

Contemporary Human Geography

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Human Geography

Human geography is one of the two major sub-fields of geography. Human geography is the study of human use and understanding of the world and the processes which have affected it. Human geography broadly differs from physical geography in that it has a greater focus on studying human activities and is more receptive to qualitative research methodologies. Broadly speaking, human geography is a social science discipline, whilst physical geography is an earth science. Human geography is concerned with the study of spatial patterns of interactions between human beings and their physical environment.

It is a branch of geography that focuses on the study of patterns and processes that shape human interaction with various environments. It encompasses human, political, cultural, social, and economic aspects. While the major focus of human geography is not the physical landscape of the Earth, it is hardly possible to discuss human geography without referring to the physical landscape on which human activities are being played out, and environmental geography is emerging as a link between the two. Human geography can be divided into many broad categories, such as:

Initiation

In the History of geography geographers have often recorded and described features of the Earth that might now be considered

the remit of human, rather than physical, geographers. For example Hecataeus of Miletus, a geographer and historian in ancient Greece, described inhabitants of the ancient world as well as physical features. It was not until the 18th and 19th Centuries, however, that geography was recognised as a discrete academic discipline.

The Royal Geographical Society was founded in England in 1830, although the United Kingdom did not get its first full Chair of geography until 1917. The first real geographical intellect to emerge in United Kingdom geography was Halford John Mackinder, appointed reader at Oxford University in 1887.

The National Geographic Society was founded in the USA in 1888 and began publication of the National Geographic magazine which became and continues to be a great popularizer of geographic information. The society has long supported geographic research and education.

One of the first examples of geographic methods being used for purposes other than to describe and theorise the physical properties of the earth is John Snow's map of the 1854 Broad Street cholera outbreak. Though a physician and a pioneer of epidemiology, the map is probably one of the earliest examples of Health geography.

However, the now fairly distinct differences between the subfields of physical and human geography developed at a later date. This connection between both physical and human properties of geography is most apparent in the theory of Environmental determinism, made popular in the 19th Century by Carl Ritter and others, and with close links to evolutionary biology of the time. Environmental determinism is the theory that a people's physical, mental and moral habits are directly due to the influence of their natural environment. However, by the mid 19th Century, environmental determinism was under attack for lacking methodological rigour associated with modern science, and later as serving to justify racism and imperialism.

A similar concern with both human and physical aspects is apparent in the later Regional geography, during the later

19th and first half of the 20th Centuries. The goal of regional geography, through regionalization, was to delineate space into regions and then understand and describe the unique characteristics of each region, in both human and physical aspects. With links to possibilism and cultural ecology, some of the same notions of causal effect of the environment on society and culture, as with environmental determinism remained.

By the 1950s, however, the quantitative revolution lead to strong criticism of regional geography. Due to a perceived lack of scientific rigour in and overly descriptive nature of the discipline, and a continued separation of geography from geology and the two subfields of physical and human geography, geographers in the mid 20th Century began to apply statistical and mathematical model methods to solving spatial problems. Much of the development during the quantitative revolution is now apparent in the use of Geographic information systems; the use of statistics, spatial modeling and positivist approaches is still important to many branches of human geography. Well-known geographers from this period are Fred K. Schaefer, Waldo Tobler, William Garrison, Peter Haggett, Richard J. Chorley, William Bunge, and Torsten Hägerstrand.

From the 1970s a number of critiques of the positivism now associated with geography emerged. Known under the term critical geography this signalled another turning point in the discipline. Behavioral geography emerged for some time as a means to understand how people made perceived spaces and places, and made locational decisions. More influentially, radical geography emerged in the 1970s and 1980s, drawing heavily on Marxist theory and techniques, and is associated with geographers such as David Harvey and Richard Peet. Seeking to say something 'meaningful' about the problems recognised through quantitative methods, to provide explanations rather than descriptions, to put forward alternatives and solutions and to be politically engaged, rather than the detachment associated with positivist methods. (The detachment and objectivity of the quantitative revolution was itself critiqued by

radical geographers as being a tool of capital). Radical geography and the links to Marxism and related theories remain an important part of contemporary human geography. Critical geography also saw the introduction of humanistic geography, associated with the work of Yi-Fu Tuan, which, though similar to behavioural geography, pushed for a much more qualitative approach in methodology. The changes under critical geography have led to contemporary approaches in the discipline such as Feminist geography, New cultural geography, and the engagement with postmodern and post structural theories and philosophies.

REGIONAL AND GLOBAL PATTERNS

Today, human geography also looks at regional and global patterns. Because of the spread of modern technology, humans today can make changes in the natural environment at a much faster rate and much grander scale than at any other time in human history. In addition, conflicts such as war can cause immediate and widespread environmental damage, such as the oil fires and spills during the various conflicts in Iraq and Kuwait or the widespread killing of wildlife in various African conflicts. The extent of environmental degradation and pollution in the former Soviet Union and the demise of the Aral Sea are other examples of human-created changes in geography. Like physical geography, human geography is divided into a wide range of subtopics.

These include economics, transportation, cultural geography, urban geography, and political geography. For example, human geography, when dealing with environmental issues, is not limited to natural dynamics but also takes into account the fact that there are distinct social, economic, and political environments. The problems dealt with by human geography have varied over the course of time. In addition, new models and technical abilities affect how problems in the human-physical environment are approached. Given the diversity of philosophies and models for the description and analysis of human-environment interaction, it would be more appropriate

to speak of a plurality of human geographies rather than one single human geography. In 1992, David N. Livingstone noted different approaches to the discipline. According to this English geographer, the whole set of problems, subjects, and concepts that have developed over time have come to form part of this tradition and to be called human geography. From the time of the explorers to the drawing of maps, from the days of proposals for the study of industrial locations to the study of the distribution of wealth throughout the world, or the spaces constructed by "gay" communities or "okupas," up to the time of the survey of the surface of the Earth with remote sensors and cartography based on GEOGRAPHICAL INFORMATION SYSTEMS (GIS)-all of this has come to be a part of the human geography tradition and to distinguish it from the type of history and cultural or social and political analyses and description developed by other disciplines. It is possible to distinguish four significant events that help to understand how different problems and subjects have become defined as human geography.

These events were:

- The formal recognition of modern geography (1870-1920);
- The development of pragmatic perspectives (1950s);
- The manifestation of radical and critical views (1970s); and the development of what has been termed a postmodern approach along with more traditional cultural geographies (1980s and 1990s).

Formal Recognition (1870-1920)

Human geographies developed in most European countries were influenced by the German, French, or British schools of geography and sometimes by all three together. Some maintain that it was in these three countries that the discipline was first institutionalized as something distinct from history and geology. Between the mid-19th century and the beginning of the 20th century, and in the context of the construction and redefinition of national states and the process of imperialism and colonial expansion, geographical knowledge was clearly related to the

extension of political and economic power. As it was considered, geography offered the kind of knowledge that made it possible to acculturate and integrate or control local populations. During this period, human geography became a distinct programme in the curriculum. For example, the first chair in human geography was set up in 1870 within the context of the unification of Germany, and under the responsibility of the geographer-philosopher, Friedrich Ratzel (1844–1904). France recognized the importance of teaching geography after the loss of the territories of Alsace-Lorraine to the Germans.

This was France's context for the creation of the chair of human geography under Paul Vidal de la Blache (1854–1904). Ratzel developed a project for anthropogeography based on the analysis of the influence of natural conditions on humanity. For Ratzel, the greater the attachment to the earth (as Ratzel called the territory) the greater would be the need for a society to maintain its physical possession. Ratzel believed that it was for this reason that the state was created. The analysis of the relations between state and space was one of the main topics in anthropogeography. The development of any society would imply, as he saw it, the need to increase the size of territory and hence to conquer new areas. One can readily see the seeds of Adolf Hitler's *Lebensraum* (expanding "living space") in this approach to the state.

On the other hand, the Frenchman de la Blache was critical of anthropogeography as an approach to human geography. Rather than being interested in the influence of natural conditions on societies, de la Blache sought to analyse how societies could challenge nature and come to develop an environment suited to their needs. Within this framework he formulated his concept of the *genre de vie* (lifestyle), understood as a historically constructed relationship built up by different human groups with their surroundings, and based on the use of available technologies.

This was a view that emphasized human abilities and influences in modifying the physical earth itself. For this geographer, natural human regions and regional study was

seen as an expression of lifestyle, which was the whole object of study of human geography. Seen in the light of this approach, for de la Blache, the map of France was the result of the harmonizing of its different regions. In the light of the theories and studies of de la Blache, the concept of a region (the study of the particular relation of a set of diverse elements in a given area) became one of the key concepts in human geography.

In Great Britain, the Royal Geographical Society was responsible for the institutional and financial organization of the two chairs in geography, one at Oxford University and the other at Cambridge University. The first was assumed by Halford J. Mackinder (1861–1947). The second fell to Francis Guillermand (1852–1933). Mackinder considered that geography could be useful to statesmen since it is an integrating discipline, in which studies can be made of the causal relationships between man and the environment.

These studies can be conducted in specific areas and have as their purpose the analysis of these relationships on a global scale. Towards the end of the 19th century, biology was considered to be the most modern discipline. In the light of such thinking, the concept of geography as a natural science was the guarantee required for it to achieve qualification as a science. Thus, no one hesitated to qualify geography as a natural science, thus placing evolution at the heart of any geographic explanation. For French geographers, human geography was a discipline that leads to knowledge of the relationship of societies with their environment.

For Russian geographers, the purpose of geography in education was to reveal the battle of human beings with nature, thereby leading to a better understanding of the relationship between the two. Some Russians stressed that the study of human diversity implies showing what constitutes families of different peoples, bringing them together regardless of any racial differences, beliefs, or lifestyles. On the other hand, other geographers placed work as the mediator between the physical environment and society. North American cultural geography presented by Carl Sauer (1889–1975) is one of the

few proposals of that time that attempts to rise above a global and North American evolutionary framework (particularly as it was developed in the United States by H. Barrows, T.G. Taylor, R.D. Salisbury along with W. Davis and E. Semple.). In fact, Sauer makes the whole concept of culture, linked to the anthropology, the key to the transformation of the natural landscape or the visible forms of nature into a cultural landscape.

PRAGMATIC PERSPECTIVES

In the years after World War II and to the beginning of the Cold War, regional analyses of human geographies had become the principal activity conducted in the field. As financial capital was directed to the reconstruction of postwar Europe, a group of planning organizations was attempting to define the best locations for productive activities. They did this using a set of geographical engineering models that would define social problems before they became major challenges. The joining of the human geographies of political and economic perspectives led to the birth of a focus on pragmatic versus theoretical or descriptive studies.

For most of the geographers following this line, mathematical language and models were considered to be the most appropriate methods for true science. Human geographies that emphasized descriptive accounts were exchanged for a more statistical approach. Neoclassical models were formulated in the belief that subjects would behave rationally and with a view to seeking a maximization of earnings and opportunities. Now human geography became viewed as a discipline entrusted with spatial analysis. From this time on, spatial organization became the principal object of study of human geographers. The scientific base was to begin with an assumption that geographic space was to begin *de novo*—that is, without people or prior history.

In short, the approach was, “All things being equal, then...” Within these assumptions, the planner could move freely within geographic space, the only variables would be questions of distance, direction, and connection (linkage). The geographic

region was understood as the space in which internal differences are minimized and everything beyond its boundaries would be of much greater difference or variance. Under the idea of pragmatic geography (as another subset of human geography) there were various trends. First, quantitative geographers studied the relations and interrelations of different geographic phenomena, local variations of physical landscape, and the impact of nature on societies and of the latter on the environment. These were all to be numerically expressed and understood. The second trend involved geographers who used systems theory. Hence it is given the name "systematic" or "modeling geography."

For example, the geographer Brian Berry defines models as key to the formulation of explanations. A third school of pragmatic geography is represented by a focus on the geography of perception. Drawing on the instruments of behavioral psychology, the followers of this trend try to analyse the subject valuation of space, both in the case of the behavior of the urban dweller and that of native African communities. It is focused on culture as the key to the creation of human geographies. A part of the legacy of the approach of pragmatic geography has been the evolution of geographic information systems (GIS), a field in which the concept of abstract space and the formulations of a mathematical character continue to play an important role. And it is a practice now widely used by many fields of science, both physical and social.

RADICAL, CRITICAL HUMAN GEOGRAPHIES

As part of the sociology of its era, the decades of the 1960s and 1970s witnessed a major political convulsion in the field of human geography. In addition to the controversies surrounding the Vietnam War, it was a period during which many of the long-established European colonies in Africa achieved independence.

Various social movements, such as those in defence of human rights, the rights of women, and the protests of an

ecological character all appeared on the world scene and were especially intense in Europe and the United States. Many contemporary human geographers not only participated in these movements but also began to question their own practices. The crisis to be identified in geography was a symptom of other crises occurring in capitalism, politics, and science. Some human geographers now considered that scientific knowledge should not only serve for the understanding of society, but should also help to guide and transform it. Positioning themselves simultaneously against both classical and quantitative geography, they tried to establish the basis of a new science that, as they saw it, would help create the basis of a new society.

These geographers called themselves radicals in the United States; in other contexts, such as the French, the Italian, the Spanish or the Latin American world, they were referred to as critical geographers. Both the radical and critical schools of human geography followed the philosophical tenets of Marxism and stressed first and foremost the importance of economics (not the natural environment) when it comes to the interpretation of social dynamics.

Second, they stressed the role of ideology in the production of knowledge, opposing the idea that there is any possibility of creating an objective or value-neutral science. Both the radical and the critical geographers reverted to the concept of space already worked upon by the pragmatic geographers in order to provide the social content it had consciously omitted (to be scientifically neutral) when formulated in the 1950s. Radical and critical geography was a shift to emphasizing human economics and philosophies in the creation of human geographies. The approach known as active geography was opposed to the applied geography promoted over the decade of the 1950s. The first manifestation of this approach was found in *Géographie Active* (1964) the name of a book written by Pierre George, Yves Lacoste, Bernard Kayser, and R. Guglielmo. This book undertook an analysis designed to reveal the contradictions of capitalism in different regional geography frameworks.

Thus, a type of geography was formulated for regional analysis that would reveal inherent social contradictions such as poverty, malnutrition, and precarious housing. The proposal for active human geography also gave a new significance to actual fieldwork in the countryside. Thus, for example, in the Anglo-Saxon context, William Bunge proposed the organization of expeditions to communities living in conditions of poverty in order to help them overcome their situation, establishing a priority for social welfare over academic work. Following the interdisciplinary exchanges that were opened up by the pragmatists, the radical and critical geographers exchanged ideas with other social sciences. This further removed human geography from its earlier emphasis on the physical environment. This exchange can be seen in the influence of the book by sociologist M. Castells, *La Question Urbaine* (1972), or the philosopher Henri Lefèbvre's *La production de l'espace* (1974) on the urban geography of the period. Among the radical geographers, one of their most representative works is *Urban Justice and the City* (1973) by David Harvey. Harvey questioned the liberal theories of the city and took on a socialist posture. He adopted the Marxist theory of rent in order to analyse the valuation of urban space.

He then studied the use of the land in terms of use/value categories and exchange value. This sort of analysis enabled him to understand the active importance of spatial forms in social processes, an approach that he later developed in works dealing with the role of capital in the generation of unequal space usage and the compression of space/time.

In one sense, it was a human geographic view of socialism rather than the traditional emphasis on how humans modify the physical environment. For critical geographers, particularly in Latin America, one of the most important texts has been Por uma Geografia Nova (1978). The author, Milton Santos (1926–2001), showed that it was possible to conceive of personal ideas that could be applied to the interpretation of the third world. In effect, his analysis of the specific nature of urban processes in underdeveloped countries and his theory of banal space (the

daily space for solidarity where men, living and feeling, have the opportunity to create a new history) are an example of this. Santos offers multiple ways of perceiving social space. First, space appears as a social product, born of human action. Second, it signifies accumulated work, the incorporation of capital into land surface, which creates lasting forms known as "roughness." These manifestations of "roughness" turn out to be space legacies that end up by influencing the pattern of contemporary action. In this sense, spatial patterns are the product of past processes that also condition the future. Now there were human geographers who simply followed a modified version of the philosophical view *cogito, ergo sum*—"I think, therefore I am."

FIELDS OF HUMAN GEOGRAPHY

The main fields of study in human geography focus around the core fields of:

Culture

Cultural geography is the study of cultural products and norms and their variation across and relations to spaces and places. It focuses on describing and analyzing the ways language, religion, economy, government, and other cultural phenomena vary or remain constant from one place to another and on explaining how humans function spatially.

Development

Development Geography is the study of the Earth's geography with reference to the Standard of living and the Quality of life of its human inhabitants, study of the location, distribution and spatial organization of economic activities, across the Earth. The subject matter investigated is strongly influenced by the researcher's methodological approach.

Economic

Economic geography examines relationships between human economic systems, states, and other factors, and the biophysical environment.

Health

Health geography is the application of geographical information, perspectives, and methods to the study of health, disease, and health care.

Historical

Historical Geography is the study of the human, physical, fictional, theoretical, and “real” geographies of the past. Historical geography studies a wide variety of issues and topics.

A common theme is the study of the geographies of the past and how a place or region changes through time. Many historical geographers study geographical patterns through time, including how people have interacted with their environment, and created the cultural landscape.

Political

Political geography is concerned with the study of both the spatially uneven outcomes of political processes and the ways in which political processes are themselves affected by spatial structures.

Population

Population geography is the study of the ways in which spatial variations in the distribution, composition, migration, and growth of populations are related to the nature of places.

Tourism

Tourism geography is the study of travel and tourism as an industry, as a human activity, and especially as a place-based experience.

Philosophical and Theoretical Approaches

Within each of the subfields, various philosophical approaches can be used in research; therefore, an urban geographer could be a Feminist or Marxist geographer, etc.

Such approaches are:

- Behavioral geography

- Critical geography
- Feminist geography
- Marxist geography
- Non-representational theory
- Postcolonialism
- Poststructuralist geography
- Psychoanalytic geography

Physical Geography

Physical geography (or physiography) focuses on geography as an Earth science. It aims to understand the physical lithosphere, hydrosphere, atmosphere, pedosphere, and global flora and fauna patterns (biosphere). Physical geography can be divided into the following broad categories:

Environmental Geography

Environmental geography is the branch of geography that describes the spatial aspects of interactions between humans and the natural world. It requires an understanding of the traditional aspects of physical and human geography, as well as the ways in which human societies conceptualize the environment. Environmental geography has emerged as a bridge between human and physical geography as a result of the increasing specialisation of the two sub-fields. Furthermore, as human relationship with the environment has changed as a result of globalization and technological change a new approach was needed to understand the changing and dynamic relationship. Examples of areas of research in environmental geography include emergency management, environmental management, sustainability, and political ecology.

Geomatics

Geomatics is a branch of geography that has emerged since the quantitative revolution in geography in the mid 1950s. Geomatics involves the use of traditional spatial techniques used in cartography and topography and their application to computers.

Geomatics has become a widespread field with many other disciplines using techniques such as GIS and remote sensing. Geomatics has also led to a revitalization of some geography departments especially in Northern America where the subject had a declining status during the 1950s. Geomatics encompasses a large area of fields involved with spatial analysis, such as Cartography, Geographic information systems (GIS), Remote sensing, and Global positioning systems (GPS).

Regional Geography

Regional geography is a branch of geography that studies the regions of all sizes across the Earth. It has a prevailing descriptive character. The main aim is to understand or define the uniqueness or character of a particular region which consists of natural as well as human elements. Attention is paid also to regionalization which covers the proper techniques of space delimitation into regions. Regional geography is also considered as a certain approach to study in geographical sciences (similar to quantitative or critical geographies, for more information see History of geography).

Related Fields

- Urban planning, regional planning and spatial planning: use the science of geography to assist in determining how to develop (or not develop) the land to meet particular criteria, such as safety, beauty, economic opportunities, the preservation of the built or natural heritage, and so on. The planning of towns, cities, and rural areas may be seen as applied geography.
- Regional science: In the 1950s the regional science movement led by Walter Isard arose, to provide a more quantitative and analytical base to geographical questions, in contrast to the descriptive tendencies of traditional geography programs. Regional science comprises the body of knowledge in which the spatial dimension plays a fundamental role, such as regional economics, resource management, location theory, urban and regional planning, transport and communication,

human geography, population distribution, landscape ecology, and environmental quality.

- **Interplanetary Sciences:** While the discipline of geography is normally concerned with the Earth, the term can also be informally used to describe the study of other worlds, such as the planets of the Solar System and even beyond. The study of systems larger than the earth itself usually forms part of Astronomy or Cosmology. The study of other planets is usually called planetary science. Alternative terms such as Areology (the study of Mars) have been proposed, but are not widely used.

Techniques

As spatial interrelationships are key to this synoptic science, maps are a key tool. Classical cartography has been joined by a more modern approach to geographical analysis, computer-based geographic information systems (GIS).

In their study, geographers use four interrelated approaches:

- **Systematic:** Groups geographical knowledge into categories that can be explored globally.
- **Regional:** Examines systematic relationships between categories for a specific region or location on the planet.
- **Descriptive:** Simply specifies the locations of features and populations.
- **Analytical:** Asks why we find features and populations in a specific geographic area.

Cartography

Cartography studies the representation of the Earth's surface with abstract symbols (map making). Although other sub disciplines of geography rely on maps for presenting their analyses, the actual making of maps is abstract enough to be regarded separately. Cartography has grown from a collection of drafting techniques into an actual science. Cartographers must learn cognitive psychology and ergonomics to understand which symbols convey information about the Earth most

effectively, and behavioral psychology to induce the readers of their maps to act on the information. They must learn geodesy and fairly advanced mathematics to understand how the shape of the Earth affects the distortion of map symbols projected onto a flat surface for viewing. It can be said, without much controversy, that cartography is the seed from which the larger field of geography grew. Most geographers will cite a childhood fascination with maps as an early sign they would end up in the field.

Geographic Information Systems

Geographic information systems (GIS) deal with the storage of information about the Earth for automatic retrieval by a computer, in an accurate manner appropriate to the information's purpose.

In addition to all of the other sub disciplines of geography, GIS specialists must understand computer science and database systems. GIS has revolutionized the field of cartography; nearly all mapmaking is now done with the assistance of some form of GIS software. GIS also refers to the science of using GIS software and GIS techniques to represent, analyse and predict spatial relationships. In this context, GIS stands for Geographic Information Science.

Remote Sensing

Remote sensing is the science of obtaining information about Earth features from measurements made at a distance. Remotely sensed data comes in many forms such as satellite imagery, aerial photography and data obtained from hand-held sensors.

Geographers increasingly use remotely sensed data to obtain information about the Earth's land surface, ocean and atmosphere because it:

- Supplies objective information at a variety of spatial scales (local to global),
- Provides a synoptic view of the area of interest,
- Allows access to distant and/or inaccessible sites,

- Provides spectral information outside the visible portion of the electromagnetic spectrum,
- Facilitates studies of how features/areas change over time.

Remotely sensed data may be analysed either independently of, or in conjunction with, other digital data layers (e.g., in a Geographic Information System).

Quantitative Methods

Geostatistics deal with quantitative data analysis, specifically the application of statistical methodology to the exploration of geographic phenomena. Geostatistics is used extensively in a variety of fields including: hydrology, geology, petroleum exploration, weather analysis, urban planning, logistics, and epidemiology. The mathematical basis for geostatistics derives from cluster analysis, linear discriminant analysis and non-parametric statistical tests, and a variety of other subjects. Applications of geostatistics rely heavily on geographic information systems, particularly for the interpolation (estimate) of unmeasured points. Geographers are making notable contributions to the method of quantitative techniques.

Qualitative Methods

Geographic qualitative methods, or ethnographical; research techniques, are used by human geographers. In cultural geography there is a tradition of employing qualitative research techniques also used in anthropology and sociology. Participant observation and in-depth interviews provide human geographers with qualitative data.

MODERN GEOGRAPHY, HUMAN GEOGRAPHIES

Between 1950 and 2000, human geography become more diverse, and spread across university systems and languages. It also more wholly engaged with theoretical and epistemological turns across the humanities, sciences, and social sciences. There are different ways to portray this development and

diversification. One explanation is that growth and further specialization merely continued to unfurl as ever more themes, subjects, and places were incorporated into geographical analysis. Further parts were simply added as subdisciplinary specialisms developed and became normalized. This rings true for certain places and subdisciplines: urban geography, rural geography, and population geography became fully co-alesced specialisms as critical masses of researchers and teachers were reached, as university subjects were proposed and approved, and as academic journals gained publishers and readerships.

This doesn't however reflect the way other sub-disciplinary areas emerged from political impetuses, or in reaction to the perceived intellectual poverty of existing orthodoxies. This was certainly how the so-called 'quantitative revolution' transformed academic geography in the 1960s. According to Allen Scott, it was a period of great intellectual and professional struggle in geography between traditionalists and reformers, with the latter seeking to push geography out of its perceived idiographic torpor and – on the basis of quantitative methodologies and formal modelling – into a more forthright engagement with theoretical ideas. (2004: 481) While pre-war geographers speculate about environmental determinism, or retreated to regionalism and areal differentiation, other competing academic disciplines had proceeded ahead with conceptual and statistical advances.

This triggered reactions in a new generation of geographers with a shared desire to develop a thorough, mathematically justifiable geographical science that could be taken seriously by other disciplines. Geographers created the field of spatial science in the 1960s – with new journals and readerships – attempting to develop general theories of space and human activity using inferential statistical techniques and abstract modeling. The emphasis was on techniques of locational analysis – often inspired by other disciplines such as physics, mathematics, economics, and sociology – but also on developing more defensible theories. Common themes included the geography of land rent in cities; geographical diffusion over

time; networks (particularly transport); and the locational decision-making behavior and distribution of economic activities.

In turn, radical geography would emerge from the 1970s when geographers would become dissatisfied with quantitative geography, which was perceived as socially irrelevant and apolitical. Quantitative geographers appeared to have much to say about how human economic and social activities were structured across hypothetical, abstract space, but were silent on the worrying problems of poverty, war, and racism afflicting the world at that time.

Indeed, radical geographers became concerned that (whether willingly or not) the discipline may in fact contribute these problems rather than provide explanations or solutions. As Harvey explained, the radical and Marxist push in geography in the late 1960s concentrated on a critique of ideology and practice within the positivism that then reigned supreme. It sought to penetrate the positivist shield and uncover the hidden assumptions and class biases that lurked therein. It increasingly viewed positivism as a manifestation of bourgeois managerial consciousness given over at worst to manipulation and control of people as objects and at best capable of expressing a paternalistic benevolence. It attacked the role of geographers in imperial endeavors, in urban and regional planning procedures designed to facilitate social control and capital accumulation. It called into question the racism, sexism, ethnocentrism, and plain political prejudice communicated in many geographical texts. (Harvey, 1984: 5).

A variety of liberation movements of the 1960s and 1970s would exert a political influence on the development of new strands of human geography concerned with injustice: the women's movement would inform a new critique of the embedded masculinist and patriarchal power axes in geography (and in society more generally); the civil rights and union movements would inspire young radical social geographers concerned with issues of race, class, exclusion, and inequality in the city; international movements for the recognition of the treatment and rights of indigenous peoples would lay the foundation for

new postcolonial geographical critiques of empire and European cartography; and poverty, capital-ism, and uneven development were examined in more critical light. Economic geography in particular would be transformed, with new interests in the role of transnational corporations, the politics of trade and foreign direct investment, and international and gendered divisions of labor.

New journals emerged (notably *Antipode*, in 1969, and *Gender, Place and Culture*, in 1994) and study groups emerged from within geographical associations to provide more focused arenas for radical discourse. These reactionary voices would have a substantial legacy for contemporary human geography. In addition to the shifting of its topics and themes, they opened up the discipline to political exigency, and to broad critical shifts energizing the social sciences and humanities. In time, postmodern and post-structuralist theoretical perspectives (as well as those from more specific fields such as queer theory, governmentality, science and technology studies, and psychoanalysis) would become incorporated into human geographical praxis and be debated for their merits in advancing meaningful, theoretically robust and relevant research. Engagements with philosophy would take human geography even further into metaphysical and ontological ruminations on the nature of place and space.

Intellectual and political 'turns' were thus vital in replenishing the discipline. However, linguistic and national differences complicated this: even between English and American geography the uptake of new specialisms and influences varied. Lingering legacies of older practitioners were present in one country but not another, as were channels of influence on government and the wider social sciences. The enthusiasm for paradigmatic revolutions from the 1960s onwards also belied historical continuities with earlier approaches. Quantifiers, for instance, did reject description and regional parochialism in a revolutionary manner, but they also reconnected geography with a much earlier legacy of Renaissance mathematical geography.

Quantitative geography also secured a more formal role for theory in human geography, which subsequent phases of the discipline would rely upon – even if their theoretical and political influences were different. Certain types of human geography developed consistently without necessarily falling from favor, as in the case of social geography. Similarly, although cultural geography bloomed in the 1980s after the ‘postmodern turn’ (to the chagrin of some commentators), certain continuities would exist with much earlier traditions (e.g., its focus on landscape).

Population Geography

Population geography is a division of human geography. It is the study of the ways in which spatial variations in the distribution, composition, migration, and growth of populations are related to the nature of places. Population geography involves demography in a geographical perspective. It focuses on the characteristics of population distributions that change in a spatial context. Examples can be shown through population density maps. A few types of maps that show the spatial layout of population are choropleth, isoline, and dot maps.

DENSITY OF POPULATION IN INDIA

Distribution of population refers to general distribution of population of a region or a country. But density of population refers to average number of persons per sq km. The table given on the next page shows the distribution of population and density of population in the states and *Union Territories of India* according to the census of 2001. The table shows that the highest population is found in the state of *Uttar Pradesh* (16,6052,859) and the highest density is recorded in the state of *West Bengal* (904). The lowest population is found in the state of *Sikkim* and the lowest of population is recorded in the state of *Arunachal Pradesh*. According the *Union Territories*, the highest population and highest density of population occur in *Delhi*. The lowest population is found in *Lakshadweep*; but

the lowest density of population prevails in the *Andaman and Nicobar Islands*. The over-all picture (*States and the Union territories together*) shows the following facts: (1) the highest population in *U.P.*, (2) the highest density of population in *Delhi*, (3) the lowest population in *Lakshadweep* and (4) the lowest density of population in *Arunachal Pradesh*.

