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RESEARCH ARTICLE

“FROM APPLYING EFFORT TO APPLIED DISCIPLINE”- GEOGRAPHY AS THE DYNAMIC FIELD WITH TODAY’S CONTEXTUALIZING ISSUES OF SOCIETY AND NATURE.

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Abstract

Geography is one of the oldest sciences that have formed their identities through fundamental research focused on budding new theories and methods, but also by solving specific spatial, social and economic problems. The awareness of importance of using geographic skills and spatial ways of thinking has greatly increased in the last decades. This is foremost a result of increasing challenges in the contemporary world, which can be largely attributed to scarcity and a rapid depletion of natural and social resources. On the other hand, the evolution of *geo-information techniques* has offered a new approach in solving variety of global problems, including spatial management. At the same time, the last decades have seen an increased awareness of the importance of space, the so-called spatial turn in social sciences, which has provided an opportunity for the affirmation of geography in a new theoretical discourse of understanding the space and place. Thanks to its fundamental characteristic as a bridge between nature and society coupled with potential benefits from application of new information techniques, geography should definitely become one of the key sciences of the 21st century. However, applied geography today often takes place outside the academia, resulting in theory and practice becoming more separated, while geography tools and approaches are often used by professionals from other fields. At the same time the ideas of multidisciplinary approach in solving complex issues unfortunately, are sometimes far from the reality. This is exactly the reason why there is a need for an academic discussion about past experiences and future potentials of applied geography focused on problem-solving research in all geographic disciplines. Hence, **Applied Geography** is a dynamic field that changes over time but always maintains a central focus on attempting to solve practical problems our societies face. Studies in Applied Geography are versatile in terms of subject matters but the foundation of this field is based on applying geographic concepts and *geospatial technologies* to solve real world problems. Given that, it is difficult to define Applied Geography with a strict structure since Geography itself cannot be defined that way and Geography lacks a set of fundamental theories to call its own. The relevance and value of applied geographical research has never been more apparent given the plethora of problem situations which confront modern societies –

ranging from extreme natural events through environmental concerns. This paper seeks to exhibit the fundamental principles and empirical praxis of applied geography and provides an overview of the principles and practice of applied geography. Consideration is given to the relationship between ‘*pure*’ and ‘*applied*’ research, and the particular concept of ‘useful knowledge’ is introduced. Finally, a prospective perspective is adopted to consider the question of the value of applied geography for *contemporary societies*.

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..... Introduction:-

Since the 1970s, society has been moving into an age based on information and technology. Geographers have contributed to this evolution. In technology, their interest in remote sensing and image processing as a primary means for accessing detailed information about the general environment was the precursor and barometer of this change. As computer processing of large volumes of remotely sensed and otherwise collected data became possible (with the help of mainframe computers), geographers (particularly cartographers) were rapidly diverted from traditional paper-and-pencil production methods to computer-based digital analysis and representation of geographic patterns (Monrnonier, 1977, 1982). Computer cartography and graphical presentation of material in both image and tabular form were as necessary to the governmental and business worlds as they were to the academic. And the inevitable combination of large and complex digitized spatial databases stored in computers, together with the analytical methods developed in the post theoretical revolution era, and the increased personalization of computers as they progressed from mainframe to desktop to wearable versions (with approximately equal capacity), facilitated the most significant and powerful contribution of geography to the applied world--the geographic information system (GIS).

For the last 25 years, information has become the dominant medium of growth, change, and power. Although often belittled by derogatory remarks about excessive scientism and increasing technocracy, there is no doubt that the processing of information has been the most dominant evolutionary theme of the past quarter century. Individualized, interpersonal, and intergroup interaction, social and cultural development, and economic growth and change have all resulted from processes of telecommunication, computerization, and globalization of activity. In geography, these trends have had significant impact as a need arose to examine the deconstruction and reconstruction of social and economic systems within and among countries. A new age based on information services has meant changes in the structure and functioning of urban places, the focusing of international attention on new areas of the globe, the emergence of world cities and new bases of economic and political power, and a new social order with substantial demographic and social changes (e.g., the increasing infusion of women into the, work force at all organizational levels) (Golledge and Stimson, 1997). Together, these forces have resulted in changing behaviors, changing interaction systems, changing distributional methods, and a changing face for geography.

Geography's earthbound existence, and its miniaturization of the events and patterns of the world into static, two-dimensional representations (i.e., maps), has necessarily changed. Viewing the earth from space has given the geographer better and more accurate access to many relatively unknown places and previously unobserved patterns and relations. Monitoring at a global level has clearly identified global problems such as deforestation, atmospheric pollution, acid rain devastation, and marine pollution. But mechanisms for looking at the human dimensions of existence at a global level have proven much more difficult to come by. However, a change in perspective has diffused across the many areas of the discipline as these external technological changes have provided (at the flip of a switch or the click of a mouse) the databases so laboriously compiled in the past by field observation. Geographical analysis and the representation of geographic phenomena in cross-sectional or dynamic form via computer representation is inevitably impacting the discipline. It is also changing the need for geography by society. As we globally recognize problems of resource depletion and environmental degradation, the need for geographers to take their expertise into areas of environmental protection and resource management has become more urgent. So, applications of geographic knowledge and methods have spread markedly from serving the business community or governmental agencies in narrowly defined ways to investigating larger problems that deal with the well-being of humanity as a whole.

But this does not mean that this applied work has neglected the individual. Just the opposite is true. Although more attention is now focused on the problems of the global environment, so too has awareness grown of questions of equity and opportunity, questions of individual and social well-being, and questions of how best to use expertise to make better use of human resources and to improve quality of life. Thus far, much of geography continues to look at aggregated pictures; but some geographers are pursuing the task of taking what has been developed for larger-area operations and applying it at the individual level. It is this latter area on which the rest of this article is focused.

So what has geography gained from this evolving structure? What distinct contributions can geographers make to solving today's problems? In addition to the scale at which they often work, geographers have a unique mix of environmental and human understandings. Their focus on the essential spatial relations underlying human and physical behaviors (From the eroding and depositional actions of streams, to the patterns of intercity telephone calls and the spatial patterns embedded in the selection of marriage partners) provide a theoretical and empirical basis for examining human-environment relationships that differs from other disciplines. Although other disciplines often use spatial variables as part of a larger explanatory schema (e.g., as an independent variable in a multiple regression equation), geographers use spatial variables as the dependent variable (i.e., the variable to be explained). As part of this perspective on the world, geographers have focused on observable (or empirically recordable) events. This focus helped develop an emphasis on external representation of those events. As a result, data, analyses, and representations are essentially spatial, and configuration, layout, interaction, and pattern are the focus of attention. This emphasis has remarkable relevance for living in, coping with, and understanding the complex world in which we live. It has even more relevance when the human-environment interaction mode is constrained as when disability places a filter between people and the world in which they live.

Objectives:-

1. To assess the defining characters and historical background of Applied Geography;
2. To analyze the basic features, components and tradition of Applied Geography;
3. To enlighten the general perspectives, scope and methods of it;
4. To establish the relation between Pure Geography and Applied Geography;
5. To assess the value of Applied Geography;
6. To analyze the relational status of quality of life research and applied geography; and
7. To justify the problems and prospects of Applied Geography.

Methodology:-

To fulfill this study, I have basically emphasized on the literature review on Modern Geographical Trend and Applied Geography from global perspective. Intensive and extensive library research and survey have been the basic tools to figure this paper. Different websites regarding the subject matter helps me broadly in this context. Some important e-journals and e-books related to social science and geography give the fuels to conduct this study. Comprehensively, this informative article is mainly on the deep culture of geographical philosophy and thoughts with its dynamic character throughout the time.

Defining Characteristics of Applied Geography:-

Applied geography is undoubtedly a vibrant and robust subfield of geography, based on all the conventional metrics of the status of a discipline or a specialty area, such as counts of organizations, conferences, publications, and educational programs. In fact, applied geography was featured prominently, along with other major subfields in the discipline of geography, in two broad-brush overview volumes published at the dawn of the twenty-first century in both the United States (Torrieri and Ratcliffe 2003) and the United Kingdom (Bennett and Wilson 2003).

