THE STATE AND TENDENCIES OF POLISH GEOGRAPHY AND THE FOUNDATIONS OF THE PROGRAMME OF ITS FURTHER DEVELOPMENT

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ABSTRACT. The article gives a methodological characterization of (1) the state and tendencies of Polish geography, and (2) a conception of a programme of its further development. These reflections have been inspired by the papers and discussion at the National Geographical Conference at Rydzyna (1983).

1. The state and tendencies of Polish geography

As the basis of the characterization of the state and tendencies of Polish geography I accept its formulation as a socio-cognitive system. As any science, geography can be understood as a socio-cognitive system, i.e. a concrete system comprising a community of research workers engaged in scholarly activity within a definite field which results in scientific knowledge. The system's environment or surroundings is society, between which and science there is an interaction consisting, on the one hand, in the influence of science on social issues and, on the other, in the influence of economic and political factors on science.

In this approach, Polish geography is a concrete socio-cognitive system composed of specific disciplines which form its interrelated subsystems. It constitutes, in turn, a generic subsystem of Polish science as its component, and a regional subsystem of global, or world, geography.

This conception takes into consideration the basic aspects of science, i.e. both the cognitive aspect pertaining to the research procedure and its results – scientific

knowledge, and the social aspect concerning the character of the scholarly community and the relations of science and society.

Starting from these assumptions, I take it that an analysis of the state and tendencies of Polish geography as a concrete and real socio-cognitive system should embrace its three main elements:

A) the academic community of geographers,
B) the research procedure and its results, and
C) the links, role and social situation of geography.

1.1. The academic community of geographers

The academic community of geographers consists of a group of research workers engaged in scholarly activity within the domain of geography. Hence, the characterization of the community should be preceded by a presentation of the research field of geography and its internal structure. On this basis the specialization division of scholars should be presented, as well as the institutional organization of geography, the formation of scientific schools and generation differences, and scientific careers. Thus, we shall discuss in turn:

1) the domain of geography, i.e. its component disciplines and relations among them,
2) research specializations, and
3) the institutional organization of geography, scientific schools, generation differences, and the character of the scientific career.

1.1.1. The domain of geography – its component disciplines and relations among them

Although Polish geographers treat their science as a whole, it is clearly divided into two main disciplines: physical and socio-economic geography. Moreover, regional geography is also distinguished, which, however, is not generally accepted.

The division into physical and socio-economic geography is very deep and reflects the fundamental differences said to exist between the natural and the social spheres, and pertaining to the dissimilarity of facts and regularities, and hence, of research methods and results. In spite of frequently declared attempts to overcome these differences on the ground of geography, it has not got a generally accepted, uniform conception of its subject that might form its pre-theoretical basis. Thus, the problems and methodology of geography are determined by its division into physical and socio-economic geography, and by the tendency to further disintegration, following mainly from the growing specialization and the weakening links within geography. Polish geography has come to resemble a coalition rather than a union.

Hence, the term that is more and more frequently applied is "geographical sciences" instead of "geography".

The research field of the basic disciplines constituting Polish geography can be presented as follows.

Physical geography deals mainly with the natural sphere and has a double-level structure. The first, specialized, level concerns the components of the epigeosphere and embraces geomorphology, climatology, and hydrography (hydrology) together with oceanography; this type is also represented by soil geography and biogeography, which, however, do not belong to geography in respect of organization. The other, integrating, level concerns the study of the geographic environment and its relations with society, and includes general, or complex, physical geography.

Physical geography in Poland is characterized by: 1) the preference of physico-chemical investigations over biotic ones, and of palaeogeographic over dynamic ones, 2) the domination of research at the specialized level over the integrating one and a steady growth of specialization, and 3) the dominant role of geomorphology and its aspiration to acquire the status of an independent scientific discipline, as well as the strengthening of its connections with the geology of the Quaternary.

Socio-economic geography has a single-level structure. However, two tendencies can be observed within it. One, specializational, is expressed in the division of economic geography into sub-disciplines: the geography of settlement, population, agriculture, industry, transport, services, tourism, and recently also social geography. The other, holistic, aims at preserving its indivisibility and at posing and solving problems in a complex approach.

Polish socio-economic geography is characterized by: 1) the domination of specialized problems over complex ones, and branch over regional ones, 2) the limitation of research to the area of Poland, and 3) the domination of the spatial approach, the symptoms of which are the successive mutations of the key, and then interdepartmental, project on "Foundations of the space economy of the country".

The distinction of regional geography as a third component of geography is not fully accepted by Polish geographers, mainly on account of the indefiniteness of its scope of problems and methodology. Regional geography is usually treated as a research stage giving a regional or territorial synthesis of investigations conducted within physical or economic geography, or as their joint result. However, a lot of works of this type are not a result of geographical research and belong to common knowledge.