POPULATION SIZE, DISTRIBUTION AND GROWTH

Populations are dynamic entities. Over time they grow or decline, they become younger or older and their geographic distribution changes. Such changes are the cumulative effects of the events that people undergo during their lives, namely births, deaths and migrations. One of the concerns in demography is to trace out the consequence of changes in individual-level behaviour for aggregate processes. The combination of these individual events shapes the population of each country, and, though partially predictable, the outcome is sometimes surprising. While no other century has witnessed such rapid and accelerating population growth as did the twentieth, population declines have been observed in several countries during the past decade or so. Such declines are foreseen to become the rule rather than the exception in some regions of the world, while in other regions the population will continue to grow, albeit at a more moderate pace.

Population Size and Distribution

In the year 2005, the world population is estimated to have reached 6.5 billion, more than two and a half times the level in 1950; according to the medium-variant projection of the 2004 Revision, it is expected to reach 9.1 billion in 2050. The less developed regions, with 5.3 billion people in 2005, account for the vast majority of the world population (81.3 per cent). The more developed regions have an estimated population of 1.2 billion, or 18.7 per cent of the world population.

More and more of the world's inhabitants are coming to reside in the less developed regions, increasing from 67.7 per cent in 1950 to a projected 86.4 per cent in 2050. Within the

less developed regions in 2005, the least developed countries account for about 0.8 billion and other less developed countries for 4.5 billion. The share of the least developed countries is projected to grow from 8.0 per cent in 1950 to 19.1 per cent in 2050. Asia, with a population of 3.9 billion in 2005, is by far the most populous major area; its share of the world population stays fairly stable over time, rising and falling slightly in the neighbourhood of 55-60 per cent between 1950 and 2050.

The population shares of two other major areas, however, have shifted considerably since 1950, and this shifting is expected to continue. Europe's population represented 21.7 per cent of the world population in 1950, a figure that was reduced by almost half by 2005, to 11.3 per cent. Europe's share of the world population is projected to decline furthermore, to 7.2 per cent in 2050. At the same time, Africa's share of the world population has been increasing, from 8.9 per cent in 1950 to 14.0 per cent in 2005, and is projected to reach 21.3 per cent in 2050, close to Europe's share in 1950. The social and economic disadvantages afflicting least developed countries are often vividly expressed in basic demographic indicators. In assessing the challenges to international development that are presented by these countries, it should be remembered that they account for a relatively small share of the world population: 11.7 per cent in 2005.

The other less developed countries, which include China and India, the two most populous countries collectively account for 69.5 per cent of the world population. Most of the world's population is found in a small set of very populous countries. A mere 4.8 per cent of all countries, that is, the 11 largest countries, each with an estimated population of 100 million or more in the year 2005, lay claim to 60.9 per cent of the world population. The vast majority of the world's countries are actually relatively small in terms of their population size—of all countries, 77.2 per cent have populations under 20 million (with almost one third of all countries having fewer than 1 million). Taken as a group, these small countries account for only 11.6 per cent of the world population, while countries with

populations from 20 million to 100 million include 18.0 per cent of all countries and 27.5 per cent of all population. Taken together, the 11 largest countries are home to more than 3.9 billion people.

Jointly, China and India account for more than 37 per cent of the world population in 2005, with estimated populations of 1.3 billion and 1.1 billion, respectively. A further 9 countries account for almost a quarter of the earth's population, namely, the United States of America, Indonesia, Brazil, Pakistan, the Russian Federation, Bangladesh, Nigeria, Japan and Mexico. Eight of the 11 most populous countries are considered to be less developed, leaving only 3 in the more developed regions (the United States of America, with a population of 298 million; the Russian Federation, with 143 million; and Japan, with 128 million). These large, more-developed countries account for almost 9 per cent of the world population, a considerable share but far below that of China and India. The concentration of world population in large countries has been lessening, and this trend is projected to continue. In 1950, the combined populations of some 21 countries accounted for three-quarters of the population of the globe, a number that increased to 24 countries in 2005. By 2050, according to the mediumvariant projection, 28 countries will be needed to reach that same share. Inevitably, several countries are projected to change ranks over the next 45 years. India and China will likely trade places at the very top of the population rankings, Nigeria is expected to rise from 9th to 6th in rank, and the Russian Federation will likely fall from 7th to 17th.

In addition, three least developed countries—Bangladesh, the Democratic Republic of the Congo and Ethiopia—will be among the ten most populous countries. Population growth would be substantially greater in the absence of fertility decline. If fertility were to be held constant at its current level for every country, the world population would reach a total of 11.7 billion persons by the year 2050, almost doubling its present size. The extent of growth is all the more impressive when one considers that an assumed constant fertility fixes a number of countries at below-replacement fertility levels.

Alternatively, if total fertility were to adhere to the high-fertility variant, usually half a child above what is assumed in the medium-variant projection but generally declining over time, the world total would reach 10.6 billion in 2050. Under the low-fertility assumption, by contrast, with total fertility rates usually set at half a child below the medium variant, world population would reach 7.7 billion, far lower but still representing an addition of 1.2 billion persons to the world's current total. Evidently, the pace and depth of fertility decline will continue to have an important impact on world population levels and trends. Anticipated mortality trends will also influence the overall population.

The basic projection variants assume a single course of mortality change, usually a continuous decline, for each country. If mortality rates were held constant at their current levels, however, under the medium fertility variant world population would rise to 8.1 billion persons in 2050, about 1 billion less than the projected levels. Although there are important differences across these projection variants, in one respect they all agree: an era of substantial world population growth lies ahead. The estimated and projected world population levels are the product of divergent trends across the more developed and less developed regions. For the more developed regions, it seems that an era of population decline may not be too far into the future. According to the medium-variant projection, the aggregate population of this region will rise from the year 2005 estimate of 1.21 billion persons to a peak of 1.25 billion around 2030, and will then fall to 1.24 billion by the end of the projection period, yielding a net addition of only about 25 million.

Only the high fertility variant suggests continued growth in the populations of the more developed regions. Note that if current levels of fertility were to be maintained, as assumed in the constant fertility variant, the populations of the more developed regions would fall below the medium-variant projection. Likewise, the path of fertility decline will make an important difference to the futures of the other less developed countries, a group that includes China, India, Indonesia, Brazil,

Pakistan and other populous nations. The medium-variant projection for these countries indicates continued population growth, with their total rising from 4.5 billion persons in 2005 to 6.1 billion in 2050. Continuation of current fertility rates would add an expected 1.6 billion persons to the total population of these countries (relative to the medium variant), whereas the expected total would be only 632 million above the current population if the low fertility variant were to prevail. To sum up, for all less developed regions combined, constant fertility would imply total populations of 10.5 billion in 2050, well above the 7.8 billion produced by the medium variant.

Under most projection scenarios, population decline will occur in the more developed regions at some point in the projection period. The anticipated trend at the aggregate level, however, masks differences at the national and regional level. Some developed countries are expected to continue to grow, but others may experience population declines. Overall, among all countries with a population of at least 100,000 in the year 2000, according to the results of the medium variant, 44 countries are expected to experience a reduction in population between 2005 and 2050, the majority of them located in the more developed regions.

The prospects for population decline in selected countries and regions of the more developed world are quite striking. The most substantial population decline relative to present levels is likely to occur in Eastern Europe, which is projected to lose about 25 per cent of its current total population by 2050. The Russian Federation, which constitutes approximately 48 per cent of Eastern Europe's population in 2005, is projected to decline by some 22 per cent. Other Eastern European countries, such as Ukraine, Belarus and Bulgaria, are also expected to experience a substantial decline in their population size. The least developed countries comprise 50 countries that are located mainly in Africa and Asia, plus small island developing States¹ from Oceania and the Caribbean.

Jointly, these countries have recorded relatively higher fertility and mortality levels than the more developed regions

and the other less developed countries, a trend that is expected to continue in the coming decades. Since the 1970s, the least developed countries have experienced, on average, the highest population growth rates in the world. Even though they represent a relatively small share of the world population, just under 12 per cent in 2005, it is expected that the overall population increment in those countries will account for 37 per cent of all world population growth during the period 2005-2050.

Though fertility has been declining in most countries of this group, averaging on the whole about 5 children per woman in 2000-2005, mortality trends have not shown encouraging signs since the late 1980s. Continued population growth in already fragile economies will exacerbate problems of resource allocation for education and health care. Southern Europe and Japan will likely see declines of about 7 and 12 per cent, respectively, by 2050. Little change is anticipated in the total populations of Western Europe, while an increase in the order of 10 per cent is projected for Northern Europe, even though some countries within that region will experience substantial declines (e.g., Latvia, Lithuania and Estonia). In both Northern and Western Europe, immigration is likely to play an important role in maintaining or slightly increasing the population size. Population declines or only slight increases are also projected between 2005 and 2050 in some less developed countries, for example, those in the Southern Africa region, which are among the countries most highly affected by the HIV/AIDS epidemic. Among these countries, only Namibia is thought likely to experience substantial continued population growth, mainly because of its relatively high fertility.

During the period 2000-2005, the estimates show that 16 countries across the world experienced a reduction in population of more than 5,000 persons, ranging from 37 thousand in Estonia to close to more than 3 million in the Russian Federation. Except for Serbia and Montenegro, all countries included in this group are located in Eastern and Northern Europe or are successor States of the former USSR. Losses will be greater

and more widespread by 2045-2050. During the last five years of the projection period, 31 countries are expected to experience population declines of 100,000 persons or more (up from 9 countries in 2000-2005), with an additional 15 countries losing more than 25,000 persons or more. Comparing 2000-2005 with 2045-2050, countries newly experiencing declines in 2045-2050 are located in Asia, Southern and Western Europe and also include Cuba and Mexico. Among the five countries that are expected to lose the largest absolute amount of population in 2045-2050, three are from Eastern Asia: China, Japan and the Republic of Korea. As in 2000-2005, the Russian Federation and Ukraine are expected to be among the countries with the biggest declines.

Population Growth Rates

Throughout the course of human history, and partially as a consequence of high mortality levels, population growth rates were on average quite low. It was probably not until the Seventeenth and eighteenth centuries that annual growth rates as high as 0.5 per cent were being sustained. From then until the dawn of the twentieth century, annual population growth at the rate of half a percentage point was the norm. But improvements in sanitary measures as well as access to antibiotics during the twentieth century, among other factors, led to a reduction in mortality levels. Consequently, population growth accelerated to historically unprecedented rates, reaching levels of around 2 per cent annually in 1965–1970. Since that historic peak, world population growth has greatly decelerated, and if the medium projections made in the 2004 Revision come to pass, the world will be returning to the 0.5 per cent rate of growth. The rapid growth of the twentieth century may come to be seen as an extraordinary but historically isolated.

Phenomenon. The annual population growth rate² of the world is now estimated at 1.21 per cent. At present, the growth rate of the more developed regions stands at 0.30 per cent per annum—about half of the norm in the eighteenth and nineteenth centuries—whereas the growth rate for the least developed countries is 2.40 per cent, far above the historical norm. The

other less developed countries have an intermediate position with a growth rate of 1.27 per cent.

Growth rates in all three regions are projected to decline over time under the medium-variant projection, but only the more developed regions are thought likely to enter an era of population decline during the projection period. By 2050, the combined population of the more developed regions will have been declining in absolute terms for 20 years, whereas the least developed countries will still be growing at a rate of 1.30 per cent annually. An inspection of growth rate trajectories for the major areas of the world shows that two will be sharply distinguishable from the others.

Population growth rates in Africa are expected to be the highest throughout the projection period, falling to 1.21 per cent in 2045–2050, while those for Europe are projected to be the lowest, reaching -0.37 per cent by the end of the projection period. Growth rates of the other major areas—Asia, Latin America and the Caribbean, Northern America and Oceania—are expected to converge to between 0.19 and 0.45 per cent in 2045–2050. Noticeably, most of the convergence in terms of growth rates between these major areas actually occurred between 1950 and 2005, while growth rates from Africa and Europe actually diverged from those of the rest of the world.

At the country level, among the ten countries with the highest population growth rates in 2000–2005, five are from Africa and five from Asia, with values ranging from around 3.40 per cent in Niger, Uganda and Chad to 6.51 per cent in the United Arab Emirates.

Most countries included in the list have relatively high fertility levels, the main cause of such growth, but the soaring growth rates in the countries from the Arabic Peninsula (United Arab Emirates, Qatar and Kuwait) are largely due to international migration. By 2045–2050, all countries with the highest projected growth rates are in Africa, except for Afghanistan. Nevertheless, the anticipated growth rates are much lower than current ones, ranging from 1.75 per cent in Burkina Faso to 2.39 per cent in Uganda.

At the other end of the spectrum, the countries with the lowest rates of population change in 2000-2005 (*i.e.*, fastest rates of decline) are all from Eastern and Northern Europe or are successor States of the former USSR. Estimates of growth rates range from about -0.4 per cent in Romania, Lithuania and Armenia to about -1.10 per cent in Georgia and Ukraine. A few of these countries will continue to have some of the lowest rates of change in the world by 2045-2050, joined mainly by members of the small island developing States¹.

THE DISTRIBUTION OF POPULATION

Division According to Density of Population: The distribution of population in India shows the following density pattern according to census 2001.

Regions of Shows population Density (density below 100 per sq. km.): In includes *Jammu and Kashmir, Sikkim, Arunachal Pradesh, Mizoram states and Union Territories Andaman and Nicobar*. In the low population density due to ragged is topography and forested land with the severity of climate.

Regions of Medium Population Density (between 101 and 250 per sq. km.): It includes *Himachal Pradesh, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Orissa, Rajasthan, Chhattisgarh and Uttaranchal states*. These regions are hilly, mountainous or forested, and some are deserted. Hence population is medium.

Regions of Considerably High Population Density (between 251 and 500 per sq. km.): This region includes *Andhra Pradesh, Assam, Gujrat, Haryana, Karnataka, Maharashtra, Punjab, Tamil Nadu, Tripura, Goa, Jharkhand states and Union Territories of Darda & Nagar Haveli*. Fairly high population of this region is due to the advancement of agriculture, mining and industry. Economic progress and job opportunities contribute much for this population.

Regions of High Population Density (between 501 and 1000 per sq. km.): *Bihar, Kerala, Uttar Pradesh and West Bengal* are

included in this population zone. This high population is due to very fertile soil, advancement of agriculture, mining, industries, trade and commerce and opportunities for subsistence.

Regions of Very High Population Density (above 1001 per sq. km.): It includes the *Union Territories of Delhi, Chandigarh, Pondicherry, Lakshadweep and Daman & Diu*. The high density of this region is due to high economic and administrative activities.

THE CAUSES FOR THE UNEVEN DISTRIBUTION OF POPULATION

The distribution of population in India is not uniform. Some areas have high density of population, while others have medium or low density. The following physical and cultural factors are responsible for the uneven distribution of population in the country. The physical factors are gifts of nature; they influence much for the distribution of population.

Difference in Relief: The relief of the country exerts immense influence in the population distribution of a country. Extremely rugged topography associated with thick forest-cover do not encourage settlement as in the Himalayas and in the north-eastern hilly states of India. But the river valleys with alluvial plains provide easy livings for which the population is high. The population of the Ganga-Brahmaputra plain is distinctively high.

Variation in Climate: Climate exerts a great influence on human settlement. The *Marusthali* of western Rajasthan is sparsely populated; it is the hottest place in India and it has the extreme type of climate with little rainfall. Due to the adverse climate condition, the *Marusthali* is sparsely populated. On the other hand, the mild and equitable climate of the *Ganga plain* encourages settlements.

Influence of Soil: Agriculture depends on soil condition. The fertility of soil determines the cultivation of crops. Thus the livings and subsistence of the people depend on soil and not on rocky waste or infertile soil. The great northern plains

of India have fertile soil and on these plains density of population is remarkably high.

Influence of River: Rivers provide water to agriculture and other indispensable needs (drinking water and others) of the people. They also provide avenues for trade and commerce. That is why it is frequently said; the river valleys are the cradles of civilization. All the river valleys, which have fertile soil and tolerable climate, are thickly populated.

Presence of Minerals: Mineral deposits attract population. The discovery of enormous mineral deposits in the *Chhotanagpur plateau* region has contributed much to the growth of high concentration of population to this region. The cultural factors are also responsible for the uneven distribution of population. These factors are man-made and popularly known as non-physical factors or cultural factors. **Development of Industries:** Development of industries also attracts population. A few decades ago, there was very low population in Durgapur region; but with the development of industries in the Durgapur belt, the population has steadily increased.

Historical & Political Factors: After the partition of Bengal, when the Indian independence was achieved, the population of *West Bengal* grew up rapidly due to the influx of the people from the other side of *Bengal*. **Religious Influence:** *Varanasi, Mathura, Haridwar, Nabadweep, Puri* are the sacred religious centres of the *Hindus*, *Agra* of the *Muslims* and *Amritsar* of the *Sikhs*. They are densely populated due to religious factors.

THE DENSITY OF POPULATION

In an agricultural country like India, which does not import its food but grows it, the population of every considerable area tends to increase till it approaches the maximum that the produce of the land can feed.

But the abundance of the harvests depends upon the nature of the soil and the sufficiency and regularity of the water supply. And, since in most places the water supply is almost entirely due to the rainfall, it follows that, as a general rule

and within certain limits, the density of the population varies with the average rainfall. Of course, there are many exceptions to this. The rainfall may be so irregular that, though the country may have a large annual average, it may, nevertheless, be burnt up for the greater part of the year and flooded for a few weeks. Such an irregular rainfall as this would not greatly promote agriculture. Or, though the rainfall is large and regular, the land itself may consist of rocky and barren hills. Both the produce and the population will then be low. On the other hand, a country which has a scanty rainfall may be well watered by irrigation, and therefore fertile. But if sufficiently large areas be taken, it will be found that regions of ampler rainfall are also regions of denser population.

It should be noted, however, that this connection only holds good in agricultural countries. Wherever other industries are largely developed, whether mining or manufacture, a population is often found far larger than any that the land itself could support. The wealth made by these industries enables such countries to import much of their food from other lands. The following map, which shows the density of the population in the several States and Provinces of the Empire, illustrates in part this relation between rainfall and population.

At one time Dravidian forms of speech probably occupied the whole country. That is at least suggested by the fact that scattered tribes, speaking Dravidian tongues, are still found as far north as Baluchistan in the west and Chota Nagpur in the east. Now, however, the vernacular languages of at least four-fifths of the Indian people belong to the Aryan family. This is precisely what might have been expected. Whenever a stronger people, more advanced in all the arts, and with a more developed language, dispossess a weaker race, the latter will in course of time adopt the language of their conquerors, even though, through intermarriage, the races themselves may coalesce. The superseded tongue may contribute any number of words to the new language which the conquered must adopt, but ultimately the language which survives will be, in idiom, form and structure, the language of the conquerors. This process has

gone on largely in India. Though Dravidian blood still prevails in some degree almost up to the Himalayas, and in comparative purity as far north as Central India, Dravidian languages are, with the exception of a few scattered remnants, confined to those parts of South India over which the waves of Aryan immigration never swept in force.

The principal Dravidian languages are Telugu, Tamil, Kanarese, and Malayalam, which are spoken respectively by about 2, 3, 4, and 6 millions of people, inhabiting an area which forms a solid linguistic block in south-east India. Gond is spoken by over a million people, chiefly in the Central Provinces; Tulu by over half a million in South Kanara; Kurukh, or Oraon, by about the same number on the hills of Chota Nagpur. And Kandh by nearly as many on the hills of Orissa. There are many other Dravidian languages spoken by smaller numbers, the most interesting of which is Brahi, spoken by an isolated group in eastern Baluchistan.

Santali and Kol, the languages of the Santhals and Kols, who number nearly three millions and are found in Bihar, Chota Nagpur and Orissa, are the chief languages of the Munda Sub-Family. There are several other members of this group, but less known, and spoken by smaller numbers. These languages used to be called Kolarian, and the Kolarians were believed by some to have entered India from the north-east. The group is, however, essentially Dravidian, and is probably identical in origin with the Dravidian languages of the South.

The Aryan languages spoken in India fall into two classes, the Irano-Aryan, or Iranian, which prevail west of the Indus, and of which Baloch, Pashto, and Persian are the chief examples, and the Indo-Aryan which prevail from the Indus to the confines of Burma, and southwards till they meet the Dravidian languages of the peninsula.

All the chief Indo-Aryan languages are Sanscritic in their character, Sanscrit, the great classical language of India, having in all probability been developed into the form in which it is found in the Vedas long after the final Aryan immigrants had settled in the "Middle Land." A comparison of these languages

suggests that they were introduced into India at two different periods, probably separated by several centuries; that the earliest wave of immigrants, coming, most likely, from the west, spread over the greater part of western and northern India before the arrival of the second wave; and that these latter, coming most probably across the northern frontier, forced their way into the middle of the previous settlers, and, as they grew in numbers, drove them gradually to the east, south and west, and to some extent also to the north. Dr. Grierson, the head of the Linguistic Survey of India, calls the languages whose origin is to be traced to these later settlers, the Inner Indo-Aryan languages, and those that appear to have sprung from the language of the earlier settlers, the Outer Indo-Aryan languages. To the east of the Inner group there is also a smaller Intermediate class formed probably by a fusion of the two. The localities in which these various languages are spoken are shown on the map on the following page. It should be remembered, however, that neighbouring languages shade off into one another by almost imperceptible gradations, and though the boundaries are of necessity sharply defined on a map, they are not so in reality.

Most of these languages have numerous dialects, sometimes exhibiting a very wide degree of divergence. The only one of these that we need notice is Hindustani, the chief dialect of Western Hindi. Hindustani is spoken more or less all over India, and particularly by the Muhammadans, and is often spoken of as the lingua franca of India. Urdu is literary Hindustani, written in the Persian character, and often greatly modified by the introduction of Persian words. The prevalence of Hindustani throughout India is due to the widespread influence of the Mughal Empire, and to the fact that Muhammadans are numerous in every Province.

In the extreme north of India are tribes speaking Non-Sanskritic Indo-Aryan languages. They are few in number, however, and none of their dialects have native characters. The Indo-Chinese languages spoken in India, of which by far the most important group is the Tibeto-Burman, are very numerous,

including no fewer than 92 of the 147 languages enumerated in the Census Report. They are spoken, however, by a comparatively small fraction of the people, less than twelve millions in all, including the people of Burma and the border mountains, the Khasi and Garo Hills, and the slopes of the Himalayas. Burmese, the most cultivated of these languages, is spoken by about 11 millions. Karen and Shan, spoken by tribes bearing the same names, are closely related to Chinese, and are each spoken by about a million people. The rest of the languages of this group are spoken by mere handfuls of people. Comparatively little is known as yet about many of the Indo-Chinese languages.

SEX RATIO OF INDIA

Sex Ratio is defined as the number of females per 1000 males. Sex Ratio is an important social indicator to measure the extent of prevailing equity between males and females at a given point of time. It is mainly the outcome of the interplay of sex differentials in mortality, sex selective migration, sex ratio at birth and at times the sex differential in population enumeration.

According to the Census of India, 2001, the sex ratio of India stands at 933. This is a marginal improvement from the 1991 Census, which had recorded 927 females for every 1000 males. At the 2001 Census, the sex ratio among the major States ranged from 861 in Haryana to 1058 in Kerala.

State/Union Territory (U.T.)	India Sex Ratio
Jammu & Kashmir	900
Himachal Pradesh	970
Punjab	874
Chandigarh (U.T.)	773
Uttaranchal	964
Haryana	861
Delhi (U.T.)	821

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Rajasthan	922
Uttar Pradesh	898
Bihar	921
Sikkim	875
Arunachal Pradesh	901
Nagaland	909
Manipur	978
Mizoram	938
Tripura	950
Meghalaya	975
Assam	932
West Bengal	934
Jharkhand	941
Orissa	972
Chhatisgarh	990
Madhya Pradesh	920
Gujarat	921
Daman & Diu (U.T.)	709
Dadra & Nagar Haveli (U.T.)	811
Maharashtra	922
Andhra Pradesh	978
Karnataka	964
Goa	960
Lakshadweep (U.T.)	947
Kerala	1058
Tamil Nadu	986
Pondicherry (U.T.)	1001
Andaman & Nicobar Islands (U.T.)	846

INDIA'S SEX RATIO CONTINUES TO SLIDE

As many as 35 million girls have been killed before, during or after birth in India over the last 100 years, according to the

Indian census commissioner, J.K. Banthia. And the gap between girls and boys is accelerating, especially amongst the wealthier and better educated. A new report, *Missing: mapping the adverse child sex ratio in India*, issued by the UN Population Fund, shows that the sex ratio, which is calculated as the number of girls per 1000 boys in the 0-6 age bracket, declined from 945 in the 1991 census to 927 in the 2001 census. The normal ratio is about 950 to 1000. The steepest declines took place in the prosperous northern states of Punjab, Haryana, Himachal and Gujarat, which fell below 800 girls per 1000 boys for the first time. The lowest ratio was 754 in Fatehgarh, in Punjab. The top ten districts with healthy sex ratios of more than 1000 girls per 1000 boys are largely in non-Hindu areas like Jammu and Kashmir and in the northeastern tribal regions.

"A stage may soon come where it would become extremely difficult, if not impossible, to make up for the missing girls," says Francois Farah of the UN Population Fund. "Today we are at a stage where many villages are having fewer or no small daughters and... the resulting imbalance can destroy the social and human fabric."

At the heart of the decline are numerous doctors offering ultrasound scans to check the sex of the pregnant woman's baby. "Involvement of the medical community in this criminal activity indulged in by parents of the unborn child and the doctors is 100 per cent," says Dr. Puneet Bedi, an independent health activist and gynaecologist. Sex determination has been banned since 1996, but this has only slowed the spread of the practice, not decreased it, according to the census commissioner. Campaigners against female infanticide complain that doctors are indifferent. Students at India's leading medical school, the All India Institute of Medical Sciences, recently refused to cooperate with an awareness drive. "They are not taught enough about medical ethics," said Dr. M.K. Bhan, a paediatrician at the Institute. "There is a large vacuum in the medical curriculum. The students are young. They are under a lot of pressure. In liberal arts, you are taught about ethics. In medical science, you are not."

SEX RATIO IN INDIA A CONCERN

New Delhi-A disturbing and steady decline has occurred in the ratio between Indian girls to boys born in the past decade, according to a United Nations Population Fund (UNFPA) report published on Tuesday. Several thousand girls and women are "missing", the UNFPA study said, referring to those who should have been part of the population but are not because they were killed for being female.

In both rural and urban India, there is a strong preference for boys. One Indian saying goes: "Nurturing a girl is like watering someone else's garden." Girls are thought to be a burden on their parents, and are usually given less food and little or no education. Parents do not invest in their daughters' health and development, as they will eventually get married and leave home.

'When girls go missing in a society, it shows that compassion is missing' In 1991, there were 945 girls born for every thousand boys in India. By 2001, the national average dropped to 927 girls, the Indian Express newspaper reported.

According to UNFPA, among the main causes for the adverse sex ratio are increasing rates of female foeticide. Indian states with alarmingly low sex ratios are Punjab, Haryana and Himachal Pradesh in the north and Gujarat in the west-all with less than 800 girls on an average for every thousand boys. Development experts and demographers acknowledge that given the same nurturing and opportunities as boys, girls would actually outlive and outnumber them. The desire for boys transcends caste, social, educational and economic status. "The ratio stands at a mere 770 in Kurukshetra district of Haryana, 814 in Ahmadabad (Gujarat) and 845 in southwest Delhi, which are among the most prosperous regions in the country," the study said. Federal Minister for Health and Family Welfare Sushma Swaraj said, "When girls go missing in a society, it shows that compassion is missing." 'You will remain unmarried if girl fetuses continue to be destroyed' Her message to Indian men was: "You will remain unmarried if girl fetuses continue to be destroyed in the womb."-Sapa-dpa.

Age structure: *0-14 years*: 31.5% (male 189,238,487/female 172,168,306.)

15-64 years: 63.3% (male 374,157,581/female 352,868,003)

65 years and over: 5.2% (male 28,285,796/female 31,277,725) (2008 est.)

Definition: This entry provides the distribution of the population according to age. Information is included by sex and age group (*0-14 years, 15-64 years, 65 years and over*). The age structure of a population affects a nation's key socioeconomic issues. Countries with young populations (high percentage under age 15) need to invest more in schools, while countries with older populations (high percentage ages 65 and over) need to invest more in the health sector. The age structure can also be used to help predict potential political issues. For example, the rapid growth of a young adult population unable to find employment can lead to unrest.

Sex ratio: *at birth*: 1.12 male(s)/female

Under 15 years: 1.1 male(s)/female

15-64 years: 1.06 male(s)/female

65 years and over: 0.9 male(s)/female

Total population: 1.06 male(s)/female (2008 est.)

DENSITY OF POPULATION

A ratio of population to area may be a better measure of variation in the distribution of population. One such measure is the 'density of population', expressed as number of people per unit area, for example, a square kilometer or a hectare. However, it is a crude measure, and is referred to as the 'arithmetic density'. It is crude because the entire area of a country or a state is taken into consideration while calculating the density. In fact, the population lives only in the selected areas which are productive, rich in natural resources and accessible to man. The hilly and the rugged terrain, swampy, marshy and forested tracts as well as the areas covered by water bodies are just not suited for human habitation. Because of the

limitation of the arithmetic density, densities are sometimes calculated for the rural population or agricultural population. In calculating the density, a cultivated area is considered. A ratio of population to cultivated area is described in France as 'physiological density'. This measure of density gives us an idea as to how many people are dependent on each hectare of cultivated land. It is a highly meaningful index, particularly for countries whose economies are largely dependent on agriculture.

The analysis of population density of the country discussed here is, however, based on the 'arithmetic density'-defined as the number of persons per square kilometer. The population density has gone up from 216 in 1981 to 267 persons in 1991 (excluding Assam and Jammu and Kashmir). In 1901, it was 77 persons. Thus, it implies an addition of 51 persons per square kilometer for the country. This addition in a short span of ten years is really alarming.

From among the various states, West Bengal occupied the first rank with the highest density of 767 persons per sq km. It was followed by Kerala (749), Bihar (497), Uttar Pradesh (473), Tamil Nadu (429), Punjab (403), Haryana (372), Goa (316) and Assam (286) in this order. Thus Kerala drifted to the second position during 1981-91 in terms of population density mainly due to its controlled growth of population. However, these nine states had a density higher than the national average of 267. At the other end of the scale was Arunachal Pradesh which, among various states, had the lowest density of only 10 persons per sq km. There were eight states in the country which had a density less than 100 persons per sq km. These states included Mizoram (33), Sikkim (57), Nagaland (73), Jammu and Kashmir (76), Meghalaya (78), Manipur (82) and Himachal Pradesh (92). Thus, the states having low density were either the hill states or had a large proportion of mountainous areas.