Applied geography has a long history, dating to long before the formal academic discipline was established. As a species, *homo sapiens* has always applied geographic knowledge or skills of various kinds, consciously or subconsciously, for survival (e.g., hunting for food or building shelters) or for achieving higher social goals (e.g., defeating rival tribes during conflicts or wars). Indeed, we concur with Frazier (1978), when he launched the AGC series in the late 1970s that applied geography is not really new a specialty area in an already very fragmented discipline, but a return to our very ancient roots.

Applied geography is as diverse as geography itself. Under its big tent, geography is a very unique discipline.

We have practitioners following the traditions of the physical sciences, social sciences, engineering and technologies, and humanities. Applied geographers have relied on knowledge discovered in all branches of geography—human geography, physical geography, medical and health geography, regional geography, and geographic techniques (among them cartography and mapping, remote sensing, geographic information systems [GIS], and spatial and quantitative analysis).

Applied geography can serve people at both individual and collective levels. Meaningful and happy lives at the individual level cannot be separated from the constant application of geographic knowledge. For example, citizens from all walks of life are also increasingly contributing to the production of geographic knowledge in the form of volunteered geographic information (Sui, Elwood, and Goodchild 2012). Furthermore, government agencies, nongovernmental organizations, and businesses are both producers and consumers of applied geography.

Applied geography and basic or academic geography are not mutually exclusive. We believe the boundary between them is arbitrary, artificial, and increasingly blurred. "There is no such thing as a special category of science called applied science; there is science and (there are) its applications, which are related to one another as the fruit is related to the tree that has borne it," wrote Louis Pasteur. Both history and recent trends have showed us that applied and basic geography are mutually beneficial and reinforcing.

Historical Background of Applied Geography:-

The term "Applied Geography", *La Géographie Appliquée*, *Prikladnaja Geografia*, *Angewandte Geographie*, *Geografia Applicata*, *Geografia Stosowana*— has become very fashionable in recent years. It has been used however for a long time, at least since the end of the 19th century. It has appeared in many geographical publications issued in France, Great Britain, Canada, Poland and elsewhere. For example the report of the first Anglo-Polish Seminar was entitled "Problems of Applied Geography".

Opinion on applied geography especially on the following two problems: (1) **the application of geographical research to practical purposes**, with the possibility of three different approaches, and (2) **applied geography as a branch of geography** or as a new trend in the development of geography.

Even in ancient times scientists were interested in the application of the geographical research. It was mentioned for instance by Strabo, who expressed the wish that his seventeen-volume *Geographika* would help the emperors to administer and govern the Roman Empire, and to find an appropriate policy for their relations with barbarian peoples. Similar ideas on the application of scientific research can be found in the works not only of ancient geographers but also in later geographical writings up to the nineteenth century at which time geography emerged as a science. In the last years of the nineteenth century and especially in the twentieth century many geographers have carried on research of an applied nature. Some of them were justly proud when the results of their research were taken into account by governments or by social organizations in their policy making or when they served as the basis of the economic development of certain areas.

Thus in the whole history of the development of geography we can trace the application of geographical research, but a special development of this type of research has taken place after **World War I** and more recently after **World War II**. In France a special stress was put on the practical applications of physico-geographical research to France, to its particular areas or to the former French colonies. In England under the influence of **L. Dudley Stamp**, geographers started special research projects for physical and regional planning and have concentrated their efforts on the problems of rational land use, distribution of industry, migrations, urban development and so on. This means that in England a stress has been put on applied research in economic and human geography.

American geographers have concentrated on the questions connected with current economic, political, social, and military problems. For example some of their work has been aimed at helping in the planning of the network of schools, motorways, airports, shopping centres (store sites), as well as helping in the development of metropolitan areas, in the distribution of recreational areas etc. Also in many other countries, as e.g. in Germany, Belgium, Norway, Austria, Switzerland, Italy research projects within applied geography were undertaken. They concerned various geographical problems discussed with a view to meeting practical social needs. Most of them dealt with geographical research carried out for the needs of physical and regional planning. Sometimes regional monographs were prepared with this in view. This has raised discussion on the relation between regional and applied geography.

At the meetings of the Section on Applied Geography held during the 19th International Geographical Congress in Stockholm, in 1960, 22 papers on various subjects were read. In result of the debates a resolution was taken to establish a special Commission on Applied Geography.

In recent years, we observe in the countries of South America, Oceania and Asia the development of applied geography, mostly under the influence of European and American geographers. Special centres of applied geography were established at the French universities (Strasbourg, Rennes). In spite of these facts little attention has still been paid to theoretical bases of applied geography and even to some generalizations and systematization of this branch of science. Neither can such generalization be found in the Soviet or Chinese geographical literature nor in the geographical literature of any country belonging to the socialist camp, because in these countries geographers have taken a practical approach in their research work which emphasizes the application of geographical research to the needs of society, while rather neglecting the theoretical approach to these problems. In these countries, although many important results in this field were likewise achieved, geographers have felt no need to discuss the concept of applied geography, or the theoretical base for its existence, because the connection between the science and life has always seemed to them so obvious.

Geographic research used in problem solving – extends the experimental method to include evaluation and implementation.

1. WWI – Geographers attached to governmental agencies, conducted commodity and mineral studies;
2. 1920's to 1930's – Land Classification studies, TVA planning;
3. WWII – logistics, transportation, intelligence;
4. Contemporary applied geography employs geographic research methodologies and techniques toward solution of relevant problems; and
5. Major objective or current applied geography programs are to increase non-academic employment while at the same time educating the public as to what geographers do.

Three Pillars of Applied Geography:-

Three Scholars have made significant contribution to the definition, scope and characteristics of Applied Geography. They are L. Dudley Stamp (1948), L.R. Singh (1968) and Michael Pacione (1999). Applied Geography is considered as a sub-discipline of Geography.

☐ L. Dudley Stamp on Applied Geography:-

He makes a distinction between 'Pure' and 'Applied' branches of Geography. To him Applied Geography is the application of geographical thought in different aspects of social, physical and other branches of geography. The roots of Applied Geography (L.D.Stamp) are originated in 19th century.

☐ L. R. Singh on Applied Geography:-

He considers Applied Geography to be an application of geographical knowledge and its techniques of survey and analysis in solving practical problems of the land and environment. He further considers public policy to be one of the applications of applied geographic principles. He considered national planning analysis as an integral part of applied geography.

To him applications of geography to land use and water development planning are important applied aspects of geography. For Singh the concept of applied geography can best be explained by the methods and techniques that we use to solve practical problems of the world. This is done in order to serve the society. It is a constructive public policy on an applied level. To him the strategy of applied geography is the trinity of men, space and resources. Singh further elaborates the scope of applied geography in the following subsections:

1. **Applied Geomorphology:-** Application of geomorphology to the problems related to anthropology, archeology, engineering, hydrology, soil erosion, land classification and terrain evaluation.
2. **Applied Climatology:-** Use of necessary climatic data for operational research in different fields of human economy and disaster forecast.
3. **Applied Oceanography:-** Sea, a reservoir of food supply, affects day to day weather and causes erosion and destruction by storms and tsunami; the deeper knowledge of the ocean activity is of significance.
4. **Applied Soil Geography:-** Preparation of a geographic inventory of soil resources can be linked to proper utilization both for cultivation, settlement and economic uses.

