-Fu Tuan, op. cit., 1976, pp. 266 - 267.

⁶⁷ Yi-Fu Tuan, op. cit., 1976, p. 275.

⁶⁸ Yi-Fu Tuan, op. cit., 1976, p. 274.

⁶⁹ Yi-Fu Tuan, op. cit., 1976, p. 274.

⁷⁰ L. Van der Laan, A. Piersma, *The image of man: paradigmatic cornerstone in human geography*, Annals of the Association of American Geographers, 72, 3, 1982, p. 422.

⁷¹ J. N. Entrikin, op. cit., 1976, p. 632.

Thus, the radical conception is not only a methodological approach (in a broad meaning) but primarily an ideological attitude, the dominance of the "interests" (in Habermas' sense) of social practice and control over scientific practice.

Thus, the radical conception of geography is distinguished from other conceptions by a close relation to the development of social and political radicalism as the philosophy of life. "Self-conscious radicalism is such an approach which fully understands its object and its roots and which is a desire to destroy it and replace it with a better one. Without the first feature it would be fanaticism, without the second — wisdom only. Thus, radicalism must combine wisdom with an active attitude, an action which changes what is nonrational"⁷². Consequently, the presentation of the radical conception does not fit the methodological categories but requires its socio-political aspects in the form of the ideology of radical movements to be taken into account. The radical conception of geography, or to put it more broadly, of social sciences, developed in those countries in which opposing social movements originated which questioned the nature of the capitalist system, in which, however, conditions for unhampered scientific discussion and publication did occur. As R. Peet states, "radical science is a conscious factor of revolutionary political change. And radical geography is one part of it, sharing the same aims, using the same methods but specializing in a set of relationships from which society is made"⁷³.

The radical conception of geography looks for its assumptions in those philosophical and social trends which are the basis for the criticism and restructuring of the capitalist social system. The main sources of inspiration are P. Kropotkin's views, the representative of the 19th century anarchism, and K. Marx' ideas, which, however, are differently interpreted, mainly in the formulation of "neo-Marxism"⁷⁴.

The conceptualization of the radical programme of geography is ascribed to D. Harvey (1972), who formulated the conception of the theory in geography as the theory dialectically formulated which is established in reality and which represents this reality, giving real chances of choice of future changes in social processes, and which consistently maintains the view about the creation of truth instead of its discovery⁷⁵. According to S. Folke, "revolutionary theory without revolutionary practice is not only useless, it is inconceivable" (...); "practice is the ultimate criterion of truth"⁷⁶.

The process of the radicalization of geography occurred through the criticism of

⁷² J. Mucha, *Radykalizm w socjologii XX wieku* (Radicalism in 20th century sociology), *Studia Socjologiczne* 1(88), 1983, p. 5.

⁷³ R. Peet, *The development of radical geography in the United States*, In: R. Peet (ed.) *Radical geography: alternative viewpoints in contemporary social issues*, London 1977.

⁷⁴ Cf. A. Malinowski, „Neomarksizm” — geneza i współczesne interpretacje ("Neo-Marxism" — genesis and modern interpretations), *Studia Filozoficzne* 12, 1980, pp. 97 - 111.

⁷⁵ D. Harvey, *Revolutionary and counter-revolutionary theory in geography and the problem of ghetto formation*, *Antipode*, 6, 2, 1972, pp. 1 - 13; cf. also: D. Harvey, *Social justice and the city*, Baltimore 1973, p. 151.

⁷⁶ S. Folke, *Why a radical geography must be Marxist*, *Antipode* 4, 2, 1972, p. 17.

previous conceptions of geography on the one hand, and on the other, through the formulation of its new theoretical foundations in the form of so-called radical geography.

Criticism of the conceptions and models of geography existing hitherto, called conventional or liberal, was directed against their assumptions, the structure of geographical knowledge and the functions, and comprised both the scientific orientation of geography (and especially the empirical and hypothetical models) and the humanistic conception.

Generally speaking, the previous conception of the place and role of geography in science is being criticised. The function of science, of which geography is a component, consists in "the ideological protection of a social and economic system owned and controlled by a ruling minority of its members" and geography itself is a "politically safe, isolated discipline which deals with only a fragment of knowledge; within this fragment, geographers try to find "causes" of the problems they observe in what is the spatial distribution of the results of far deeper social causes"⁷⁷.

The edge of criticism from the advocates of radical geography is directed especially at neopositivism. The term denotes the scientific orientation in geography. It reproaches this direction for its conception of cognitive objectivism which gives geographic theories the character of a "status quo" and because of that, they cannot be utilized as the basis of changes, which makes them "counter-revolutionary"⁷⁸.

The theoretical foundations of radical geography are seen by its advocates in K. Marx' philosophy. Marxist geography "is that part of a whole science which specialises in the dialectical relations between social processes on the one hand and the natural environment and spatial relations on the other". (...) "It is aimed at changing the fundamental operation of social relations of production. Social revolutionary changes are necessary to solve endemic spatial and environmental problems, for these problems originate deep in the capitalist social formation"⁷⁹.

The essential significance of the Marxist theory consists in providing "a coherent explanation for the two facts which most preoccupy Marxist geographers (and many others), and which mainstream theory cannot explain; the fact that spatial and ecological processes lead to increasing, rather than decreasing, injustice; and the fact that these processes tend toward heightened instability, rather than equilibrium"⁸⁰. Difficulties arise, however, along with the application of the Marxist theory to such problems as backward regions, precapitalist social formations and the geography of human thought⁸¹.