As regards the union territories, with the exception of Andaman and Nicobar islands (34), all the union territories had a higher density than the national average of 267. Delhi, with a density of 6352 persons per sq km was the most densely

populated region of the country. The unions territories are mostly highly urbanized and hence display a high degree of population concentration.

The sparsely populated territory of Andaman and Nicobar Islands consists of a large number of widely spread, poorly connected islands which are located at a great distance from the mainland.

The ten most densely populated districts of the country include Calcutta, Chennai, Greater Mumbai, Hyderabad, Delhi, Chandigarh, Mahe, haora, Kanpur Nagar and Bangalore in this order. These districts together account for 5% of the country's total population, but, on an average, have a density of 5,791 persons/sq km. If all the districts in the country are arranged in a descending order in terms of their density and average quartile values of densities are calculated, the following are observed:

Each quartile has 107 districts (excluding the districts of Jammu and Kashmir and Assam for which data are not yet available). The first quartile districts (having densities above 522) account for 36% of the country's population and cover 12% of the country's area. On an average, these districts together have a density of 844 persons/sq km. The districts in the second quartile (having densities between 271 and 522) account for 28% of the country's population and 20% of its area.

These districts together have an average density of 383 persons. The wide gap in densities between, the first and the second quartiles signifies a high degree of variability in population density from one region to another.

The third quartile districts (densities between 155 to 2700) account for about 25% of the country's population and 3% of its area. The average density for these districts works out to be 204.

The districts in the fourth quartile have densities below 155 and accommodate 11% of the country's population. These districts account for as much as 35% of the country's area with an average density of 83.

CLASSIFICATION OF RACES OF MANKIND

The classification of mankind into a number of permanent varieties or races, rests on grounds which are within limits not only obvious but definite. Whether from a popular or a scientific point of view, it would be admitted that a Negro, a Chinese, and an Australia, belong to three such permanent varieties of men, all plainly distinguishable from one another and from any European. Moreover, such a division takes for granted the idea which is involved in the word race, that each of these varieties is due to special ancestry, each race thus representing an ancient breed or stock, however these breeds or stocks may have had their origin.

The anthropological classification of mankind is thus zoological in its nature, like that of the varieties or species of any other animal group, and the character on which it is based is in great measure physical, though intellectual and traditional peculiarities, such as moral habit and language, furnish important aid. Among the best-marked racecharacters are the following:—The colour of the skin has always been held as specially distinctive.

The coloured race-portraits of ancient Egypt remain to prove the permanence of complexion during a lapse of a hundred generations, distinguishing coarsely but clearly the types of the red-brown Egyptian, the yellow-brown Canaanite, the comparatively fair Libyan, and the Negro. These broad distinctions have the same kind of value as the popular terms describing white, yellow, brown, and black races, which often occur in ancient writings, and are still used. But for scientific purposes greater accuracy is required, and this is now satisfactorily attained by the use of Dr. Broca's graduated series of colours as a standard (*Memoires de la Societe d'Anthropologie de Paris*, ii.) By this, the varieties of the human skin may be followed from the fairest hue of the Swede and the darker tint of the Provencal, to the withered-leaf brown of the Hottentot, the chocolate brown of the Mexican, and the brown-black of the West African. The colour of the eyes and hair is also to be defined accurately by Broca's table.

This affords, however, less means of distinction, from the extent in which dark tints of hair and iris are common to races whose skins are more perceptibly different; yet some varieties are characteristic, such as the blue eyes and flaxen hair of that fair race of Northern Europe. As to the hair, its structure and arrangement is a better indication of race than its tint. The fair differs in quantity between scantiness of the body of the Mongol and profusion on the body of the Aino; while as to the arrangement on the scalp, the tufts of the Bushman contrast with the more equal distribution on the European head. The straight hair of the North American or Malay is recognizable at once as different from the waving or curling hair of the European, and both from the naturally frizzed hair of the Negro.

These marked differences are due to the structure of the hair, which, examined in sections under the microscope, varies from the circular section proper to the straight-haired races, to the more or less symmetrically oval or reniform sections belonging to races with curled and twisted hair. Stature is by no means a general criterion of race, and it would not, for instance, be difficult to choose groups of Englishmen, Kafirs, and North American Indians, whose mean height should hardly differ. Yet in many cases it is a valuable means of distinction, as between the tall Patagonians and the stunted Fuegians, and even as a help in minuter problems, such as separating the Teutonic and Keltic ancestry in the population of England. Proportions of the limbs, compared in length with the trunk, have been claimed as constituting peculiarities of African and American races; and other anatomical points, such as the conformation of the pelvis, have speciality.

But inferences of this class have hardly attained to sufficient certainty and generality to be set down in the form of rules. The conformation of the skull is second only to the colour of the skin as a criterion for the distinction of race. The principal modes of estimating the differences of skulls are the following:

- The skull being seen from above, the proportions of the two diameters are estimated on the principle employed by Retzius:

taking the longer diameter from front to back as 100, if the shorter or cross diameter falls below 80, the skull may be classed as long (dolichocephalic); while if it exceeds 80, the skull may be classed as broad (brachycephalic); or a third division may be introduced between these as intermediate (mesocephalic), comprehending skulls with a proportionate breadth of 75 to 80, or thereabout. The percentage of breadth to length measured in this manner is known as the cephalic index; thus, the cephalic index of a Negro or Australian may be as low as 72, and that of a Tatar as high as 88, while the majority of Europeans have an index not departing in either direction very far from 78. The cephalic height is measured in the same way as a percentage of the length.

The back view (*norma occipitalis*) of the skull is distinguished as rounded, pentagonal, &c., and the base view of the skull shows the position of the occipital foramen and the zygomatic arches. The position of the jaws is recognized as important, races being described as prognathous when the jaws project, far, as in the Australian or Negro, in contradistinction to the orthognathous type, which is that of the ordinary well-shaped European skull. On this distinction in great measure depends the celebrated "facial angle," measured by Camper as a test of low and high races; but this angle is objectionable as resulting partly from the development of the forehead and partly from the position of the jaws. The capacity of the cranium is estimated in cubic measure by filling it with sand, &c., with the general result that the civilized white man is found to have a larger brain than the barbarian or savage.

Classification of races on cranial measurements has long been attempted by eminent anatomists, such as Blumenbach and Retzius, while the later labours of Von Baer, Welcker, Davis, Broca, Busk, Lucae, and many others, have brought the distinctions to extreme minuteness. In certain cases great reliance may be placed on such measurements. Thus the skulls of an Australian and a Negro would be generally distinguished by their narrowness and the projection of the jaw from that of

any Englishman; while, although both the Australian and Negro are thus dolichocephalic and prognathous, the first would usually differ perceptibly from the second in its upright sides and strong orbital ridges. The relation of height to breadth may furnish a valuable test; thus both the Hafir and the Bushman are dolichocephalic, with an index of about 72, but they differ in the index of height, which may be 73 and 71 respectively, in the one case more than the width and in the other less.

It is, however, acknowledged by all experienced craniologists, that the shape of the skull may vary so much within the same tribe, and even the same family, that it must be used with extreme caution, and if possible only in conjunction with other criteria of race. The general contour of the face, in part dependent on the form of the skull, varies much in different races, among whom it is loosely defined as oval, lozenge-shaped, pentagonal, &c. Of particular features, some of the most marked contrast to European types are seen in the oblique Chinese eyes, the broad-set Kamchadal cheeks, the pointed Arab chin, the snub Kirghis nose, the fleshy protuberant Negro lips, and the broad Kalmuk ear.

Taken altogether, the features have a typical character which popular observation seizes with some degree of correctness, as in the recognition of the Jewish countenance in a European city. The state of adaptation in which each people stands to its native climate forms a definite race-character. In its extreme form this is instanced in the harmful effect of the climate of India on children of European parents, and the corresponding danger in transporting natives of tropical climates to England. Typical instances of the relation of race-constitutions to particular diseases are seen in the liability of Europeans in the West Indies to yellow fever, from which Negroes are exempt, and in the habitation by tribes in India of so-called "unhealthy districts," whose climate is deadly to Europeans, and even to natives of neighbouring regions. Even the vermin infesting different races of men are classified by Mr. A. Murray as distinct. The physical capabilities of different races are known to differ widely, but it is not easy to discriminate here between

hereditary race-differences and those due to particular food and habit of life.

A similar difficulty has hitherto stood in the way of any definite classification of the emotional, moral and intellectual characters of races. Some of the most confident judgment which have been delivered on this subject have been dictated by prejudice or willful slander, as in the many lamentable cases in which slave-holders and conquerors have excused their ill-treatment of subject and invaded races on the ground of their being creatures of bestial nature in mind and morals. Two of the best-marked contrasts of mental type recorded among races are Mr. A. R. Wallace's distinction between the sky, reserved, and impassive Malay and the sociable and demonstrative Papuan (*Tr. Eth. Soc.*, vol. iii. p. 200), and the very similar difference pointed out by Spix and Martius between the dull and morose natives of the Brazilian forests, and the lively sensuous African Negroes brought into contact with them (*Riese in Brasilien*, vol. I).

In general, however, descriptions of national or racial character are so vitiated by the confusion of peculiarity of natural character with stage of civilization, that they can only be made use of with the greatest reserve. Every division of mankind presents in every character wide deviations from a standard. Thus the Negro race, well marked as it may seem at the first glance, proves on closer examination to include several shades of complexion and features, in some districts varying far from the accepted Negro type; while the examination of a series of native American tribes shows that, notwithstanding their asserted uniformity of type, they differ in stature, colour, features, and proportions of skull. Detailed anthropological research, indeed, more and more justifies Blumenbach's words, that "innumerable varieties of mankind run into one another by insensible degrees." This state of things, due partly to mixture and crossing of races, and partly to independent variation of types, makes the attempt to arrange the whole human species within exactly bounded divisions an apparently hopeless task. It does not follow, however, that the attempt to distinguish

special races should be given up, for there at least exist several definable types, each of which so far prevails in a certain population as to be taken as its standard. M. Quetelet's plan of defining such types will probably meet with general acceptance as the scientific method proper to this branch of anthropology. It consists in the determination of the standard, or typical "mean man" (*homme moyen*) of a population, with reference to any particular quality, such as stature, weight, complexion, &c.

In the case of statute, this would be done by measuring a sufficient number of men, and accounting how many of them belong to each height on the scale. If it be thus ascertained, as it might be in an English district, that the 5 ft. 7 in. men form the most numerous group, while the 5 ft. 6 in. and 5 ft. 8 in. men are less in number, and the 5 ft. 5 in. and 5 ft. 9 in. still fewer, and so on until the extremely small number of extremely short or tall individuals of 5 ft. or 7 ft. is reached, it will thus be ascertained that the stature of the mean or typical man is to be taken as 5 ft. 7 in. The method is thus that of selecting as the standard the most numerous group, on both sides of which the groups decrease in number as they vary in type.

Such classification may show the existence of two or more types in a community, as, for instance, the population of a Californian settlement made up of Whites and Chinese might show two predominant groups (one of 5 ft. 8 in., the other of 5 ft. 4 in) corresponding to these two racial types. It need hardly be said that this method of determining the mean type of a race, as being that of its really existing and most numerous class, is altogether superior to the mere calculation of an average, which may actually be represented by comparatively few individuals, and those the exceptional ones.

For instance, the average stature of the mixed European and Chinese population just referred to might be 5 ft. 6 in — a worthless and, indeed, misleading result. The measurement and description of the various races of men are now carried to great minuteness so that race classification is rapidly improving as to both scope and accuracy. Even where comparatively loose

observations have been made, it is possible, by inspection of considerable number of individuals, to define the prevalent type of a race with tolerable approximation to the real mean or standard man. It is in this way that the subdivision of mankind into races, so far as it has been done to any purpose, has been carried out by anthropologists.

These classifications have been numerous, and though, regarded as systems, most of them are now seen at the first glance to be unsatisfactory, yet they have been of great value in systematizing knowledge, and are all more or less based on indisputable distinctions. Blumenbach's division, though published nearly a century ago (1781), has had the greatest influence. He reckons five races, *viz.*, Caucasian, Mongolian, Ethiopian, American, Malay. The ill-chosen name of Caucasian, used by Blumenbach to denote what may be called white men, is still current; it brings into one race peoples such as the Arabs and Swedes, although these are scarcely less different than the Americans and Malays, who are set down as two distinct races.

Again, two of the best-marked varieties of mankind are the Australians and the Bushmen, neither of whom, however, seem to have a natural place in Blumenbach's series. The yet simpler classification by Cuvier into Caucasian, Mongol, and Negro, corresponds in some measure with a division by mere complexion into white, yellow, and black races; but neither this threefold division, nor the ancient classification into Semitic, Hamitic, and Japhetic nations can be regarded as separating the human types either justly or sufficiently. Schemes which set up a larger number of distinct races, such as the eleven of Pickering, the fifteen of Bory de St Vincent, and the sixteen of Desmoulins, have the advantage of finding niches for most well-defined human varieties; but no modern naturalist would be likely to adopt any one of these as it stands. In criticism of Pickering's system, it is sufficient to point out that he divides the white nations into two races, entitled the Arab and the Abyssinian. Agassiz, Nott, Crawford, and others who have assumed a much larger number of races or species of man, are not considered to have satisfactorily defined a corresponding number of distinguishable types.

On the whole, Professor Huxley's recent scheme probably approaches more nearly than any other to such a tentative classification as may be accepted in definition of the principal varieties of mankind, regarded from a zoological point of view, though anthropologists may be disposed to erect into separate races several of his widely-differing sub-races. He distinguishes four principal types of mankind, the Australioid, Negroid, Mongoloid, and Xanthochoroic, adding a fifth variety, the Melanochroic.

The special points of the Australioid are a chocolate-brown skin, dark brown or black eyes, black hair (usually wavy), narrow (dolichocephalic) skull, brow-ridges strongly developed, projecting jaw, coarse lips, and broad nose. This type is best represented by the natives of Australia, and next to them, by the indigenous tribes of Southern India, the so-called coolies. The Egyptians to some degree approach this type; they are, however, held by good authorities to be a modified African race.

The Negroid type is primarily represented by the Negro of Africa, between the Sahara and the Cape district, including Madagascar. The skin varies from dark brown to brown-black, with eyes of similar dark hue, and hair usually black, and always crisp or woolly. The skull is narrow (dolichocephalism), with orbital ridges not prominent, prognathous, with depressed nasal bones, causing the nose to be flat as well as broad; and the lips are coarse and projecting.

Two important families are classed in this system as special modifications of the Negroid type. First, the Bushman of South Africa is diminutive in stature, and of yellowish-brown complexion; the Hottentot is supposed to be the result of crossing between the Bushman and ordinary Negroid.

Second, the Negritos of the Andaman Islands, the peninsula of Malacca, the Philippines and other islands, to New Caledonia and Tasmania, are mostly dolichocephalism, with dark skins and woolly hair. In various districts they tend towards other types, and show traces of mixture.

The Mongoloid type prevails over the vast area lying east of a line drawn from Lapland to Siam. Its definition includes

a short, squat build, a yellowish brown complexion, with black eyes and black straight hair, a broad (brachycephalic) skull, usually without prominent brow-ridges, flat small nose, and oblique eyes.

The dolichocephalic Chinese and Japanese in other respect correspond. Various other important branches of the human species are brought into connection with the Mongoloid type, though on this view the differences they present raise difficult problems of gradual variations, as well as of mixture of race; these are the Dyak-Malays, the Polynesians, and the Americans.

The Xanthochroi, or fair whites-tall, with almost colourless skin, blue or grey eyes, hair from straw colour to chesnut, and skulls varying as to proportionate width- are the prevalent inhabitants of Northern Europe, and the type may be traced into North Africa, and eastward as far as Hindostan.

On the south and west it mixes with that of the Melanochroi, or dark whites, and on the north and east with that of the Mongoloids. The Melanochroi, or dark whites, differ from the fair whites in the darkening of the complexion to brownish and olive, and of the eyes and hair to black, while the stature is somewhat lower and the frame lighter. To this class belong a large part of those classed as Kelts, and of the populations of Southern Europe, such as Spaniards, Greeks, and Arabs, extending as far as India; while endless intermediate grades between the two white types testify to ages of intermingling.

Professor Huxley is disposed to account for the Melanochroi as themselves the result of crossing between the Xanthochroi and the Australioids. Whatever ground there may be for his view, it is obviously desirable to place them in a class by themselves, distinguishing them by an appropriate name.

In determining whether the races of mankind are to be classed as varieties of one species, it is important to decide whether every two races can unite to produce fertile offspring. It is settled by experience that the most numerous and well-known crossed races, such as the Mulattos, descended from Europeans and Negroes-the Mestizos, from Europeans and American indigenes — the Zambos, from these American

indigenes and Negroes, &c., are permanently fertile. They practically constitute sub-races, with a general blending of the characters of the two parents, and only differing from fully established races in more or less tendency to revert to one or other of the original types. It has been argued, on the other hand, that not all such mixed breeds are permanent, and especially that the cross between European and Australian indigenes is almost sterile; but this assertion, when examined with the care demanded by its bearing on the general question of hybridity, has distinctly broken down. On the whole, the general evidence favours the opinion that any two races may combine to produce a new sub-race, which again may combine with any other variety.

Thus, if the existence of a small number of distinct races of mankind be taken as a starting-point, it is obvious that their crossing would produce an indefinite number of secondary varieties, such as the population of the world actually presents. The working out in detail of the problem, how far the differences among complex nations, such as those of Europe, may have been brought about by hybridity, is still, however, a task of almost hopeless intricacy.

Among the boldest attempts to account for distinctly-marked population as resulting from the intermixture of two races, are Professor Huxley's view that the Hottentots are hybrid between the Bushmen and the Negroes, and his more important suggestion, that the Melnochroic peoples of Southern Europe are of mixed Xanthochoric and Australioid stock. The problem of ascertaining how the small number of races, distinct enough to be called primary, can have assumed their different types, has been for years the most disputed field of anthropology, the battle-ground of the rival schools of monogenists and polygenists. The one has claimed all mankind to be descended from one original stock, and generally from a single pair; the other has contended for the several primary races being separate species of independent origin. It is not merely as a question of natural history that the matter has been argued. Biblical authority has been appealed to, mostly on the side of the monogenists, as

recording the descent of mankind from a single pair. On the other hand, however, the polygenists not less confidently claim passages from which they infer the existence of non-Adamite, as well as Adamite races of man. Nor have political considerations been without influence, as where, for instance, one American school of ethnologists have been thought to have formed, under the bias of a social system recognizing slavery, their opinion that the Negro and the white man are of different species. Of the older school of scientific monogenists, Blumenbach and Prichard are eminent representatives, as is Quatrefages of the more modern. The great problem of the monogenist theory is to explain by what course of variation the so different races of man have arisen from a single stock.

In ancient times little difficulty was left in this, authorities such as Aristotle and Vitruvius seeing in climate and circumstance the natural cause of racial differences, the Ethiopian having been blackened by the tropical sun, &c. Later and closer observations, however, have shown such influences to be, at any rate, far slighter in amount and slower in operation than was once supposed. M. de Quatrefages brings forward (*Unite de l'Espece Humaine*, Paris, 1861, ch. 13) his strongest arguments for the variability of races under change of climate, &c (*action du milieu*), instancing the asserted alteration in complexion, constitution, and character of Negroes in America, and Englishmen in America and Australia.

But although the reality of some such modification is not disputed, especially as to stature and constitution, its amount is not enough to upset the counter-proposition of the remarkable permanence of type displayed by races ages after they have been transported to climates extremely different from that of their former home.

Moreover, physically different races, such as the Bushmen and Negroids in Africa, show no signs of approximation under the influence of the same climate; while on the other hand, the coast tribes of Tierra del Fuego and forest tribes of tropical Brazil continue to resemble one another, in spite of extreme differences of climate and food. Mr. Darwin, than whom no

naturalist could be more competent to appraise the variation of a species, is moderate in his estimation of the changes produced on races of man by climate and mode of life within the range of history .

The slightness and slowness of variation in human races having become known, a great difficulty of the monogenist theory was seen to lie in the shortness of the chronology with which it was formerly associated. Inasmuch as several well-marked races of mankind, such as the Egyptian, Phoenician, Ethiopian, &c., were much the same three or four thousand years ago as now, their variation from a single stock in the course of any like period could hardly be accounted for without a miracle. This difficulty was escaped by the polygenist theory, which, till a few years since, was gaining ground. Two modern views have, however, intervened which have tended to restore, though under a new aspect, the doctrine of a single human stock.

One has been the recognition of man having existed during a vast period of time , which made it easier to assume to continuance of very slow natural variation as having differenced even the white man and the Negro among the descendants of a common progenitor. The other wise is that of the evolution or development of species, at the present day so strongly upheld among naturalists. It does not follow necessarily from a theory of evolution of species that mankind must have descended from a single stock, for the hypothesis of development admits of the arguments, that several simious species may have culminated in several races of man.

The general tendency of the development theory, however, is against constituting separate species where the differences are moderate enough to be accounted for as due to variation from a single type. Mr. Darwin's summing up of the evidence as to unity of type throughout the races of mankind is as distinctly a monogenist argument as those of Blumenbach, Prichard or Quatrefages- "Although the existing races of man differ in many respects, as in colour, hair, shape of skull, proportions of the body, &c., yet, if their whole organization be

take into consideration, they are found to resemble each other closely in a multitude of points. Many of these points are of so unimportant, or of so singular a nature, that it is extremely improbable that they should have been independently acquired by aboriginally distinct species or races.

The same remark holds good with equal or greater force with respect to the numerous points of mental similarity between the most distinct races of man... Now, when naturalists observe a close agreement in numerous small details of habits, tastes, and dispositions between two or more domestic races, or between nearly allied natural forms, they use this fact as an argument that all are descended from a common progenitor, who was thus endowed; and consequently, that all should be classed under the same species.

The same argument may be applied with much force to the races of man." A suggestion by Mr. A.R. Wallace has great importance in the application of the development theory to the origin of the various races of man; it is aimed to meet the main difficulty of the monogenist school, how races which have remained comparatively fixed in type during the long period of history, such as the white man and the Negro, should have, in even a far longer period, passed by variation from a common original.

Mr. Wallace's view is substantially that the remotely ancient representatives of the human species, being as yet animals too low in mind to have developed those arts of maintenance and social ordinances by which man holds his own against influences from climate and circumstance, were in their then wild state much more plastic than now to external nature; so that "natural selection" and other causes met with but feeble resistance in forming the permanent varieties or races of man, whose complexion and structure still remain fixed in their descendants. On the whole, it may be asserted that the doctrine of the unity of mankind now stands on a firmer basis than in previous ages. It would be premature to judge how far the problem of the origin of races may be capable of exact solution; but the experience of the last few years countenances Mr. Darwin's

prophecy, that before long the dispute between the monogenists and the polygenists will die a silent and unobserved death.

CAUSES OF RAPID POPULATION GROWTH

The main reasons why population growth is rapid are as follows:

High Birth Rates and Declining Death: According to the 1991 census, birth rate in India was 30.5, while the death rate was 9.4. As a result, the survival rate has been increasing. To arrest this trend, the birth rates will have to be brought down further.

Near Universal Incidence of Marriage: According to one survey, in the 40-44 years age group, the percentage of women who never married was merely 0.55%. Because of universal marriage of women, the number of children born per couple is very large.

Early Marriage of Girls: The survey also revealed that 44% of the women is 15-19 years age-group and 90% in the 20-24 years age group are married. This implies more chances of bearing children for women in the early reproductive years- thus leading to high birth rates.

Economic Backwardness

Because of a high percentage of rural population and a high incidence of rural poverty more children considered a resource. A high infant mortality rate also encourages the poor to produce more children.

Climatic Factors

The tropical climate makes for early puberty and conservative social institutions lead to an early marriage of women.

LITERACY

Education is a key factor in socio-economic development. A reasonable level of literacy achieves the following objectives.

It increases the receptivity of the population to modern ideas and improved techniques and enlarges their mental horizon. It promotes increased participation of citizens in the affairs of the country. It results in greater awareness of available opportunities and mobility of labour. It produces skilled and trained personnel needed by economy and society. It promotes science and technology and, even more importantly, a scientific outlook.

It generates national and development consciousness.

For the purpose of census, a person is deemed as literate if he or she can read and write any language, with understanding. In the 1991 census, the question on literacy was canvassed only for population aged seven years and above, unlike earlier censuses which took into account population of five years and above for this purpose.

The final results reveal that there has been an increase in literacy in the country. The literacy rate, according to the 1991 census, is 52.21% (64.13% for males and 39.29% for females). Kerala retained its position by being on top with a 89.81 % literacy rate in the country. Bihar stood at the bottom with a literacy rate of 38.48% with Rajasthan with a percentage of 20.44% as compared to 54.99% among the males.

The average literacy rates, however, conceal many sharp inequalities. First, and quite glaring, is the wide difference between rural and urban areas. Secondly, there is large difference between males and females. Female literacy rate was 25% below that of the male literacy rate in 1991. Thirdly, there are enormous inter-state differences in literacy rates. In 1991, Kerala stood at one end with the overall literacy rate of 89.81% (male: 96.62%, female: 86.17%) and Rajasthan at the other with 38.55% (male: 54.99%, female: 20.44%). The maximum difference-that between Kerala's urban male population and Rajasthan's rural female population was 84%.

One straight forward message from these trends is that, if India continues at the present rate of growth of literacy, it will keep on adding to the number of illiterates. Earlier estimates by such a reputed source as the World Bank had suggested that

if India continued at present rates, by 2000 AD, it would have the rather dubious distinction of being the home of more than half the illiterate population in the world.

IMPLICATIONS OF LOW LITERACY RATES

Such a poor performance has, of course, many serious implications. There is enough evidence now to show that high literacy-rates-especially high female literacy rates-are associated with low rates of population growth.

Kerala is an outstanding example where high (especially female) literacy rates have gone hand in hand not only with low rates of growth of population, but with superior performance in terms of a number of health indicators, such as infant mortality rates, death rates of growth of population, but with superior performance in terms of a number of health indicators, such as infant mortality rates, death rates, sex ratio and so on. In sharp contrast, abysmally low rural female literacy rates are associated with both high population growth rates and poorer performance in terms of health indicators-as the case of Bihar, Rajasthan, Uttar Pradesh and Madhya Pradesh demonstrates.

PERFORMANCE OF STATES IN LITERACY

From the analysis of the performance of states in literacy during the last decade, the following points emerge-Only three states-Kerala, Tamil Nadu and Maharashtra-have crossed the 50% marks in female literacy rates. Haryana has shown the greatest improvement in terms of overall as well as female literacy rates.

Bihar shows the least progress in male, female and total literacy rates. Male-Female literacy differentials have narrowed in all states except Rajasthan. While this is encouraging, the pattern of decline is not. Thus, the states which perform the worst in terms of literacy rates-Bihar, Rajasthan, Madhya Pradesh, Uttar Pradesh and Andhra Pradesh-are also the ones which have recorded minimum improvement in the matter of

male-female differentials. The states which have shown significant decline in male-female literacy differential are also the ones which have consistently had above average literacy rates for all categories-persons, males and females. Male-female differential are comparatively low in the three regions inhabited predominantly by tribal-Meghalaya, Mizoram and Nagaland.

MEASURE TO ARREST LOW LITERACY RATES

The states with low literacy rates tend to have low enrolment-retention rates among girls which depress the overall figures for these states. The most vulnerable classes (especially for girls) for non-starter and drop-outs are Scheduled Castes, Scheduled Tribes, those living in remote and backward areas and the children of recent migrants to towns. Thus, socio-economic compulsions, rather than non-availability of schools, are mainly responsible for the children keeping out of schools. The programmes like mid-day meals, free books, uniforms and stationary have had limited impact. The following steps are suggested to ensure full enrolment of the 6-14 year age group-Lag in enrolment of girls be removed.

Overall enrolment percentage in educationally backward states is brought to the national level. Innovative measures are evolved to check the drop-out rates. Quality, relevance and effectiveness of primary education are improved.

To improve literacy levels among children, the government launched 'Operation Blackboard' in 1987-88 which, according to the current norms, aims at equipping each primary and upper primary school with three reasonably large, all weather rooks; at least three teacher per school, one of them being a lady teacher; separate titles for boys and girls; adequate learning and teaching material such as maps, charts, toys and too old for work experience.

The government also provides non-formal education facilities for the children in tribal, hilly, desert and remote areas and in urban slums, where quite a number of children work.

To attain higher levels of literacy among the adult population, the National Adult Education Programme was taken up in 1978. the Sixth Plan set the target of reaching 100% literacy in the 15-35 years age group. In 1988, a National Literacy Mission was launched to impart functional literacy to the adult population in 15-35 years age group. The National Literacy Mission Campaigns are area-specific, time-bound, volunteer based, cost-effective and outcome oriented. These campaigns also aim at universal enrolment and retention of children, small family norms, immunization, maternity protection, communal harmony and environment protection. The Mission Campaigns aim to cover 345 districts by the end of the 8th Plan.

PROBLEMS ASSOCIATED WITH HIGH POPULATION GROWTH

The large population of India and its continued growth at an annual rate well above 2% has created many problems;

Scope for Decline in Death Rates

With ever increasing provision of health services, there is a scope for further decline of the death rates. If the birth rates do not show similar declines, the population growth rates will go further up.

Tendency for Rise in Proportion of Women in the Reproductive Age

According to the 1991 census, 36% of the population is below 15 years. Women in this age group will contribute to the reproductive age section in future. This will lead to increase in overall birth rates due to an ever expanding.

High Birth Rate Depresses Per Capita Income

Income During 1950-51 to 1990-91 period, the national income rose by 223% (average annual rate-4.21%), but the per capita income rose by 52.8% only (average annual rate-2.23%). This is because the population rose by 223% (average annual

rate-2.14%) during this period. Low rates of per capita income mean low rates of savings and of investments which depress the growth of national income as a whole.

High Birth Rates a Strain on Mother's Health and Norms Activity

This results in lower productivity of the population.

High Population Growth Means increased Pressure on Land

As the total area of the country is fixed, the rapid growth of population has increased pressure on land, especially cultivable land. In India, only 46% of the total land is available for agricultural purposes, while 70% of the population depends on agricultural land is responsible for high unemployment rates among rural people.

Inter-Regional Migration

Rapid population growth causes migration of people from denser regions like Kerala and West Bengal to less dense regions. This causes increased demands for infrastructure and civic amenities in areas which receive migrating populations.