5. **Applied Biogeography:-** Spatial pattern of plants and animals can be related to economic processes and restoration of regional ecological balance. This field is particularly important in this century when we are expected to face severe consequences to global warming.
6. **Applied Population Geography:-** The effects of population pressure on lands and its resources, and social and political consequences of over population are parts of population geography. Is a Malthusian consequence of checks and balance still valid? Alternatively, Neo-Malthusian concept may alter productivity of crops and control population in order to avoid disastrous consequences.
7. **Applied Settlement Geography:-** Patterns, linkages and appropriate use of locations for villages, towns and metropolises are extremely useful for our betterment. Planning guidelines and best use of the existing facilities are parts of applied settlement geography.
8. **Applied Urban Geography:-** Though a part of settlement geography, urban forms, locations and settlements needs specific attention. Projections point out that by 2050 more than half of the population of the world will live in urban areas. With this forecast in view, urban geography needs to collaborate with planners, demographers and development strategists to position the urban settlement in such a way that they can be sustainable.
9. **Applied Medical Geography:-** Diffusion and distribution of diseases and farming policies to control limit the spread are aspects of the applied medical geography. Measurement of spatial and temporal variations of disease insurance is of particular interest to medical geographers. Also included in this sub-field is the development of medical science in controlling and eradicating disease.
10. **Applied Agricultural Geography:-** The future of food security, land utilization, ground water contamination and use of excessive pesticides are parts of applied agricultural geography. How can land be best utilized is a crucial topic. Sustainable agricultural development is critical to our survival.
11. **Applied Industrial Geography:-** Industrial locations. Industrial corridors and its recent trend in shift of manufacturing from developed countries to developing countries like China and India and problems associated with them are parts of Applied Industrial Geography.
12. **Applied Transportation Geography:-** Interconnections in areas and cities, spatial change, traffic flow, freight structure, impact of technology and urbanization are parts of applied aspects of transportation geography. Transportation planning can use a great deal of geographic knowledge in formulating their plan.
13. **Applied Political Geography:-** The changing political and administrative units adjust to geographic conditions. Sometimes the political units divide homogenous culture and are not in conformation with the natural features. Problems in a spatial analysis of political geographic features are parts of applied political geography.
14. **Applied Photo Geography:-** Aerial photographs are new tools in geographical analysis. This was especially true in the 1950s and early 1960s when Dr. Singh wrote his paper. Now it is not simply aerial photography but also satellite images which are used to identify characteristics of the land for transport planning, land use planning and military geography. Moreover, satellite based remote sensing now combines with Geographical Information System in order to map and synthesize many features of the existing land surface. They are used to assess damage from natural disasters; also used to plan from normal circumstances.
15. **Applied Geographical Cartography:-** Application of Computers has revolutionized map preparation and accuracy of mapping. Different software programmes are used now for mapping existing features and projecting the future development.

❑ **Pacione on Applied Geography:-**

Pacione traces the earlier statements on Applied Geography to A. J. Herbertson in 1999, who defined applied geography as a special way of looking at the subject and specialization from one point of view. Applied Geography is considered to deal with theoretical as well as real world problems. Hart in 1989 defined applied geography as the synthesis of existing geographical knowledge and the principles to serve the specific needs of a particular client. To Sant, applied geography is an aid to reaching decision over using world's resources. Thus the pursuit the definition for applied geography goes on and new dimensions are explored. Applied Geography uses the geographical knowledge in resolving human and physical problems in a geographical perspective (Pacione, 1999).

Pacione advocates that applied geographers should ensure their work advances human wellbeing. He recognized three types of applied geographic research based on ideas of Habermas: (a) Empirical-Analytical, (b) Historical-Hermeneutic and (c) Realist- Anticipatory. Pacione also developed a protocol for applied geography which follows a step by step research.

Based on the conditions and demands of the situation at the end of 20th century, Pacione divided the applied geography into four broad divisions:

- A. *Natural and Environmental Hazards,*
- B. *Environmental Change and Management,*
- C. *Challenges of the Human Environment, and*
- D. *Techniques of Spatial Analysis.*

His fourth division includes Remote Sensing, GIS, Electronic Cartography, Geo-demographics, Global Positioning System (GPS) and Computer Simulation and Modeling.

Three Basic Features of Applied Geography:-

- ☐ Applied Geography builds on spatial perspective and focuses on how geographic information and methodologies can be used in human and environmental problem-solving
- ☐ Applied Geography emphasizes analysis, evaluation, implementation, and recommendation
- ☐ Applied Geography has utility in a number of areas including government, public policy, business, national security, environmental management.

Basic Components of Applied Geographic Research:-

- ♣ Process oriented focused on discovery,
- ♣ Systematic and logical,
- ♣ Scientific method,
- ♣ Empirical approach based on collection, analysis, interpretation, presentation, and application of data to problem solving,
- ♣ Builds on conceptual framework,
- ♣ Starts with problem identification and definition,

Tradition of Applied Geography:-

Although applied geography has been a widely practiced field for much of the century, it has become a recognized specialty group within several national geographic associations only during the last decade. But it has a substantial international following and a clearly defined path to the future.

In many ways, the development of applied geography was an inevitable consequence of general trends in the search for geographic knowledge. In a broad spectrum, we can regard geographic activities in the early and middle-parts of the century as pursuing a course that legitimized the discipline. Efforts were undertaken to provide sound basis for using spatial data, and the process of understanding spatial interaction and spatial relations in both large- and small-scale environments was initiated. Once a good foundation had been laid, however, it was also inevitable that the search for academic legitimacy would require the discipline to develop a body of relevant theory. The theoretical revolution of the late 1950s and 1960s began this process. It was accompanied by the development of appropriate measurement tools and analytical devices. Just as inevitably, this need spawned the quantitative revolution that emphasized those mathematical, statistical, and logical inference processes as having specific geographic relevance. As what was regarded as a relevant theory expanded, there was sequential development of behavioral, political, economic, social-theoretic, postmodernist, and reformation-theoretic approaches used in researching geographic problems. These included survey and ethnographic research of the behavioral and humanist approaches, and the politicized ideological arguments of the social theorists. More recently this evolution of method and theory has turned to the digital domain of databases and computer-based processing models of the information and technological society in which we currently find ourselves.

A natural consequence of the two-decade exploration of relevant theory was the empirically based search for applications. This focused attention on the applied domain, which slowly extended its influence into the traditional academic areas of both physical and human geography, and encouraged the rapid development of new technologies designed to assist in the diffusion of such applications (Applebaum, 1954, 1959; White, 1945).

Much of the geography pursued throughout this century has in fact been applied. Perhaps this has been most obvious on the physical side, where geographers analyzed soils, erosion, vegetation, hydrology, weather, and climate, and applied their findings in diverse fields ranging from agriculture and hazard mitigation to predicting alpine snow melt runoff and the impact of settlement on endangered species. Simultaneously, human geographers developed land-use

classification schemes for both rural and urban environments, explored different aspects of city planning, examined the geographical patterns of pricing and cost in transportation systems, and examined the movement of goods and people. They also explored local and national impacts as traditional transportation systems (such as coastal or inland shipping and the railroads) began to decline in importance as mechanisms for transferring commodities and people. (For an overview of the trends see Gaile and Willmott, 1989)

But perhaps applied geography became most recognized in human geography, Math its exploration into location theory, market area analysis, retailing, and consumer behavior. Marketing geography is generally recognized to have been a focus of the new applied geography (Applebaum, 1954; Epstein, 1967). Examination of the location of retailing firms and the spatial distribution of their customers, investigation of market-area boundaries, evaluation of both simple deterministic gravity models and probabilistic alternative ways to define market-area dominance, and examination of market penetration and location choice provided an immediate and desirable tie to the business community (e.g., Huff, 1962, 1964; Huff & Black, 1997). The dramatic expansion of the power location theory after the development of location models (e.g., Isard, 1954) not only firmed the tie with the private sector, but was greedily adopted by the services sector. Locating public services such as day-care centers and group homes for disabled populations and finding optimal locations for effective and efficient provisions of emergency services (e.g., police, fire, emergency medical and health services) expanded the domain of applied geography into areas other than the traditional marketing, land-use planning, and transportation sectors of the economy (Rushton, Goodchild, and Ostresh, 1973).

General Perspectives of Applied research in Geography:-

Applied Geographical Research adds two stages mainly. These are:

1. *Evaluation of research findings for a specific strategy, and*
2. *Implementation of change by controlling change*

Applied research is primarily concerned with providing answers to a present problem, but may use theoretical research to achieve goal.