The internal links between the main disciplines constituting Polish geography – physical and socio-economic – exist not so much in their subjects and problems as in the social and organizational sphere.

The weak links among subjects and problems of geography are a result not only of the lack of a definite conception of its subject matter, i.e. an accepted pre-theory of geography, but first of all of the lack of a common basis of principal

research problems that would be solved by physical and socio-economic geography in a complementary way.

Thus, the main role in the formation of ties binding geography is played by the social and organizational link. The link consists in the institutional community of the academic organization of geography, teaching and degrees, as well as of research interests of geographers as a social group of scholars and in its distinctness from other groups of similar status.

The external links of geography weaken its cohesion. On the one hand, the specialized disciplines of physical geography are more and more strongly connected with the Earth sciences. This especially concerns geomorphology and its connections with the geology of the Quaternary. On the other hand, there is a strengthening relationship between socio-economic geography and economic sciences and town planning, and recently also sociology. At the same time, there is a tendency to shift spatial-economic research problems from geography to the so-called spatial sciences. Programmatically, "spatial sciences" are treated as a complex of problems that are to form the basis of spatial and/or regional planning.

1.1.2. Research specializations

Research specializations can be determined either through a self-identification of scientists or through a qualification of their research results. We shall limit ourselves to the first way based on the declarations of research workers.

The analysis of data on the declared research interests of professors employed in geographic research institutes contained in the *Informator Nauki Polskiej 1980/81* (Reference Book of Polish Science 1980/81) shows as many as 79 combinations of specializations, including 63 within geography declared by 120 respondents. Their range varies from specializations proper such as "physical geography", "economic geography", "cartography" or "regional geography", through sub-specializations, e.g. "climatology" or "settlement geography", to such narrow approaches as e.g. "the history of cartography". Some of the declarations are unique and do not repeat themselves.

The first position among specializations is occupied by physical geography, declared by 67 geographers, i.e. 56%. Its dominating sub-specialization is geomorphology (31 persons, i.e. 26%), and then climatology and/or meteorology (8 persons, i.e. 7%), and hydrography and hydrology (7 persons, i.e. 6%). Complex physical geography is only declared by 2 persons. It should be added that geomorphology is frequently declared as a specialization independent of the category of physical geography (13 persons), i.e. a specialization in itself with various sub-specializations.

Economic geography occupies the second position (39 persons, i.e. 32%), with 1/3 of the respondents regarding it as a specialization without further sub-specializations; those who recognize them declare mainly settlement and population geography (10 persons). There is only a small percentage of the research workers who stated regional geography to be their specialization (4 persons).

Thus, the basic specializations proper to geography constituting groups of research interests are as follows:

Specialization	Number of respondents	%
Physical geography	67	56
Economic geography	39	32
Regional geography	4	3
Cartography and teledetection	7	6
Didactics of geography	2	2
Geography (no specialization given)	1	1
	120	100

Thus, the main specializations are physical and economic geography, but there is also a tendency to identify one's specialization as a narrower category, the clearest example of which is geomorphology.

1.1.3. The institutional organization of geography, scientific schools, generation differences, and the nature of the scientific career

There are two organizational patterns: 1) the Polish Academy of Sciences (PAN), which includes the Institute of Geography and Spatial Organization, and 2) the Ministry of Science, Higher Education and Technology, which comprises the faculties: of Geography and Regional Studies of Warsaw University, as well as of Geographical and Geological Sciences of Adam Mickiewicz University, Poznań; the institutes of Nicolas Copernicus University, Maria Curie-Skłodowska University, Wrocław University, the Jagiellonian University, Łódź University, Gdańk University, and the Silesian University; the institutes of the Higher Pedagogical Schools in Cracow and Kielce; and finally the departments of economic geography of economic academies.

The preferences that the PAN institutes have (no didactics, central periodicals and publications, official foreign contacts and visits) caused the Institute of Geography and Spatial Organization of the PAN to play the main role in the representation of Polish geography abroad, which built up the prestige of its workers. Within the scope of economic geography, particularly in the 1950's and 1960's, it initiated new research conceptions and programmes and organized national and international geographic conferences.

This is connected with the formation of scientific schools created by groups of scholars constituting a community with definite research goals and views, as well as with an original and significant contribution to the development of their disciplines. It assumed a different character in physical and socio-economic geography.

In the 1950's, in physical geography, there appeared empirical scientific schools

in the domain of geomorphology, each interested in different regions and problems. They formed around outstanding scientific authorities – J. Dylik, M. Klimaszewski, R. Galon, and A. Jahn – in the research centres of Łódź, Cracow, Toruń, and Wrocław, respectively. They differed not only in the regions and problems they dealt with, but also in the conceptions of field investigations based on assumptions accepted in the particular circle of co-operating scholars. In the 1970's, in turn, the Poznań centre came to the fore in geomorphology; its rapid growth was based on the development of laboratory studies.