Environmental Implications

Because of growth of population, there is an increased demand for food, clothing, shelter, industrial and consumer goods. This creates pressure on natural resources and leads to increased use of fertilizers, pesticides, irrigation measures, machines, power etc. This coupled with rapid deforestation to clear land for human settlement, growing slums, poor sanitation, soil erosion, air and water pollution causes a great strain on our natural resources and gives way to an unsustainable mode of development. Growing concerns on environmental degradation are related to high levels of population growth.

Increasing Pressure on Civic Amenities and the Social Problems

Because of high population growth rates, and migrations in search of employment to urban areas, there is immense pressure on public facilities like transport, hospitals, educational institutions,

water supply, electricity, sanitation etc. Because of growing socio-economic disparities and large floating populations in urban areas, social problems arise, such as crime against women and the elderly, drug abuse, child delinquency, vulgar consumerism etc. Similarly, high rates of unemployment among youth, rising prices and demands for higher wages are other problems associated with high rates of population growth.

POPULATION AND FAMILY PLANNING POLICY

Population growth has long been a concern of the government, and India has a lengthy history of explicit population policy. In the 1950s, the government began, in a modest way, one of the earliest national, government-sponsored family planning efforts in the developing world. The annual population growth rate in the previous decade (1941 to 1951) had been below 1.3 percent, and government planners optimistically believed that the population would continue to grow at roughly the same rate.

Implicitly, the government believed that India could repeat the experience of the developed nations where industrialization and a rise in the standard of living had been accompanied by a drop in the population growth rate. In the 1950s, existing hospitals and health care facilities made birth control information available, but there was no aggressive effort to encourage the use of contraceptives and limitation of family size. By the late 1960s, many policy makers believed that the high rate of population growth was the greatest obstacle to economic development. The government began a massive program to lower the birth rate from forty-one per 1,000 to a target of twenty to twenty-five per 1,000 by the mid-1970s. The National Population Policy adopted in 1976 reflected the growing consensus among policy makers that family planning would enjoy only limited success unless it was part of an integrated program aimed at improving the general welfare of the population. The policy makers assumed that excessive family size was part and parcel of poverty and had to be dealt with as integral to a general development strategy. Education about

the population problem became part of school curriculum under the Fifth Five-Year Plan (FY 1974-78). Cases of government-enforced sterilization made many question the propriety of state-sponsored birth control measures, however.

During the 1980s, an increased number of family planning programs were implemented through the state governments with financial assistance from the central government. In rural areas, the programs were further extended through a network of primary health centers and subcenters. By 1991, India had more than 150,000 public health facilities through which family planning programs were offered. Four special family planning projects were implemented under the Seventh Five-Year Plan (FY 1985-89). One was the All-India Hospitals Post-partum Programme at district- and subdistrict-level hospitals. Another program involved the reorganization of primary health care facilities in urban slum areas, while another project reserved a specified number of hospital beds for tubal ligation operations. The final program called for the renovation or remodelling of intrauterine device (IUD) rooms in rural family welfare centers attached to primary health care facilities.

Despite these developments in promoting family planning, the 1991 census results showed that India continued to have one of the most rapidly growing populations in the world. Between 1981 and 1991, the annual rate of population growth was estimated at about 2 percent. The crude birth rate in 1992 was thirty per 1,000, only a small change over the 1981 level of thirty-four per 1,000. However, some demographers credit this slight lowering of the 1981-91 population growth rate to moderate successes of the family planning program. In FY 1986, the number of reproductive-age couples was 132.6 million, of whom only 37.5 percent were estimated to be protected effectively by some form of contraception. A goal of the seventh plan was to achieve an effective couple protection rate of 42 percent, requiring an annual increase of 2 percent in effective use of contraceptives.

The heavy centralization of India's family planning programs often prevents due consideration from being given to

regional differences. Centralization is encouraged to a large extent by reliance on central government funding. As a result, many of the goals and assumptions of national population control programs do not correspond exactly with local attitudes toward birth control. At the Jamkhed Project in Maharashtra, which has been in operation since the late 1970s and covers approximately 175 villages, the local project directors noted that it required three to four years of education through direct contact with a couple for the idea of family planning to gain acceptance. Such a timetable was not compatible with targets. However, much was learned about policy and practice from the Jamkhed Project. The successful use of women's clubs as a means of involving women in community-wide family planning activities impressed the state government to the degree that it set about organizing such clubs in every village in the state. The project also serves as a pilot to test ideas that the government wants to incorporate into its programs. Government medical staff members have been sent to Jamkhed for training, and the government has proposed that the project assume the task of selecting and training government health workers for an area of 2.5 million people.

Another important family planning program is the Project for Community Action in Family Planning. Located in Karnataka, the project operates in 154 project villages and 255 control villages. All project villages are of sufficient size to have a health subcenter, although this advantage is offset by the fact that those villages are the most distant from the area's primary health centers. As at Jamkhed, the project is much assisted by local voluntary groups, such as the women's clubs. The local voluntary groups either provide or secure sites suitable as distribution depots for condoms and birth control pills and also make arrangements for the operation of sterilization camps. Data provided by the Project for Community Action in Family Planning show that important achievements have been realized in the field of population control. By the mid-1980s, for example, 43 percent of couples were using family planning, a full 14 percent above the state average. The project has significantly improved the status of women, involving them and empowering

them to bring about change in their communities. This contribution is important because of the way in which the deeply entrenched inferior status of women in many communities in India negates official efforts to decrease the fertility rate.

Studies have found that most couples in fact regard family planning positively. However, the common fertility pattern in India diverges from the two-child family that policy makers hold as ideal. Women continue to marry young; in the mid-1990s, they average just over eighteen years of age at marriage. When women choose to be sterilized, financial inducements, although helpful, are not the principal incentives. On average, those accepting sterilization already have four living children, of whom two are sons.

The strong preference for sons is a deeply held cultural ideal based on economic roots. Sons not only assist with farm labor as they are growing up (as do daughters) but they provide labor in times of illness and unemployment and serve as their parents' only security in old age. Surveys done by the New Delhi Operations Research Group in 1991 indicated that as many as 72 percent of rural parents continue to have children until at least two sons are born; the preference for more than one son among urban parents was tabulated at 53 percent. Once these goals have been achieved, birth control may be used or, especially in agricultural areas, it may not if additional child labor, later adult labor for the family, is deemed desirable.

A significant result of this eagerness for sons is that the Indian population has a deficiency of females. Slightly higher female infant mortality rates (seventy-nine per 1,000 versus seventy-eight per 1,000 for males) can be attributed to poor health care, abortions of female fetuses, and female infanticide. Human rights activists have estimated that there are at least 10,000 cases of female infanticide annually throughout India. The cost of theoretically illegal dowries and the loss of daughters to their in-laws' families are further disincentives for some parents to have daughters. Sons, of course continue to carry on the family line. The 1991 census revealed that the national

sex ratio had declined from 934 females to 1,000 males in 1981 to 927 to 1,000 in 1991. In only one state—Kerala, a state with low fertility and mortality rates and the nation's highest literacy—did females exceed males. The census found, however, that female life expectancy at birth had for the first time exceeded that for males. India's high infant mortality and elevated mortality in early childhood remain significant stumbling blocks to population control. India's fertility rate is decreasing, however, and, at 3.4 in 1994, it is lower than those of its immediate neighbors (Bangladesh had a rate of 4.5 and Pakistan had 6.7). The rate is projected to decrease to 3.0 by 2000, 2.6 by 2010, and 2.3 by 2020.

During the 1960s, 1970s, and 1980s, the growth rate had formed a sort of plateau. Some states, such as Kerala, Tamil Nadu, and, to a lesser extent, Punjab, Maharashtra, and Karnataka, had made progress in lowering their growth rates, but most did not. Under such conditions, India's population may not stabilize until 2060.

Life Expectancy and Mortality

The average Indian male born in the 1990s can expect to live 58.5 years; women can expect to live only slightly longer (59.6 years), according to 1995 estimates. Life expectancy has risen dramatically throughout the century from a scant twenty years in the 1911-20 period. Although men enjoyed a slightly longer life expectancy throughout the first part of the twentieth century, by 1990 women had slightly surpassed men. The death rate declined from 48.6 per 1,000 in the 1910-20 period to fifteen per 1,000 in the 1970s, and improved thereafter, reaching ten per 1,000 by 1990, a rate that held steady through the mid-1990s. India's high infant mortality rate was estimated to exceed 76 per 1,000 live births in 1995. Thirty percent of infants had low birth weights, and the death rate for children aged one to four years was around ten per 1,000 of the population.

According to a 1989 National Nutrition Monitoring Bureau report, less than 15 percent of the population was adequately

nourished, although 96 percent received an adequate number of calories per day. In 1986 daily average intake was 2,238 calories as compared with 2,630 calories in China. According to UN findings, caloric intake per day in India had fallen slightly to 2,229 in 1989, lending credence to the concerns of some experts who claimed that annual nutritional standards statistics cannot be relied on to show whether poverty is actually being reduced. Instead, such studies may actually pick up short-term amelioration of poverty as the result of a period of good crops rather than a long-term trend.

Official Indian estimates of the poverty level are based on a person's income and corresponding access to minimum nutritional needs. There were 332 million people at or below the poverty level in FY 1991, most of whom lived in rural areas.

Communicable and Noncommunicable Diseases

A number of endemic communicable diseases present a serious public health hazard in India. Over the years, the government has set up a variety of national programs aimed at controlling or eradicating these diseases, including the National Malaria Eradication Programme and the National Filaria Control Programme. Other initiatives seek to limit the incidence of respiratory infections, cholera, diarrheal diseases, trachoma, goiter, and sexually transmitted diseases.

Smallpox, formerly a significant source of mortality, was eradicated as part of the worldwide effort to eliminate that disease. India was declared smallpox-free in 1975. Malaria remains a serious health hazard; although the incidence of the disease declined sharply in the postindependence period, India remains one of the most heavily malarial countries in the world. Only the Himalaya region above 1,500 meters is spared. In 1965 government sources registered only 150,000 cases, a notable drop from the 75 million cases in the early postindependence years. This success was short-lived, however, as the malarial parasites became increasingly resistant to the insecticides and drugs used to combat the disease. By the mid-1970s, there were nearly 6.5 million cases on record. The

situation again improved because of more conscientious efforts; by 1982 the number of cases had fallen by roughly two-thirds. This downward trend continued, and in 1987 slightly fewer than 1.7 million cases of malaria were reported. In the early 1990s, about 389 million people were at risk of infection from filaria parasites; 19 million showed symptoms of filariasis, and 25 million were deemed to be hosts to the parasites. Efforts at control, under the National Filaria Control Programme, which was established in 1955, have focused on eliminating the filaria larvae in urban locales, and by the early 1990s there were more than 200 filaria control units in operation.

Leprosy, a major public health and social problem, is endemic, with all the states and union territories reporting cases. However, the prevalence of the disease varies. About 3 million leprosy cases are estimated to exist nationally, of which 15 to 20 percent are infectious. The National Leprosy Control Programme was started in 1955, but it only received high priority after 1980. In FY 1982, it was redesignated as the National Leprosy Eradication Programme. Its goal was to achieve eradication of the disease by 2000. To that end, 758 leprosy control units, 900 urban leprosy centers, 291 temporary hospitalization wards, 285 district leprosy units, and some 6,000 lower-level centers had been established by March 1990. By March 1992, nearly 1.7 million patients were receiving regular multidrug treatment, which is more effective than the standard single drug therapy (Dapsone monotherapy).

India is subject to outbreaks of various diseases. Among them is pneumonic plague, an episode of which spread quickly throughout India in 1994 killing hundreds before being brought under control. Tuberculosis, trachoma, and goiter are endemic. In the early 1980s, there were an estimated 10 million cases of tuberculosis, of which about 25 percent were infectious. During 1991 nearly 1.6 million new tuberculosis cases were detected. The functions of the Trachoma Control Programme, which started in 1968, have been subsumed by the National Programme for the Control of Blindness. Approximately 45 million Indians are vision-impaired; roughly 12 million are

blind. The incidence of goiter is dominant throughout the sub-Himalayan states from Jammu and Kashmir to the northeast. There are some 170 million people who are exposed to iodine deficiency disorders. Starting in the late 1980s, the central government began a salt iodination program for all edible salt, and by 1991 record production—2.5 million tons—of iodized salt had been achieved. There are as well anemias related to poor nutrition, a variety of diseases caused by vitamin and mineral deficiencies—beriberi, scurvy, osteomalacia, and rickets—and a high incidence of parasitic infection.

Diarrheal diseases, the primary cause of early childhood mortality, are linked to inadequate sewage disposal and lack of safe drinking water. Roughly 50 percent of all illness is attributed to poor sanitation; in rural areas, about 80 percent of all children are infected by parasitic worms. Estimates in the early 1980s suggested that although more than 80 percent of the urban population had access to reasonably safe water, fewer than 5 percent of rural dwellers did. Waterborne sewage systems were woefully overburdened; only around 30 percent of urban populations had adequate sewage disposal, but scarcely any populations outside cities did. In 1990, according to United States sources, only 3 percent of the rural population and 44 percent of the urban population had access to sanitation services, a level relatively low by developing nation standards. There were better findings for access to potable water: 69 percent in the rural areas and 86 percent in urban areas, relatively high percentages by developing nation standards. In the mid-1990s, about 1 million people die each year of diseases associated with diarrhea.

India has an estimated 1.5 million to 2 million cases of cancer, with 500,000 new cases added each year. Annual deaths from cancer total around 300,000. The most common malignancies are cancer of the oral cavity (mostly relating to tobacco use and pan chewing—about 35 percent of all cases), cervix, and breast. Cardiovascular diseases are a major health problem; men and women suffer from them in almost equal numbers (14 million versus 13 million in FY 1990).

Acquired Immune Deficiency Syndrome

The incidence of AIDS cases in India is steadily rising amidst concerns that the nation faces the prospect of an AIDS epidemic. By June 1991, out of a total of more than 900,000 screened, some 5,130 people tested positive for the human immunodeficiency virus (HIV). However, the total number infected with HIV in 1992 was estimated by a New Delhi-based official of the World Health Organization (WHO) at 500,000, and more pessimistic estimates by the World Bank in 1995 suggested a figure of 2 million, the highest in Asia. Confirmed cases of AIDS numbered only 102 by 1991 but had jumped to 885 by 1994, the second highest reported number in Asia after Thailand. Suspected AIDS cases, according to WHO and the Indian government, may be in the area of 80,000 in 1995.

The main factors cited in the spread of the virus are heterosexual transmission, primarily by urban prostitutes and migrant workers, such as long-distance truck drivers; the use of unsterilized needles and syringes by physicians and intravenous drug users; and transfusions of blood from infected donors.

Based on the HIV infection rate in 1991, and India's position as the second most populated country in the world, it was projected that by 1995 India would have more HIV and AIDS cases than any other country in the world. This prediction appeared true. By mid-1995 India had been labeled by the media as "ground zero" in the global AIDS epidemic, and new predictions for 2000 were that India would have 1 million AIDS cases and 5 million HIV-positive. In 1987 the newly formed National AIDS Control Programme began limited screening of the blood supply and monitoring of high-risk groups. A national education program aimed at AIDS prevention and control began in 1990. The first AIDS prevention television campaign began in 1991. By the mid-1990s, AIDS awareness signs on public streets, condoms for sale near brothels, and media announcements were more in evidence. There was very negative publicity as well. Posters with the names and photographs of known HIV-positive persons have been seen in New Delhi, and

there have been reports of HIV patients chained in medical facilities and deprived of treatment.

Fear and ignorance have continued to compound the difficulty of controlling the spread of the virus, and discrimination against AIDS sufferers has surfaced. For example, in 1990 the All-India Institute of Medical Sciences, New Delhi's leading medical facility, reportedly turned away two people infected with HIV because its staff were too scared to treat them.

A new program to control the spread of AIDS was launched in 1991 by the Indian Council of Medical Research. The council looked to ancient scriptures and religious books for traditional messages that preach moderation in sex and describe prostitution as a sin. The council considered that the great extent to which Indian life-styles are shaped by religion rather than by science would cause many people to be confused by foreign-modeled educational campaigns relying on television and printed booklets.

The severity of the growing AIDS crisis in India is clear, according to statistics compiled during the mid-1990s. In Bombay, a city of 12.6 million inhabitants in 1991, the HIV infection rate among the estimated 80,000 prostitutes jumped from 1 percent in 1987 to 30 percent in 1991 to 53 percent in 1993. Migrant workers engaging in promiscuous and unprotected sexual relations in the big city carry the infection to other sexual partners on the road and then to their homes and families.

India's blood supply, despite official blood screening efforts, continues to become infected. In 1991 donated blood was screened for HIV in only four major cities: New Delhi, Calcutta, Madras, and Bombay. One of the leading factors in the contamination of the blood supply is that 30 percent of the blood required comes from private, profit-making banks whose practices are difficult to regulate. Furthermore, professional donors are an integral part of the Indian blood supply network, providing about 30 percent of the annual requirement nationally. These donors are generally poor and tend to engage in high-

risk sex and use intravenous drugs more than the general population. Professional donors also tend to donate frequently at different centers and, in many cases, under different names. Reuse of improperly sterilized needles in health care and blood-collection facilities also is a factor. India's minister of health and family welfare reported in 1992 that only 138 out of 608 blood banks were equipped for HIV screening. A 1992 study conducted by the Indian Health Organisation revealed that 86 percent of commercial blood donors surveyed were HIV-positive.

Economic Geography

Economic geography is the study of the location, distribution and spatial organization of economic activities across the world. The subject matter investigated is strongly influenced by the researcher's methodological approach. Neoclassical location theorists, following in the tradition of Alfred Weber, tend to focus on industrial location and use quantitative methods.

Since the 1970s, two broad reactions against neoclassical approaches have significantly changed the discipline: Marxist political economy, growing out of the work of David Harvey; and the new economic geography which takes into account social, cultural, and institutional factors in the spatial economy. Economic geography is usually regarded as a subfield of the discipline of geography, although recently economists such as Paul Krugman and Jeffrey Sachs have pursued interests that can be considered part of economic geography.

Krugman has gone so far as to call his application of spatial thinking to international trade theory the "new economic geography", which directly competes with an approach within the discipline of geography that is also called "new economic geography".

The name geographical economics has been suggested as an alternative. Given the variety of approaches, economic geography has taken to many different subject matters, including: the location of industries, economies of agglomeration

(also known as "linkages"), transportation, international trade and development, real estate, gentrification, ethnic economies, gendered economies, core-periphery theory, the economics of urban form, the relationship between the environment and the economy (tying into a long history of geographers studying culture-environment interaction), and globalization.

This list is by no means exhaustive.

Areas of Study

- Theoretical economic Geography focuses on building theories about spatial arrangement and distribution of economic activities.
- Regional economic geography examines the economic conditions of particular regions or countries of the world. It deals with economic regionalisation, and local economic development as well.
- Critical economic geography is approach from the point of view of contemporary critical geography and its philosophy.
- Behavioural economic geography examines the cognitive processes underlying spatial reasoning, locational decision making, and behaviour of firms and individuals.

Branches

Thematically economic geography can be divided into these sub disciplines:

- 'Geography of Agriculture'
- 'Geography of Industry'
- 'Geography of International Trade'
- 'Geography of Resources'
- 'Geography of Transport and Communication' and others.

However, their areas of study may overlap with another geographical sciences or may be considered on their own.

WHAT IS ECONOMIC GEOGRAPHY

Economic geography is a sub-discipline that uses a geographical approach to study the economy. It is a vibrant and exciting branch of geography. Its name would suggest that economic geography lies somewhere between, or at the overlap of, the disciplines of geography and economics. This is true to some extent. In fact, both geographers and economists use the term 'economic geography'. However, they mean different things by it. Indeed, it is important to stress from the outset that the approach that geographers are using to study the economy is very different from that used by most economists. A Contemporary Introduction written by Neil Coe and his colleagues, this subject guide uses the term economic geography and economic-geographical approach to describe the approach used by geographers.

On the other hand, the type of 'economic geography' that economists are using, can be best described as 'geographical economics' or 'spatial economics'. More generally, this distinction between 'economic geography' and 'geographical economics' reflects fundamental differences between the way the economy is treated by geographers on the one hand, and economists on the other. In other words, an economic-geographical approach to studying the economy is very different from the one used by mainstream economics.

Key Differences Between Economic Geography and Economics' Approaches

The key difference is that mainstream economists usually pay little attention to the geographical dimensions of economic processes while economic geographers consider geography as being essential for the understanding of the ways economies work. From this, two completely different views of the economy, and the way it operates, emerge. Most mainstream economists see the economy as a machine that works just as to certain principles and whose behaviour can be predicted using modelling techniques. Mathematics is therefore the main 'language' economists 'speak'. The body of thought that underpins such

a conceptualisation of the economy can be referred to as 'economic orthodoxy'. Let us first explore the key components of economic orthodoxy before introducing the key concepts of an economic-geographical perspective.

Mainstream Economics

Key components of economic orthodoxy could be simply summarised as follows.

- One of the key assumptions of the economic orthodoxy is that all people are behaving in a rational, self-interested and economising, profit-maximising manner. This type of rational individual is sometimes referred to as 'economic man' or homo economicus.
- Economic orthodoxy assumes that these rational individuals are competing against each other on the market. Mainstream economists believe that the market is the best mechanism to ensure economic efficiency since, they believe, perfect competition on the market guarantees that supply will meet demand at a particular price and the economy will be in equilibrium. The notion of equilibrium is one of the central assumptions of mainstream economic thought and shapes the way in which economists see the world around them.
- Mainstream economists believe that the market economy operates just as to certain laws and principles that could be studied as a 'science'. One of the main concerns of this economic 'science' is to predict the behaviour of the economy using mathematical models and equations. The achievement of the aforementioned equilibrium is one of the key concerns of such modelling.
- Mainstream economists believe that these laws and principles work everywhere and therefore economic models are applicable to them in every context. In other words, economic orthodoxy believes in certain universalism.

Some would argue that such a portrayal of economic orthodoxy is somewhat simplistic, a caricature of an increasingly

diverse body of economics. However, a tendency among economists to assume some sort of universal applicability of basic economic 'laws' is rather pervasive. Within this world of universal laws there is a little room for local differences and geography in general. Indeed, geography rarely enters economists' equations. The use of geography by economists is somewhat limited. There are some important exceptions, however. Among them is Paul Krugman, US economist and the Nobel Prize winner for economics in 2008. Over the years, Krugman has made an important contribution in terms of bringing geography into economics and is seen as a leading figure of the so-called 'New Economic Geography'. However, his notion of geography is still somewhat limited and narrow, especially when compared with the conceptualisation of geography used by the economic geographical perspective discussed below. Indeed, there are stark differences between the 'New Economic Geography' used by economists and the 'new economic geography' used by geographers.

An Economic-geographical Perspective

In contrast to a rather limited appreciation of geography by most economists, geographers emphasise the fact that no economy can function at the head of a pin. In other words, 'all economies must take place'. Geography, therefore, is always intrinsically present in all economic processes. One could therefore argue that, in fact, there are 'no economies, only economic geographies'. It follows then, that the kind of universalism that mainstream economics assumes is somewhat problematic.

Indeed, if all economic processes have a geographical dimension, then it is difficult to imagine that economic rules can apply equally to all places. Another major difference between an economic-geographical perspective and the assumptions of economic orthodoxy concerns the notion of a 'rational man'—*homo economicus*.

Mainstream economists assume that people are always behaving as rational, profitmaximising individuals responding to market signals. However, life is more complex than that and

people's behaviour is not always the outcome of rational decision-making. Rather, it can be influenced and conditioned by their gender, race, age, class, religion, culture, health or disability. Geographers are keen to take these aspects on board when studying economies. A 'geographical man/woman'—or what I will call here *homo geographicus*—can behave very differently from the way they are supposed to behave just as to economic orthodoxy. This has important implications for the remaining assumptions of economic orthodoxy. Indeed, if people are not behaving in a predictable way, then it is hard to expect that the entire economy will behave just as to some predictable laws and principles.

However sophisticated, mathematical models may not be able to capture all the complexity of economic processes happening in the real world. Worse still, mathematical models are not very helpful in elucidating the ways people relate to each other within societies and economies. In other words, 'the language of mathematics limits the ways in which economists can think about questions of power and social relations'. However, the questions of power and social relations are crucial in understanding economies because people do not live and work in isolation.

We are connected to each other in complex ways and economic geography helps us to explore these connections and relations. This exploration becomes more important in the age of globalisation. Further to this, it could be argued that these connections and relations are not limited to market exchanges and transactions. Indeed, there is a wide range of economic processes happening outside the scope of the market. The diversity of forms of economic processes, both within and outside the scope of the market, means that many economic geographers are not talking about 'the economy' but about 'economies'.

In recent years, the notion of 'diverse' or 'alternative' economies attracted much interest among geographers. The notion of 'diverse economies' further undermines the universalism of economic orthodoxy and paves the way for alternative explanations of what the economy is and how it

works. Thus, one way or another, geographers in general, and economic geographers in particular, help to build a much richer, and perhaps more accurate, picture of the contemporary globalising economy. Coe and his colleagues go as far as to suggest that 'the set of approaches offered by the field of economic geography is best placed to help us appreciate and understand the modern economic world in all its complexity'. They identify the following key concepts that form part of the economic-geographical approach: space, place and scale.

Key Concepts of Economic Geography: Space, Place and Scale

An economic-geographical approach puts spatial concepts such as space, place and scale at the centre of the analysis. These concepts form part of the common language that is shared among professional geographers.

It is therefore essential that you familiarise yourself with these concepts right at the start:

- *Space*: The concept of space refers to physical distance and area. The concept of space allows us to ask simple questions such as where a particular process is happening.

Four interrelated elements of the concept of space can be identified:

1. Territoriality and form
 2. Location
 3. Flows across space
 4. The concept of uneven space as a necessary condition of a capitalist system
- *Place*: The concept of place aims to capture the specificity or uniqueness of particular places that are carved out of space. Through the notion of place, geographers are able to explore the richness and complexity of particular places and economic processes which are always embedded in environmental, social, cultural, institutional and political contexts. The idea of being embedded is very important because environmental, social, cultural, institutional and political contexts

influence economic processes. Many Western values, for instance, may be alien to many other cultures, societies or nations. Therefore, the way economies are constructed and performed may be very different in different places. Despite its importance for geographical research, the notion of place is somewhat vague because it can take various shapes and sizes.

- *Scale*: The concept of scale therefore helps us to organise places through a typology of spatial scales.

Spatial scales that are commonly used by economic geographers include:

- Global scale
- Macro-regional scale
- National scale
- Regional scale
- Local scale
- Lived places

It is worth noting that the precise typology is sometimes problematic. The terms 'local' and 'regional', for instance, are often used rather loosely. In some cases, it is difficult to establish whether we are looking at a national, regional or local scale. When reading economic geography literature, you should always pay attention to what definition of scale a particular author is using.

Further to this, it is important to realise that the above three key concepts are not simply neutral tools for describing the world—they can also be seen as representations of the world. Indeed, the way these concepts are used by academics, the media or politicians influences the way we look at the world and how we understand its problems.

Major Theoretical Perspectives in Economic Geography

While most geographers would recognise and use the concepts of space, place and scale, it is important to realise that concepts of space, place and scale are themselves subject to debate and alternative interpretations in geography. For

instance, some geographers use the term space to describe absolute geographical space, while others are using the term to describe relative space or relational space. You need to keep this in mind when reading some geography texts. More generally, you need to be aware of the fact that economic geography is a vibrant, dynamic and continuously evolving sub-discipline composed of a diverse set of approaches and concepts. This subject guide will help you to learn about the key approaches and concepts that contemporary economic geography has to offer.

These approaches and concepts will be explained in some detail in subsequent stages. However, already at this point, it is useful to highlight the various intellectual traditions within which these approaches and concepts are anchored.

Four main theoretical perspectives in economic geography are:

- *Neo-classical location theory:* Location theory flourished in the 1950s and the 1960s and was primarily interested in establishing and explaining patterns in the distribution of economic activities across space. This type of economic geography was firmly anchored in a neoclassical economics theory and used a model-based approach to study the location of economic activities in space. This period in the development of economic geography is often called a 'quantitative revolution' which provided foundations for 'regional science', 'geographical economics' and 'spatial economics'. However, many economic geographers became dissatisfied with this approach and started exploring alternatives. More recently, the interest in regional science and geographical economics has been revived through the work of economist Paul Krugman and his 'New Economic Geography'.
- *Behavioural approach:* A behavioural approach emerged in the late 1960s as one of the reactions to the 'quantitative revolution'. It moved away from a simple neo-classical assumption of homo economicus and

explored a wider range of factors that influence economic decisionmaking of human actors in various situations. The problem with this approach, however, is that it fails to explore fully the relationships between individuals and society.

- *Structuralist approach/Marxist political economy*: By contrast, a Marxist political economy approach, places social relations at the centre of its analysis, with an emphasis on class. Since the 1970s Marxist views started to influence geography and still have a significant influence on economic geography today. Importantly, Marxist-inspired economic geography moved the attention from spatial patterns and locational issues to questions of social relations and economic structures of capitalist economies.
- *Post-structuralist approaches/New economic geography/Cultural turn*: However, since the mid-1990s, a new type of economic geography has started to emerge from post-structuralist ideas. An important contribution of the new economic geography is its insistence that economic process cannot be seen in isolation from social, cultural and political contexts. In fact, new economic geography argues that social, cultural and/or institutional factors are central to the functioning of the economy/economies. Thus the emphasis on the notion of class has been replaced by the interest in categories such as gender, race, age, religion and culture. This change of emphasis is often referred to as the 'cultural turn'. This emphasis on cultural factors also represents one of the key differences between the 'new economic geography' used by geographers and the one used by economists. Furthermore, the cultural turn brought with it a change of focus away from structural features towards more particular features of societies and economies.

You will familiarise yourself with these major theoretical perspectives step by step of this subject guide. The important

thing to remember is that economic geographers do not always agree which approach is best and concepts they are working with are continually tested and contested. None of the theoretical perspectives is perfect; each of them has its strengths and weaknesses.

However, collectively, they provide critical insights into the ways in which societies and economies work. The importance of economic geography for understanding the economic world around us will be explored in the subsequent part. However, before moving on to the next part, let me reiterate the difference between the 'new economic geography' described by geographers and the 'New Economic Geography' described by economists. The difference between the two reflects a fundamental difference of understanding concerning what economic geography is about.

Paul Krugman, the key proponent of NEG, economic geography is about 'the location of production in space'; in other words, it is a 'branch of economics that worries about where things happen in relation to one another'.

In investigating the patterns of location of production in space, Krugman uses complex economic models in which geography is inserted as an important factor. In this way, Krugman's NEG has much in common with neo-classical location theory.