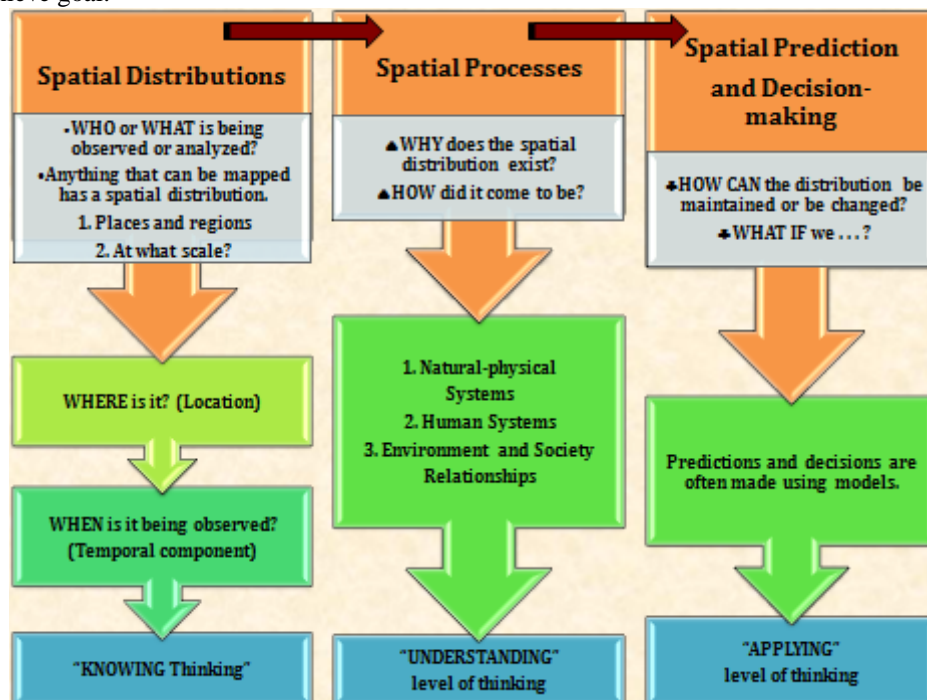


Figure 1:- General Perspective of Applied Geography

The Relationship between Pure and Applied Research in Geography:-

In geography, basic research aims to develop new theory and methods that help explain the processes through which the spatial organization of physical or human environments evolves. In contrast, applied research uses existing geographic theory or techniques to understand and solve specific empirical problems”.

The development of applied geography has been accompanied by debate over the relative merits of pure and applied research. Critics such as Cooper (1966) and more recently Kenzer (1989) warned against the application of geographical methods as a threat to the intellectual development of the discipline. Conversely, Applebaum (1966) took the view that “geography as a discipline has something useful to contribute to man’s struggle for a better and more abundant life. Geographers should “stand up and be counted among the advocates and doers in this struggle” (Applebaum, 1966, 198). In similar vein, Abler (1993) considered that “too many geographers still preoccupy themselves with what geography is; too few concern themselves with what they can do for the societies that pay their keep” (Abler, 1993, 225). There is no reason why an individual researcher cannot maintain a presence in both pure and applied research. The eminent American geographer C. Sauer was both a “scholar” who conducted research on agricultural origins and dispersals and an “applied geographer” who developed a land classification system for the State of Michigan. The terms pure and applied are best seen as the ends of a continuum rather than unrelated polar opposites.

While this distinction is useful at a general level it overplays the notion of a dichotomy between pure and applied geography, which are more correctly seen as two sides of the same coin. There is, in fact, a dialectic relationship between the two. As Frazier (1982, 17) points out “applied geography uses the principles and methods of pure geography but is different in that it analyses and evaluates real-world action and planning and seeks to implement and manipulate environmental and spatial realities. In the process, it contributes to, as well as utilizes, general geography through the revelation.

There is little merit in pursuing a false dichotomy between pure and applied research. A more useful distinction is that which recognizes the different levels of involvement of researchers at each stage of the research and specifically the greater engagement of applied geographers in the ‘downstream’ or post-analysis stages (Fig. 1). The applied researcher has a greater interest than the pure researcher in taking the investigation beyond analysis into the realms of application of results and monitoring the effects of proposed strategies. Researcher participation in the implementation stage may range from recommendations in scholarly publications or contracted reports (a route favoured by most academic applied geographers, though not exclusively) to active involvement in implementation (more usually by applied geographers employed outside academia). Between these positions lie a variety of degrees of engagement, including acting as expert witnesses at public enquiries, dissemination of research findings via the media, field involvement in, for example, landscape conservation projects, and monitoring the effects of policies and strategies enacted by governmental and private sector agencies.

Table 1:- Cycles of pure and applied geography.

Sl. No.	Periods	State of Pure & Applied Geography
1.	First Applied Period (late nineteenth century)	Geography created as an applied discipline to serve the political, military and commercial interests of the Prussian state.
2.	First Pure Period (early twentieth century)	Based around the holistic philosophy encompassing both physical and human phenomena and focused on the core concept of the region and regional synthesis.
3.	Second Applied Period (inter-war)	A period of war, followed by Depression, and war again demanded geography demonstrate its usefulness in fields such as land use planning.
4.	Second Pure Period (post 1945 boom)	Rejection of ideographic, regionalism replaced by spatial science and the quantitative revolution; demise of holistic approach and emergency of subfields within the discipline.
5.	Third Applied Period (mid 1980s)	Extension of the concept of useful research into new areas of concern relating to social, economic and environmental problems; applied geographers working both in academic and in public and private sectors. Applied geography as an approach rather than a subfield crosscuts the artificial boundary between physical and human geography and emphasizes the dialectic relationship between pure and applied research. Acknowledgement of the role of human agency and values in research and environmental change, and the need for a pluralist view of science.
6.	Third Pure Period (?)	Characteristics unknown but speculatively - a return to a more holistic philosophy reflecting the growing importance of environmental issues and the combinatory perspective of applied geography.
7.	Fourth (emerging?) Applied Period (post-2009 Global recession)	Increasing demands from governments and research funding councils for researchers to demonstrate the applied beneficial impacts of their research for contemporary economy and society.

The balance between pure and applied research within a discipline varies over time in relation to the prevailing socio-political environment. When external pressures are at their greatest disciplines will tend to emphasize their problem-solving capacity while during periods of national economic expansion “more academic” activity may be pursued in comfort. Taylor (1985) equated these cycles with the long waves of the world economy, and identified three periods in which applied geography was in the ascendancy (in the late nineteenth century, inter-war era, and mid-1980s) separated by two periods of pure geography (in the early twentieth century, and during the post-1945 economic boom). More recently, the global recession of 2009 has led to demands from the UK government and research funding bodies for academic research to demonstrate its (applied) beneficial impact for the nation’s economy and society.

Scope and the Methods of Applied Geography:-

Taking all this into account, it seems to me worthwhile to try to summarize the current views on the scope and the methods of applied geography. Recent developments in the sphere of applied geography require some systematization and generalization (Stanislaw Leszczycki). There are two ways to systematize applied geographical research and to establish its limits:

1. According to the various divisions, branches and specialties of geographical research, and
2. According to the different areas of social and economic life in which these studies can be of service.

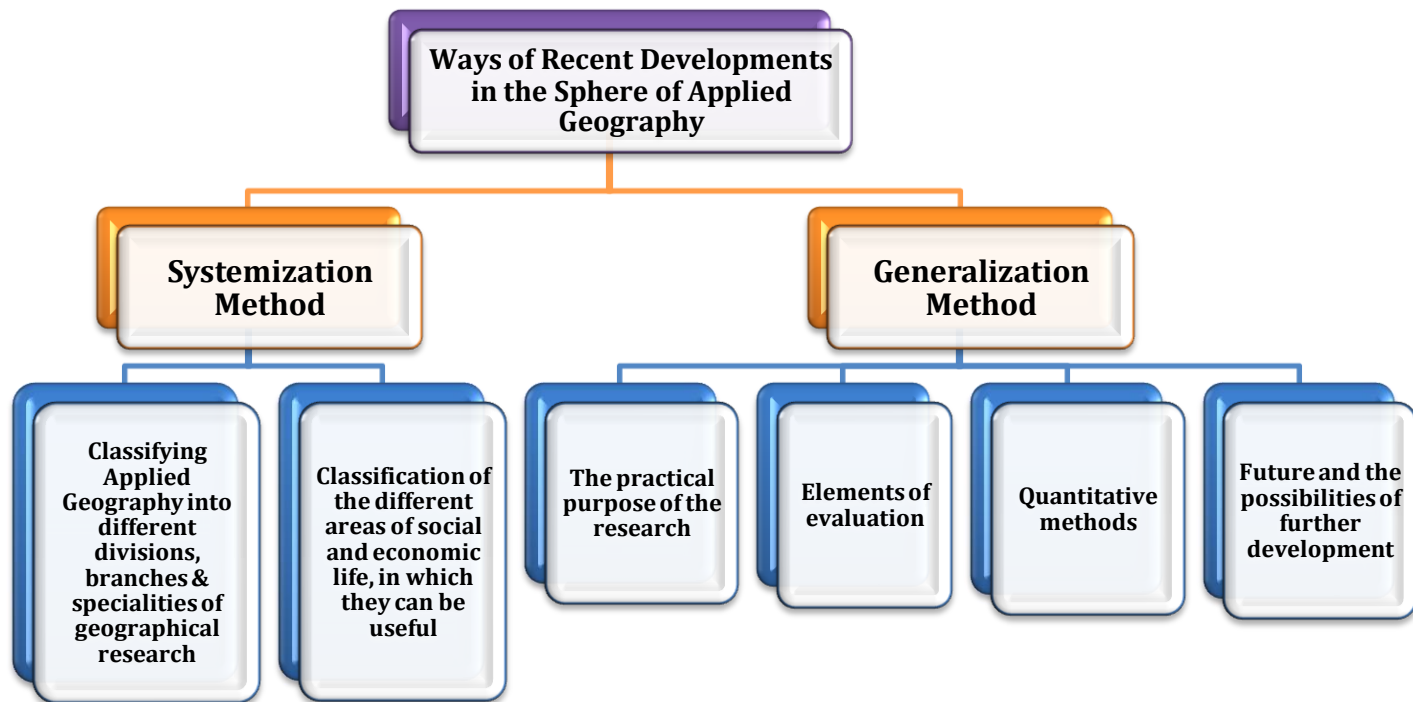


Figure 2:- Ways of Applied Geography.