In socio-economic geography, there appeared a stronger tendency to programme integration inspired in the 1950's by S. Leszczycki's views including the postulate of connecting geographic research with the rebuilding of the social and economic life of the country, and of active participation in this process of geography based on specialized research. This was the background on which a specific Polish school of economic geography developed, with the dominating role of the Institute of Geography of the PAN and comprising a wide range of research in a spatial-economic approach conducted in various centres by different circles of co-operating scholars. It won recognition abroad with its results in the regional structure and regionalization of the country as well as in settlement and agricultural issues. In the 1970's symptoms of a methodological reorientation in Polish economic geography appeared, connected mainly with the development of applications of quantitative methods as well as with the diversity of programme conceptions and the growing importance of regional centres, especially the Poznań one.

Recently, there has been a growing interest in philosophical problems among the younger generation of scholars, which is reflected, among others, in the postulate of restructuring socio-economic geography along the lines of the humanistic orientation in Anglo-Saxon geography.

Basically, there have been no significant differences in approaches to and views on the character and role of geography between the younger and the older generation.

As in the whole of Polish science, the factor favouring opportunistic attitudes and discouraging critical and polemical ones is the multistage, hierarchical model of the scientific career (from the doctoral degree to the full membership of the PAN). Due to its multistage character and the connection of rank (and age) with authority to give opinions and make decisions, the model protects scholars of higher rank against the criticism of those of lower rank. An additional factor discouraging scientific criticism is the interdependence pattern resulting from giving opinions on scientific advancement. This favours the disposition of younger scholars to prepare works mainly to obtain scientific degrees and to choose the conceptions and problems preferred by the opinion-givers.

Hence, there is a prevailing "workshop" approach in physical geography, favouring fragmentary works prepared on the model of the masters, frequently after a long apprenticeship and based on the conception of the cumulative growth of knowledge, partly justified by the fact that it is a description of nature.

In socio-economic geography, in turn, the undertaken works tend to be "technique-oriented", i.e. to concentrate on the application of specific research tools, especially methods of statistical analysis, rather than on the investigated problem itself and its results.

1.2. Research procedure and its results – the orientation and philosophical-methodological models of Polish geography

The characterization of research procedure and its results, indispensable in an analysis of the state and tendencies of Polish geography, can be most synthetically presented as its philosophical-methodological orientation.

A philosophical-methodological orientation is an ideal of the rationality of scientific thinking and activity, and takes the form of models explicitly or implicitly assumed by scholars. The models comprise the principles of research procedure and the cognitive and logical nature of geographic knowledge, as well as their cognitive and extra-cognitive functions. The determination of the orientation is crucial for the understanding of the state and tendencies of geography because it gives a fuller definition of the cognitive nature of geography.

In my opinion, this conception of a philosophical-methodological orientation presents the cognitive standpoint of geography more adequately than its formulation in the framework of a specific philosophical trend, e.g. neopositivism, structuralism, phenomenology, etc.

In the Polish geography of the post-war period, its philosophical-methodological foundations have not aroused broader and deeper interest. After the period of intensive but superficial interest in the conceptions of dialectical and historical materialism, in later years the prevailing attitude towards the philosophical and methodological problems of geography was that of indifference, in spite of the declared Marxist orientation. This was caused by a low methodological self-consciousness of geographers, their lack of interest in the philosophical and methodological orientations in world geography, and the dominance of a pragmatic attitude over a theoretical one.

A careful analysis of the foundations of Polish geography shows that its basic orientation is scientistic in character. It has been accepted implicitly, i.e. it has been applied without formulating its doctrinal assumptions.

By a scientistic orientation I mean the view that the goal of geography is the conceptual knowing of reality, objective in character, constituting the only form of cognition and its basic value, and realized as a uniform pattern of research procedure common to empirical sciences. Its opposition, an anti-scientistic orientation, rejects these assumptions, especially the uniform conception of research, and assumes a fundamental difference in cognition in the spheres of nature and society.

In principle, the scientistic orientation is an ideal which rationalizes the aims of research procedure and the structure of knowledge of the whole of geography, but its models are differently substantiated in the investigation practice of physical and socio-economic geography. The difference stems from the different approaches to the object of research and its cognitive aspects.

The formation of these models differs from that of the main philosophical and methodological models in western geography.

The scientistic orientation in Polish geography assumes three main forms: 1) traditional empirical, 2) inductive, and 3) model-hypothetical.

The traditional empirical model favours factual investigations of individual objects and phenomena or their spatio-temporarily limited classes as interesting in themselves. The basic analytical methods are here qualitative classification and regionalization. The results of research are mostly descriptive and informative, and their basic final component is a cartographic expression and picture and a regional synthesis. The interpretation of these results takes the form of explanatory description. The differences in the realization of this model in physical and socio-economic geography concern the character of factual data and their interpretation.