This subject guide will not explore Krugman's theory in any detail. However, by learning about neoclassical location theory you will gain a good understanding of the basic principles on which Krugman's theory builds. This, in turn, will help you to study Krugman's work in the future should you choose to do so. In contrast to NEG, the 'new economic geography' described by geographers as part of the 'cultural turn' is not represented by one single theory. Rather it is very much a diverse set of approaches. More importantly, the new economic geography of the cultural turn represents a dramatically different view of economies and their geographies. While there have been attempts to foster a dialogue between geographers and economists the gap between the two types of new economic geographies is rather noticeable.

HISTORY OF ECONOMIC GEOGRAPHY

In the history of economic geography there were many influences coming mainly from economics and geographical sciences.

First traces of the study of spatial aspects of economic activities can be found in seven Chinese maps of the State of Qin dating to the 4th century BC. Ancient writings can attributed to Greek Strabo's *Geographika* compiled almost 2000 years ago. A few centuries ago, there were developed many of the aspects used today in Economic Geography.

This process originated in the secret maps created across different powers in Europe, locating the products they could find in colonies in the Americas, Africa and Asia, or where they had trading interests. During the period known in geography as environmental determinism notable (though later much criticized) influence came from Ellsworth Huntington and his theory of climatic determinism. Valuable contributions came from location theorists such as Johann Heinrich von Thunen or Alfred Weber.

Other influential theories were Walter Christaller's Central place theory, the theory of core and periphery. Fred K. Schaefer's article *Exceptionalism in geography: A Methodological Examination* published in American journal *Annals* (Association of American Geographers) and his critique of regionalism had a big impact on economic geography. The article became a rallying point for the younger generation of economic geographers who were intent on reinventing the discipline as a science. Quantitative methods became prevailing in research. Well-known economic geographers of this period are William Garrison, Brian Berry, Waldo Tobler, Peter Haggett, William Bunge (Apurba Dutta, Ranibandh) Contemporary economic geographers tend to specialize in areas such as location theory and spatial analysis (with the help of geographic information systems), market research, geography of transportation, land or real estate price evaluation, regional and global development, planning, Internet geography, innovation, social networks and others.

Economists and Economic Geographers

Economists and economic geographers differ in their methods in approaching similar economic problems in several ways. To generalize, an economic geographer will take a more holistic approach in the analysis of economic phenomena, which is to conceptualize a problem in terms of space, place and scale as well as the overt economic problem that is being examined. The economist approach, according to economic geographers, has four main drawbacks or manifestations of "economic orthodoxy that tends to homogenize the economic world in way that economic geographers try to avoid (Coe *et al.*)

Geo (Marketing)

As a general term, Geomarketing is the integration of Geographical intelligence into all marketing aspects including sales and distribution. Geomarketing Research is the use of geographic parameters in research methodology starting from sampling, data collection, analysis, and presentation. Geomarketing Services are more related to routing, territorial planning, and site selection whereas the location is the key factor for such disciplines.

The core base of Geomarketing is the digital map; it can either make or break the concept. Equally important, though, is the association of data with these maps using some place-based component.

In marketing, geo (also called marketing geography or geomarketing) is a discipline within marketing analysis which uses geolocation (geographic information) in the process of planning and implementation of marketing activities. It can be used in any aspect of the marketing mix – the Product, Price, Promotion, or Place (geo targeting).

Market segments can also correlate with location, and this can be useful in targeted marketing. The methodology geomarketing is successfully applied in the financial sector through identifying ATMs traffic generators and creating hotspots maps based on geographical parameters integrated with customer behaviour.

Geomarketing has a direct impact on the development of modern trade and the reorganization of retail types. Site selection becomes automated and based on scientific procedures that saves both time and money.

Geomarketing uses key facts, a good base map, proper data layers, reliable consumer profiling, and proper success/fail criteria.

GPS tracking and GSM localization can be used to obtain the actual position of the travelling customer.

Geo Marketing Software

Geolocation software is used to display data that can be linked to a geographic region or area. It can be used to:

- Determine where the customers are (on country, city, street or user level).
- Determine who the customer is (on organisation or user level), or make a guess on it based on earlier encounters by tracking IP address, credit card information, VOIP address, etc.
- Visualize any data in a geographic context by linking it to a digital map.
- Locate a web client's computer on a digital map.
- Calculate summary information for specific areas.
- Select customers within specific areas.
- Select customers with a certain radius of a point.
- Using micro-geographic segmentation select customers similar to a specific type in the rest of the country.

Some of the software used includes Map Info, Arc GIS (ESRI), Regio Graph (GfK), assorted open source like Map window, DIVA (which while normally used for bio-diversity creates very visually pleasing density maps), GRASS (which works in Linux and Windows environments).

Several other software are available. Indeed Google Earth provides an excellent set of images that are always useful.

IMPORTANCE OF ECONOMIC GEOGRAPHY

Issues for Economic Geography

We highlighted the fact that economic geography can be seen as a diverse set of approaches and concepts that economic geographers use to study economic processes. In turn, this diversity of economic geography approaches allows economic geographers to engage with a diverse set of questions about the economy and society. Concrete questions often depend on a theoretical standpoint.

Peter Dicken and Peter Lloyd in their textbook Location in Space argue that:

- 'Fundamentally, the economic geographer is concerned with the spatial organisation of economic systems: with where the various elements of the system are located, how they are connected together in space, and the spatial impact of economic processes.'

On the basis of this, they argue that economic geographers are interested in three interconnected questions.

- In what ways are economic activities organised spatially on the earth's surface, and how do such spatial forms or patterns change over time?
- Why are economic activities organised spatially in particular ways; that is, what are the underlying processes at work?
- How does the spatial organisation of economic activities itself influence economic and other social processes?

On the other hand, Roger Lee suggests that economic geography is 'a geography of people's struggle to make a living' and should therefore concern itself with 'the sustainable and humane production, use and reproduction of the social, natural and material conditions of human existence'.

On the basis of this, Lee argues that an 'inclusive economic geography' should include the study of:

- The cultural and environmental origins of economic activity, articulated through socially constructed gender

and kinship relations; and the struggle to establish a particular set of social relations of production and their geographical extent

- The conceptualisation of nature
- The forms of calculation and measurement of value
- The processes and forms of production and consumption generated by such relations and value systems
- The division of labour
- The conditions of development within a particular set of social relations
- The forms of state and politics which support and legitimise particular social relations and processes of production and consumption
- The construction of cultural and ideological forms which shape the basis of discourse within a particular value system
- The structuring of relationships within and between different sets of social relations
- The conditions of transformation from one set of social relations of production to another

This is a long list indeed—it reflects the view discussed earlier that there are ‘no economies, only economic geographies’. Put differently, given that all economic processes are inherently spatial, economic geographers should be concerned about all the processes related to the people’s struggle to make a living.

However, an important question arises about whether such an approach is still needed in the era of globalisation in which space is apparently being dissolved by modern information and communication technologies.

Age of Globalisation: the End of Geography

Powerful arguments have been put forward about the impact of globalisation in general, and the effects of the ICT revolution in particular, on economic activities. Some observers have come to the conclusion that electronic communications have ‘space-

shrinking' effects and will bring about the 'death of distance' and thus, ultimately, the 'end of geography'.

The 'death of distance' thesis has been expressed by Cairncross as follows:

- 'Distance will no longer determine the cost of communicating electronically. Companies will organize certain types of work in three shifts just as to the world's three main time zones: the Americas, East Asia/Australia, and Europe...No longer will location be key to most business decisions. Companies will locate any screen-based activity anywhere on earth, wherever they can find the best bargain of skills and productivity.'

A similar argument has been put forward by O'Brien who argued that ICTs will allow money to be moved around the globe without constraints, thus spelling the 'end of geography':

- 'The end of geography, as a concept applied to international financial relationships, refers to a state of economic development where geographical location no longer matters, or matters less than hitherto. In this state, financial market regulators no longer hold sway over their regulatory territory; that is rules no longer apply to specific geographical frameworks, such as the nation-state or other typical regulatory/jurisdictional territories. For financial firms, this means that the choice of geographical location can be greatly widened... Stock exchanges can no longer expect to monopolize trading in the shares of companies in their country or region... For the consumer of financial services, the end of geography means a wider range of services will be offered, outside the traditional services offered by local banks.'

Both the authors of these statements attempt to convince their readers that, thanks to ICTs, space and place no longer matter or at least they matter much less than before. Indeed, they both seem to suggest that location in space is no longer an issue for firms as they can locate 'anywhere on earth'. Also, the role of place is apparently greatly diminished. Cairncross,

for instance, suggests that the only place characteristics that firms may be interested in can be reduced to 'the best bargain of skills and productivity'.

O'Brien, in the meantime, does not seem to recognise any role that places may play in the globalised financial markets. But, interestingly, both Cairncross and O'Brien seem to imply that the national scale is increasingly irrelevant in the global economy. Indeed, O'Brien specifically points out that financial market regulators 'no longer hold sway' and that rules no longer apply to nation-states, because financial flows are spilling over traditional national boundaries. Similarly, Cairncross seems to suggest that the time zone is the only geographical scale that holds any relevance in the new era of global electronic communications. What is interesting about the above statements of Cairncross and O'Brien is that they both see globalisation as something positive.

Note, for instance, Cairncross's suggestion that companies will benefit from the new locational freedom by allowing them to find and exploit 'the best bargain of skills and productivity'. O'Brien, meanwhile, suggests that the 'end of geography' will be beneficial for both financial firms and their customers.

Views such as these can be labelled as 'hyperglobalist'. Some of them go as far as to suggest that freeing economic activities from their traditional geographical constraints will bring benefits to all people in all corners of the globe. However, this, manifestly, does not seem to be the case. Today's world is ridden with sharp inequalities both within and between countries and geography plays an important role in understanding economic and social processes and their uneven manifestations in the age of globalisation.

Importance of Economic Geography in the Era of Globalization

Despite the hyperglobalist views, the role of space, place and scale do not diminish in the globalising world. Quite the opposite perhaps. Indeed, as economic activities are increasingly internationalised, interconnections between various places increase, competition between them intensifies and inequalities

are on the rise, so geography becomes more important than ever. And as we have pointed out earlier, an economic-geographical approach is perhaps 'best placed to help us appreciate and understand the modern economic world in all its complexity'.

This conviction is based on the knowledge that economic geography offers powerful tools for analysing and understanding contemporary economies and societies. Economic geography, for instance, can help us to understand that, despite years and decades of economic globalisation, the pattern of investment, production, trade and consumption is highly uneven. Economic geography can also help us to understand that even footloose multi-national corporations have to be 'grounded' in specific locations and often 'embedded' in places and their socio-political, institutional and cultural contexts. Economic geography also helps to elucidate the ways in which MNCs and other economic activities are 'governed' at various geographical scales from local and regional to national, macro-regional and global levels. Economic geography also helps us to understand that despite the widespread use of ICTs, trading places for global financial capital remain stubbornly located in a small number of global cities and these global cities, in turn, influence economic processes around the world.

Thanks to these and other insights, economic geography can thus contribute to our understanding of inequalities at various geographical scales from poverty in urban areas to global uneven development. No other discipline can claim such a wide scope of interest and relevance to today's rapidly changing world. By following this subject guide, you will gain solid foundations in economic geography approaches, concepts and theories and their applicability to the contemporary world and policy-making.

TRANSPORTATION AND ECONOMIC DEVELOPMENT

Transportation developments that have taken place since the beginning of the industrial revolution have been linked to growing economic opportunities. At each stage of human societal

development, a particular transport mode has been developed or adapted. However, it has been observed that throughout history no single mode of transport has been solely responsible for economic growth. Instead, modes have been linked with the direction and the geographical setting in which growth was taking place. For instance, major flows of international migration that occurred since the eighteenth century were linked with the expansion of international and continental transport systems. Transport has played a catalytic role in these migrations, transforming the economic geography of many nations. Concomitantly, transportation has been a tool of territorial control and exploitation, particularly during the colonial era where resource-based transport systems supported the extraction of commodities in the developing world.

Each transport mode and technology is linked to a set of economic opportunities, notably in terms of market areas, types of commodities that can be transported (including passengers) and economies of scale. All these issues are related to a scale and level of commercial geography. Prior to the industrial revolution, economic opportunities were limited by the low capacity to move commodities over long distances, as most activities were very localized in scale and scope. The industrial revolution unleashed greater economic opportunities, initially with the development of inland canal systems, steamships and then railway systems. Passenger and freight transportation expanded as well as production and consumption while new markets and resources became available. In many instances, the development of one transportation mode built on the opportunities developed by another, such as maritime and canal shipping. In other situations, the growth of a new mode of transportation favored the decline of others, such as the collapse of many inland canal networks in the late nineteenth century because of rail competition.

The development of the mass production system at the beginning of the twentieth century increasingly relied on the commercial opportunities introduced by road transportation, particularly the automobile. Later in the twentieth century,

globalization became a possibility with the joint synergy of maritime transportation, roadways, railways, air and telecommunications. Economic opportunities became global in scale and scope, particularly because of the capacity to maintain an intricate network of trade and transactions through transport systems. More recently, new opportunities arose with the convergence of telecommunications and information technologies, supporting a higher level of management of production, consumption and distribution. It is expected that such a process, building upon the advantages conferred by other transportation modes, will account for a significant share of economic opportunities in the first half of the twenty-first century.

While some regions benefit from the development of transport systems, others are often marginalized by a set of conditions in which inadequate transportation plays a role. Transport by itself is not a sufficient condition for development, however; the lack of transport infrastructures can be seen as a constraining factor on development. The relationship between transportation and economic development is thus difficult to formally establish and has been debated for many years. The complexity lies in a variety of possible impacts:

- Timing of the development varies as the impacts of transportation can either precede, occur during or take place after economic development. The lag, concomitant and lead impacts make it difficult to separate the specific contributions of transport to development, therefore. Each case study appears to be specific to a set of timing circumstances that are difficult to replicate elsewhere.
- *Types of impacts vary considerably.* The spectrum of impacts ranges from the positive through the permissive to the negative. In some cases transportation impacts can promote, in others they may hinder, economic development in a region. In many cases, few, if any, direct linkages can be clearly established.

Cycles of economic development provide a revealing conceptual perspective about how transport systems evolve in

time and space as they include the timing and the nature of the transport impact on economic development. Transport, as a technology, follows a path of experimentation, introduction, adoption and diffusion and, finally, obsolescence, each of which has an impact on economic development. Succinctly, transport technology can be linked to five major waves of economic development where a specific mode or system emerged:

- *Seaports*. Linked with the early stages of European expansion from the sixteenth to eighteenth centuries. They supported the development of international trade through colonial empires, but were constrained by limited inland access.
- *Rivers and canals*. The first stage of the industrial revolution in the late eighteenth and early nineteenth centuries was linked to the development of canal systems in Western Europe and North America, mainly to transport heavy goods. This permitted the development of rudimentary and constrained inland distribution systems.
- *Railways*. The second stage of the industrial revolution in the nineteenth century was intimately linked to the development and implementation of rail systems enabling a more flexible inland transportation system.
- *Roads*. The twentieth century saw the development of road transportation systems and automobile manufacturing. Individual transportation became a commodity available to the masses, especially after World War II. This process was reinforced by the development of highway systems.
- *Airways and information*. The later part of the twentieth century saw the development of global air and telecommunication networks in conjunction with the globalization of economic activities. New organization, control and maintenance capacities were made possible. Electronic communications have become consistent with transport functions, especially in the rapidly developing realm of logistics and supply chain management.

Technological innovation and economic growth are closely related and can be articulated within the concept of cycles or waves. Each wave represents a diffusion phase of technological innovations, creating entirely new industrial sectors, and thus opportunities for investment and growth. Five waves have been identified so far:

- *1st wave (1785–1845)*. Depended on innovations such as water power, textiles and iron. The beginning of the industrial revolution in England was mainly focused on simple commodities such as clothes and tools. The conventional maritime technology relying on sailships was perfected, supporting the creation of large colonial/trading empires, mainly by the British, the French, the Dutch, and the Spanish. Significant inland waterway systems were also constructed.
- *2nd wave (1845–1900)*. Involved the massive application of coal as a source of energy, mainly through the steam engine. This induced the development of rail transport systems, opening new markets and giving access to a wider array of resources. The steamship had a similar impact for maritime transportation and permitted further commercial exploitation.
- *3rd wave (1900–50)*. Electrification was a major economic change as it permitted the usage of a variety of machines and appliances. This permitted the development of urban transit systems (subways and tramways). Another significant improvement was the internal combustion engine, around which the whole automotive industry was created.
- *4th wave (1950–90)*. The post-World War II period represented significant industrial changes such as plastics (petrochemicals) and electronics (television). The jet engine expanded the aviation industry towards the mass market.
- *5th wave (1990–2020?)*. The current wave mainly relies on information systems, which have tremendously modified the transactional environment with new

methods of communication and more efficient management of production and distribution systems. This has spawned new industries, mainly computer manufacturing and software programming, but more recently e-commerce as information processing converged with telecommunications.

As time progressed, the lapse between each wave got shorter. For instance, the first wave lasted 60 years while the fourth wave lasted 40 years.

This reflects a growing capacity for innovation and the capacity of economic systems to derive wealth from it. Innovations are no longer the result of individual efforts, but are organized and concerted actions whose results are rapidly diffused. It is thus expected that the fifth wave will last about 30 years.

Contemporary trends have underlined that economic development has become less dependent on relations with the environment (resources) and more dependent on relations across space.

While resources remain the foundation of economic activities, the commodification of the economy has been linked with higher levels of material flows.

Concomitantly, resources, capital and even labor have shown increasing levels of mobility. This is particularly the case for multinational firms that can benefit from transport improvements in two significant markets:

- *Commodity market.* Improvement in the efficiency with which firms have access to raw materials and parts as well as to their respective customers. Thus, transportation expands opportunities to acquire and sell a variety of commodities necessary for industrial and manufacturing systems.
- *Labor market.* Improvement in the access to labor and a reduction in access costs, mainly by improved commuting (local scale) or the use of lower cost labor (global scale).

APPROACHES IN ECONOMIC GEOGRAPHY

We introduced economic geography as a subdiscipline of geography which uses a geographical approach to study economies. We have highlighted the fact that the economic-geographical approach of studying economies is very different from the one used by mainstream economics. We have also noted that economic geographers see the economy through the prism of space, place and scale.

What we have not done is to explore the question of what 'the economy' actually is. However, this is a fundamental question. Indeed, the way in which we define what 'the economy' is influences our understanding of how 'the economy' works and what can be done about it.

Importantly, the definition of 'the economy' and 'the economic' has an important bearing on our understanding of the way economic processes work over space, across scales and in particular places. In other words, the way in which we define 'the economy' has profound implications for our understanding of economic geographies. This stage thus aims to address this issue by exploring the different theoretical perspectives on 'the economy' and their geographical implications. The point here is not to provide a detailed description of the various economic geography concepts.

Rather the aim here is to allow the reader to grasp and recognise the key differences in the theoretical foundations on which various economic geography concepts have been developed. Economic geography is not a monolithic sub-discipline. Rather it is a sub-discipline which draws on various intellectual traditions.

This stage will consider three broad perspectives on the economy:

- The mainstream economic perspective.
- The Marxist perspective.
- Alternative approaches.

These three perspectives represent contrasting views on how the economy works and in turn offer three quite different

ways of approaching economic geographies. But first, let us explore the question of what the economy is.

What is the Economy?

Let us start with a definition of 'the economy'. The term is used in everyday life with such frequency that we rarely pause to think what the economy actually is. Most people take the notion of the economy for granted. In fact, many economics dictionaries and textbooks take it for granted too and do not even bother defining it. The term 'economy' had not featured in the original version of Raymond Williams' Keywords either. So what is 'the economy'?

The Concise Oxford English Dictionary suggests that the word 'economy' is in fact of Greek origin. The Greek term 'oikonomia' basically means 'household management'—from oikos 'house' and nomos 'managing' from nemein 'manage'. The hint of this original meaning still survives today and 'economy' can mean 'careful management of available resources'. In travel this can mean that you buy the cheapest air or rail ticket and travel 'economy class'. However, since about the eighteenth century the term economy also began to gain a new meaning and now can refer to economic affairs at a much larger geographical scale, namely that of a nation.

Nowadays, the notion of 'the economy' is perhaps still most commonly used to describe the economic processes of a country. The Concise Oxford English Dictionary defines the economy as 'the state of a country or area in terms of the production and consumption of goods and services and the supply of money'. However, as it will become apparent below, even this latter definition is somewhat problematic.

Measuring the Economy

Perhaps the most common way of measuring 'the state in which a country is in terms of the production and consumption of goods and services' is an indicator called Gross Domestic Product. GDP measures, in money terms, the total market value of production in a particular economy in a given year.

It is usually calculated as a sum of expenditures by households, firms and the government plus net exports.

By household expenditure we mean the total amount spent by individuals in a given year including their expenditure on food, fuel, housing, clothing, household appliances, leisure, etc. Expenditure by firms is measured as investment expenditure by which we mean the amount invested by businesses in future productive capacity. Government expenditure is the amount spent by the government to build infrastructure or provide services. Finally, net exports represent the value of goods and services sold to other countries minus the value of goods and services imported from abroad.

Problematising and Re-defining the Economy

GDP represents a fairly standard way of measuring the economy. It captures three key economic agents—namely households, firms and the government—all of which play important roles in the economy. Yet measuring the economy in this way can be highly problematic. One of the key problems is that GDP measurement is derived from a definition of the economy that is rather narrow—it includes certain things and processes but excludes others.

Coe offer a very good example of this problem. If you have taken a bus or drive a car to your place of work or study then you have engaged in an economic act. Your bus fare or your fuel bills and parking costs would be included in your individual consumption and therefore included in the conventional definition of the economy. But if you decide to cycle or walk instead, no money will change hands and, therefore, oddly, you have not engaged in an economic act! Another good example is unpaid work. Since no wages are paid, unpaid work occurs outside the formal monetary economy and therefore is not included in the consideration of the state of the economy.

This way, not only is the economy miscounted, but also the work of certain people is discounted. A similar problem arises with the 'black economy'. In the 'black economy', money can indeed change hands, but because these monetary transactions

are not recorded by the government, they are not included in what counts as 'the economy'. Yet, the livelihoods of millions of people around the world may be dependent on such transactions. Thinking about what constitutes an economic act or process is crucial for our understanding of the economy and is, therefore, a point of contention.

The way in which cultural, social, political and environmental processes are related to the economic processes is another contentious issue. A conventional definition of the economy supports the impression that the economy is somewhat separated from other dimensions of our lives. This in turn helps to create the impression that the economy is something 'out there', which affects our lives, but which we, as individuals, cannot control. This impression is often reinforced by the way the economy is represented in everyday use and policy documents. Indeed, the economy is often represented by metaphors such as a 'machine', an 'organism' or a 'body'; that presumably has a life of its own. However, it could be argued that the economy is inseparable from cultural, social, political and environmental processes.

Ray Hudson, for instance, understands 'the economy' as referring to:

- Those simultaneously discursive and material processes and practices of production, distribution and consumption, through which people seek to create wealth, prosperity and wellbeing and so construct economies; to circuits of production, circulation, realisation, appropriation and distribution of value.

However, he is quick to add that value is 'always culturally constituted and defined' and that '[w]hat counts as "the economy" is, therefore, always cultural, constituted in and distributed over space, linked by flows of values, monies, things and people that conjoin a diverse heterogeneity of people and things'. He further argues that '[e]qually importantly, the social processes that constitute the economy always involve biological, chemical or physical transformation via human labour of elements of the natural world'.

This also means that thinking about 'the economy' in terms of evergrowing GDP, for instance, may not be a universally shared, nor necessarily desirable, concept. Indeed as Hodder and Lee have argued several decades ago, that it is 'all too easy, for instance, to assume that the dream of each less-developed country is to become developed'. Indeed, 'such a view can easily disregard highly developed local cultures'. They add that 'self-respect is at least as important a measure of social and economic progress as are increases in... material wealth'.

Similarly, studying 'the economy' without considering the environmental dimension of economic processes is problematic, not least because 'economic activities are taking an increasing toll of balanced interactions within the life-giving ecosystem'. Another way to approach a definition of 'the economy' is to remind ourselves of the notion introduced in that there are 'no economies, only economic geographies'. In turn, economic geographies can be defined as 'geographies of people's struggle to make a living'. Importantly, this struggle to make a living is framed in both material and social processes. In other words, 'all economies and economic geographies are both material and social constructs'. What is more, in the construction of economic geographies the relations between the material and the social are 'inseparable and mutually formative'. The recognition of this further undermines the notion of the economy as simply being 'the state of production and consumption of goods and service and the supply of money' or as being measurable by GDP.

How does the Economy Work

We have attempted to answer the question 'what is the economy?' The process of defining the economy can be problematic. What should and should not be included in the notion of 'the economy' remains a contentious issue. In this part as suggested, attempt to address an issue which is even more contentious: 'How does the economy work?' As already pointed out in the introductory part, the answer to this question is in part influenced by the way we define the economy. However, even people who would share the view about what the economy

is can disagree profoundly on the question of how it works. Large numbers of economists and social scientists work on this question every day and we have no space here to review all of their theories. Instead, what as suggested, attempt to do in this is to identify three basic theoretical perspectives on the economy.

First, as suggested, examine the mainstream economic perspective, which sees the functioning of the economy through the lens of market forces and which maintains that individual self-interest mediated by the 'invisible hand' of the market leads to equilibrium and prosperity.

Second, as suggested, introduce the Marxist perspective which, in contrast, argues that the capitalist market economy is ridden by internal contradictions and produces both inequality and instability.

Finally, as suggested, have a look at the alternative approaches, especially those associated with evolutionary and institutionalist economics, which try to go beyond the boundaries of market-based processes and which pay attention to wider social, cultural and institutional contexts in order to explain how economies function.

Mainstream Economic Views

The mainstream economic perspective is mainly associated with neoclassical economic theory. The neo-classical school of thought has been developing since the late nineteenth-century and currently represents the dominant way of looking at the economy. Neo-classical economics is rooted in the belief that the market is the most efficient mechanism for the allocation of resources and hence the creation of prosperity.

The neo-classical school of economic thought has been built on the foundations laid down by Adam Smith, a Scottish economist and the founder of the classical political economy. Back in the eighteenth century, Smith devised an economic theory, the features of which remain with us today. This includes his concepts of rational self-interest and the 'invisible hand' of the market, concepts that underpin much of contemporary mainstream economic thinking. In seeking to identify how

wealth is created, Adam Smith argued that the main cause of prosperity is the division of labour.

Smith expressed his arguments in his famous work titled *An Inquiry into the Nature and Causes of the Wealth of Nations* published in 1776. In it, Smith used an example of a factory making pins to explain the power of the division of labour and the productivity that can be achieved from this. He argued that a single worker working alone at home would be lucky to produce even one pin per day and certainly not 20. However, he observed that in a pin-making factory 10 workers can engage in the production of pins by dividing 18 specialised pin-making tasks between them:

- One man draws out the wire, another straightens it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head; to make the head requires two or three distinct operations; to put it on, is a peculiar business, to whiten the pins is another; it is even a trade by itself to put them into the paper; and the important business of making a pin is, in this manner, divided into about eighteen distinct operations, which, in some manufactories, are all performed by distinct hands, though in others the same man will sometimes perform two or three of them... Smith.

By dividing the work between them in this way, Smith argued, 10 workers can together produce about 48,000 pins per day. That is 4,800 pins per worker per day, representing a massive improvement of productivity when compared to the output achievable without the division of labour. The above improvement of productivity in the pin-making factory is impressive indeed.

But how does the pin-making factory know how many pins to produce and at what price to sell them? The mainstream economists, this problem will be solved by what Smith called the 'invisible hand' of the market. The market will determine both the quantity of goods produced and the price at which these goods will be sold, by matching supply with demand. This is how it works. From a producer's point of view, the higher

the price customers are prepared to pay for a product the more the producer will be prepared to produce.

However, the higher the price, the less the goods will be in demand by the customers. Under perfect market conditions, supply and demand curves will intersect in the middle, thus fixing both the quantity of goods to be produced and the price under which they will be sold. In other words, the markets will achieve equilibrium. However, is based on the expectation that both producers and consumers are acting in a rational, economising or profit-maximising way.

In other words, they are behaving as *homo economicus*. Adam Smith argued that such behaviour is motivated by 'self-interest'. He further argued that by pursuing their own self-interests, individuals, led by the 'invisible hand' of the market, are unintentionally contributing to a greater societal good, a win-win situation, from which everybody will benefit. If pin-makers, shoe-makers, butchers and bakers all pursue their individual self-interest, the market will ensure that everybody will be better off. Since the times of Adam Smith, economic theory has developed a lot, but the key principles he introduced are still with us. The analysis of the workings of the economy through the lens of rational profit-making agents and the belief that markets are capable of delivering both equilibrium and efficiency, is central to neo-classical economic theory. However, such an understanding of the economy has been challenged by Marxist and other alternative approaches which as suggested, examine in turn.

The Marxist Approach

The Marxist perspective on the economy is derived from the work of Karl Marx and Friedrich Engels, two German philosophers of the late nineteenth-century. Like Adam Smith, Karl Marx was interested in the question of how wealth is created in the economy and how wealth is distributed among members of society.

However, in stark contrast to the win-win situation alluded to by Smith, Marx pointed out that wealth will increasingly

concentrate in the hands of the few. How so? To answer this question, Marx devised his labour theory of value. In order to explain the basics of the labour theory of value as devised by Marx, let us go back to the pin-making factory described earlier. As we have seen, the productivity gains from organising pin production in the pin factory were substantial. But who reaps the benefits? If the factory was jointly owned by the 10 workers who work there, it is possible to imagine a situation in which they could split the benefits of their production between themselves.

However, in the capitalist market economy, the factory is likely to be privately owned. The owner, the capitalist, would own the land on which the factory is built, the factory building itself, the raw materials needed to produce the pins and all the machinery and tools used by the workers. In other words, he or she would own the means of production. Workers, on the other hand, do not own the means of production and the only way they can sustain themselves is to sell their own work to capitalists. Thus, in the capitalist market economy, labour itself becomes a commodity—labour power can be bought and sold like any other commodity. So, workers sell their labour and receive wages in exchange for their work and that looks fine on the surface. However, the question arises as to what capitalists do to sustain themselves? They have to engage in the circuit of capital and make profit.

The way Marx described how the circuit of capital works. Imagine a capitalist who has capital in the form of money—money capital (M)—to invest. He or she can turn this money capital into productive capital (P) by purchasing two commodities—the labour power (LP; *e.g.* labour of 10 workers) and the means of production (MP; *e.g.* pin-making factory, raw materials, machinery, tools, etc., needed to produce pins). The labour power and the means of production are then combined in the process of production to produce 48,000 pins a day—representing another form of capital—commodity capital (C).

