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METHODOLOGICAL LEVELS OF RESEARCH THE POST-INDUSTRIAL DEVELOPMENT OF THE CITY

Since the middle of the twentieth century, most countries of the world are in a phase of significant socio-economic transformations. The main vector of these transformations is the transition to the post-industrial stage of development, which was predicted by a number of scientists from many industries at the turn of the nineteenth and twentieth centuries. There is a logical relationship between the level and stage of development of the country. So the highly developed countries of the world are already in the phase of post-industrial development. For countries with a low level of development and a powerful and complex industrial past, such as the post-Soviet and post-socialist countries of Eastern Europe, the transition to post-industrial development, the so-called post-industrial transformations, is characteristic. A detailed study of these processes makes it possible to predict the possible paths of developed countries and individual territories.

The city, as the main agent for transforming the territory, plays a major role in the country's transition to the post-industrial level of development. This article is devoted to the methodological features of studying the features of post-industrial urban development. In contemporary human geography, there is an active discourse on the issue of methodological support for research, which mainly focuses on the feasibility of applying qualitative and quantitative methods and the possibilities of their interdisciplinary application. However, in our opinion, the more complex the object of study, the wider and more directional should be the methodological apparatus of research. In this case, one should take into account the territorial aspect of this study and select methods solely for their effectiveness in achieving their goals. The author proposes to classify research methods of the features of the post-industrial development of the city according to hierarchical levels of influence of the city: global, regional and local levels. Also, this paper offers a generalized algorithm of socio-geographical study of features of post-industrial urban development, which presents the main stages of the study and proposes the most common methods of study.

Keywords: post-industrial development, city, socio-geosystem, methods, methodological levels of research, territorial approach.

Ольга Суптелю. МЕТОДИЧНІ РІВНІ ДОСЛІДЖЕННЯ ПОСТІНДУСТРІАЛЬНОГО РОЗВИТКУ МІСТА

Починаючи з середини ХХ століття більшість країн світу перебувають у фазі значних соціально-економічних трансформацій. Головним вектором цих трансформацій є перехід до постіндустріального етапу розвитку, який був прогнозований рядом вчених багатьох галузей ще на межі ХІХ та ХХ століть. Простежується закономірний зв'язок між рівнем та етапом розвитку країни. Так, високорозвинені країни світу вже перебувають у фазі постіндустріального розвитку. Для країн із нижчим рівнем розвитку та потужним і складним індустріальним минулим, таких як пострадянські та постсоціалістичні країни Східної Європи, характерним є етап переходу до постіндустріального розвитку, так звані постіндустріальні трансформації. Детальне вивчення цих процесів дає можливість для прогнозування можливих шляхів розвитку країн та окремих територій.

Місто, як головний агент трансформацій території, відіграє головну роль в переході країни на постіндустріальний рівень розвитку. Дана стаття присвячена методичним особливостям вивчення постіндустріального розвитку міст. В сучасній суспільній географії активним є дискурс щодо питання методичного забезпечення дослідження, який головним чином точиться навколо доцільності застосування якісних та кількісних методів та можливостей їх міждисциплінарного застосування. Проте на нашу думку, чим складніший об'єкт дослідження, тим ширшим та ціленаправленим повинен бути методичний апарат дослідження. При цьому, слід враховувати територіальний аспект даного дослідження та підбирати методи виключно за їх ефективністю для досягнення поставлених цілей. Автор пропонує класифікувати методи дослідження особливостей постіндустріального розвитку міста за ієрархічними рівнями впливу міста: глобальний, регіональний та локальний рівні. Також у даній роботі пропонується узагальнений алгоритм суспільно-географічного дослідження особливостей постіндустріального розвитку міст, в якому представлені основні етапи дослідження та запропоновано найбільш поширені методи дослідження.

Ключові слова: постіндустріальний розвиток, місто, соціогеосистема, методи, методичні рівні дослідження, територіальний підхід.