In physical geography, emphasis is put on the collection of factual material by means of direct observation in the field and on its elaboration in a typological approach. Of special importance are methods of mapping and a cartographic description of results, as exemplified by hydrographic and geomorphological maps. Attempts at the interpretation of factual results are made on the basis of natural laws, especially physico-chemical ones, and the principles of geology.

In economic geography, in turn, research procedure is not so much connected with field observation as with factual data coming from official documents and statistics. Principal emphasis is put on methods of analysis of these materials, comprising graphic methods, typology and regionalization, and utilizing notional categorizations of economic sciences, demography, and town planning in the interpretation of the factual material mainly in a spatial approach or through the establishment of connections with the variation of the natural environment.

Among the primary functions of this type of geographic knowledge are descriptive and informative ones, which can be used for practical purposes in the form of diagnoses of the state of spatial organization and elements of the geographical environment.

The main ideal of the traditional empirical model is technical perfection. Generally, this approach has not been connected with any specific philosophical-methodological conception, but treated as the "normal" research procedure peculiar to geography. Some scholars have tried to give it a dialectical-materialistic justification.

The inductive model developed in Polish geography under the banner of its "scientification" and quantification, and elevation to the level of exact sciences by increasing the generality and precision of knowledge formulated inductively

in historically general or universal terms. The study of individual objects and phenomena is the basis of establishing their properties as representative of certain types or classes considered in general terms or as interdependences among them.

This conception is more prominent in economic geography than in physical geography.

It appeared in economic geography together with the introduction of mathematical-statistical methods, especially the methods of numerical taxonomy, regression, factor analysis, and principal components analysis. The approach is connected with a shift of attention to the spatial consideration of the structure of reality, which found expression in the so-called spatial analysis. However, this has not led to the creation of a nomological-theoretical type of geographical knowledge that would allow a better apprehension and explanation of changes in the economic and social reality. Also, the interest in statistical methods has contributed to an excessive concentration on the technique and hence to their application because of their sophistication rather than because of empirical results they can yield. And yet, the results are more precise and useful and can be utilized for prognostic purposes, which increases their practical importance. However, this has made geographic knowledge less interesting and attractive for the wide reading public.

In physical geography this conception is less clearly outlined and has no programmatic significance. It is expressed, on the one hand, in a shift of attention to the investigation of processes, however, with the studies of their origin in a historical approach still dominant, and on the other hand, in marked progress in the utilization of physico-chemical instruments and techniques as well as auxiliary laboratory investigations. However, this progress is hindered by the lack of modern technical equipment as well as the application of induction leading to self-limitation in theory development.

Geographical knowledge has become more precise, but this has not increased its explanatory power. Still, it has enhanced its informative and prognostic value, and thus its practical importance.

The hypothetical-deductive model, though postulated, has not been accepted in Polish geography. The principal element of this model – formulating hypotheses of a high degree of generality and testing them against particularly significant facts in order to construct good theories – has never been put to practice on a larger scale or won general recognition. The central position in the model is occupied by the construction of theoretical knowledge that would enhance our understanding of basic processes and systems and offer their explanation. However, the realization of this model was made difficult by fears of excessive idealization of geographical knowledge on the one hand, and on the other, by difficulties with a notional restructuring of the assumptions of geography in a systemic and process approach.

In socio-economic geography, this conception develops in a model-mathematical approach. It has not led to original theoretical results yet that would help us to understand the socio-economic realities of the country any better. One of the reasons

of this situation is the interest in general formal conceptions which, however, do not bring proper results when transferred to our reality because of the discrepancy between the assumptions underlying a socialist economic and social system and those underlying western societies accepted in the applied models.

In physical geography, the transition from the inductive model to the hypothetical-deductive one has not marked any critical turning-point. Attempts at theory construction in the process approach to reality have not gone beyond methods of testing conceptions with the help of laboriously collected field materials. Experimental simulating methods and the modelling of more complex situations are utilized to a small degree only.

All this makes the model-theoretic trend in Polish geography a programme rather than research practice.

Generally speaking, Polish geography is strongly rooted in empirical conceptions with the domination of the empirical-inductive approach. Both in research procedure and its results, empirical interests prevail over theoretical ones. Within the traditional empirical model, partial or complete regional syntheses are those most appreciated, while in the inductive model – characterizations of problems in the form of historical generalizations.

This knowledge has mainly a descriptive-informative function, and only to a small degree explanatory, predictive and practical functions, which is partly a result of its atheoretical character.

The situation of both physical and socio-economic geography is similar in this respect. In considerations on this subject, special importance is ascribed to their practical function of making practical activity more efficient. It is indirect, and concerns the solution of practical problems.