Commodity capital can be turned back into money capital when the factory owner sells pins on the market at a certain

price (and this price represents what Marxists call exchange value). For the capitalist to survive, he or she has to make a profit. This means that the money he or she receives in exchange for the commodities produced must be greater than the money originally invested in the enterprise ($M' > M$). The search for profit is the motivating force of the capitalist economy. The crucial point in the Marxist analysis is a recognition that, ultimately, all value comes from human labour and the only way for a capitalist to make profit is to appropriate surplus value (s).

Surplus value is the difference between the wages the factory owner pays workers for their labour and the value these workers produce for him or her in the factory while making pins. To frame it differently, workers add value to the commodities they produce by applying their labour, and this value is greater than the reward they get in exchange for their efforts in the form of wages.

This is the basis of exploitation in the capitalist economy. However, capitalists have to engage in it, if they are to survive the cut-throat competition from other capitalists, who have to do exactly the same. Those capitalists who fail to generate profit (or enough profit) go out of business. The effort to maximise profit is therefore an imperative of the capitalist economy. All capitalists, individually, have to act in a profit-maximising manner, which echoes the self-interested behaviour described by Adam Smith. Such behaviour, in turn, further exacerbates competition and so it could be argued that one of the key features of capitalism is that it is inherently competitive. However, Marx argued that such individual action will not lead to the equilibrium and win-win situation envisaged by Smith—far from it.

Marx argued that capitalism (the system based on capital) is both unequal and unstable. He argued that inequalities within society will increase as capitalists try to increase their profits and squeeze workers' wages, by introducing machines, intensifying labour processes or simply by forcing workers to work longer hours, for example. Capitalists can also endeavour

to replace workers by machines and by doing so, they create a growing pool of the unemployed, which in turn will push wages down further still.

The result of this process will be an increasing concentration of wealth in the hands of a few (the capitalist class) and the impoverishment of the working class masses (proletariat). Simply put, the capitalist system will ensure that the rich will become richer and the poor will become poorer. Ethical issues aside, Marx argued that such a system is unlikely to reach an equilibrium of the kind envisaged by Adam Smith, because sooner or later the fundamental economic contradiction arises: too many commodities (*e.g.* pins) will be produced, but there will be too few people able to buy them.

Marxists call this situation an overaccumulation. Overaccumulation can take various forms, but overaccumulation of capital in the form of unsold commodities is one of the most striking symptoms. Ian Craib offers a very good illustration of how such a crisis of overaccumulation can happen, using a crucial distinction in Marxist theory between use value and exchange value:

'If I am a worker and I produce £50 worth of goods in a day (the use value of my labour to my employer), and I receive £10 a day in wages (the exchange value of my labour power), then I do not receive in wages sufficient to buy back the value of goods I have produced. This applies right across the system, so that if stocks of unsold goods build up, workers have to be laid off, and the economy enters a crisis, a depression, or slump, until the stock of goods are used up and firms go back into production. There is a cycle of growth and slump, something that capitalist economies have been trying to deal with for over a century and a half.'

This is then one of the possible causes of the familiar boom-and-bust cycle. Each boom is followed by a crisis in which devaluation must take place to kickstart the accumulation process all over again. For Marx then, the capitalist economy is neither equal nor stable—it is inherently unequal and

crisisprone. The profit-making imperative that drives the capitalist economy and makes it dynamic, is also a source of its fundamental contradiction. Marxist conceptualisation of the economy therefore represents a stark contrast to the equilibrium-prone and win-win expectations of mainstream economics. Importantly, Marx also argued that in the long run, the capitalist system is unsustainable, because the increasing contradictions will reach a tipping point at which the system will eventually collapse.

This, Just as to Marx will happen in the most advanced capitalist countries, where the contradictions between labour and capital will be the greatest. The collapse of capitalism will pave a way (via a socialist revolution led by the working class) for a new social and economic order (communism). Marx said very little about how such a new system would operate. However, for a system to be freed from exploitation, both private property and class relations based on property rights would have to be abolished.

While Marxism provides a powerful analysis of the way the economy works, it also leaves us with a number of important issues. Indeed, the economy does not always work as predicted by Marx and, so far, the socialist revolution has failed to materialise in the most advanced capitalist countries. One of the key questions therefore is how can we account for the fact that the capitalist system manages to survive despite its contradictions? Economic geographers have made an important contribution to the debate on this question. But for now, let's turn to the alternative approaches.

Alternative Approaches

It is clear from the above two sub-sections that mainstream economic and Marxist perspectives differ dramatically in their analysis of the workings of the economy. However, despite the differences, these two perspectives also share one common feature-they both focus on formal market transactions. Indeed, as we have seen, mainstream economics is concerned with the relationship between the demand and supply of goods or services as expressed by a price fixed through the market mechanism.

The Marxist analysis, meanwhile, focuses on the difference between the price of labour (exchange value of labour power) and the exchange value of the commodities produced by the labour. However, what constitutes 'the economy' and 'the economic' is a contentious issue. Echoing these concerns, a number of alternative economic approaches have emerged. These approaches usually fall within a category of heterodox economics since they are providing a counterbalance to the established mainstream (orthodox) economic views. One of the leading heterodox approaches is associated with evolutionary and institutional economics.

Evolutionary and institutional economics is in itself a diverse set of approaches, but there are some key shared characteristics that clearly distinguish these approaches from both the mainstream economics and Marxist perspectives. The starting point of evolutionary/institutional and other alternative approaches is their insistence that the economy cannot be reduced to market transactions only.

Instead, they argue that wider social, cultural and institutional contexts need to be taken into consideration if one is to explain how economies work. Institutional contexts are defined broadly here and may include both formal institutions (*e.g.* laws, regulations, formal procedures) and informal institutions (*e.g.* habits, customs, conventions, cultural norms, etc.) at various scales—from the level of the firm to the institutional landscapes underpinning the whole economy. The inclusion of the wider social, cultural and institutional considerations has profound implications for the understanding of the ways economies work.

Importantly, such an inclusion challenges the neo-classical notion of the rational behaviour of 'economic man' guided by the 'invisible hand' of the market. Instead, it emphasises the way in which social institutions play an essential role in guiding the action of economic agents. (This also differs from the Marxist view that the role of economic agents is structured by the prevailing social relations of production). In the evolutionary/institutionalist view, firms, for instance, are not seen as atomistic

units competing against each other on the free market. Rather, firms are perceived as being embedded within wider socio-economic relations and networks.

These networks may include various formal and informal links with suppliers, customers and competitors. Importantly, transactions within these networks are not simply guided by market competition. Rather they often involve valuable elements of coordination and cooperation. This is important because such cooperative networks are often crucial for fostering innovation which is seen as vital for economic development or economic evolution. In turn, this raises the question whether the 'pure market' is the best mechanism for ensuring economic progress.

Evolutionary and institutionalist economists would argue that successful economies are neither pure markets nor pure hierarchies. Instead, successful economies are 'mixed economies' with important roles for the public sector and for different kinds of policy. Mixed economic systems are also seen as capable of producing a diversity of economic forms which contributes to the adaptability and longterm survival of economic systems. Another line of argument advanced by alternative approaches relates to the claim that successful economies are increasingly knowledge-intensive or knowledge-based. The knowledge-based economy can be simply defined as an economy in which knowledge becomes the key economic resource. While all economies can be seen as knowledge-based, there is a perception that we witness a major shift in the relative importance of land, physical capital and knowledge capital, in favour of the latter. For some observers, the shift towards the knowledge-based economy represents an epochal transformation.

As Burton-Jones vividly put it:

'Since ancient times, wealth and power have been associated with the ownership of physical resources. The traditional factors of production, materials, labour, and money, have been largely physical in nature. Historically the need for knowledge has been limited, and access to it largely controlled by those owning the means

of production. Steam power, physical labour, and money capital largely facilitated the Industrial Revolution... In contrast, future wealth and power will be derived mainly from intangible, intellectual resources: knowledge capital. This transformation from a world largely dominated by physical resources, to a world dominated by knowledge, implies a shift in the locus of economic power as profound as that which occurred at the time of the Industrial Revolution. We are in the early stages of a "Knowledge Revolution."

The notion that the economy is moving towards a post-industrial, knowledge-intensive phase, in turn, opens up a whole set of questions. Both mainstream economics and Marxist approaches have been devised in the context of an industrial era. But will the same principles apply to the new knowledge economy? Evolutionary and institutionalist economists have devised their own approaches to account for the ways knowledge economies work.

One of the most influential concepts is that of the 'learning economy' introduced by Lundvall and Johnson. The starting point of the 'learning economy' concept is the argument that if knowledge is the most fundamental resource in our contemporary economy, then learning is 'the most important process'. Although Lundvall and Johnson admit that knowledge always has been a 'crucial resource' for the economy, and was in the past 'layered in traditions and routines', they argue that knowledge and learning have more recently become much more fundamental resources than before. They argue that the economy is now characterised by 'new constellations of knowledge and learning in the economy' mainly through the development of ICTs, flexible specialisation and, finally, changes in the process of innovation.

These changes are bringing challenges that firms have responded to by changing organisational forms and by building alliances in order to gain access to a more diversified knowledge base. This implies 'broader participation in learning processes' to include all layers within the firm, the development of

'multiskilling and networking skills' and enhancing the 'capacity to learn and to apply learning to the processes of production and sales'. This is why Lundvall and Johnson 'regard... capitalist economies not only as knowledge-based economies but also as "learning economies"'.

They offer the following definition of the 'learning economy':

The learning economy is a dynamic concept; it involves the capacity to learn and to expand the knowledge base. It refers not only to the importance of the science and technology systems-universities, research organisations, in-house RandD departments and so on-but also to the learning implications of the economic structure, the organisational forms and the institutional set-up.'

At the core of the 'learning economy' are apparently firms that 'start to learn how to learn' and which are able to handle various types of knowledge. Lundvall and Johnson distinguish at least four categories of knowledge: know-what, know-why, know-who and know-how. The first category, know-what, represents knowledge about 'facts'. The meaning of this is probably close to that of 'information'. The, second category, know-why, refers to scientific knowledge of principles and laws of motion in nature and in society. This kind of knowledge, Lundvall and Johnson argue, is extremely important for technological development. The third term, know-who, is already a more complex construction that reaches a sphere of specific social relations and time-space dimension. A simple example of know-who can be a situation when, for a successful innovation, it is more important to know key persons than to know basic scientific principles.

Know-when and know-where refers to economically useful knowledge about markets with their temporal and spatial dimensions, for instance. Finally, knowhow refers to practical skills in production or other spheres of economic activity. Lundvall and Johnson also address different aspects of learning. Importantly, they do not understand learning as a simple absorption of science and technical knowledge. Rather, they define it more broadly as learning changes in economic

structures, organisational and institutional forms. Learning is presented as a dynamic and interactive process aimed at the accumulation of knowledge at the level of the firm and the economy as a whole.

Learning is present in both production and consumption processes and is expressed through 'learning by doing' and 'learning by using'. From the point of view of permanent renewal and adaptation of economic and organisational structures, Lundvall and Johnson have also introduced an innovative term 'forgetting'. They argue that the 'learning economy' should not only preserve and store its pool of knowledge, but also should be able to 'forget'. 'Forgetting' at the level of individual workers refers to their ability to abandon obsolete skills and professional expertise. An example of 'forgetting' at the level of the firm or economy includes closing down ailing branches or whole sectors.

Thus, the 'learning economy' is supposed to intelligently manage continuous self-organised learning. The work of Lundvall and Johnson and other evolutionary/institutionalists has proved highly influential in framing the discussion on contemporary economic geographies, despite the fact that there remain questions about the precise nature of the supposed transformation of the economy towards the 'knowledge-based economy' or 'learning economy'. One contentious issue relates to the question of whether the transformation beyond an old industrial economy also signifies a move beyond a capitalist economy. Geoffrey Hodgson-one of the prominent evolutionary/institutionalist economists-contributed to the debate by offering his own definitions of the 'knowledge-intensive economy' and 'learning economy'.

Hodgson has argued that the 'knowledge-intensive economy' would still be a capitalist one, but it would be an economy in which an 'enlightened group of business leaders' is 'aware of the kind of democratic culture and participatory industrial relations that facilitate productivity'. Alongside 'collaborative and co-operative relationships between firms... against the neo-liberal insistence on fierce, price driven, market competition', Hodgson suggests that:

'Such a progressive movement of business people could find valuable allies among trade unionists and the population as a whole'. However, for Hodgson, the 'learning economy' or 'market cognitism', in contrast, is a scenario clearly 'beyond capitalism' where the 'degree of control by the employer over the employee is minimal'. Hodgson has argued that such an economy, 'would not be socialist, in any common sense of the word', but nevertheless, 'it is not capitalism' presumably because the means of production are effectively controlled by the workers themselves, not by the employers. Such a benign view of the emerging new 'knowledge era' thus implies that the contradictions identified by Marx as inherent to the capitalist economy may be waning. This point is hotly debated but if proven true, it can have potentially important implications for the way we conceptualise economic geographies of the 'new era'.

Political Geography

Political geography is the field of human geography that is concerned with the study of both the spatially uneven outcomes of political processes and the ways in which political processes are themselves affected by spatial structures. Conventionally political geography adopts a three-scale structure for the purposes of analysis with the study of the state at the centre, above this is the study of international relations (or geopolitics), and below it is the study of localities. The primary concerns of the sub-discipline can be summarised as the inter-relationships between people, state, and territory.

History

The origins of political geography lie in the origins of human geography itself and the early practitioners were concerned mainly with the military and political consequences of the relationships between physical geography, state territories, and state power. In particular there was a close association with regional geography, with its focus on the unique characteristics of regions, and environmental determinism with its emphasis on the influence of the physical environment on human activities. This association found expression in the work of the German geographer Friedrich Ratzel who, in 1897 in his book *Politische Geographie*, developed the concept of Lebensraum (living space) which explicitly linked the cultural growth of a nation with territorial expansion, and which was

later used to provide academic legitimization for the imperialist expansion of the German Third Reich in the 1930s.

The British geographer Halford Mackinder was also heavily influenced by environmental determinism and in developing his concept of the 'geopolitical pivot of history' or heartland (first developed in 1904) he argued that the era of sea power was coming to an end and that land based powers were in the ascendant, and, in particular, that whoever controlled the heartland of 'Euro-Asia' would control the world. This theory involved concepts diametrically opposed to the ideas of Alfred Thayer Mahan about the significance of *sea power* in world conflict. The heartland theory hypothesized the possibility of a huge empire being created which didn't need to use coastal or transoceanic transport to supply its military industrial complex, and that this empire could not be defeated by the rest of the world coalitioned against it. This perspective proved influential throughout the period of the Cold War, underpinning military thinking about the creation of buffer states between East and West in central Europe.

The heartland theory depicted a world divided into a *Heartland* (Eastern Europe/Western Russia); *World Island* (Eurasia and Africa); *Peripheral Islands* (British Isles, Japan, Indonesia and Australia) and *New World* (The Americas). Mackinder claimed that whoever controlled the Heartland would have control of the world. He used this warning to politically influence events such as the Treaty of Versailles, where buffer states were created between the USSR and Germany, to prevent either of them controlling the Heartland. At the same time, Ratzel was creating a theory of states based around the concepts of *Lebensraum* and Social Darwinism. He argued that states were 'organisms' that needed sufficient room in which to live. Both of these writers created the idea of a political and geographical science, with an objective view of the world. Pre-World War II political geography was concerned largely with these issues of global power struggles and influencing state policy, and the above theories were taken on board by German geopoliticians such as Karl Haushofer who perhaps

inadvertently-greatly influenced Nazi political theory. A form of politics legitimated by 'scientific' theories such as a 'neutral' requirement for state expansion was very influential at this time.

The close association with environmental determinism and the freezing of political boundaries during the Cold War led to a considerable decline in the importance of political geography which was described by Brian Berry in 1968 as 'a moribund backwater'. Although in other areas of human geography a number of new approaches were invigorating research, including quantitative spatial science, behavioural studies, and structural marxism, these were largely ignored by political geographers whose main point of reference continued to be the regional approach. As a result much political geography of this period was descriptive with little attempt to produce generalisations from the data collected. It was not until 1976 that Richard Muir could argue that political geography might not be a dead duck but could in fact be a phoenix.

Areas of Study

From the late-1970s onwards political geography has undergone a renaissance, and could fairly be described as one of the most dynamic of the sub-disciplines today. The revival was underpinned by the launch of the journal *Political Geography Quarterly* (and its expansion to bimonthly production as *Political Geography*). In part this growth has been associated with the adoption by political geographers of the approaches taken up earlier in other areas of human geography, for example, Ron J. Johnston's (1979) work on electoral geography relied heavily on the adoption of quantitative spatial science, Robert Sack's (1986) work on territoriality was based on the behavioural approach, and Peter Taylor's (e.g. 2007) work on World Systems Theory owes much to developments within structural Marxism. However the recent growth in the vitality and importance of the sub-discipline is also related to changes in the world as a result of the end of the Cold War, including the emergence of a new world order (which as yet is only poorly defined), and the development of new research agendas, such as the more

recent focus on social movements and political struggles going beyond the study of nationalism with its explicit territorial basis.

Recently, too, there has been increasing interest in the geography of green politics, including the geopolitics of environmental protest, and in the capacity of our existing state apparatus and wider political institutions to address contemporary and future environmental problems competently.

Political geography has extended the scope of traditional political science approaches by acknowledging that the exercise of power is not restricted to states and bureaucracies, but is part of everyday life.

This has resulted in the concerns of political geography increasingly overlapping with those of other human geography sub-disciplines such as economic geography, and, particularly, with those of social and cultural geography in relation to the study of the politics of place.

Although contemporary political geography maintains many of its traditional concerns the multi-disciplinary expansion into related areas is part of a general process within human geography which involves the blurring of boundaries between formerly discrete areas of study, and through which the discipline as a whole is enriched.

In particular, then, modern political geography often considers:

- How and why states are organized into regional groupings, both formally (e.g. the European Union) and informally (e.g. the Third World)
- The relationship between states and former colonies, and how these are propagated over time, for example through neo-colonialism
- The relationship between a government and its people
- The relationships between states including international trades and treaties
- The functions, demarcations and policings of boundaries
- How imagined geographies have political implications

- The influence of political power on geographical space
- The study of election results (electoral geography)

POLITICAL GEOGRAPHIES

The field of human geography made big strides forward between 1910 and 1930. The imperial expansion of the European countries was inspired by the idea that the power of a state was based on its capacity to expand its territory, a concept used to justify German expansion in Europe between 1933 and 1945. After the fall of Hitler, the whole field of political geography suffered from a corresponding loss of prestige that lasted until 1980, when it began to arouse interest once again. Two factors have played a big role in its rebirth; first the fall of the Berlin Wall in 1989, considered a symptom of the decline of the Soviet bloc, the end of the Cold War, and the birth or rebirth of states that would be incorporated into the market economy; and second, the assault on the World Trade Center towers in New York City and the Pentagon near Washington, D.C., in 2001.

On the one hand, the United States appeared as the world's leading military power and adopted an aggressive Middle East foreign policy. The interest of the United States lies in controlling territories, populations, and natural resources, particularly oil, in that part of the planet; but, on the other hand, it is faced with the organization of radical groups using tactics to destabilize institutionalized methods of warfare. (They do such things as attacking civilians who are then beset by a feeling of insecurity. It is no longer a question of confrontation between states, but now within states; there is no such thing as neutrality or the laws of cease-fire. And the financing providing for the activities of these groups is usually of criminal origin.) Both of these series of events have unleashed processes that form a part of the agenda for political geography today. The new agenda includes the reformulation of the relationship between territories and power.

In this sense, the state is no longer the only basic legal and administrative unit that creates other types of international

political relations. Organizations such as the European Union and other international and transnational agencies have powers that have often been redefined, so that they can now acquire authority over the territorial states themselves (one example would be the World Trade Organization). These new types of organizations have also redefined the sovereign power of individual states, now sometimes reduced to certain limited fields such as the management of labour markets.

In fact, functions that before was the exclusive domain of the state, such as capital attraction promotion, are now also encouraged by political groups associated with specific regions or cities. State territorial sovereignty is increasingly questioned in some countries like Colombia, where guerrilla fighters and drug traders control part of the national territory. Frontier building also depends to a great extent on the new vision of power and of territory. Processes designed to stimulate the free circulation of goods and persons exist at the same time as the increase in measures destined to prevent displacement.

Thus, while the European Union extended its eastern frontier in 2004 to include Slovakia, Slovenia, Malta, Poland, Latvia, Lithuania, Cyprus, and the Czech Republic, the Mediterranean area is becoming a major monitoring system designed to restrict the access of people from Africa to the New Europe. The wall raised by Israel on the Gaza Strip is also aimed at preventing the Palestinian population from entering the country. And, finally, the direct relation between state nation- territories is now being challenged. It is true that the so-called equivalence of these terms was fractured when local national claims led to an increase in the autonomy of certain regions of the planet (Cataluña, the Basque Country, Northern Ireland, Quebec and Casamance) or to separatism (with the division of the ex-Yugoslavia and the independence of East Timor). The agenda for political geography in the 21st century is engaged in redefining the relationship between state, nation, and territory. It is also incorporating new concerns (such as the environment or HIV/AIDS) and new subjects (guerrilla fighters, mafias, emigrants, and refugees), new conflicts (particularly of

an ethnic-religious character such as between India and Pakistan or in Sudan), and studies of future scenarios, such as the political and economic role in this new century of countries like China.

POLITICAL CULTURE AND THE EVOLVING STATE

Political activity is very much a part of human culture and could probably be traced to competition for space or leadership in groups of early humans. Thus emerged history's first politicians. Political activity possesses spatial expression that can be mapped, a fact that interests geographers (political geography is the study of political activity in spatial context). The most common line on a map is a political boundary and such boundaries represent a long evolutionary process, but the world political map is relatively new to human history. Perhaps no political map will ever be permanent, as events in the 1990s have shown us, but there is hope that political activity may yet lead to a lessening of tensions and conflict between the Earth's inhabitants.

The present-day layout of the world's political map is a product of humanites' endless politico-geographic accommodations and adjustments. A mosaic of more than 200 states and territories separated by boundaries, makes the world look like a jigsaw puzzle.

The map depicting that jigsaw puzzle is the most familiar and widely used map of the world—so widely used that we often fail to think about the pattern it contains. Valuable insights can be obtained from even a brief examination of the nature and significance of the patterns on the political map. It shows, for example, that in terms of territory there are vast inequalities ranging from subcontinental giants to microstates. What the map cannot show is that only a minority of the world states are nation-states, the ideal form to which most nations and states aspire—a political unit wherein the territorial state coincides with the area settled by a certain national group of people. The population of such a country would thus possess

a substantial degree of cultural homogeneity and unity—and, hopefully, political stability.

RISE OF THE MODERN STATE

The concept of statehood spread into Europe from Greece and Rome, where it lay dormant until feudalism began to break down. The Norman invasion of 1066 was perhaps the most significant event in this process.

The Normans destroyed the Anglo-Saxon nobility; created a whole new political order, and achieved great national strength under William the Conqueror. On the European mainland, the continuity of dynastic rule and the strength of certain rulers led to greater national cohesiveness. At the same time, Europe experienced something of an economic revival, and internal as well as foreign trade increased. The lifestyles of many disadvantaged people improved and crucial technological innovations occurred. The so called Dark Ages were over and a new Europe was emerging.

From a political-geographic perspective, the Peace of Westphalia can be seen as the first major step in the emergence of the European state. The treaties signed at the end of the Thirty Years War (1648) contained language that recognized statehood and nationhood, clearly defined boundaries, and guarantees of security.

Europe's politico-geographical evolution was to have enormous significance, because the European state model was exported through migration and colonialism, but it has not always worked well in the non-Western world.

Territory

No state can exist without territory, although the United Nations does recognize the Palestinians as a stateless nation. Within the states territory lie the resources that make up the state. The territorial character of states has long interested geographers, who have focused on territorial morphology—territorial size, shape, and relative location. There is no question

that the nature of a state's territory can have social and political significance, but focusing just on territory without considering other aspects of a state's geo-graphical context can be misleading. Being small and compact can mean very different things for a state in the economic core than for one in the periphery.

4 Different territorial characteristics can present opportunities and challenges, depending on the historical and political-economic context. For the United States, large size, large population, and abundant resources meant emergence as a global power. For the former Soviet Union, the vast distances over which people and resources were distributed presented a serious obstacle and contributed to its collapse. Similar problems can result because of a state's shape—as in the case of the fragmented Philippines; the elongated Chile or Thailand with its southern protruded area. These and other state shapes can often cause problems of political control, defence, transportation, or access.

Boundaries

The territories of individual states are separated by international boundaries that mark the limits of national jurisdiction. Boundaries may appear on maps as straight lines or twist and turn to conform to physical or hydrologic features. A boundary between states is actually a vertical plane that cuts through the rocks below (called the subsoil in legal papers) and the airspace above—defined by the atmosphere above a state's land area as marked by its boundaries, as well as what lies at higher altitude. Only where this vertical plane intersects the Earth's surface (on land or at sea) does it form the line we see on a map.

When boundaries were established, things were much different and the resources below the surface were much less well-known than they are today. Many mineral deposits extend from one country to another, provoking arguments about ownership and use. This includes everything from coal deposits and petroleum reserves to groundwater supplies (aquifers). Since aircraft had not yet been invented, little attention was

paid to the control of the air above—an issue that is of considerably greater importance today. The control of airline traffic over states' territory may someday be extended to satellite orbits and air circulates from one airspace to another carrying pollutants of one state across the vertical plane to another state.

MULTINATIONAL CORPORATIONS

A multinational corporation (MNC) or enterprise (MNE), is a corporation or an enterprise that manages production or delivers services in more than one country. It can also be referred to as an international corporation. The International Labour Organization (ILO) has defined[citation needed] an MNC as a corporation that has its management headquarters in one country, known as the home country, and operates in several other countries, known as host countries.

The Dutch East India Company was the first multinational corporation in the world and the first company to issue stock. It was also arguably the world's first megacorporation, possessing quasi-governmental powers, including the ability to wage war, negotiate treaties, coin money, and establish colonies.

The first modern multinational corporation is generally thought to be the East India Company. Many corporations have offices, branches or manufacturing plants in different countries from where their original and main headquarters is located. Some multinational corporations are very big, with budgets that exceed some nations' GDPs. Multinational corporations can have a powerful influence in local economies, and even the world economy, and play an important role in international relations and globalization.

Market Imperfections

It may seem strange that a corporation can decide to do business in a different country, where it does not know the laws, local customs or business practices. Why is it not more efficient to combine assets of value overseas with local factors

of production at lower costs by renting or selling them to local investors?

One reason is that the use of the market for coordinating the behaviour of agents located in different countries is less efficient than coordinating them by a multinational enterprise as an institution. The additional costs caused by the entrance in foreign markets are of less interest for the local enterprise. According to Hymer, Kindleberger and Caves, the existence of MNCs is reasoned by structural market imperfections for final products. In Hymer's example, there are considered two firms as monopolists in their own market and isolated from competition by transportation costs and other tariff and non-tariff barriers. If these costs decrease, both are forced to competition; which will reduce their profits. The firms can maximize their joint income by a merger or acquisition, which will lower the competition in the shared market. Due to the transformation of two separated companies into one MNE the pecuniary externalities are going to be internalized. However, this does not mean that there is an improvement for the society.

This could also be the case if there are few substitutes or limited licenses in a foreign market. The consolidation is often established by acquisition, merger or the vertical integration of the potential licensee into overseas manufacturing. This makes it easy for the MNE to enforce price discrimination schemes in various countries. Therefore Hymer considered the emergence of multinational firms as "an (negative) instrument for restraining competition between firms of different nations".

Market imperfections had been considered by Hymer as structural and caused by the deviations from perfect competition in the final product markets. Further reasons are originated from the control of proprietary technology and distribution systems, scale economies, privileged access to inputs and product differentiation. In the absence of these factors, market are fully efficient. The transaction costs theories of MNEs had been developed simultaneously and independently by McManus (1972), Buckley and Casson (1976) Brown (1976) and Hennart (1977, 1982). All these authors claimed that market

imperfections are inherent conditions in markets and MNEs are institutions that try to bypass these imperfections. The imperfections in markets are natural as the neoclassical assumptions like full knowledge and enforcement do not exist in real markets.

INTERNATIONAL POWER

Tax Competition

Multinational corporations have played an important role in globalization. Countries and sometimes subnational regions must compete against one another for the establishment of MNC facilities, and the subsequent tax revenue, employment, and economic activity. To compete, countries and regional political districts sometimes offer incentives to MNCs such as tax breaks, pledges of governmental assistance or improved infrastructure, or lax environmental and labour standards enforcement. This process of becoming more attractive to foreign investment can be characterized as a race to the bottom, a push towards greater autonomy for corporate bodies, or both.

However, some scholars for instance the Columbia economist Jagdish Bhagwati, have argued that multinationals are engaged in a 'race to the top.' While multinationals certainly regard a low tax burden or low labour costs as an element of comparative advantage, there is no evidence to suggest that MNCs deliberately avail themselves of lax environmental regulation or poor labour standards. As Bhagwati has pointed out, MNC profits are tied to operational efficiency, which includes a high degree of standardisation. Thus, MNCs are likely to tailor production processes in all of their operations in conformity to those jurisdictions where they operate (which will almost always include one or more of the US, Japan or EU) that has the most rigorous standards.

As for labour costs, while MNCs clearly pay workers in, e.g. Vietnam, much less than they would in the US (though it is worth noting that higher American productivity—linked to technology—means that any comparison is tricky, since in

America the same company would probably hire far fewer people and automate whatever process they performed in Vietnam with manual labour), it is also the case that they tend to pay a premium of between 10% and 100% on local labour rates.

Finally, depending on the nature of the MNC, investment in any country reflects a desire for a long-term return. Costs associated with establishing plant, training workers, etc., can be very high; once established in a jurisdiction, therefore, many MNCs are quite vulnerable to predatory practices such as, e.g., expropriation, sudden contract renegotiation, the arbitrary withdrawal or compulsory purchase of unnecessary 'licenses,' etc. Thus, both the negotiating power of MNCs and the supposed 'race to the bottom' may be overstated, while the substantial benefits that MNCs bring (tax revenues aside) are often understated.