Ольга Суптелю. МЕТОДИЧЕСКИЕ УРОВНИ ИССЛЕДОВАНИЯ ПОСТИНДУСТРИАЛЬНОГО РАЗВИТИЯ ГОРОДА

Начиная с середины ХХ века, большинство стран мира находятся в фазе значительных социально-экономических трансформаций. Главным вектором этих трансформаций является переход к постиндустриальному этапу развития, который был прогнозируемым рядом ученых многих отраслей еще на рубеже ХІХ и ХХ веков. Прослеживается закономерная связь между уровнем и этапом развития страны. Так, высокоразвитые страны мира уже находятся в фазе постиндустриального развития. Для стран с низким уровнем развития и мощным и сложным индустриальным прошлым, таких как постсоветские и постсоциалистические страны Восточной Европы, характерен этап перехода к постиндустриальному развитию, так называемые постиндустриальные трансформации. Детальное изучение этих процессов дает возможность для прогнозирования возможных путей развития стран и отдельных территорий.

Город, как главный агент трансформаций территории, играет главную роль в переходе страны на постиндустриальный уровень развития. Данная статья посвящена методическим особенностям изучения постиндустриального развития городов. В современной общественной географии активен дискурс по вопросу методического обеспечения исследования, который главным образом идет вокруг целесообразности применения качественных и количественных методов и возможностей их междисциплинарного применения. Однако, по нашему мнению, чем сложнее объект исследования, тем шире и целенаправленнее должен быть методический аппарат исследования. При этом следует учитывать территориальный аспект данного исследования и подбирать методы исключительно по их эффективности в достижении поставленных целей. Автор предлагает классифицировать методы исследования особенностей постиндустриального развития города по иерархическим уровням влияния города: глобальный, региональный и локальный уровни. Также в данной работе предлагается обобщенный алгоритм общественно-географического исследования особенностей постиндустриального развития городов, в котором представлены основные этапы исследования и предложены наиболее распространенные методы исследования.

Ключевые слова: постиндустриальное развитие, город, социogeосистема, методы, методические уровни исследования, территориальный подход.

Formulation of the problem. The issue of post-industrial development research with a focus on urban areas is important and relevant for Ukraine and Eastern Europe, which are also undergoing a transformation. It has been repeatedly noted that it is powerful industrial and post-industrial cities that represent a kind of “growth pole” of the territory [10], the level of development of the region and the country as a whole depends on the level of development of them.

Conducting any kind of research, first of all, requires choosing the right set of methods. The choice of methods depends on the purpose and task of the study, and on the available source data, in turn, the final result of the study depends on the selected methods. For contemporary human geography the question of methodological support of research is very relevant. Contemporary socio-geographical science is a complex science, the purpose of which is a comprehensive study of the organization of the territory of different hierarchical levels. As a complex science, human geography combines scientific approaches and methods of research of many related sciences based on the interdisciplinary imperative established by the synergistic paradigm. [5]. According to Topchiyev O. in the book “Social and geographical research: methodology, methods, methods” [15] – there is no generally accepted system of methods of socio-geographical research, and therefore the choice of method depends, in particular, on the available source data and the expected result.

An important component of socio-geographical research is the study of cities and the features of their development. Analysis of previous studies suggests that geography of cities (geo-urban studies), as one of the major disciplines of social geography [13], is one of the most diversified sciences. That is why geo-urban studies require a detailed selection of methods and techniques.

This study is devoted to socio-geographical analysis of existing methods for studying the features of the post-industrial development of the city. This specific field of research, which lies at the boundary of socio-geographical, economic, political, sociological sciences, requires a multi-sectoral approach and a specific algorithm and set of research methods. Unfortunately, the current stage of research on the post-industrial development of cities is unidirectional, and is mainly based on philosophical and sociological methods. Among socio-geographical studies, the main focus is on the separate components of this process. There are almost no studies on the comprehensive analysis of individual cities. The main reason for this is the undeveloped methodological

apparatus for this kind of comprehensive research. In our opinion, it is the systematic approach with a territorial focus that is the main advantage of social geography in the study of post-industrial development of the city.