In the first case it is necessary to classify applied geographical studies according to the various divisions of geographical sciences. First of all they can be classified according to the four main divisions of geographical studies: (1) physical geography, (2) economic geography, (3) regional geography and (4) cartography. Then, if necessary, the more detailed classification of applied geographical studies may follow the further division of geographical sciences into particular branches: for instance in physical geography: geomorphology, hydrography, climatology, geography of soils, biogeography; and in economic geography: population geography, settlement geography, industrial geography, geography of agriculture, geography of transportation and geography of services. More detailed classification is also possible: for instance according to specialties: in settlement geography: urban geography and rural geography, and in agricultural geography: geography of forestry, geography of fisheries etc.

The classification of all applied geographical research carried on up to now, and of the methods used by it, gives us a long list of all the possible applications of geographical studies, and the scope of such applications.

Instead of this **systematization** of applied geographical studies based on the divisions and branches of geographical sciences there exists also another possibility. The systematization may be based on a classification of the different areas of social and economic life, in which they can be useful. One thinks of areas such as population policy, industry, agriculture, forestry, transportation, trade and commerce and various services such as municipal, educational, public health, and so on. Thanks to such systematization, a detailed list of all applied geographical studies will be obtained, comprising also the methods used. This will allow us to establish the scope and field of those studies. Still another approach, the regional one, is possible. It was pointed out by M. Phlipponneau. Complex studies can be organized for the countries having particularly unfavorable geographical conditions, for arid and semiarid zones, for humid tropics, arctic and subarctic zones, or for underdeveloped countries. This may be agreed with this regional approach to applied geographical studies and it seems that such an approach will enable us to systematize these studies, to establish their fields, and to make some generalizations. However, to achieve this goal we shall need further and more detailed studies.

According to Stanislaw Leszczycki, we can carry our generalization even further. In order to achieve it, we must find out what are the characteristic features common to all applied geographical studies. Four of them are:

- ⌘ **The practical purpose of the research:** Owing to the fact that the results of the research are to be used directly by the people who use them, this research must employ special methods and the results ought to have the character of responsible scientific opinions worked out by experts. Since these geographical studies are sometimes requested or commissioned by some existing organization or institution, which means that the client or consumer of the geographical research is definitely known, to fulfill their aim geographers will have to employ in their work the terminology already in use in the various areas of national economy to which such an organization or institution belongs. Therefore geographers ought not to make efforts to create a new terminology of their own.
- ⌘ **Elements of evaluation:** The practical purpose of these studies requires the elements of evaluation to be introduced into the research and into its results. The evaluation of the studied phenomena from the point of view of the practical application of applied studies is the characteristic feature of all applied research. This characteristic feature allows us to differentiate applied research from research in general which is often merely limited to the statement of facts leaving their evaluation to the reader.
- ⌘ **Quantitative methods:** The practical purpose of these studies requires that all their results be presented quantitatively, that is in numbers. That is the reason why the quantitative methods, so well developed now in the American geography, ought to prevail in such studies.
- ⌘ **Future and the possibilities of further development:** As all applied studies must take into account the future and the possibilities of further development, they ought to give perspectives and be cast in the form of a scientific forecast.

Recently many similar studies have been carried on. They are sometimes undertaken in order to meet some important political, social or economic needs. There should be quoted some examples:

1. Every country needs to maintain strong defenses. These defenses are the task of its military establishment. The solution of many complicated problems involved there often requires the help of geographical studies belonging to different branches of geography. All these studies deal with a concrete territory, and their aim is clearly defined; taken as a whole they constitute a special branch of geography usually called military geography. The characteristic features of this kind of research allow us to consider military geography as an entity and as a branch of applied geography. Military geography is well developed in the Soviet Union, the United States, Germany and some other developed and developing countries.
2. Geographical studies connected with tourist travel and recreation has a similar character. These problems have grown steadily in importance from the social point of view. These studies are very complex: they include not only research dealing with aspects of natural environment valuable for recreation and tourist travel, such as landscape or climate, dealt with by physical geography; but they also contain anthropogenic aspects valuable for recreation or tourist travel, from the point of view of culture, as well as such phenomena as recreational trips, economic problems connected with the services for the tourists and the social and cultural problems which result from tourist and recreational travel. This last group of problems belongs to cultural and economic geography. But as all these studies, economic as well as physical, aim at solving but one complex problem, they can be considered as a special branch of applied geography, namely recreational geography which can boast of important achievements in many countries.
3. Probably the same approach could also be applied to the problems of public health services. A geographer concerned with these problems must deal with the people and their resistance to certain diseases, with the

natural and social conditions which contribute to the spread of contagious diseases, with conditions of neo-therapy and climatic treatment, acclimatization of human races, etc. All these problems, considered together, from the field of medical geography which, of course, is not merely confined to the problem of the distribution of diseases. Medical geography, understood in this way, may be considered as a branch of applied geography. The huge scope of the problems encompassed by medical geography, as well as the methods used by it, will allow the geographer to play a greater role in this field, alongside the biologist and the physician.

4. Finally, an example which seems to be the most important and the best known. There are the geographical studies undertaken to meet the needs of physical and regional planning, or to work out the programme for the regional development of a certain territory. Physical and regional planning is complex in their character. They are concerned with a concrete area that is with a concrete sector of the Earth's crust.

Geographical studies for the purpose of physical and regional planning are applied in their character, because they aim at working out a perspective plan to meet the needs of a continually growing population. Such a plan usually comprises all investment outlays connected with production, transportation, and with material as well as cultural services. The geographical studies involved in this have a very wide range, are tentatively directed to their goal, use appropriate methods suited to produce results which could be directly used by planners. All these studies form a complex and are not merely "applied", but also regional; they form a certain whole which constitutes a branch of applied geography, namely, planning geography. This type of applied geographical research has been carried on for many years in many countries.

The number of such examples could, no doubt, be multiplied. A similar approach could also be applied to the problems of controlling a country's affairs, to foreign trade, etc.

All the examples mentioned above have some characteristic features in common. All these geographical studies put a special stress in their research:

1. *On finding out the most rational use of all the resources of the geographical environment, in order to meet the needs of a given society, and*
2. *On working out proposals of adequate organization forms which would allow the society to control its geographical space.*

These two characteristics allow us to delineate the nature of applied geography and to determine its fundamental goals.

Some geographers will, perhaps, prefer another approach. They will, perhaps, consider applied geography as a new fashionable trend in geographical research. This trend may be treated much as the trends towards regional geography or systematic geography were treated in the past. In the 19th century the trends towards concentration on physical geography to the detriment of human geography, or *vice versa*, had a similar character. In the history of geography there were many trends which greatly contributed to the development of geography as a whole, in spite of the fact that these trends were not accepted by all geographers. In any case, the trend in geographical studies known as "applied geography" comprises a certain concept which allows us to consider applied geography as a special division of geographical sciences, distinct from the other divisions. It differs from them because of its different approach expressed in the scope of the research, in its aims, in its results containing the evaluation of the facts, and also in the special methods it uses.

Protocol for Applied Geography:-

There is no single method of doing applied geographical research. Nevertheless it is useful to examine one possible protocol which, with appropriate methodological modifications to suit the task in hand, can provide a framework for many investigations in applied geography.