Physical geography performs these indirect functions modestly, but reliably. It mainly supplies information on the resources and the state of the geographical environment and its changes that can be utilized as information on the natural conditions limiting the present and the potential economic development.

Socio-economic geography, although its subject matter coincides with the central problems of the prospective social and economic development of the country, and although it cherishes the ambition to formulate its programmes, hardly fulfils this function because of the phenomenalistic and shallow character of its results. Hence the small contribution of geography to the ways and means of reforming the Polish economy and overcoming the social and economic crisis.

In spite of the interest aroused by humanistic conceptions, the anti-scientistic orientation has not become the basis of theoretical thinking and inquiry in Polish socio-economic geography, and hence it has not been adopted in research practice. It seems to be of little use first of all on account of the subjective nature of results, as well as because of overemphasizing the role of the geographer not as a research worker but as a moralist-reformer. The ideologization of geography along the lines

of some conceptions of the so-called human geography can deprive it of its cognitive and informative values and squeeze it into the notional frameworks of those disciplines that not so much investigate reality as interpret it on the basis of ideological preferences.

1.3. Relations of Polish geography with science and society

I shall limit the presentation of the relations of Polish geography with science and society to remarks pertaining to two issues: 1) the place of Polish geography in world geography, and 2) the role of Polish geography in science and society.

1.3.1. The place of Polish geography in world geography

The considerable differentiation of the issues and research level in contemporary geography makes it difficult to talk about a uniform conception of world geography as a basis for comparisons. In my opinion, the high level of research allows Anglo-Saxon and Swedish geography to be taken as representative of world geography as far as socio-economic geography is concerned; in physical geography, that of the German-speaking countries and the USSR can be taken as a standard. Seen against this background, Polish socio-economic geography is characterized by:

1) interest in its own country and lack of studies concerning other ones,
2) a predominance of partial studies over synthetic ones,
3) a small contribution of original theoretical studies, and
4) little interest in methodological studies.

Polish physical geography, in turn, is characterized by:

1) a predominance of a historical approach over a dynamic one,
2) a small contribution of experimental studies, and
3) total lack of methodological interests.

The influence of Polish geography on world geography is not great and consists mainly in the intellectual prestige of some outstanding scholars participating in international conferences and in the work of various committees of the International Geographic Union. The contribution of Polish geographers to the leading, opinion-forming geographical periodicals published in English is too insignificant. Works published in English in Poland are rarely quoted. Also, in spite of the fact that Polish geography is sometimes blamed for coming under the influence of western geography, it shows little absorption of the theoretical output of world geography, especially Anglo-Saxon one.

1.3.2. The role of Polish geography in science and society

In the post-war period, geography obtained full institutional independence as an academic discipline, which manifests itself, among other things, in separate academic studies as well as scientific degrees and titles. Thus, it took a place on a par

with other sciences. This fact also brought about an increase in: 1) the number of geographical students and people with diplomas in geography, 2) the number of people with scientific degrees and titles, 3) the number of geographical periodicals and publication series, 4) the number of scientific works on geography, and 5) the contribution of geography to the solution of socially important problems. In recent years (1973 - 1984), however, this progress was checked, and the balance of the period is not too optimistic.

The status of geography in society has been lowering. This claim is supported by such facts as the diminished share of geography in school teaching, fading interest in geographical studies, or rare consideration of the problems of geography in public. The reasons for this state of affairs are diverse. The non-professional character of the academic training in geography as well as the low proportion of its practical functions in comparison with the informative and descriptive ones, creates in the social awareness an image of geography close to that of the humanities, but deprived of their opinion-forming character and attractiveness. Also, geography does not evoke any more the social response it used to bring forth as a science presenting a picture of the world, since it has been replaced in this capacity by the press and television. Further reasons of the weakening position of geography are the limitation of research to its own country, the analytic quality of geographical knowledge, little explanatory power, and a very modest share of geographers in the solution of socially important issues.

Generally, the present state of Polish geography is critical. This manifests itself in:

1) a lack of clear methodological and subject-matter conceptions of geography,
2) neglecting research possibilities of geography in those aspects of studies on the environment and society that fall within its domain, and resulting from its low sensibility to current social problems,
3) the dominance of a popular, and partly trivial, type of geographical knowledge,
4) a tendency to maintain the subject-matter and methodological status quo,
5) low social standing of geography.

2. The programme of the development of Polish geography

A reversal of the undesirable tendencies that occur in Polish geography requires steps following from a definite programme of its further development. A programme of the development of a scientific discipline should be taken as a set of postulates concerning its philosophical-methodological assumptions, its reference, research issues, methods and tools of investigation, as well as social and institutional conditions of the realization of the programme. It should take into account the state of the discipline, its specific goals, and the possibilities of their attainment.