Analysis of previous research and publications.

The study of the city and urban processes at the present stage of development of science involved specialists in various fields: geographers, economists, philosophers, architects, sociologists, political scientists, futurologists, historians, cultural scientists, ecologists and others. Despite this, the methodological apparatus of urban studies is still not formed.

There are currently two major methodological discourses on urban exploration:

1. Possibility and appropriateness of complex research;
2. Relationship between quantitative and qualitative research methods.

Based on the basic tenets of a systematic approach (general systemic paradigm) [6], and considering the city as a socio-geosystem consisting of a number of hierarchical levels and subsystems, to obtain more accurate and complete information, it is possible both specifically scientific and complex study of the individual city.

Given the integrated systematic approach, the post-industrial development of the city in scientific works is considered according to separate components: economy, population, architecture, urban space research, production structure and employment. While the main focus of these studies is directed either generally to the development of the concept of post-industrial development, post-industrial society, or to a specific problem of empirical character, theoretical and methodical aspects of the problem are ignored.

Foundations of the concept of post-industrial development were laid in the early twentieth century by sociologists A. Penty and D. Bell [1, 9]. The main agent and environment of post-industrial change, according to the authors, was society. Subsequently, other specialists, including economists, became involved in post-industrial discourse. Considering the population as a workforce, and considering the natural link between the structure of production and the structure of employment, P. Drucker and A. Toffler [14], American economists and sociologists, theorize the process of postindustrial change, the main driver is called a person as a professional worker. However, again, no methodological recommendations for the study of the process of post-industrial development are given.

Contemporary empirical studies are based on an analysis of the current state of development of territories and the presentation of forecasts regarding its post-industrial development. Significant place in the socio-geographical studies of post-industrial development is the study of abandoned industrial areas and the search for possible ways to overcome depression. In the article “Encountering Detroit: The Post-Industrial City as a Stage”, Elizabeth Currans [2] studies Detroit (USA) after de-industrialization, using the case method. This study is practical and only demonstrates the possibilities of different sociological, geographical and philosophical methods and techniques, unfortunately does not theorize the process of post-industrial transition and does not provide the theoretical basis for studying the post-industrial city.

Also, in an article by Polish scientists Marcin Wójcik, Paulina Tobiasz-Lis & Karolina Dmochowska-Dudek “Problems of post-industrial city development. Tensions between the structure and image of Łódź (Poland)” [17] the main methodical techniques are the use of retrospective analysis of the city development in comparison with the current state of the economy and public spaces of the city. Again, research is a concrete example of applying methods without providing theoretical and methodological bases.

Another study on the industrial heritage of contemporary cities, “Post-industrial, post-socialist or new productive city? Case study of the spatial and functional change of the chosen Warsaw industrial sites after 1989” Katarzyna Sadowy & Adam Lisiecki, it is also based on a retrospective analysis of the level of development of the study area, as well as a number of sociological methods: content analysis, focus groups, interviews, peer review, but the theoretical level of study of this phenomenon is absent [12].

Therefore, a complex multi-sectoral approach to the study of post-industrial urban development is increasingly reduced to describing and analyzing the current state of development of urban areas and their individual elements: society, economy and production, public spaces. This fact makes it possible to theorize the post-industrial development of cities by the methods of social (human) geography. Which is a complex science, the particular advantage of which is the use of a systematic approach (city – sociogeosystem) [7]. But there is an open discourse in contemporary social (human) geography between proponents of the methodological support of “qualitative” or “quantitative” methods.