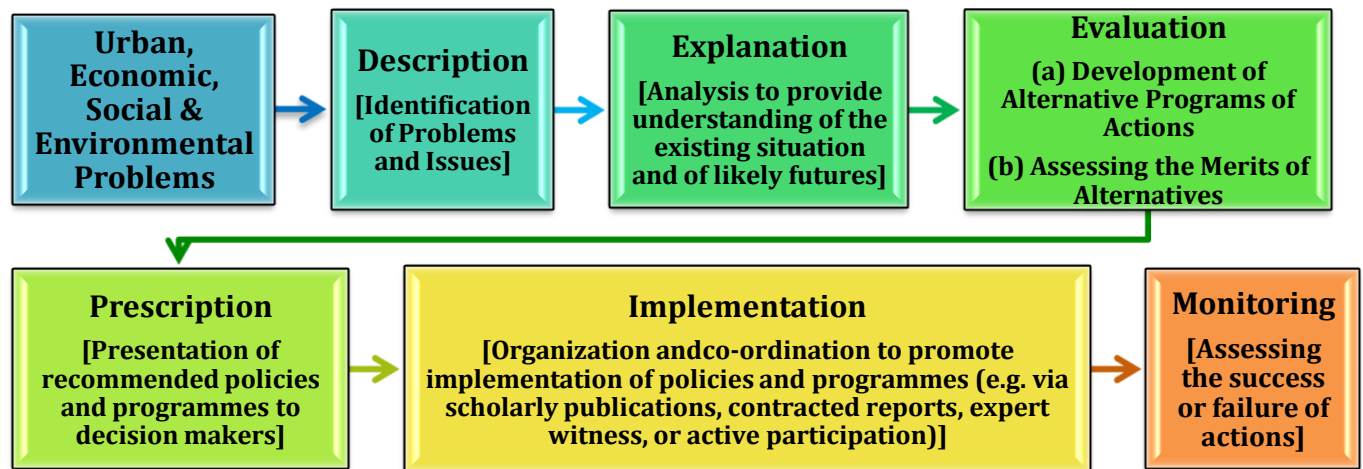


Figure 2:- A protocol for applied geography Pacione, 1999.

The procedure may be summarized as *description*, *explanation*, *evaluation* and *prescription* (DEEP) followed by *implementation* and *monitoring*. The “DEEP” procedure represents a useful analytical algorithm. However, the apparent clarity and organization of the scheme does not imply that simple answers are expected to contemporary social, economic or environmental problems. Normally, in order to understand the nature and causes of real world problems it is necessary to untangle a Gordian knot of causal linkages which underlie the observed difficulty. In some cases, such as the link between ground slippage and building collapse, cause and effect are relatively straightforward.

As above figure indicates, as well as describing the nature and explaining the causes of problems the applied geographer also has a role to play in evaluating possible responses and in prescribing appropriate policies and programmes which may be implemented by planners and managers in both the public and private sectors, or by the residents of affected communities. In performing these tasks the applied geographer will be confronted with a variety of potential responses for any problem. The selection of appropriate strategy is rarely straightforward. The decision must be based on not only technical criteria but also on a wide range of conditioning factors including the views and preferences of those affected by the problem and proposed solution, available finance, and externality considerations or how the strategy to resolve a particular problem (such as construction of flood control levees) may affect other problems (such as increased flooding of downstream communities).

As indicated earlier, applied geographers, in contrast to “pure” geographers, may also be involved in the implementation stage of the research, normally in a supervisory or consultancy capacity to ensure effective application of a strategy. The nature of any engagement is potentially wide ranging, for example, from overseeing the setting-up of a computer-based route planning system for a private transport company or public ambulance service to making one’s expertise available to community groups seeking to establish a housing co-operative or local economic development initiative. Finally, as above figure reveals, applied geographers may be involved in monitoring the impacts of policies and programmes implemented to tackle a problem, and in relating these critically to predetermined normative goals.

Contemporary Research Issues in Applied Geography:-

Table 2:- Contemporary Issues in Applied Geography.

Natural and Environmental Hazards	Techniques of Spatial Analysis
♣ Global Warming	🌀 Remote Sensing and Environmental Change
♣ Acid Precipitation	🌀 Computer Cartography
♣ Extreme Weather Events	🌀 Geodemographics
♣ Earthquakes and Vulcanism	🌀 Global Positioning Systems
♣ Landslides	🌀 Computer Simulation
♣ Floods Modeling	🌀 Urban Structure

♣ Coastal Erosion	🌀 Geographic Information Systems
♣ Physical Problems of Urban Environments	🌀
Environmental Change and Management	Challenges of The Human Environment
♠ Water Supply and Management	❖ Urbanization and Counter urbanization
♠ Water Quality and Pollution	❖ Boundary Disputes
♠ Irrigation	❖ Political Spaces and Representation Within States
♠ Desertification	❖ Housing Problems in the Developed World
♠ Deforestation	❖ The Geography of Poverty
♠ Maintaining Biodiversity	❖ Segregation and Discrimination
♠ Landscape Evaluation	❖ Socio-spatial Variations in Health
♠ Environmental Impact Assessment	❖ Crime and Fear of Crime
♠ Countryside Recreation Management	❖ Retail Location Analysis
♠ De-intensification of Agriculture	❖ Urban Transport and Traffic
♠ Wetlands Conservation	❖ Rural Accessibility
♠ Land Use Conflict	❖ City Marketing
♠ Derelict and Vacant Land	❖ Low Income Shelter in the Third World
♠ Sustainable Tourism	❖ Informal Sector Activity in the City
♠ Townscape Conservation	❖ Social Polarization and Exclusion

Source: Pacione, M., 1999: *Applied Geography: Principles and Practice*, Routledge, London.

The Value of Applied Geography:-

The relevance and value of applied geographical research has never been more apparent given the plethora of problem situations which confront modern societies - ranging from extreme natural events (such as floods, drought and earthquakes) through environmental concerns (such as deforestation, disease and desertification) to human issues (such as crime, poverty and unemployment). An applied geographical approach has the potential to illuminate the nature and causes of such problems and inform the formulation of appropriate responses.

At each stage of the research process the applied geographer is faced with a number of methodological and ethical questions. Decisions are required on defining the nature of the problem, its magnitude, which is affected and in what ways, as well as on the best means of addressing the problem. All of these require value judgements on, for example, the acceptability of existing conditions (what is an acceptable level of air pollution? or of infant malnutrition?). Values are also central to the evaluation and selection of possible remedial strategies, including comparative analysis of the benefits and disbenefits of different approaches for different people and places. In some cases the applied geographer may seek to minimise such value judgements by enhancing the objectivity of the research methodology (for example, by employing a classification of agricultural land capability to inform a set-aside policy). In most instances, however, it is impossible to remove the need for value judgement. As Briggs (1981, 4) concluded, "whether objectivity is ever achieved is a moot point. In most cases the subjectivity is merely transferred from the client (for example the politician or the planner) to the research designer". The impossibility of objective value-free research is now axiomatic.

Applied geographers must beware of any restrictions imposed by research sponsors and aware of the ways in which their research results may be used. Decisions on whether to undertake a project must weigh the benefits against any constraints imposed by a client or sponsor. In general, applied geographers should seek to ensure that their work contributes to human welfare. In practice this goal may be approached by careful selection of clients and research projects, by ensuring freedom to disseminate results and, where possible, through engagement in the implementation and monitoring of relevant policy or strategies. This leads to consideration of a possible protocol for the practice of applied geography.

I think that the importance of applied geography compels us to reflect on this subject. The development of applied geography may be of considerable advantage to the geographical sciences taken as a whole. It may, among other things, contribute:

1. *To strengthen the authority of geography as a science because its results will be formulated precisely, quantitatively, and will have the character of a responsible scientific opinion worked out by experts and sometimes of scientific prognosis of future developments;*

2. To enlarge the possibilities of employment for geographers as specialists, not exclusively in the realm of education, but also in many other fields. This enlargement of occupational possibilities will result from the more precise determination of their profession and the scope of their knowledge;
3. To increase the subsidies for geographical studies because the subsidizers will derive practical advantages from the scientific research carried on by geographers;
4. To make the scientific generalizations in geographical sciences and their theoretical foundations more solid, more precise. This will result from the continuous confrontation of the theoretical assumptions and the effects of geographical research on life, since they will be verified in practice.
5. All these advantages are so promising that it is worthwhile to give more attention to the development of applied geography in the future.