In my opinion, two aspects of a development programme of a discipline should be distinguished: a) a programme of a scientific orientation (school), and b) a programme of the scientific community (national).

A programme of a scientific orientation includes a set of research problems and ways of solving them based, more or less consciously, on definite methodological and referential assumptions. It is selective by nature, and although it can concern the whole of the development of a discipline, it must follow the principle of conceptual and subject-matter coherence assuming that research development is confined to the framework of the accepted orientation.

Such a programme is developed and made more specific by programmes or projects realizing research directions defined within the framework of the given orientation.

The value of a programme of a scientific orientation is determined by its science-creating function in a given field. The programme is progressive as long as the issues it poses lead to new, interesting cognitive and/or practical results. When it becomes less and less fruitful, it degenerates. Hence, it is difficult to determine the period of its vitality in advance.

The programme should include: 1) a definite philosophical-methodological model, i.e. an ideal of the rationality of geography as a science determining its cognitive character, 2) a pre-theoretical model, i.e. a conception of its reference, 3) main research problems whose solution will contribute to scientific progress, and 4) research methods and tools that will allow solving problems and making knowledge more profound.

A programme of the scientific community should embrace the principal research directions and issues representing the development strategy of a scientific discipline in a 10- to 15-year perspective. The programme should 1) integrate the efforts of the whole geographic community around the solution of problems that are of particular use and essential importance for the socio-economic development of the country, 2) realize the postulate of the unity and independence of geography as a separate scientific discipline granted academic and social recognition in research and didactics, and 3) go on with the research directions and problems whose innovative possibilities have not been exhausted yet, cognitively or practically.

What should differentiate this programme from that of the scientific orientation is the principle of pluralism, both in the philosophical-methodological aspect and in the subject matter. Philosophical-methodological pluralism assumes that the development of a discipline should be based on different philosophical-methodological assumptions, since the advance of science founded on a diversity of views opens up different perspectives. Subject matter pluralism claims that the development of a scientific discipline should be based on different pre-theories, since each of them takes into account different components or aspects of reality.

A way such a programme can be elaborated is putting forward proposals for it followed by their discussion and acceptance.

The programme of the scientific community should provide a framework for the norms of research procedure and the quality of geographic knowledge, especially in works carried out for an academic degree.

On the basis of these assumptions, I shall present a proposal for a programme of the development of Polish geography that will be critical-scientific in character. The proposal will incorporate a discussion of: 1) the goals of the programme, 2) its components, and 3) the social, institutional and material conditions of its realization.

2.1. The aims of the programme

The main goals that a programme of the further development of Polish geography can realize are debatable. I think, however, that its basic aim should be ensuring its further scientific advance. The notions and criteria of scientific advance, however, require more precise definition. I assume that the scientific progress of geography consists in such changes in its scope and subject matter that will increase its cognitive and practical values.

The cognitive value of geography is defined by its informativeness, an increase of which can be treated as a decrease of uncertainty with respect to the studied phenomena and processes. Increasing the cognitive value does not only mean raising the level of the generality and theoreticality of knowledge, but also of its exactness, certainty, and simplicity. The practical value, in turn, is determined by the usefulness of geography for effective action in the sphere of broadly understood social practice. What it all amounts to, then, is a desire to describe the world more exactly and understand it better, and thus to acquire a more interesting and useful knowledge.

The research scope of geography is a set of problems falling within its field of vision. In turn, definite solutions of these problems in the form of accepted statements constitute its research subject matter.

Changes in the scope of a science are brought about by the introduction of new issues and result in expanding its subject matter, which, in turn, may be followed by widening its problem scope. However, changes in the subject matter need not lead to changes in the scope, but may amount to new solutions of known problems, of greater cognitive and/or practical value.

In the cognitive dimension, scientific progress may be a process modifying geography in two aspects: 1) of concepts and problems, and 2) of methodology.

The aspect of concepts and problems consists in the change of the scope of geographical knowledge through: a) a change of the basic concepts of geography as a science, and b) a change of research problems.

A change of the basic concepts of geography as a science can affect (1) its philosophical-methodological model, i.e. the fundamental ideal of the rationality of geography as a science defining its cognitive character, and (2) its pre-theoretical model, i.e. the conception of its reference, including its categories and referential assumptions.

A change of research issues includes posing new or modified cognitive questions in the field of geography that can be solved by way of investigation.

In the methodological aspect, in turn, the process of modification of geographical knowledge consists mainly in a change of its subject matter through the application of new research methods that make it possible to obtain new or better results.

In the practical dimension, the scientific advance of geography is connected with a modification of geographical knowledge leading first of all to the solution of problems of particular social usefulness.