Market Withdrawal

Because of their size, multinationals can have a significant impact on government policy, primarily through the threat of market withdrawal. For example, in an effort to reduce health care costs, some countries have tried to force pharmaceutical companies to license their patented drugs to local competitors for a very low fee, thereby artificially lowering the price. When faced with that threat, multinational pharmaceutical firms have simply withdrawn from the market, which often leads to limited availability of advanced drugs. In these cases, governments have been forced to back down from their efforts. Similar corporate and government confrontations have occurred when governments tried to force MNCs to make their intellectual property public in an effort to gain technology for local entrepreneurs. When companies are faced with the option of losing a core competitive technological advantage or withdrawing from a national market, they may choose the latter.

This withdrawal often causes governments to change policy. Countries that have been the most successful in this type of

confrontation with multinational corporations are large countries such as United States and Brazil[citation needed], which have viable indigenous market competitors.

Lobbying

Multinational corporate lobbying is directed at a range of business concerns, from tariff structures to environmental regulations. There is no unified multinational perspective on any of these issues. Companies that have invested heavily in pollution control mechanisms may lobby for very tough environmental standards in an effort to force non-compliant competitors into a weaker position.

Corporations lobby tariffs to restrict competition of foreign industries. For every tariff category that one multinational wants to have reduced, there is another multinational that wants the tariff raised. Even within the U.S. auto industry, the fraction of a company's imported components will vary, so some firms favour tighter import restrictions, while others favour looser ones.

Multinational corporations such as Wal-mart and McDonald's benefit from government zoning laws, to create barriers to entry. Many industries such as General Electric and Boeing lobby the government to receive subsidies to preserve their monopoly.

Patents

Many multinational corporations hold patents to prevent competitors from arising. For example, Adidas holds patents on shoe designs, Siemens A.G. holds many patents on equipment and infrastructure and Microsoft benefits from software patents. The pharmaceutical companies lobby international agreements to enforce patent laws on others.

TRANSNATIONAL CORPORATIONS

A Transnational Corporation (TNC) differs from a traditional MNC in that it does not identify itself with one national home. Whilst traditional MNCs are national companies

with foreign subsidiaries, TNCs spread out their operations in many countries sustaining high levels of local responsiveness. An example of a TNC is Nestlé who employ senior executives from many countries and try to make decisions from a global perspective rather than from one centralised headquarters. However, the terms TNC and MNC are often used interchangeably.

MICRO-MULTINATIONALS

Enabled by Internet based communication tools, a new breed of multinational companies is growing in numbers. (Copeland, Michael V. (2006-06-29). "How startups go global". CNN. What differentiates micro-multinationals from the large MNCs is the fact that they are small businesses. Some of these micro-multinationals, particularly software development companies, have been hiring employees in multiple countries from the beginning of the Internet era. But more and more micro-multinationals are actively starting to market their products and services in various countries. Internet tools like Google, Yahoo, MSN, Ebay and Amazon make it easier for the micro-multinationals to reach potential customers in other countries.

Service sector micro-multinationals, like Facebook, Alibaba etc. started as dispersed virtual businesses with employees, clients and resources located in various countries. Their rapid growth is a direct result of being able to use the internet, cheaper telephony and lower traveling costs to create unique business opportunities. Low cost SaaS (Software As A Service) suites make it easier for these companies to operate without a physical office. Hal Varian, Chief Economist at Google and a professor of information economics at U.C. Berkeley, said in April 2010, "Immigration today, thanks to the Web, means something very different than it used to mean. There's no longer a brain drain but brain circulation. People now doing startups understand what opportunities are available to them around the world and work to harness it from a distance rather than move people from one place to another."

CRITICISM OF MULTINATIONALS

The rapid rise of multinational corporations has been a topic of concern among intellectuals, activists and laypersons who have seen it as a threat of such basic civil rights as privacy. They have pointed out that multinationals create false needs in consumers and have had a long history of interference in the policies of sovereign nation states. Evidence supporting this belief includes invasive advertising (such as billboards, television ads, adware, spam, telemarketing, child-targeted advertising, guerrilla marketing), massive corporate campaign contributions in democratic elections, and endless global news stories about corporate corruption (Martha Stewart and Enron, for example). Anti-corporate protesters suggest that corporations answer only to shareholders, giving human rights and other issues almost no consideration. Films and books critical of multinationals include *Surplus: Terrorized into Being Consumers*, *The Corporation*, *The Shock Doctrine*, *Downsize This*, *Zeitgeist: The Movie* and others.

THE CHANGING GLOBAL POLITICAL LANDSCAPE

The world at the end of the twentieth century is a world of contradictions. Hopes for peace and cooperation are often countered by the reality of division resulting from national self-interest, economic factors, human rights issues, and many other concerns. The hopes for a so-called New World Order shaped by forces that interconnect nations and states by supranational blocks capable of balancing the force of the major powers, and multinational action should any state violate rules of communal conduct, are already clouded by doubts and uncertainties. The world today is burdened by a weakening state system and devolution, which afflicts a growing number of countries.

In this final chapter the focus is on the forces that are changing the global political landscape. These are forces with which government, businesses, and individuals must contend. To be aware of these forces is to be better prepared to cope with

them. When we study the changes taking place in the world's political framework, we enter the field of geopolitics. This field combines geography with some aspects of political science but geography brings cultural, environmental, and spatial perspectives to the field. As such, geopolitics is a wide arena that helps us understand the forces that are transforming the world map.

FORCES OF DEVOLUTION

Devolution, the disintegration of a state along regional lines, is occurring in a growing number of countries, old and young, large and small, wealthy and poor. States are the result of political-geographical evolution that may have spanned millennia (China) or centuries (many European states). Still others have evolved from colonial empires only a few decades ago, as in much of Africa. Revolution, civil war, and international conflict accompany the evolution of states. Even the oldest and apparently most stable states are vulnerable to a process that is the reverse of evolution, propelled by forces that divide and destabilize. That process is called devolution.

Devolution results from many factors, and rarely is the process propelled by a single one, but the primary ones are cultural, economic, and spatial. In Europe, devolutionary threats threaten a large number of older as well as younger states (Figure 35-1). Several of these have cultural bases, as in Spain, Belgium, and the former Yugoslavia. Economic and cultural devolutionary forces are present in Catalonia, but purely economic forces are at work in Italy and France (which is often cited as the model nation-state). In this case the problem is the island of Corsica where the activists want power and money. Europe is not alone in confronting economic forces leading to devolution. During the 1990s a devolutionary movement arose in Brazil that was rooted in economics. It seems that no country is immune from devolutionary pressures.

If devolutionary events have one feature in common, it is that they occur on the margins of states. Note that every one of the devolutionary-infected areas shown in Figure 35-1 lies

on a coast or a boundary. Distance, remoteness, and peripheral location are allies of devolution. In many cases the regions adjoin neighbours that may support separatist objectives. As stated previously, the basic reason for almost all devolutionary forces is territory under one guise or another.

In most instances of devolution, the problem remains domestic; that is, it has little or no impact on the world at large. One notable exception is the devolution of the former Soviet Union by a powerful combination of political, cultural, and economic forces (Figure 35-3). When this occurred, the world was transformed. The former Soviet empire is left with a political-geographic legacy that will remain problematic for generations to come. Visions of local or regional autonomy, notions of democracy and participation, concepts of religious fundamentalism, and economic globalization are changing the map of the modern world.

The State in the New World Order

The state is the crucial building block in the global international framework, yet the world today is burdened by a weakening state system and an antiquated boundary framework. The state's weaknesses are underscored by the growing power of regions, provinces, States, and other internal entities to act independently of the national government. The European state system, born more than 350 years ago and exported globally with Europeanization in autocratic form, later modified in many instances to a federal system, was at best tenuous in non-European areas. Many boundaries in existence today are the result of colonial control and decision with little regard for the impact on indigenous populations. With the end of colonialism, the legacy of such decisions has produced devolution and conflict. Supranationalism may be a solution to at least some of these problems but the state system did not evolve quickly or painlessly and it is doubtful its successor, whatever that may be, will proceed more smoothly.

A New World Order is said to be in the making following the end of the Cold War, but its geographic outlines cannot

yet be discerned. It is likely to involve a multipolar rather than a bipolar configuration (as existed before the devolution of the Former Soviet Union) and it is unclear how orderly it will be or who the key players will be.

CRITICAL POLITICAL GEOGRAPHY

Critical political geography is mainly concerned with the criticism of traditional political geographies. As with much of the move towards 'Critical geographies', the arguments have drawn largely from postmodern, post structural and postcolonial theories. Examples include:

- Feminist geography, which argues for a recognition of the power relations as patriarchal and attempts to theorise alternative conceptions of identity and identity politics. Alongside related concerns such as Queer theory and Youth studies
- Postcolonial theories which recognise the Imperialistic, universalising nature of much political geography, especially in Development geography

Notable Political Geographers:

- John A. Agnew
- Kevin Cox
- Klaus Dodds
- Derek Gregory
- Richard Hartshorne
- Karl Haushofer
- Eleonore Kofman
- Yves Lacoste
- Halford Mackinder
- Doreen Massey
- Gearoid O Tuathail
- Joe Painter
- Linda J. Peake
- Friedrich Ratzel

- Robert Sack
- Ellen Churchill Semple
- James Sidaway
- Simon Springer
- Peter J. Taylor

Strategic Geography

Strategic geography is concerned with the control of, or access to, spatial areas that have an impact on the security and prosperity of nations. Spatial areas that concern strategic geography change with human needs and development. This field is a subset of human geography, itself a subset of the more general study of geography. It is also related to geostrategy.

Strategic geography is that branch of science, which deals with the study of spatial areas that have an impact on the security and prosperity of a nation.

MILITARY GEOGRAPHY

Military geography is a sub-field of geography that is used by, not only the military, but also academics and politicians to understand the geopolitical sphere through the militaristic lens. Following the Second World War, Military Geography has become the "application of geographic tools, information, and techniques to solve military problems in peacetime or war." To accomplish these ends, military geographers must consider diverse geographical topics from geopolitics to the physical locations' influences on military operations and from the cultural to the economic impacts of a military presence. Military Geography is the most thought-of tool for geopolitical control imposed upon territory.

Without the framework that the military geographer provides, a commander's decision-making process is cluttered with multiple inputs from environmental analysts, cultural analysts, and many others. Without the military geographer to put all of the components together, a unit might know of the terrain, but not the drainage system below the surface. In that

scenario, the unit would be at a disadvantage if the enemy would have chosen that drainage system as a point to ambush the unit as it passed through the area. The complexities of the battlefield are multiplied tenfold when military operations are to take place within the boundaries of areas of urban development. "If a general desired to be a successful actor in the great drama of war, his first duty is to study carefully the theater of operations so that he may see clearly the relative advantages and disadvantages it presents for himself and his enemies."

Urbanistics

Due to the highly complex problems that urban development have given the military geographer, a term has been coined by Russian Colonel N.S. Olesik that can be applied to any military's geography unit responsible for analysing the urban environment: "military geo-urbanistics." Fighting in the open country is much simpler; all that there is to deal with is the terrain, weather, and the enemy. However, urban combat involves much more than the weather, enemy, and terrain. The terrain is even more complex within urban areas, filled with many structures and transformations of the land by the inhabitants. Also, within urban areas the geographer must work with or work around the people. No matter the situation, there are always people that will cooperate. Likewise there are always those that will oppose, and there are also those that are caught between the two factions. The difficulties for any military conducting operations within urban areas begin with the man-made structures that are what make an area urban. The different buildings themselves bring forth their own difficulties; obviously, this is due to the different types of structures that make up an urban area. The most dangerous aspect of urban warfare for U.S. troops, the roadside bomb, has become a deadly reality because of the narrow streets that convoys must use to get from one point to another within the confines of urban areas. Ambushes are more likely to be set up in or around heavily populated areas rather than the larger "industrial" locales that urban areas are set up around. In today's wars this is common

practice for guerrilla warriors often due to a western nation's unwillingness to bomb a neighbourhood or hospital. In an urban area, especially cities, the dominance of air power is limited by the buildings' ability to restrict visibility from the air and because of the possible collateral damage.

During an urban operation it is almost impossible for there not to be any collateral damage; the people are just too close to the action. Also, with the theater of urban combat, there are some people that will oppose the invading force, and sometimes that opposition will be armed opposition. The armed opposition, of course, makes it very difficult to identify enemy combatants from civilians. This is the case in the ongoing Iraq war. In many cases occupying troops fight residents of the cities they are occupying. Insurgents often conceal themselves in the rest of the population and may employ vehicle bombs and suicide bombing.

Base Construction and Closings

The United States Department of Defence maintains a larger number of domestic and foreign military bases than all other countries combined. Closing redundant military bases in the United States often has a negative economic impact on local communities. Analysts at the Pentagon respond to budget limitations by identifying installations that have become obsolete for various reasons. Sometimes the needs for the location are no longer prevalent in defence strategies or the installation's facilities have fallen into disrepair. That is the case with the smaller Reserve and National Guard facilities that dot every state. The personnel on the committees responsible for determining closures also observe the economic impact that their decisions will have on the communities surrounding the installations. If 40,000 people are employed because of the installation, either directly or indirectly, it is more likely that facility will remain open, but only if there is nowhere for the 40,000 people that would lose their jobs. Those people could end up on welfare, thus becoming just as much of a draw on revenue as they were as employees.

Outside of the United States, some countries are strongly vying for inclusion in strategic treaties such as NATO. These countries, many of which are in Eastern Europe, want to join NATO for the mutual advantages of defence and the possibility for foreign bases to be constructed on their soil. These bases, if they were to be built, would bring fiscal resources that those nations would not get without the bases. Sometimes foreign bases are viewed as a good thing. In other regions, a strong political stance may be taken against the construction of foreign military bases, often for sovereignty issues.

Physical Geography

Geomorphology is the science concerned with understanding the surface of the Earth and the processes by which it is shaped, both at the present as well as in the past. Geomorphology as a field has several sub-fields that deal with the specific landforms of various environments e.g. desert geomorphology and fluvial geomorphology, however, these sub-fields are united by the core processes which cause them; mainly tectonic or climatic processes. Geomorphology seeks to understand landform history and dynamics, and predict future changes through a combination of field observation, physical experiment, and numerical modelling. (Geomorphometry). Early studies in geomorphology are the foundation for pedology, one of two main branches of soil science:

- Hydrology is predominantly concerned with the amounts and quality of water moving and accumulating on the land surface and in the soils and rocks near the surface and is typified by the hydrological cycle. Thus the field encompasses water in rivers, lakes, aquifers and to an extent glaciers, in which the field examines the process and dynamics involved in these bodies of water. Hydrology has historically had an important connection with engineering and has thus developed a largely quantitative method in its research; however, it does have an earth science side that embraces the systems approach. Similar to most fields of physical geography

it has sub-fields that examine the specific bodies of water or their interaction with other spheres e.g. limnology and ecohydrology.

- Glaciology is the study of glaciers and ice sheets, or more commonly the cryosphere or ice and phenomena that involve ice. Glaciology groups the latter (ice sheets) as continental glaciers and the former (glaciers) as alpine glaciers. Although, research in the areas are similar with research undertaken into both the dynamics of ice sheets and glaciers the former tends to be concerned with the interaction of ice sheets with the present climate and the latter with the impact of glaciers on the landscape. Glaciology also has a vast array of sub-fields examining the factors and processes involved in ice sheets and glaciers e.g. snow hydrology and glacial geology.
- Biogeography is the science which deals with geographic patterns of species distribution and the processes that result in these patterns. Biogeography emerged as a field of study as a result of the work of Alfred Russel Wallace, although the field prior to the late twentieth century had largely been viewed as historic in its outlook and descriptive in its approach. The main stimulus for the field since its founding has been that of evolution, plate tectonics and the theory of island biogeography. The field can largely be divided into five sub-fields: island biogeography, paleobiogeography, phylogeography, zoogeography and phytogeography.
- Climatology is the study of the climate, scientifically defined as weather conditions averaged over a long period of time. It differs from meteorology, which studies atmospheric processes over a shorter duration, which are then examined by climatologists to find trends and frequencies in weather patterns/phenomena. Climatology examines both the nature of micro (local) and macro (global) climates and the natural and anthropogenic influences on them. The field is also

sub-divided largely into the climates of various regions and the study of specific phenomena or time periods e.g. tropical cyclone rainfall climatology and paleoclimatology.

- Pedology is the study of soils in their natural environment. It is one of two main branches of soil science, the other being edaphology. Pedology mainly deals with pedogenesis, soil morphology, soil classification. In physical geography pedology is largely studied due to the numerous interactions between climate (water, air, temperature), soil life (micro-organisms, plants, animals), the mineral materials within soils (biogeochemical cycles) and its position and effects on the landscape such as laterization.
- Palaeogeography is the study of the distribution of the continents through geologic time through examining the preserved material in the stratigraphic record. Palaeogeography is a cross-discipline, almost all the evidence for the positions of the continents comes from geology in the form of fossils or geophysics the use of this data has resulted in evidence for continental drift, plate tectonics and supercontinents this in turn has supported palaeogeographic theories such as the Wilson cycle.
- Coastal geography is the study of the dynamic interface between the ocean and the land, incorporating both the physical geography (i.e coastal geomorphology, geology and oceanography) and the human geography of the coast. It involves an understanding of coastal weathering processes, particularly wave action, sediment movement and weathering, and also the ways in which humans interact with the coast. Coastal geography although predominantly geomorphological in its research is not just concerned with coastal landforms, but also the causes and influences of sea level change.
- Oceanography is the branch of physical geography that studies the Earth's oceans and seas. It covers a wide

range of topics, including marine organisms and ecosystem dynamics (biological oceanography); ocean currents, waves, and geophysical fluid dynamics (physical oceanography); plate tectonics and the geology of the sea floor (geological oceanography); and fluxes of various chemical substances and physical properties within the ocean and across its boundaries (chemical oceanography). These diverse topics reflect multiple disciplines that oceanographers blend to further knowledge of the world ocean and understanding of processes within it.

- Quaternary science is an inter-disciplinary field of study focusing on the Quaternary period, which encompasses the last 2.6 million years. The field studies the last ice age and the recent interstadial the Holocene and uses proxy evidence to reconstruct the past environments during this period to infer the climatic and environmental changes that have occurred.
- Landscape ecology is a sub-discipline of ecology and geography that address how spatial variation in the landscape affects ecological processes such as the distribution and flow of energy, materials and individuals in the environment (which, in turn, may influence the distribution of landscape "elements" themselves such as hedgerows). The field was largely founded by the German geographer Carl Troll Landscape ecology typically deals with problems in an applied and holistic context. The main difference between biogeography and landscape ecology is that the latter is concerned with how flows or energy and material are changed and their impacts on the landscape whereas the former is concerned with the spatial patterns of species and chemical cycles.
- Geomatics is the field of gathering, storing, processing, and delivering of geographic information, or spatially referenced information. Geomatics includes geodesy (scientific discipline that deals with the measurement and representation of the earth, its gravitational field,

and other geodynamic phenomena, such as crustal motion, oceanic tides, and polar motion) and G.I.S. (a system for capturing, storing, analyzing and managing data and associated attributes which are spatially referenced to the earth) and remote sensing (the short or large-scale acquisition of information of an object or phenomenon, by the use of either recording or real-time sensing devices that are not in physical or intimate contact with the object).

- Environmental geography is a branch of geography that analyzes the spatial aspects of interactions between humans and the natural world. The branch bridges the divide between human and physical geography and thus requires an understanding of the dynamics of geology, meteorology, hydrology, biogeography, and geomorphology, as well as the ways in which human societies conceptualize the environment. Although the branch was previously more visible in research than at present with theories such as environmental determinism linking society with the environment. It has largely become the domain of the study of environmental management or anthropogenic influences on the environment and vice a versa.

EFFECT ON GLOBAL CLIMATE

A natural rainforest emits and absorbs vast quantities of carbon dioxide. On a global scale, long-term fluxes are approximately in balance, so that an undisturbed rainforest would have a small net impact on atmospheric carbon dioxide levels, though they may have other climatic effects (on cloud formation, for example, by recycling water vapour). No rainforest today can be considered to be undisturbed. Human induced deforestation plays a significant role in causing rainforests to release carbon dioxide, as do natural processes such as drought that result in tree death. Some climate models run with interactive vegetation and predict a large loss of Amazonian rainforest around 2050 due to drought, leading to forest dieback

and the subsequent feedback of releasing more carbon dioxide. Five million years from now, the Amazon rainforest will have long since dried and transformed itself into a savannah; killing itself in the process (even if all human deforestation activity ceases overnight). The descendants of our known animals will adapt to the dry savannah of the former Amazonian rainforest and thrive in the new, warmer temperatures.

Human Uses

Tropical rainforests provide timber as well as animal products such as meat and hides. Rainforests also have value as tourism destinations and for the ecosystem services provided. Many foods originally came from tropical forests, and are still mostly grown on plantations in regions that were formerly primary forest. Also, plant derived medicines are commonly used for fever, fungal infections, burns, gastrointestinal problems, pain, respiratory problems, and wound treatment.

Native People

On January 18, 2007, FUNAI reported that it had confirmed the presence of 67 different uncontacted tribes in Brazil, up from 40 in 2005. With this addition, Brazil has now overtaken the island of New Guinea as the country having the largest number of uncontacted tribes. The province of Irian Jaya or West Papua in the island of New Guinea is home to an estimated 44 uncontacted tribal groups.

Central African rainforest is home of the Mbuti pygmies, one of the hunter-gatherer peoples living in equatorial rainforests characterised by their short height (below one and a half metres, or 59 inches, on average). They were the subject of a study by Colin Turnbull, *The Forest People*, in 1962. Pygmies who live in Southeast Asia are, amongst others, referred to as "Negritos."

Deforestation

Tropical and temperate rainforests have been subjected to heavy logging and agricultural clearance throughout the 20th century and the area covered by rainforests around the world

is shrinking. Biologists have estimated that large numbers of species are being driven to extinction (possibly more than 50,000 a year; at that rate, says E. O. Wilson of Harvard University, a quarter or more of all species on Earth could be exterminated within 50 years) due to the removal of habitat with destruction of the rainforests.

Another factor causing the loss of rainforest is expanding urban areas. Littoral rainforest growing along coastal areas of eastern Australia is now rare due to ribbon development to accommodate the demand for seachange lifestyles.

The forests are being destroyed at a rapid pace. Almost 90% of West Africa's rainforest has been destroyed. Since the arrival of humans 2000 years ago, Madagascar has lost two thirds of its original rainforest. At present rates, tropical rainforests in Indonesia would be logged out in 10 years and Papua New Guinea in 13 to 16 years.

Several countries, notably Brazil, have declared their deforestation a national emergency. Amazon deforestation jumped by 69% in 2008 compared to 2007's twelve months, according to official government data. Deforestation could wipe out or severely damage nearly 60% of the Amazon Rainforest by 2030, says a new report from WWF.

However, a January 30, 2009 New York Times article stated, "By one estimate, for every acre of rain forest cut down each year, more than 50 acres of new forest are growing in the tropics..." The new forest includes secondary forest on former farmland and so-called degraded forest.

From a new recent report in September 2009, new opportunities are beginning to discover they could save the rainforest. In Brazil, Environment Minister Carlos Minc announced proudly that the rate of deforestation of the Amazon fell by 46 percent last year. That means the lowest logging level since the country began to keep annual statistics 21 years ago. But not only Brazil has reduced deforestation as a whole also slowed the loss of forest down. The annual decline is now over two thousand. Deforestation decreases in a country as it becomes richer and more industrialized. Therefore, there are exceptions

in a group of countries where deforestation has become so profitable that it is an important part in the growth of prosperity. New goal is to stop felling the forest, but also in managing the forest long-term, which occurs on a larger scale. More police officers guarding the rainforest, and stifle the illegal logging.

PHYSICAL GEOGRAPHY LITERATURE

Physical geography and Earth Science journals communicate and document the results of research carried out in universities and various other research institutions. Most journals cover a specific field and publish the research within that field, however unlike human geographers, physical geographers tend to publish in inter-disciplinary journals rather than predominantly geography journal; the research is normally expressed in the form of a scientific paper. Additionally, textbooks, books, and magazines on geography communicate research to laypeople, although these tend to focus on environmental issues or cultural dilemmas.

Historic Evolution of Physical Geography

From the birth of geography as a science during the Greek classical period and until the late nineteenth century with the birth of anthropography or Human Geography, Geography was almost exclusively a natural science: the study of location and descriptive gazetteer of all places of the known world. Several works among the best known during this long period could be cited as an example, from Strabo (Geography), Eratosthenes (Geography) or Dionisio Periegetes (Periegesis Oiceumene) in the Ancient Age to the Alexander von Humboldt (Cosmos) in the century XIX, in which geography is regarded as a physical and natural science, of course, through the work Summa de Geografia of Martin Fernandez de Enciso from the early sixteenth century, which is indicated for the first time the New World.

During the eighteenth and nineteenth centuries, a controversy exported from Geology, between supporters of James Hutton (uniformitarianism Thesis) and Georges Cuvier

(catastrophism) strongly influenced the field of geography, because geography at this time was a natural science since Human Geography or Antropogeography had just developed as a discipline in the late nineteenth century.

Two historical events during the nineteenth century had a great effect in the further development of physical geography. The first was the European colonial expansion in Asia, Africa, Australia and even America in search of raw materials required by industries during the Industrial Revolution. This fostered the creation of geography departments in the universities of the colonial powers and the birth and development of national geographical societies, thus giving rise to the process identified by Horacio Capel as the institutionalization of geography.

One of the most prolific empires in this regard was the Russian. A mid-eighteenth century many geographers are sent by the Russian altamirazgo different opportunities to perform geographical surveys in the area of Arctic Siberia. Among these is who is considered the patriarch of Russian geography: Mikhail Lomonosov who in the mid-1750s began working in the Department of Geography, Academy of Sciences to conduct research in Siberia, their contributions are notable in this regard, shows the soil organic origin, develops a comprehensive law on the movement of the ice that still governs the basics, thereby founding a new branch of Geography: Glaciology. In 1755 his initiative was founded Moscow University where he promotes the study of geography and the training of geographers. In 1758 he was appointed director of the Department of Geography, Academy of Sciences, a post from which would develop a working methodology for geographical survey guided by the most important long expeditions and geographical studies in Russia.

Thus followed the line of Lomonosov and the contributions of the Russian school became more frequent through his disciples, and in the nineteenth century we have great geographers as Vasily Dokuchaev who performed works of great importance as a "principle of comprehensive analysis of the territory" and "Russian Chernozem" latter being the most

important where introduces the geographical concept of soil, as distinct from a simple geological strata, and thus founding a new geographic area of study: the Pedology. Climatology also receive a strong boost from the Russian school by Wladimir Koppen whose main contribution, climate classification, is still valid today. However, this great geographer also contributed to the Paleogeography through his work "The climates of the geological past" which is considered the father of Paleoclimatology. Russian geographers who made great contributions to the discipline in this period were: NM Sibirtsev, Pyotr Semyonov, K. D. Glinka, Neustrayev, among others.

The second important process is the theory of evolution by Darwin in mid-century (which decisively influenced the work of Ratzel, who had academic training as a zoologist and was a follower of Darwin's ideas) which meant an important impetus in the development of Biogeography.

Another major event in the late nineteenth and early twentieth century will give a major boost to development of geography and will take place in United States. It is the work of the famous geographer William Morris Davis who not only made important contributions to the establishment of discipline in his country, but revolutionized the field to develop geographical cycle theory which he proposed as a paradigm for Geography in general, although in actually served as a paradigm for Physical Geography. His theory explained that mountains and other landforms are shaped by the influence of a number of factors that are manifested in the geographical cycle.

He explained that the cycle begins with the lifting of the relief by geological processes (faults, volcanism, tectonic upheaval, etc.).. Geographical factors such as rivers and runoff begins to create the V-shaped valleys between the mountains (the stage called "youth"). During this first stage, the terrain is steeper and more irregular. Over time, the currents can carve wider valleys ("maturity") and then start to wind, towering hills only ("senescence").

Finally, everything comes to what is a plain flat plain at the lowest elevation possible (called "baseline") This plain was

called by Davis' "peneplain" meaning "almost plain" Then the rejuvenation occurs and there is another mountain lift and the cycle continues. Although Davis's theory is not entirely accurate, it was absolutely revolutionary and unique in its time and helped to modernize and create Geography subfield of Geomorphology. Its implications prompted a myriad of research in various branches of Physical Geography. In the case of the Paleogeography this theory provided a model for understanding the evolution of the landscape.

For Hydrology, Glaciology and Climatology as a boost investigated as studying geographic factors shape the landscape and affect the cycle. The bulk of the work of William Morris Davis led to the development of a new branch of Physical Geography: Geomorphology whose contents until then did not differ from the rest of Geography. Shortly after this branch would present a major development. Some of his disciples made significant contributions to various branches of physical geography such as Curtis Marbut and his invaluable legacy for Pedology, Mark Jefferson, Isaiah Bowman, among others.

PHYSICAL CHARACTERISTICS

Landforms are categorised by characteristic physical attributes such as elevation, slope, orientation, stratification, rock exposure, and soil type.

Gross *physical features or landforms* include intuitive elements such as berms, mounds, hills, ridges, cliffs, valleys, rivers, peninsulas and numerous other structural and size-scaled (i.e. ponds vs. Lakes, Hills vs. Mountains) elements including various kinds of inland and oceanic waterbodies and sub-surface features.

Hierarchy of Classes

Oceans and continents exemplify the highest-order landforms. Landform elements are parts of a high-order landforms that can be further identified and systematically given a cohesive definition such as hill-tops, shoulders, saddles, foreslopes and backslopes.

Some generic landform elements including: pits, peaks, channels, ridges, passes, pools and plains, may be extracted from a digital elevation model using some automated techniques where the data has been gathered by modern satellites and stereoscopic aerial surveillance cameras. Until recently, compiling the data found in such data sets required time consuming and expensive techniques of many man-hours.

Terrain (or *relief*) is the third or vertical dimension of *land surface*. Topography is the study of terrain, although the word is often used as a synonym for relief itself. When relief is described underwater, the term bathymetry is used. In cartography, many different techniques are used to describe relief, including contour lines and TIN (Triangulated irregular network).

Elementary landforms (segments, facets, relief units) are the smallest homogeneous divisions of the land surface, at the given scale/resolution. These are areas with relatively homogenous morphometric properties, bounded by lines of discontinuity. A plateau or a hill can be observed at various scales ranging from few hundred meters to hundreds of kilometres. Hence, the spatial distribution of landforms is often scale-dependent as is the case for soils and geological strata.