Careers in Applied Geographic Technology:-

Many of the students are finding out the work enables them to address important environmental and social issues in the private or public sectors. As a graduate from Applied Geographic Technology, one can pursue a wide range of job opportunities, including:

Table 3:- Subject Opportunities due to Its Applying Status.

Geography Related Occupations / Job Opportunities		
CAD (Computer Aided Design) Operator	Lawyer	Soil Conservationist
Cartographer	Map Makers	Soil Scientist
Economic Development Specialist	Market Research Analyst	Commercial/ Residential Surveyor
Geographer	Natural Resource Manager	Technical Sales Rep.
Geographic Information Specialist	Naturalist	Technical Writer
Geomorphologist	Petrologist	Urban Planner
Geophysicist	Photogrammetrist	Water Quality Specialist
Government Agency Administrator	Political Analyst	Administrative Technical Staff
Historian	Political Scientist	Land use planners
Hydro-geologist	Project Associate	Environmental Consultant
International Economist	Research Scientist	Planning and Development Surveyor
Landscape Architect	Science Librarian	Geospatial Analyst
Climatologist	Climate Change Analyst	Location Analyst
Block / Regional Development Officer	Seismologist	Remote Sensing Analyst
Pollution Analyst	Water Conservation Officer	Transport Planner
Human Resource Manager	Water Quality Scientist	Waste Management Officer
Tour Guider	Management Specialist	Exhibition Designer & Organiser
 Without above mentioned job opportunities, there is more scope to appear in any type of competitive examinations for the career advancement in case of regional (state), national (central) and international levels.		

What will one learn from Applied Geography?

Through the Applied Geographic Technology program, one will learn how to:

- Collecting, analyzing, and representing earth data using geographic technologies
- Thinking critically for spatial problem solving
- Using analytical skills for data collection in the field, at the library, or on the computer
- Understanding and operating global positioning systems
- Employing mapping, spreadsheet, and database software
- The Applied Geographic Technology programme brings together new technologies in computer science, visualization, geographic information science, and remote sensing to examine the natural and human environment.
- Through intensive hands on projects, one will become an expert as using these fast growing and in demand technologies.

General Problem related to Applied Geography:-

- ☉ **Spatial geographic problems:-** all research starts with some type of problem statement establishing how the process will be conducted.
- ☉ **Problem identification:-** world is full of problems, many with geographic dimensions. Geographers identify patterns on the landscape through observation and inquiry, and begin to ask questions related to the spatial concepts:
 - ❖ What differentiates one place from another?
 - ❖ Why is one region as part of the Metroplex different from some other?
 - ❖ Where is the best location to build a new school?
 - ❖ What would be the best route for a new highway?
 - ❖ Is there a geographical pattern as to where certain types of disease occur?
- ☉ **General problem:-** establishes the context of the problem locally, regionally, nationally, and/or globally. Provides an orientation as to why the problem will be studied and its significance/importance
- ☉ **Specific problems:-**
 - ❖ Identify smaller questions, which must be answered in order to achieve larger research objective.
 - ❖ Specific research questions can be concept focused and/or directed at individual steps in research process. Specifically, this research will: 1) locate...2) inventory...3) analyze... and 4) recommend solutions to the general problem.
 - ❖ Spatial or geographic research problems can start with a map of dependent variable or the pattern we are attempting to understand.

Problems of Applied Geography in India:-

- a. Poor Teaching and Learning,
- b. Poor Training and Research,
- c. Overall Poor Output,
- d. Poor Recognition,
- e. Poor Funding, and
- f. Poor Infrastructure and Poor Trained.

The above problems in case of our country, withhold the advancement of applied geography in India. But, this is fortunate that recent efforts from some institutions are flourishing the potentiality of applied geography here since India is full of issues with its explosive population.

Prospects of Applied Geography:-

Gould (1999) predicted that the twenty-first century would be essentially a spatial century. Implicitly, he also hinted at a possible renaissance of geography in general, and applied geography in particular. Echoing Gould's sentiment, Torrieri and Ratcliffe (2003) predicted that "in the twenty-first century, applied geographic research will help push the discipline of geography well beyond its current boundaries". According to our observations during the first two decades of the twenty-first century, this indeed is what has been happening. We firmly believe that applied geography will continue to be on an upward trajectory in the years to come for several reasons.

The role of geography in the quality of life research:-

The basic determination of the role the geography can play in the framework of quality of life research can be possibly rooted in Frazier's (1982) claim that most of the problems related to human life have (certain) geographical dimension. Many other authors (Helburn 1982, Murdie et al. 1992, Dissart and Deller 2000, Massam 2002) even more directly refer to the existence of certain "geographical dimension of the quality of life".

This opinion is narrowly associated with the inartificial need to include the aspect of spatiality into the quality of life framework, which has arisen alongside the assumption that the quality of life (or better said its level measured by appropriate method) is changing not only "from man to man", but in dependence of that also "from place to place" (Andráško 2007). Despite the life spaces of individuals can differ, there are many possibilities to define the areas where the everyday human activities meet and concentrate. The study of the quality of life of people living in some specific area (city, neighbourhood, etc.) stands for a typical example of research oriented this way.

In this context, the fundamental perspective of the role of geography within the quality of life research seems to be unambiguous. Based on geographer's abilities to analyse the spatial aspects or variations of particular, relevant components and processes, and subsequently to come to the synthesis of acquired knowledge, the preferential

strongpoint of geography resides in its capability to assess the spatial differentiation of selected territory from the quality of life viewpoint (Andráško 2007). In addition, Pacione (2003) also points out the traditional conceptual and methodological eclecticism of the geography.

The role of quality of life research in the geography:-

As in a sense contrary to the above mentioned view stands the issue of the importance of the quality of life research for the geography, or in slightly other words, what role can (should) this research play in the field of this scientific discipline. As Johnston (1997) states, in the 1960s and 1970s the studies drawing the attention to the need of incorporation of the quality of life research into geography have arisen. Some of this work started to operate with the term “level of living” (e.g. Thompson et al. 1962, Lewis 1968).

Special attention was given to the social conditions, situation or deprivation in urban areas (Bunge 1973, Herbert 1975, Smith 1979). In this way, much of the research was set in the context of the “social indicators movement” (Schneider 1976, Bowling and Brazier 1995), which in general can be considered the reaction to the finding that the financial or economic indicators and indexes are at least insufficient means for the pursuit of understanding and describing the human well-being in its broadest sense. Also in that time very popular and mostly on the spatial variations in population characteristics oriented research published under the general title of factorial ecologies became in a sense for certain reasons an object of critique. Some authors subsequently adapted factorial ecology procedures and by the means of the initial indicators set extension started to portray spatial variations in social welfare. One of them, P. L. Knox promoted the mapping of social and spatial variations in the quality of life as a fundamental objective for geography and suggested the related basic methodological framework (Johnston 1997). In the 1980s the growing interest in the aspects of environmental quality led to inclusion of the environmental indicators into the geographical quality of life studies. Among others, Cutter (1985) and Pacione (1986) presented a comprehensive (geographical) quality of life models. More recently, the connection of quality of life research with the Geographical Information Systems represents highly operational technique by the generation of well-being and quality of life maps (Massam 1999). From recent works for example Brereton et al. (2008) strongly support this notion.

One of the most distinct answers to our previous question about the role the quality of life research can play in geography was given by M. Pacione. From his point of view, the structure and distribution of quality of life forms a key area of research in (human) geography (Pacione 1986). In his later work, Pacione (2003) extends this idea by the opinion that central to the quality of life research is study of the relationship between people and their environments and seeking to understand the nature of the person – environment relationship is the quintessential geographical question that lies at the core of the sub-discipline of social (human) geography.