Western socio-geographic schools prefer qualitative research methods, appealing to the fact that statistics are usually required or not reliable or absent at all. In the book “Methods in Human geography” Robin Flowerdew and David Martin prefer the whole arsenal of sociological methods of information gathering, as well as statistical and mathematical methods of its analysis [3]. The opinion of the society comes to the fore, while ignoring other factors of development and constituent territories. In contrast, Eastern socio-geographical schools prefer to traditional quantitative methods: socio-geographical and geographical, using sociological (qualitative) methods only as ancillary [8].

The specificity of the subject of study (post-industrial development of the city) and the imperfect theoretical base give considerable challenge in the analysis and refinement of research methods.

Identification of previously unsettled parts of the general problem. Despite the significant methodological basis of social (human) geography, the theorization of post-industrial development of the city and the methodological bases of its research are still not clearly defined. Given the multifaceted nature of the study process, the selection of methods and the development of a research algorithm should take into account the specifics of the study, and be in the field of social-geographical science. Moreover, the postulates of the new urbanism destroy the framework and limitations of the methodological foundations of the study.

Formulating the purpose of the article. The purpose of this article is to analyze the methodological foundations of post-industrial development of the city, to select methods in accordance with the expected results and to create the most universal algorithm for a comprehensive study of this process. **The object** of study is the post-industrial development of the city, and **the subject** is the methodological levels of its research.

In accordance with this goal, the following **tasks** were set:

- analysis of previous post-industrial development studies in the city with a focus on research methods;
- formulation of methodological levels of research of post-industrial development of the city;
- creation of an algorithm of socio-geographical study of post-industrial development of the city.

Presentation of the main research material. The study of any object at its initial stage is based on the study of theoretical and methodological bases: definition of basic concepts of research, analysis of previous research, selection and analysis of methods of future research, creation of a certain algorithm of research.

Based on M. Weber's [16] assertion that all cities are different for many objective reasons and features, it is not possible to clearly and unambiguously define this phenomenon and to define a specific set of methods for urban development research. However, there must be a common algorithm and the ability to apply different methods to this kind of research.

Post-industrial development and its manifestations at the city level consists of a number of characteristics, the analysis and correlation of which gives a complete picture of the level of development of the city and provides an opportunity for further modeling of its development trajectory. In the general understanding, the post-industrial development of the city is manifested in the following spheres of city life (Fig. 1):

Of course, in the specific and comprehensive study of the selected city, the levels and spheres of post-industrial transformation will be detailed. However, the system of *society + economy + space* remains.

The founders of contemporary Ukrainian theories of social (human) geography Shablii O.I. and Topchiyev O.G. call the following basic methodological levels of social (human) geography [13, 15]:

- *philosophical* – mainly dialectical methods: generalization, logic, etc.,
- *general scientific method* – methods are characteristic of all sciences, including social (human) geography and geo-urban studies: analysis and synthesis, induction and deduction, modeling, formalization and others.
- *specifically scientific* – used in the individual sciences or in genetically related fields: field research, distance research, mapping, balance, interview and survey.

- *special* – designed for the needs of specific science: zoning, socio-geographical regionalization.

While in Western socio-geographical practice, the selection and classification of research methods is carried out according to the stage of research [3]:

- methods of *forming the primary research base*: surveys, interviews, questionnaires; group focus, observation on and off.
- *database analysis*: mathematical and statistical, typing and classification, content analysis, GIS analysis and mapping, results visualization.