In the cognitive dimension, progress in geography can take place at different levels depending on the aspect of changes. The most profound ones are those affecting the basic conceptions of geography as a science, i.e. its philosophical, methodological and pre-theoretical models. They are revolutionary in character and lead to a restructuring of the research problems of geography. However, changes in research problems can also take place within hitherto existing philosophical-methodological and pre-theoretical models. Methodological progress, consisting in the application of new research methods, need not affect these models, either. Still, there is a lack of new, interesting results in spite of attempts at an introduction of new problems and a change of methods, which indicates the exhaustion of the fertility of the philosophical-methodological and/or pre-theoretical models and the necessity to restructure the foundations of geography.

The conception of further scientific progress of geography as the main goal of its development programme is a socially engaged one, since, besides the cognitive dimension, it also embraces the practical one through the application and utilization of geographical knowledge in the solution of problems of particular social usefulness.

The realization of this goal is the condition of strengthening the position of geography in science and increasing its prestige with the society.

2.2. Components of the programme

The principal components of the programme are: a) a conception of geography as a science containing a philosophical-methodological and a referential model, b) main research directions and problems, and c) research methods and tools.

2.2.1. The conception of geography as a science

The most profound component of the development programme of Polish geography is its philosophical-methodological model.

The cognitive progress of geography requires it to remain within the methodological framework of a science whose standards have been formed in natural and social sciences. We need not go to neo-positivism or Popperism for the standards, but look for them in the Polish methodological school originating from the Warsaw-Lvov one (J. Łukasiewicz, T. Kotarbiński, K. Ajdukiewicz, T. Czeżowski), since

it supplies proper methodological conceptions based on critical and realistic assumptions. Obviously, this approach is not based on a licence, since the conceptions of the Polish methodological school were original.

In my opinion, the further advance of Polish geography should take place within the framework of a philosophical-methodological model that will impose on it the scientific rigours established by the modern philosophy of science, allowing, however, for the specific character of geography that has formed during its development. Such a model assumes that the fundamental value of science is a rational, critical and notional knowledge of reality seeking to obtain true judgements that are intersubjectively verifiable and communicable. Although the truth of judgements is not an effective value, it must still be the cognitive ideal of science, since it loses its autonomous sense without it.

These assumptions underyling a rational and critical programme of geography are based on the opinion that the essence of science, or more precisely empirical sciences, is the same in all fields, although it approximates to the standard in differing degrees, mainly due to the differences in the subject of study.

In this approach, geography should be a knowledge with the highest informative content possible, understood as lessening the uncertainty of the studied states of affairs, and hence as increasing the certainty, exactness, generality, and simplicity of geographical knowledge accumulated according to the principles of a rational and critical research procedure. This knowledge should serve to diagnose and explain as well as predict changes of those components of natural and social reality which are the subject matter of geography and the object of effective practical activity aiming at maintaining or transforming the reality.

Thus, this model of geography should be characterized by: 1) an aspiration to a justified theoretical level, 2) obeying methodological rigours pertaining to the empirical control of statements and the objectivity of knowledge, 3) the consideration of the axiological component, and 4) a harmonious realization of both cognitive and practical values.

The aspiration to a justified theoretical level is justified to the extent that it increases the informativeness of geographic knowledge. Theorizing should not be mythicized, and theories should not be given speculative character.

Obeying methodological rigours should not be interpreted as the application and development of quantitative methods. Their use must be instrumental and not technique-oriented, i.e. they must serve as a convenient and effective scientific tool, not impose the kind of problems to be solved.

The consideration of the axiological component should consist in the valuation of definite states of reality based on the criteria elaborated in the framework of the scientific system of geography.

The realization of practical values does not mean narrow practicism amounting to the solution of problems having immediate practical importance, i.e. to project-making, but implies a social engagement of geography.

A conception that would organize the field of research and scientific problems of geography should be looked for in those properties and real relations (interactions), i.e. structures, which constitute or condition the spatial organization of the world as a global "nature-society" system and its differentiation. The processes of the formation, maintenance and destruction of these structures determine the spatial organization of geo-natural nad socio-economic systems, their formation and interaction. The dissimilarity of the processes and constancy of the structures of geo-natural and socio-economic systems, as well as of the nature of their regularities, defines the scope of natural (physical) and socio-economic geography and methodological differences.

Such a formulation of the subject of research combines the spatial and environmental approaches, solves the process-structure opposition, and is systemic in character.

When realizing this conception in geography, two issues must be taken into consideration: 1) the high complexity of the studied objects, and 2) the social character of (some parts of) these objects. The first aspect leads to a systems approach to the object of studies with its methodological consequences, while the other – to the consideration of the specificity of investigating social properties.

The systems interpretation of the object of research results in: a) an anti-reductionist approach connected with the tendency to get to know specific properties of complex wholes irreducible to the properties of their elements, b) the dominance of development and functional approaches over the causative one, and c) an important role of simulation and mathematical modelling.