The Usefulness of Geographical Quality of Life Research and Essentialities of Applied Geography:-

From more practical point of view, the conception of the quality of life can be seen as the reaction of the modern society to the problems it has to deal with. Due to this statement we will conclude the paper with the specification of some possibilities of the practical utilization of the knowledge acquired via the geographical quality of life research. The quality of life in the above mentioned sense represents a cluster of “real-world problems” inevitably connected with the applied geography, a concept and relation fittingly discussed by Pacione (1999). Several outputs of geographical quality of life research are of value to social scientists or policy makers. Combining the conclusions of Pacione (2003) and Andráško (2007) these include:

- a. Production of the spatial projection of the information regarding the quality of life in particular areas;
- b. Assessment of the spatial differentiation of selected territory (ies) from the quality of life viewpoint;
- c. Production of territorial comparisons of the levels of quality of life and identification of the most “problematic” areas;
- d. Production of visually transparent outputs (mainly maps), representing the information regarding the quality of life in quite simple and comprehensible, user friendly manner;
- e. Creation of the specialized Geographical Information Systems as a highly operative tool for handling the quality of life related data;
- f. Production of some baseline measures of quality of life against which we can compare subsequent measures and identify trends over time;
- g. Knowledge of how satisfactions and dissatisfactions are distributed through society and across space;
- h. Understanding the structure and dependence or interrelationship of various life concerns;

- i. Understanding how people combine their feelings about individual life concerns into an overall evaluation of quality of life;
- j. Achieving a better understanding of the causes and conditions which lead to individuals' feelings of well being, and of the effects of such feelings on their behaviour;
- k. Identifying problems meriting special attention and possible societal action;
- l. Identification of normative standards against which actual conditions may be judged in order to inform effective policy formulation;
- m. Monitoring the effects of policies on the ground;
- n. Promoting public participation in the policy making.

📖 Everything is Geo-referenced via the New Ubiquitous Spatial/Location-Aware Computing Environment:-

As a result of accumulative advances in geospatial technologies led by Global Positioning System (GPS), GIS and GIS science, remote sensing, location-based services, and radio-frequency identification during the past twenty years, we have reached an unprecedented moment in human history: We can now know where everything is from genetic to global level at all times.

The Web has enabled geographic information to be stored, accessed, and disseminated through multiple platforms from cell phones to cloud computing. Geographic information can now be found in the contents of wikis, photos, videos, blogs, postings in social media, and many other forms of user-generated content, and with geo-tags. The entire Web is fast becoming a potential source of geographic data, information, and perhaps even knowledge that can be searched, mapped, analyzed, and synthesized. The new ubiquitous spatial and location-aware computing environment offers applied geography not only new sources of data, but also endless possibilities for applications from genetic to global levels, limited only by our imaginations. Location-based services and intelligence in business geographies are becoming multibillion dollar industries.

📖 Everybody is becoming a Geographer with the Growing Population of Neo-geographers and Citizen Scientists:-

Advances in geospatial technologies during the past ten years have enabled ordinary citizens with little formal training to participate in the production of geographic data and knowledge through a diverse form of user-generated content and volunteered geographic information. Examples for such efforts include Open Street Map, one of a number of efforts to build global maps as patchworks of voluntary contributions; Wikimapia, which is attempting to build a world feature directory under the mantra "Let's describe the whole world"; the hundreds of thousands of Google Earth smashups created by individuals; and Genomes that provides geographic access to Wikipedia entries. Some of the so-called neo-geographers are engaged for personal amusement, and have an annual symposium. Others seek more serious goals in the tradition of citizen science, through projects such as ctisci.org, niiss.org, and whoissick.org. Indeed, as Gould (1999) asserted, "there is a geographer in most people", and we are pleased to notice that these geographers inside everybody are mostly applied geographers.

📖 The Spatial Turn across the Disciplines and the Growing Demand for Applied Geography:-

It is not only the citizens, who are increasingly interested in geospatial topics, but also scholars across the disciplines in science, engineering, social science, and humanities who are also turning more and more to a geospatial perspective in their research (Scholten, van de Velde, and van Manen 2009). In recent years, we have seen mathematicians, physicists, computer scientists, and ecologists who are conducting groundbreaking work in complex networks, visual analytics, and spatial modeling, pushing the envelope of geography and GIS science. Space has become an integrating theme across the social sciences, as evidenced by emerging spatially integrated social sciences (e.g., www.csiss.org). Economist Paul Krugman was awarded the 2008 Nobel Prize for his work in economic geography. Scholars across the humanities have also made GIS and geospatial analysis an integral part of research methodologies (Knowles 2008; Warf and Arias 2008; Bodenhamer, Corrigan, and Harris 2010). Although there is exciting basic research being conducted in the spatial turn, we have also witnessed increasing applications of and a growing demand for geographic knowledge across a diverse set of disciplinary boundaries.

📖 Place-Based Public Policies and New Areas of Applications:-

The spatial turn obviously was not confined to the walls of the ivory tower. Policymakers have also realized the crucial importance of space and places in understanding the complexity of the world's problems, thus finding viable solutions to these problems that will work well under diverse local circumstances. The World Bank (2009) framed the world development report entirely from a geographical perspective, concluding that alleviating and eventually eliminating the world's poverty problems must start with reshaping the world's economic geography. In the United

States, the Obama White House (2009) issued a memo urging all U.S. federal agencies to develop place-based policies for fiscal year 2011. Robert Kaplan alerted U.S. foreign policy makers to how the revenge of geography could be manifested in Afghanistan and Iraq if useful geographical lessons were drawn from history by the Pentagon (http://www.foreignpolicy.com/story/cms.php?story_idD4862&printD1 265). Indeed, more and more decisions made by governments have demonstrated the need to explicitly consider geographic factors and local conditions.

☐ Learn to Think Spatially and Practice Applied Geography with Heightened Ethical Sensitivity:-

Last, but definitely not least, all these trends just discussed added a new level of urgency regarding spatial thinking and geographical literacy among the public and policymakers alike. It is obviously the solemn duty of the geospatial community to push a more aggressive lifelong geospatial education and training agenda. Educators on both sides of the Atlantic have started groundbreaking work (e.g., <http://www.visualspatial.org> and <http://www.spatial-literacy.org>). Also, more than before, these new trends point to the importance of geographic education. Educating and training our students with essential skills for practicing applied geography are obviously essential if we want to maintain the momentum of the growth trend. Equally important (if not more so), though, is to teach our students and the general public at large to practice applied geography with heightened ethical sensitivity. Moving forward, applied geography is not simply about getting things done, but is also deeply concerned with why we are doing it in the first place, for whom, and to what ends, and who ultimately will benefit from our applied work (both short term and long term). Heightened ethical sensitivity also means that we conduct our applied geography work with due attention to issues related to individual privacy, social equity, the digital divide, justice, and environmental sustainability.

When we connect the dots of these diverse trends related to technologies, public participation, new concepts, policies, and educational needs, we believe that these trends converge toward one; that is, we are witnessing the renaissance of applied geography in the spatial century unfolding right in front of our eyes. As Gould (1999) so prophetically predicted, the spatial century has revitalized the role of geography in society. Many of the world's challenging problems, from the global financial crisis to reducing world poverty to global warming, cannot be solved without enlightened geographical perspectives. In this sense, the arrival of a spatial century is really signaling the coming golden age of applied geography as "the location of anything is becoming everything" (Geospatial Revolution 2010).

Conclusion:-

Applied geography is an approach whose rationale is based on the particular philosophy of relevance or social usefulness and which focuses on the application of geographical knowledge and skills to advance the resolution of real world social, economic and environmental problems. Applied geographers are active across the human-physical geography divide and in most sub-areas of the discipline. The range of applied research being undertaken illustrates not only the contribution that applied geography is currently making towards the resolution of social, economic and environmental problems at a variety of geographic scales, but also the potential of the approach to address the continuing difficulties which confront humankind. Applied geography is a socially-relevant approach to the study of the relationship between people and their environments. The principles, practice and potential of applied geography to engage a wide range of real world problems commends the approach to all those concerned about the quality of present and future living conditions and environments on the planet Earth. The relative failure of applied geography to exert a major influence on social policy, however, does not signal a failure of applied geography to promote any significant improvement in human well-being which, as we have seen, may be achieved by means other than via public policy. Any assessment of the contribution of applied geography to the resolution of real world problems must balance the limited success in the specific area of social policy against the major achievements of applied geographers in a large number of other problem areas. The aim of the quality of life conception and Applied Geography Research cannot be seen only in the way of identifying particular problems, but also to point out the possibilities of their solution and outline the direction the society has to follow in a sense to ensure the satisfactory degree of quality of life for all. Hopefully, the presented paper at least partially contributed to explanation and support of the status of geography and geographers in this endeavour.

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