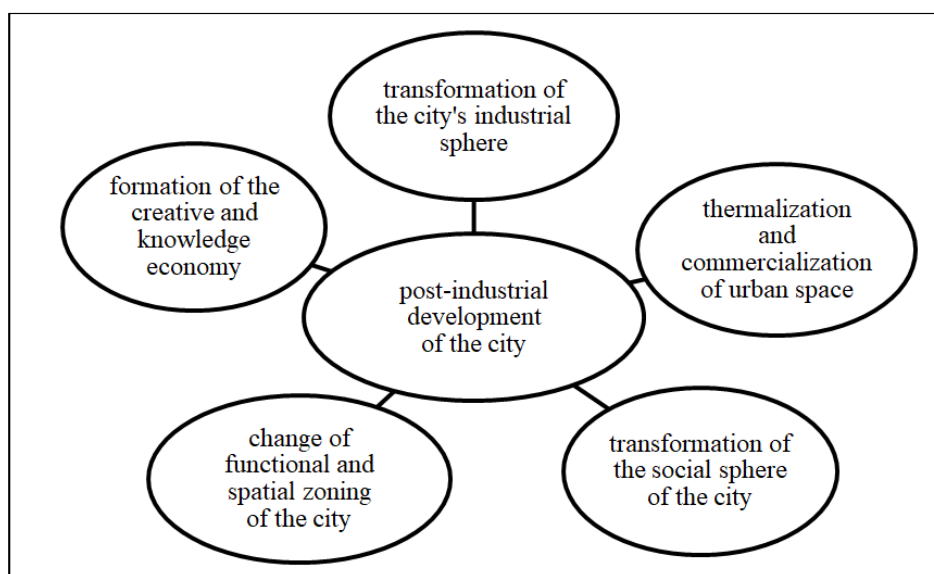


Fig. 1. The components of post-industrial development of the city (created by the author)

On the basis of content analysis of the literature, we conclude that there are two categorically different approaches to conducting social and geographical research, each of which has its advantages and disadvantages. In our opinion, it is important to combine these two approaches qualitatively, considering the territory factor and considering the city as a sociogeosystem, and its development as a complex, multi-layered socio-geographical process. [4].

Currently, there are two opposite approaches in the world of post-industrial urban development research [11]:

- study of transformational changes at *the micro-level*: economy, population, political and social sphere,
- at *the macro level*, determining the impact of post-industrial urban change on global processes.

The decisive factor in choosing research methods is the territorial aspect. We propose to identify the following methodological levels of socio-geographical study of post-industrial development of the city (Fig. 2):

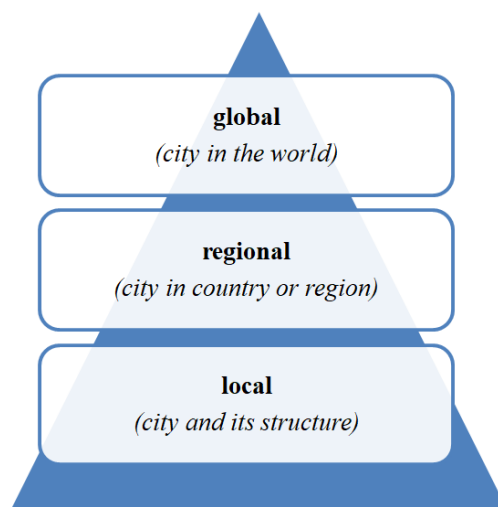


Fig. 2. Methodological levels of socio-geographical study of post-industrial development of the city (compiled by the author)

Each of the methodological levels will be examined in more detail, defining the theoretical background, main directions of research, and the most used methods (Table 1).

It is seen that along with the decrease in the hierarchical level of socio-geographical study of post-

industrial development of the city, the set of methods is increasing, and they become more diverse in different directions. Accordingly, the result obtained at the local level will be the most accurate and substantiated. At the local level, it is possible to determine the effectiveness of those or other research methods.

Table 1

General characteristics of methodological levels of socio-geographical study of post-industrial development of the city (compiled by the author)