The necessity to consider the specificity of the social sphere, in turn, requires the introduction of valuation conceptions and the "humanistic coefficient", i.e. taking into account the fact that social phenomena are experienced consciously.

2.2.2. Main research directions and problems

The formulation of new research problems is a creative element of science that can hardly be programmed. This is so because they are the work of outstanding individuals and are created during the solution of problems already posed. Hence, it is difficult to draw up a list of such problems *ad hoc*. Therefore, I shall limit myself to a presentation of some postulates concerning their assumptions and character only in the domain of socio-economic geography.

In socio-economic geography, there should be a further development of research on the spatial territorial organization of the socio-economic system of the country as well as its subsystems, in both the regional and branch aspects. However, it is necessary to extend the scope of research so as to cover the social sphere besides the economic and technical ones, as well as the normative-evaluative aspect.

The extension of research to cover the social sphere requires a sociological approach, in particular the study of the role of social interaction processes (social distance,

accommodation, assimilation, competition, conflicts) in the formation of territorial communities and mobility, as well as the consideration of social awareness, that is, the images that people (or groups) have of themselves and their environment, and its changes.

The normative-evaluative aspect imposes the consideration of the spatial organization of the socio-economic system from the point of view of definite normative standards, in particular the principles of spatial order, the conditions of its realization, and the advantages it brings.

In the economic sphere, one should stimulate the studies of the location of economic activity (industry and services) as well as of regional and local conditions of production development.

In the sphere of the technical infrastructure – the studies of the state of the transport system and its influence on the economic development, and of material and technological equipment of towns and villages.

In the social sphere – the studies of the differentiation of the mobility, conditions and standards of living of the population, with particular attention being paid to the state and developmental tendencies of the rural population.

Further research should be carried out on the level of regional development, with the emphasis, however, put on the mechanism of economic development, especially its interdependences.

Finally, of crucial importance is the development of investigations of the factors and barriers of socio-economic development conditioned by the state and resources of the natural environment of man, and of the threats coming from that quarter.

2.2.3. Research methods and tools

Further cognitive progress in Polish geography requires an improvement of research methods that would allow them to solve old and new scientific problems more effectively and to raise the "quality" of knowledge, thus enhancing its cognitive value and practical usefulness. It may seem paradoxical enough, but it is necessary to increase the role of both principal components of geographic knowledge, factual and theoretical.

Thus, the programme of methodological progress should include the following issues:

1) theory construction,
2) modelling,
3) methods of establishing factual data, and
4) methods of analysis and testing.

Theoretical progress is the most difficult to programme, as it is heuristic in character and results from special invention. One of the basic difficulties connected with the construction of theories about socio-economic phenomena is the necessity to adapt them to the specific conditions of the development of our country. The difficulties diminish in the case of the construction of theoretical, especially mathematical, models providing general frameworks; their application takes place through their empirical realization.

It must be strongly emphasized that neither theories nor theoretical models of an explanatory character pertaining to the subject matter of geography can arrange phenomena in abstract categories applicable in all the instances of time and space, as is the case in physics, since they refer to a specific historical epoch.

The construction or adaptation of models, especially mathematical ones, seems to be the most effective instrument of both theoretical and empirical progress in Polish geography. The advance made in this respect thus far augurs well for the future. However, apart from reconstructive and descriptive modelling, normative models should also be developed, including optimization ones. In contrast to the former, the latter deal with what the matters should be like, and they utilize both facts and evaluative judgements.

Of fundamental importance for marked progress in Polish geography, however, is an advance in the methods of establishing factual data. The factual component is still the weak link of research procedure. In the majority of cases factual data do not allow an empirical verification of cognitively valuable hypotheses and models.

As far as socio-economic phenomena are concerned, what enhances the prospects for determining cognitively valuable facts is the introduction of rigorous techniques of field observation based on the interview and the questionnaire. In natural studies, in turn, it is the development of permanent stations for field observation as well as the use of natural and simulation experiments and methods of teledetection and photointerpretation. Also an extension of the official statistics and information system and fitting them to the needs of geography can be of considerable importance.

Closely connected with the above is a further advance in methods of analysis and statistical testing. The possibilities include here the adaptation of both, methods already developed in Anglo-Saxon geography and those from other domains, mainly econometrics and numerical taxonomy.

2.3. Social, institutional and material conditions of the realization of the programme

The scientific progress of geography depends not only on changes in its internal structure, but also on its social, institutional and material conditions. Among the social conditions the following should be postulated:

1) a change of the existing feudal structure imposing a rigid hierarchy connected with academic distinctions,
2) the definition and application of strict criteria of evaluation and scientific criticism, and
3) a radical improvement of the flow of scientific information.