⁷⁷ R. Peet, op. cit., 1977, pp. 17 - 18.

⁷⁸ D. Harvey, op. cit., 1972.

⁷⁹ J. R. Peet, J. V. Lyons, *Marxism: dialectical materialism, social formation and the geographic relations*, In: M. E. Harvey, B. P. Holly (eds), *Themes in geographic thought*, London 1981, p. 202.

⁸⁰ J. M. Blaut, *The dissenting tradition*, *Annals of the Association of American Geographers*, 69, 1, 1979, p. 161.

⁸¹ J. M. Blaut, op. cit., 1979, p. 161.

The complexity of K. Marx' philosophy, the diversity of formulations make radical geographers use or adopt these components and interpretations of it which have an antisocialistic character, stressing historical and not dialectical materialism⁸².

Radical geography refers also to P. Kropotkin's views, forming the anarchist version⁸³. The anarchist conceptions postulate the decentralization of the spatial structure of production and people. This is justified by the claim that in such conditions societies may originate in which the individual may realize his/her full development, people may control production directly, keep contact with the natural environment and participate in various types of activities.

Radical geography, on the other hand, pays little attention to the conceptions of the Frankfurt School. The conceptions played a significant role in the formation of the radical formulation of social sciences.

The radical conception of social sciences was considerably affected by J. Habermas' views, which are antisocialistic and which prefer the "deobjectifying" cognition and antinaturalistic tendencies⁸⁴. According to J. Habermas, there is no cognition without an "interest", i. e. without a specific need on the basis of which cognition forms its image of reality. Each of the three essential conceptions of cognition: analytical-empirical, hermeneutic and critical, assumes a specific "interest"; the first, that of technological control, the second, that of communication, and the third, that of emancipation. Natural sciences being formed on the basis of the technical interest are not neutral as they are not the recipients of facts only but of practical technical measures as well. The interest of humanistic-hermeneutic sciences consists in the consolidation of understanding among people in order to improve communication. The emancipation interest lies at the basis of critical social sciences. Considering the world from the point of view of man's emancipation, the critical theory analyses the distortions of the dialogue and understanding among people caused by the stabilization of structures. The aim of the critical theory is to liberate the "reason" and to remove the communicational distortions of the society. Although the conceptions of the Frankfurt School did not significantly and directly affect the radical conception of geography, yet they exert some indirect influence, combining the humanistic approach with the critical one⁸⁵.

Generally speaking, radical geography attaches greater importance to theoretical

⁸² Cf. R. Peet, *Societal contradiction and Marxist geography*, Annals of the Association of American Geographers, 69, 1, 1979, pp. 164 - 169.

⁸³ M. M. Breitbart, *Peter Kropotkin, the anarchist geographer*, In: D. R. Stoddart (ed.), *Geography, ideology and social concern*, Oxford 1981, pp. 134 - 153.

⁸⁴ J. Habermas, *Erkenntnis und Interesse*, Frankfurt 1968; and *Technik und Wissenschaft als "Ideologie"*, Frankfurt 1970; cf. also: A. M. Kaniowski, *Racjonalizm K. R. Poppera a teoria krytyczna szkoły frankfurckiej* (K. R. Popper's rationalism and the critical theory of the Frankfurt School), *Studia Filozoficzne*, 1, 1979, pp. 77 - 96.

⁸⁵ Cf. B. Marchand, *Dialectics and geography*, In: S. Gale, G. Olsson (eds.), *Philosophy in geography*, Dordrecht 1979, pp. 237 - 267.

speculations which pertain to social controversies in the light of the ideological assumptions, than to the study of social facts, giving priority to criticism and rational analyses over empirical research, conducted mainly on the basis of a one-sided, antisocialistic interpretation of Marxism. In principle, radical geography concentrates on the criticism and analysis of its own society, thus it does not include the criticism of the capitalist society made by students from socialist countries and vice versa.

Objections from the scientific orientation towards the conception and cognitive practice of radical geography pertain mainly to: 1) combining the attitude of the research worker and the activist in one role, 2) the lack of tolerance towards different views, and 3) the lack of a fully objective analysis of social reality⁸⁶. Some representatives of the humanistic conception raise objections to radical geography which pertain primarily to the focusing of attention on society and not on the individual⁸⁷.

The above-presented reconstruction and methodological analysis of philosophical and methodological orientations of geography comprises those conceptions and models which were formulated mainly on the grounds of Western geography. It did not include the model of geography based on the assumptions of Marxist philosophy which was formulated in Soviet geography; this requires a separate study.

It should also be stressed that the formulation of philosophical and methodological problems of geography contained in the present work is an attempt to oppose commonly held views which identify models and conceptions of geography with specific philosophical directions. Particular philosophical directions are systems of ontological, epistemological, methodological and ethical views which differently influence or can influence the bases of geography and which do not determine explicitly specified methodological patterns.

⁸⁶ L. J. Kiry, *Alternatives to a positive economic geography*, Annals of the Association of American Geographers, 66, 2, 1976, pp. 293 - 308.

⁸⁷ J. Eyles, *Why geography cannot be Marxist: towards an understanding of lived experience*, Environment and Planning 13A, 1981, pp. 1371 - 1388; G. Duncan, D. Ley, *Structural Marxism and human geography: a critical assessment*, Annals of the Association of American Geographers, 72, 1, 1982, pp. 30 - 59.