Global – a city in the world; the impact of cities on world development; strengthening the role of the city; the city as the main agent for changing the structure of the world economy; theorizing of the world post-industrial transition with a focus on cities.	<i>Basic concepts:</i> world cities, global cities, air hubs, world financial centers.	<i>Researching:</i> population and migration, economic structure and contribution to the country's GDP.	<i>Methods:</i> predominantly analysis and synthesis, statistical methods (descriptive and inductive statistics, multilevel analysis, time series analysis, neural network analysis)
Regional – a city in the region; the impact of the city on regional development; the city as a pole of growth; the city as centers of creative economy, territories of specialization; regional aspects of post-industrial development, in particular in economic and socio-political spheres	<i>Basic concepts:</i> poles of growth, polycentric and monocentric development, creative economy, tertialization.	<i>Researching:</i> structure of production, population and migration, city functions, settlement system of the region, territorial structure of production	<i>Methods:</i> statistical (descriptive and inductive statistics, multilevel analysis, time series analysis, neural network analysis, graph theory method), cartographic, GIS analysis, spatial analysis information methods.
Local – the city as a separate object of study; the city is a sociogeosystem; manifestations of post-industrial development at all levels of the urban sociogeosystem; detailing of post-industrial development and its definition of major city-level markers.	<i>Basic concepts:</i> sociogeosystem, functional and spatial zoning of the city; tertialization, gentrification, commercialization, knowledge economy, diffusion of innovations, “third place”.	<i>Researching:</i> city functional zoning, public spaces, employment and production structures of the city, gentrification and industrial heritage sites, quantitative and qualitative population composition and settlement system, local identity.	<i>Methods:</i> statistical (descriptive and inductive statistics, multilevel analysis, time series analysis, neural network analysis, graph theory method, field theory methods), sociological (surveys, content analysis), cartographic, GIS analysis, spatial analysis information methods.

The general algorithm of socio-geographical research consists of the following stages or levels: conceptual and methodological, empirical, analytical, interpretative, and final. The content of each stage depends on the object of study. In general, the algorithm for the study of post-industrial development of the city at the local methodological level is shown in Figure 3.

At any of the proposed stages of socio-geographical research, it is possible to change or adjust the research methods and methodological approaches depending on the empirical data obtained and the expected research results. Considering this, the methods of socio-geographical research can also be divided into the following two levels:

- *empirical* – methods of gathering information: traditional socio-geographical (analysis of statistical

sources) and sociological (surveys, interviews and others)

- *analytical* – methods of information processing: mathematical and statistical (regressive, cluster, factor analysis and others); methods of spatial analysis (gravity model, IIF (integral influence function) modeling), GIS analysis, content analysis, modeling and others.

So, the methods of socio-geographical research of the post-industrial development of the city, depending on the features of the application and the expected results, can be divided into:

- quantitative and qualitative;
- empirical and analytical.

The following methodological levels should also be identified: global, regional and local, each of which requires its own set of research methods and approaches.

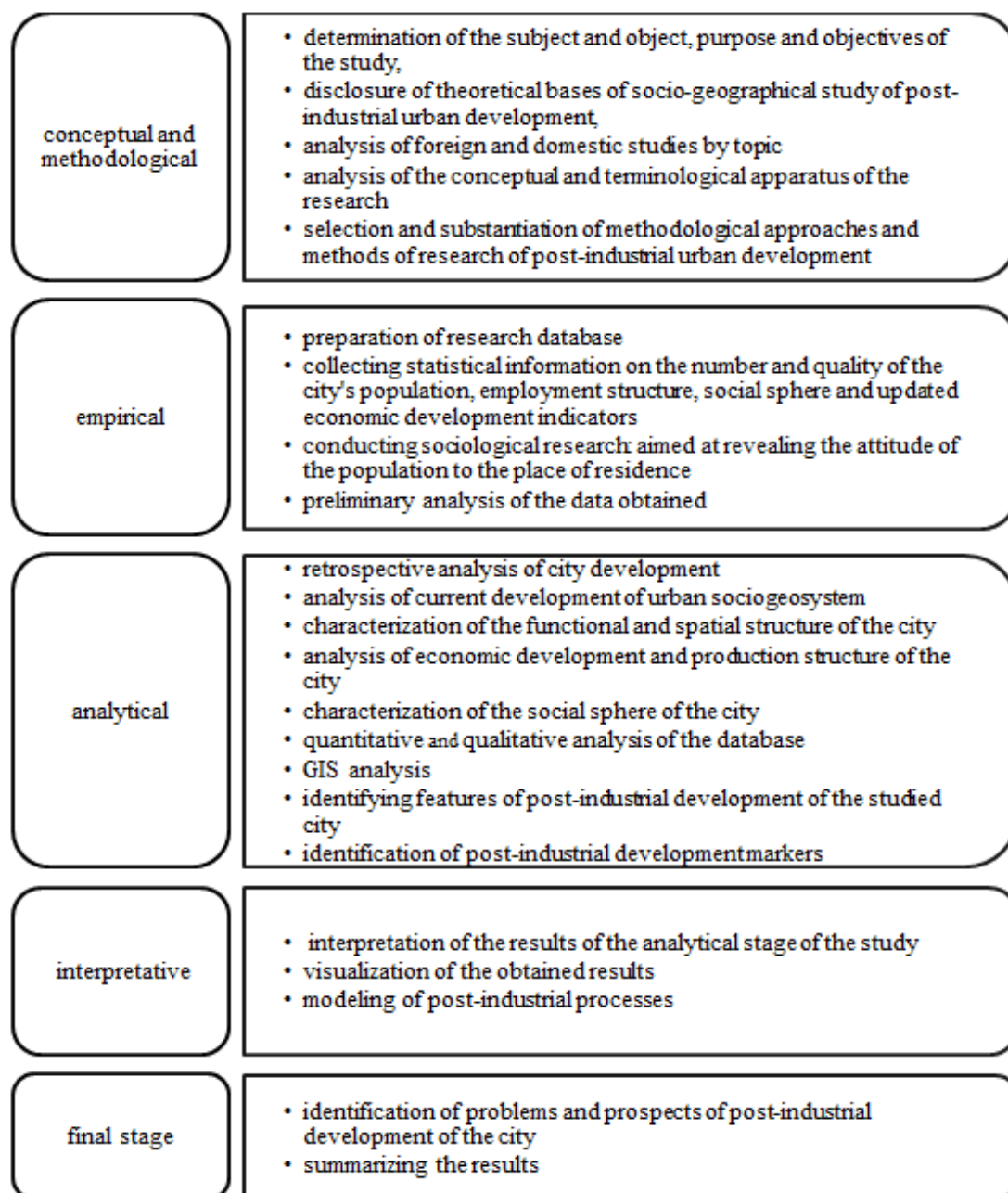


Fig. 3. Algorithm of social-geographical study of post-industrial development of the city (compiled by the author)

Conclusions. In accordance with the tasks, the following conclusions can be drawn:

- The world and domestic experience of social geography and geo-urban studies (as a separate component of social geography) has no common, coordinate multidisciplinary (complex) methodological apparatus of research. The study of post-industrial urban development is complex and multi-sectoral, requiring appropriate selection of research methods. Existing works that reveal the features of post-industrial development of the city, are predominantly empirical. The theorization of the process of research of post-industrial urban development is still ongoing.

- It has been found that, by examining existing approaches to conducting post-industrial urban development research, the majority of researchers ignore the territorial aspect of the studied object. Considering the

city as a sociogeosystem, three methodological levels of studying the features of post-industrial development are proposed: global, regional, and local. For each of these levels the features of the study, the main existing scientific concepts and the predominant methods of research are revealed.

- For the local methodological level of the study of features of post-industrial development, a general scheme of the algorithm of socio-geographical study is proposed. Analysis of this algorithm once again confirmed the feasibility of dividing the research methods into empirical and analytical ones.

An multidisciplinary approach to the study of post-industrial development features provides a wide range of research methods that are justified and appropriate. The main task of the scientist is to compile the correct algorithm of research and the selection of effective methods.

Require further study of the specific application of certain socio-geographical methods in the study of the features of post-industrial development of the city. The rapid growth of urbanization and the development of

urban settlements require effective and purposeful research methods. Moreover, the multi-sectoral and territorial approaches remain the most promising.

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