A number of factors, ranging from plate tectonics to erosion and deposition, can generate and affect landforms. Biological factors can also influence landforms— for example, note the role of vegetation in the development of dune systems and salt marshes, and the work of corals and algae in the formation of coral reefs.

Landforms do not include man-made features, such as canals, ports and many harbours; and geographic features, such as deserts, forests, grasslands, and impact craters.

Many of the terms are not restricted to refer to features of the planet Earth, and can be used to describe surface features of other planets and similar objects in the Universe. Examples are mountains, polar caps, and valleys, which are found on all of the terrestrial planets.

Terrain

Terrain, or land relief, is the vertical dimension of land surface. When relief is described underwater, the term bathymetry is used. Topography has recently become an additional synonym, though in many parts of the world it retains its original more general meaning of description of place.

Terrain is used as a general term in physical geography, referring to the lie of the land. This is usually expressed in terms of the elevation, slope, and orientation of terrain features. Terrain affects surface water flow and distribution. Over a large area, it can affect weather and climate patterns.

Importance

The understanding of terrain is critical for many reasons:

- The terrain of a region largely determines its suitability for human settlement: flatter, alluvial plains tend to have better farming soils than steeper, rockier uplands.
- In terms of environmental quality, agriculture, and hydrology, understanding the terrain of an area enables the understanding of watershed boundaries, drainage characteristics, water movement, and impacts on water quality. Complex arrays of relief data are used as input parameters for hydrology transport models (such as the SWMM or DSSAM Models) to allow prediction of river water quality.
- Understanding terrain also supports on soil conservation, especially in agriculture. Contour plowing is an established practice enabling sustainable agriculture on sloping land; it is the practice of plowing along lines of equal elevation instead of up and down a slope.
- Terrain is militarily critical because it determines the ability of armed forces to take and hold areas, and move troops and material into and through areas. An understanding of terrain is basic to both defensive and offensive strategy.

- Terrain is important in determining weather patterns. Two areas geographically close to each other may differ radically in precipitation levels or timing because of elevation differences or a “rain shadow” effect.
- Since terrain comes in vast varieties, certain features can be specific according to one type terrain, but also other features can be specific to multiple types of terrain. Basically, different terrains can both share the same features as well as have their own unique features.

PHYSICS OF THE SEA: WAVES AND CURRENTS

In fluid dynamics, wind waves or, more precisely, wind-generated waves are surface waves that occur on the free surface of oceans, seas, lakes, rivers, and canals or even on small puddles and ponds. They usually result from the wind blowing over a vast enough stretch of fluid surface. Some waves in the oceans can travel thousands of miles before reaching land. Wind waves range in size from small ripples to huge rogue waves. When directly being generated and affected by the local winds, a wind wave system is called a wind sea. After the wind ceases to blow, wind waves are called *swell*. Or, more generally, a swell consists of wind generated waves that are not — or hardly — affected by the local wind at the same moment. They have been generated elsewhere, or some time ago. Wind waves in the ocean are called ocean surface waves. Tsunamis are a specific type of wave not caused by wind but by geological effects. In deep water, tsunamis are not visible because they are small in height and very long in wavelength. They may grow to devastating proportions at the coast due to reduced water depth.

WAVE FORMATION

The great majority of large breakers one observes on a beach result from distant winds. Five factors influence the formation of wind waves:

- Wind speed

- Distance of open water that the wind has blown over (called the *fetch*)
- Width of area affected by fetch
- Time duration the wind has blown over a given area
- Water depth

All of these factors work together to determine the size of wind waves. The greater each of the variables, the larger the waves. Waves are characterized by:

- Wave height (from trough to crest)
- Wavelength (from crest to crest)
- Period (time interval between arrival of consecutive crests at a stationary point)
- Wave propagation direction

Waves in a given area typically have a range of heights. For weather reporting and for scientific analysis of wind wave statistics, their characteristic height over a period of time is usually expressed as *significant wave height*. This figure represents an average height of the highest one-third of the waves in a given time period (usually chosen somewhere in the range from 20 minutes to twelve hours), or in a specific wave or storm system. Given the variability of wave height, the largest individual waves are likely to be about twice the reported significant wave height for a particular day or storm.

Types of Wind Waves

Three different types of wind waves develop over time:

- Capillary waves, or ripples
- Seas
- Swells

Ripples appear on smooth water when the wind blows, but will die quickly if the wind stops. The restoring force that allows them to propagate is surface tension. Seas are the larger-scale, often irregular motions that form under sustained winds. They tend to last much longer, even after the wind has died, and the restoring force that allows them to persist is gravity. As seas propagate away from their area of origin, they naturally

separate according to their direction and wavelength. The regular wave motions formed in this way are known as swells.

Individual “rogue waves” (also called “freak waves”, “monster waves”, “killer waves”, and “king waves”) sometimes occur, up to heights near 30 meters, and being much higher than the other waves in the sea state. Such waves are distinct from tides, caused by the Moon and Sun’s gravitational pull, tsunamis that are caused by underwater earthquakes or landslides, and waves generated by underwater explosions or the fall of meteorites — all having far longer wavelengths than wind waves.

Wave Breaking

Some waves undergo a phenomenon called “breaking”. A breaking wave is one whose base can no longer support its top, causing it to collapse. A wave breaks when it runs into shallow water, or when two wave systems oppose and combine forces. When the slope, or steepness ratio, of a wave is too great, breaking is inevitable. Individual waves in deep water break when the wave steepness — the ratio of the wave height H to the wavelength λ — exceeds about 0.17, so for $H > 0.17\lambda$. In shallow water, with the water depth small compared to the wavelength, the individual waves break when their wave height H is larger than 0.8 times the water depth h , that is $H > 0.8h$. Waves can also break if the wind grows strong enough to blow the crest off the base of the wave.

Three main types of breaking waves are identified by surfers or surf life-savers. Their varying characteristics make them more or less suitable for surfing, and present different dangers.

- Spilling, or rolling: these are the safest waves on which to surf. They can be found in most areas with relatively flat shorelines. They are the most common type of shorebreak
- Plunging, or dumping: these break suddenly and can “dump” swimmers—pushing them to the bottom with great force. These are the preferred waves for experienced surfers. Strong offshore winds and long

wave periods can cause dumpers. They are often found where there is a sudden rise in the sea floor, such as a reef or sandbar

- Surging: these may never actually break as they approach the water's edge, as the water below them is very deep. They tend to form on steep shorelines. These waves can knock swimmers over and drag them back into deeper water

PHYSICAL ENVIRONMENTS

Water

The rate of diffusion of carbon dioxide and oxygen is approximately 10,000 times slower in water than it is in air. When soils become flooded, they quickly lose oxygen from low-concentration (hypoxic) to an (anoxic) environment where anaerobic bacteria thrive among the roots. Water also influences the spectral properties of light that becomes more diffuse as it is reflected off the water surface and submerged particles.

Aquatic plants exhibit a wide variety of morphological and physiological adaptations that allow them to survive, compete and diversify these environments. For example, the roots and stems develop large cellular air spaces to allow for the efficient transportation gases (for example, CO₂ and O₂) used in respiration and photosynthesis.

In drained soil, microorganisms use oxygen during respiration. In aquatic environments, anaerobic soil microorganisms use nitrate, manganic ions, ferric ions, sulfate, carbon dioxide and some organic compounds. The activity of soil microorganisms and the chemistry of the water reduces the oxidation-reduction potentials of the water. Carbon dioxide, for example, is reduced to methane (CH₄) by methanogenic bacteria. Salt water also requires special physiological adaptations to deal with water loss.

Salt water plants (or halophytes) are able to osmo-regulate their internal salt (NaCl) concentrations or develop special

organs for shedding salt away. The physiology of fish is also specially adapted to deal with high levels of salt through osmoregulation. Their gills form electrochemical gradients that mediate salt excretion in salt water and uptake in fresh water.

Gravity

The shape and energy of the land is affected to a large degree by gravitational forces. On a larger scale, the distribution of gravitational forces on the earth are uneven and influence the shape and movement of tectonic plates as well as having an influence on geomorphic processes such as orogeny and erosion. These forces govern many of the geophysical properties and distributions of ecological biomes across the Earth. On a organism scale, gravitational forces provide directional cues for plant and fungal growth (gravitropism), orientation cues for animal migrations, and influence the biomechanics and size of animals. Ecological traits, such as allocation of biomass in trees during growth are subject to mechanical failure as gravitational forces influence the position and structure of branches and leaves. The cardiovascular systems of all animals are functionally adapted to overcome pressure and gravitational forces that change according to the features of organisms (e.g., height, size, shape), their behaviour (e.g., diving, running, flying), and the habitat occupied (e.g., water, hot deserts, cold tundra).

Pressure

Climatic and osmotic pressure places physiological constraints on organisms, such as flight and respiration at high altitudes, or diving to deep ocean depths. These constraints influence vertical limits of ecosystems in the biosphere as organisms are physiologically sensitive and adapted to atmospheric and osmotic water pressure differences. Oxygen levels, for example, decrease with increasing pressure and are a limiting factor for life at higher altitudes. Water transportation through trees is another important ecophysiological parameter dependent upon pressure. Water pressure in the depths of

oceans requires adaptations to deal with the different living conditions. Mammals, such as whales, dolphins and seals are adapted to deal with changes in sound due to water pressure differences.

Wind and Turbulence

Turbulent forces in air and water have significant effects on the environment and ecosystem distribution, form and dynamics. On a planetary scale, ecosystems are affected by circulation patterns in the global trade winds. Wind power and the turbulent forces it creates can influence heat, nutrient, and biochemical profiles of ecosystems. For example, wind running over the surface of a lake creates turbulence, mixing the water column and influencing the environmental profile to create thermally layered zones, partially governing how fish, algae, and other parts of the aquatic ecology are structured. Wind speed and turbulence also exert influence on rates of evapotranspiration rates and energy budgets in plants and animals.

Wind speed, temperature and moisture content can vary as winds travel across different landfeatures and elevations. The westerlies, for example, come into contact with the coastal and interior mountains of western North America to produce a rain shadow on the leeward side of the mountain. The air expands and moisture condenses as the winds move up in elevation which can cause precipitation; this is called orographic lift. This environmental process produces spatial divisions in biodiversity, as species adapted to wetter conditions are range-restricted to the coastal mountain valleys and unable to migrate across the xeric ecosystems of the Columbia Basin to intermix with sister lineages that are segregated to the interior mountain systems.

Fire

Plants convert carbon dioxide into biomass and emit oxygen into the atmosphere. Approximately 350 million years ago (near the Devonian period) the photosynthetic process brought the concentration of atmospheric oxygen above 17%, which allowed

combustion to occur. Fire releases CO₂ and converts fuel into ash and tar. Fire is a significant ecological parameter that raises many issues pertaining to its control and suppression in management. While the issue of fire in relation to ecology and plants has been recognized for a long time, Charles Cooper brought attention to the issue of forest fires in relation to the ecology of forest fire suppression and management in the 1960s.

Fire creates environmental mosaics and a patchiness to ecosystem age and canopy structure. Native North Americans were among the first to influence fire regimes by controlling their spread near their homes or by lighting fires to stimulate the production of herbaceous foods and basketry materials. The altered state of soil nutrient supply and cleared canopy structure also opens new ecological niches for seedling establishment. Most ecosystem are adapted to natural fire cycles. Plants, for example, are equipped with a variety of adaptations to deal with forest fires. Some species (e.g., *Pinus halepensis*) cannot germinate until after their seeds have lived through a fire. This environmental trigger for seedlings is called serotiny. Some compounds from smoke also promote seed germination.

PHYSICS OF THE SEA: TIDES AND SEICHES

Tides are the rise and fall of sea levels caused by the combined effects of the gravitational forces exerted by the Moon and the Sun and the rotation of the Earth. The tides occur with a period of approximately 12 hours and 25 minutes, and with an amplitude that is influenced by the alignment of the sun and moon and the shape of the near-shore bottom.

Most coastal areas experience two high and two low tides per day. One of these high tides is at the point on the earth which is closest to the moon. The other high tide is at the opposite point on the earth. This is because at the point right "under" the Moon (the sub-lunar point), the water is at its closest to the Moon, so it experiences stronger gravity and is raised. On the opposite side of the Earth (the antipodal point), the water is at its farthest from the moon, so it is pulled less; at this point the Earth moves more toward the Moon than the

water does—causing that water to “rise” (relative to the Earth) as well. In between the sub-lunar and antipodal points, the force on the water is diagonal or transverse to the sub-lunar/antipodal axis (and always towards that axis), resulting in low tide.

The sun also exerts a (less powerful) gravitational attraction on the earth which results in a secondary tidal effect. When the earth, moon and sun are approximately aligned these two tidal effects reinforce one another (resulting in higher highs and lower lows). This alignment occurs approximately twice a month (shortly after the full and new moon). These recurring, extreme tides are termed spring tides. The opposite, most moderate tides are termed neap tides (occurring shortly after the first and last quarter moons).

Tides vary on timescales ranging from hours to years due to numerous influences. To make accurate records tide gauges at fixed stations measure the water level over time. Gauges ignore variations caused by waves with periods shorter than minutes. These data are compared to the reference (or datum) level usually called mean sea level.

While tides are usually the largest source of short-term sea-level fluctuations, sea levels are also subject to forces such as wind and barometric pressure changes, resulting in storm surges, especially in shallow seas and near coasts.

Tidal phenomena are not limited to the oceans, but can occur in other systems whenever a gravitational field that varies in time and space is present. For example, the solid part of the Earth is affected by tides.

Characteristics

Tide changes proceed via the following stages:

- Sea level rises over several hours, covering the intertidal zone; flood tide.
- The water rises to its highest level, reaching high tide.
- Sea level falls over several hours, revealing the intertidal zone; ebb tide.
- The water stops falling, reaching low tide.

Tides produce oscillating currents known as tidal streams. The moment that the tidal current ceases is called slack water or slack tide. The tide then reverses direction and is said to be turning. Slack water usually occurs near high water and low water. But there are locations where the moments of slack tide differ significantly from those of high and low water.

Tides are most commonly *semidiurnal* (two high waters and two low waters each day), or *diurnal* (one tidal cycle per day). The two high waters on a given day are typically not the same height (the daily inequality); these are the *higher high water* and the *lower high water* in tide tables. Similarly, the two low waters each day are the *higher low water* and the *lower low water*. The daily inequality is not consistent and is generally small when the Moon is over the equator.

Tidal Constituents

Tidal changes are the net result of multiple influences that act over varying periods. These influences are called tidal constituents. The primary constituents are the earth's rotation, the positions of Moon and the Sun relative to Earth, the moon's altitude above the earth, and bathymetry.

Variations with periods of less than half a day are called *harmonic constituents*. Conversely, *long period* constituents cycle over days, months, or years.

Principal Lunar Semidiurnal Constituent

In most locations, the largest constituent is the "principal lunar semidiurnal", also known as the M_2 (or M_2) tidal constituent. Its period is about 12 hours and 25.2 minutes, exactly half a *tidal lunar day*, which is the average time separating one lunar zenith from the next, and thus is the time required for the Earth to rotate once relative to the Moon. Simple tide clocks track this constituent. The lunar day is longer than the earth day because the Moon orbits in the same direction the Earth spins. This is analogous to the minute hand on a watch crossing the hour hand at 12:00 and then again at about 1:05 (not at 1:00).

Semidiurnal Range Differences

When there are two high tides each day with different heights (and two low tides also of different heights), the pattern is called a *mixed semidiurnal tide*.

Range Variation: Springs and Neaps

The semidiurnal range (the difference in height between high and low waters over about a half day) varies in a two-week cycle. Around new and full moon when the Sun, Moon and Earth form a line (a condition known as syzygy), the tidal force due to the Sun reinforces that due to the Moon.

The tide's range is then at its maximum: this is called the *spring tide*, or just *springs*. It is not named after the season but, like that word, derives from an earlier meaning of "jump, burst forth, rise" as in a natural spring.

When the Moon is at first quarter or third quarter, the Sun and Moon are separated by 90° when viewed from the Earth, and the solar gravitational force partially cancels the Moon's. At these points in the lunar cycle, the tide's range is at its minimum: this is called the *neap tide*, or *neaps* (a word of uncertain origin).

Spring tides result in high waters that are higher than average, low waters that are lower than average, *slack water* time that is shorter than average and stronger tidal currents than average. Neaps result in less extreme tidal conditions. There is about a seven day interval between springs and neaps.

Lunar Altitude

The changing distance separating the Moon and Earth also affects tide heights. When the Moon is at perigee the range increases, and when it is at apogee the range shrinks. Every 7½ lunations (the full cycles from full moon to new to full), perigee coincides with either a new or full moon causing perigean spring tides with the largest *tidal range*. If a storm happens to be moving onshore at this time, the consequences (property damage, etc.) can be especially severe.

Bathymetry

The shape of the shoreline and the ocean floor change the way that tides propagate, so there is no simple, general rule that predicts the time of high water from the Moon's position in the sky. Coastal characteristics such as underwater bathymetry and coastline shape mean that individual location characteristics affect tide forecasting; actual high water time and height may differ from model predictions due to the coastal morphology's effects on tidal flow.

However, for a given location the relationship between lunar altitude and the time of high or low tide (the lunital interval) is relatively constant and predictable, as is the time of high or low tide relative to other points on the same coast. For example, the high tide at Norfolk, Virginia predictably occurs approximately two and a half hours before the moon passes directly overhead.

Land masses and ocean basins act as barriers against water moving freely around the globe, and their varied shapes and sizes affect the size of tidal frequencies. As a result, tidal patterns vary. For example, in the U.S., the East coast has predominantly semi-diurnal tides, as do Europe's Atlantic coasts, while the West coast predominantly has mixed tides.

Other Constituents

These include solar gravitational effects, the obliquity (tilt) of the Earth's equator and rotational axis, the inclination of the plane of the lunar orbit and the elliptical shape of the Earth's orbits of the Earth.

PHYSICAL GEOGRAPHY OF INDIA

The geography of India describes the physical features of India, a country in South Asia that lies entirely on the Indian Plate in the northern portion of the Indo-Australian Plate. The country lies to the north of the equator between 8°4' and 37°6' north latitude and 68°7' and 97°25' east longitude. It is the seventh-largest country in the world, with a total land area of

3,287,263 square kilometres (1,269,219 sq mi). India measures 3,214 km (1,997 mi) from north to south and 2,993 km (1,860 mi) from east to west. It has a land frontier of 15,200 km (9,445 mi) and a coastline of 7,517 km (4,671 mi).

India is bounded to the southwest by the Arabian Sea, to the southeast by the Bay of Bengal and the Indian Ocean to the south. Kanyakumari constitutes the southern tip of the Indian peninsula, which narrows before ending in the Indian Ocean. The southernmost part of India is Indira Point in the Andaman and Nicobar Islands.

The Maldives, Sri Lanka and Indonesia are island nations to the south of India with Sri Lanka separated from India by a narrow channel of sea formed by Palk Strait and the Gulf of Mannar. The territorial waters of India extend into the sea to a distance of 12 nautical miles (13.8 mi; 22.2 km) measured from the appropriate baseline.

The northern frontiers of India are defined largely by the Himalayan mountain range where its political boundaries with China, Bhutan, and Nepal lie.

Its western borders with Pakistan lie in the Punjab Plain and the Thar desert. In the far northeast, the Chin Hills and Kachin Hills, deeply forested mountainous regions, separate India from Burma while its political border with Bangladesh is defined by the watershed region of the Indo-Gangetic Plain, the Khasi hills and Mizo Hills.

The Ganges is the longest river originating in India and forms the Indo-Gangetic Plain. The Ganges-Brahmaputra system occupies most of northern, central and eastern India, while the Deccan Plateau occupies most of southern India. Along its western frontier is the Thar Desert, which is the seventh-largest desert in the world.

Officially, India's highest point is K2 at 8,611 m (28,251 ft), though it lies in Gilgit-Baltistan, part of the disputed Kashmir region. Kanchenjunga in Sikkim at 8,598 m (28,209 ft) is the highest point within India's current geographic boundaries. Climate across India ranges from equatorial in the far south, to Alpine in the upper reaches of the Himalayas.

Geological Development

India is entirely contained on the Indian Plate, a major tectonic plate that was formed when it split off from the ancient continent Gondwanaland. About 90 million years ago, during the late Cretaceous Period, the Indian Plate began moving north at about 15 cm/yr (6 in/yr). About 50 to 55 million years ago, in the Eocene epoch of the Cenozoic Era, the plate collided with Asia after covering a distance of 2,000 to 3,000 km (1,243 to 1,864 mi), having moved faster than any other known plate. In 2007, German geologists determined that the reason the India Plate moved so quickly is that it is only half as thick as the other plates which formerly constituted Gondwanaland. The collision with the Eurasian Plate along the modern border between India and Nepal formed the orogenic belt that created the Tibetan Plateau and the Himalayas. As of 2009, The India Plate is moving northeast at 5 cm/yr (2 in/yr), while the Eurasian Plate is moving north at only 2 cm/yr (0.8 in/yr). India is thus referred to as the "fastest continent." This is causing the Eurasian Plate to deform, and the India Plate to compress at a rate of 4 mm/yr (0.15 in/yr).

ROLE IN THE NATURAL WORLD

In arid climates, the main source of erosion is wind. The general wind circulation moves small particulates such as dust across wide oceans thousands of kilometres downwind of their point of origin, which is known as deflation. Westerly winds in the mid-latitudes of the planet drive the movement of ocean currents from west to east across the world's oceans. Wind has a very important role in aiding plants and other immobile organisms in dispersal of seeds, spores, pollen, etc. Although wind is not the primary form of seed dispersal in plants, it provides dispersal for a large percentage of the biomass of land plants.

Erosion

Erosion can be the result of material movement by the wind. There are two main effects. First, wind causes small

particles to be lifted and therefore moved to another region. This is called deflation. Second, these suspended particles may impact on solid objects causing erosion by abrasion (ecological succession).

Wind erosion generally occurs in areas with little or no vegetation, often in areas where there is insufficient rainfall to support vegetation. An example is the formation of sand dunes, on a beach or in a desert. Loess is a homogeneous, typically nonstratified, porous, friable, slightly coherent, often calcareous, fine-grained, silty, pale yellow or buff, windblown (Aeolian) sediment. It generally occurs as a widespread blanket deposit that covers areas of hundreds of square kilometres and tens of meters thick. Loess often stands in either steep or vertical faces. Loess tends to develop into highly rich soils. Under appropriate climatic conditions, areas with loess are among the most agriculturally productive in the world. Loess deposits are geologically unstable by nature, and will erode very readily. Therefore, windbreaks (such as big trees and bushes) are often planted by farmers to reduce the wind erosion of loess.

Desert Dust Migration

During mid-summer (July), the westward-moving trade winds south of the northward-moving subtropical ridge expand northwestward from the Caribbean Sea into southeastern North America. When dust from the Sahara moving around the southern periphery of the ridge within the belt of trade winds moves over land, rainfall is suppressed and the sky changes from a blue to a white appearance, which leads to an increase in red sunsets. Its presence negatively impacts air quality by adding to the count of airborne particulates. Over 50 percent of the African dust that reaches the United States affects Florida. Since 1970, dust outbreaks have worsened because of periods of drought in Africa. There is a large variability in the dust transport to the Caribbean and Florida from year to year. Dust events have been linked to a decline in the health of coral reefs across the Caribbean and Florida, primarily since the 1970s. Similar dust plumes originate in the Gobi desert, which

combined with pollutants, spread large distances downwind, or eastward, into North America.

There are local names for winds associated with sand and dust storms. The Calima carries dust on southeast winds into the Canary islands. The Harmattan carries dust during the winter into the Gulf of Guinea. The Sirocco brings dust from north Africa into southern Europe because of the movement of extratropical cyclones through the Mediterranean Sea. Spring storm systems moving across the eastern Mediterranean Sea cause dust to carry across Egypt and the Arabian peninsula, which are locally known as Khamsin. The Shamal is caused by cold fronts lifting dust into the atmosphere for days at a time across the Persian Gulf states.

Effect on Plants

Wind dispersal of seeds, or anemochory, is one of the more primitive means of dispersal: Wind dispersal can take on one of two primary forms: seeds can float on the breeze or alternatively, they can flutter to the ground. The classic examples of these dispersal mechanisms include dandelions (*Taraxacum* spp., Asteraceae), which have a feathery pappus attached to their seeds and can be dispersed long distances, and maples (*Acer* (genus) spp., Sapindaceae), which have winged seeds and flutter to the ground. An important constraint on wind dispersal is the need for abundant seed production to maximize the likelihood of a seed landing in a site suitable for germination. There are also strong evolutionary constraints on this dispersal mechanism.

For instance, species in the Asteraceae on islands tended to have reduced dispersal capabilities (i.e., larger seed mass and smaller pappus) relative to the same species on the mainland. Reliance upon wind dispersal is common among many weedy or ruderal species. Unusual mechanisms of wind dispersal include tumbleweeds. A related process to anemochory is anemophily, which is the process where pollen is distributed by wind. Large families of plants are pollinated in this manner, which is favoured when individuals of the dominant plant species are spaced closely together.

Wind also limits tree growth: On coasts and isolated mountains, the tree line is often much lower than in corresponding altitudes inland and in larger, more complex mountain systems, because strong winds reduce tree growth. High winds scour away thin soils through erosion, as well as damage limbs and twigs. When high winds knock down or uproot trees, the process is known as windthrow. This is most likely on windward slopes of mountains, with severe cases generally occurring to tree stands that are 75 years or older. Plant varieties near the coast, such as the Sitka spruce and sea grape, are pruned back by wind and salt spray near the coastline.

Wind can also cause plants damage through sand abrasion: Strong winds will pick up loose sand and topsoil and hurl it through the air at speeds ranging from 25-40 miles per hour. Such windblown sand causes extensive damage to plant seedlings because it ruptures plant cells, making them vulnerable to evaporation and drought. Using a mechanical sandblaster in a laboratory setting, scientists affiliated with the Agricultural Research Service studied the effects of windblown sand abrasion on cotton seedlings. The study showed that the seedlings responded to the damage created by the windblown sand abrasion by shifting energy from stem and root growth to the growth and repair of the damaged stems. After a period of four weeks the growth of the seedling once again became uniform throughout the plant, as it was before the windblown sand abrasion occurred.

Effect on Animals

Cattle and sheep are prone to wind chill caused by a combination of wind and cold temperatures, when winds exceed 40 kilometres per hour (25 mph) that renders their hair and wool coverings ineffective. Although penguins use both a layer of fat and feathers to help guard against coldness in both water and air, their flippers and feet are less immune to the cold. In the coldest climates such as Antarctica, emperor penguins use huddling behaviour to survive the wind and cold, continuously alternating the members on the outside of the assembled group,

which reduces heat loss by 50%. Flying insects, a subset of arthropods, are swept along by the prevailing winds, while birds follow their own course taking advantage of wind conditions, in order to either fly or glide. As such, fine line patterns within weather radar imagery, associated with converging winds, are dominated by insect returns. Bird migration, which tends to occur overnight within the lowest 7,000 feet (2,100 m) of the Earth's atmosphere, contaminates wind profiles gathered by weather radar, particularly the WSR-88D, by increasing the environmental wind returns by 15 knots (28 km/h) to 30 knots (56 km/h).

Pikas use a wall of pebbles to store dry plants and grasses for the winter in order to protect the food from being blown away. Cockroaches use slight winds that precede the attacks of potential predators, such as toads, to survive their encounters. Their cerci are very sensitive to the wind, and help them survive half of their attacks. Elk has a keen sense of smell that can detect potential upwind predators at a distance of 0.5 miles (800 m). Increases in wind above 15 kilometres per hour (9.3 mph) signals glaucous gulls to increase their foraging and aerial attacks on thick-billed murre.

TROPHIC DYNAMICS

The Greek root of the word *troph*, trophic, means food or feeding. Links in food-webs primarily connect feeding relations or trophism among species. Biodiversity within ecosystems can be organized into vertical and horizontal dimensions. The vertical dimension represents feeding relations that become further removed from the base of the food chain up toward top predators. The horizontal dimension represents the abundance or biomass at each level. When the relative abundance or biomass of each functional feeding group is stacked into their respective trophic levels they naturally sort into a 'pyramid of numbers'. Functional groups are broadly categorized as autotrophs (or primary producers), heterotrophs (or consumers), and detritivores (or decomposers). Heterotrophs can be further sub-divided into different functional groups, including: primary

consumers (strict herbivores), secondary consumers (predators that feed exclusively on herbivores) and tertiary consumers (predators that feed on a mix of herbivores and predators). Omnivores do not fit neatly into a functional category because they eat both plant and animal tissues. It has been suggested, however, that omnivores have a greater functional influence as predators because relative to herbivores they are comparatively inefficient at grazing.

Ecologists collect data on trophic levels and food webs to statistically model and mathematically calculate parameters, such as those used in other kinds of network analysis (e.g., graph theory), to study emergent patterns and properties shared among ecosystems. The emergent pyramidal arrangement of trophic levels with amounts of energy transfer decreasing as species become further removed from the source of production is one of several patterns that is repeated amongst the planet's ecosystems. The size of each level in the pyramid generally represents biomass, which can be measured as the dry weight of an organism. Autotrophs may have the highest global proportion of biomass, but they are closely rivalled or surpassed by microbes. The decomposition of dead organic matter, such as leaves falling on the forest floor, turns into soils that feed plant production. The total sum of the planet's soil ecosystems is called the pedosphere where a very large proportion of the Earth's biodiversity sorts into other trophic levels. Invertebrates that feed and shred larger leaves, for example, create smaller bits for smaller organisms in the feeding chain. Collectively, these are the detritivores that regulate soil formation. Tree roots, fungi, bacteria, worms, ants, beetles, centipedes, spiders, mammals, birds, reptiles, amphibians and other less familiar creatures all work to create the trophic web of life in soil ecosystems. As organisms feed and migrate through soils they physically displace materials, which is an important ecological process called bioturbation. Biomass of soil microorganisms are influenced by and feed back into the trophic dynamics of the exposed solar surface ecology. Paleocological studies of soils place the origin for bioturbation to a time before the Cambrian period. Other events, such as the evolution of trees and

amphibians moving into land in the Devonian period played a significant role in the development of soils and ecological trophism.

Functional trophic groups sort out hierarchically into pyramidal trophic levels because it requires specialized adaptations to become a photosynthesizer or a predator, so few organisms have the adaptations needed to combine both abilities. This explains why functional adaptations to trophism (feeding) organizes different species into emergent functional groups. Trophic levels are part of the holistic or complex systems view of ecosystems. Each trophic level contains unrelated species that grouped together because they share common ecological functions. Grouping functionally similar species into a trophic system gives a macroscopic image of the larger functional design.

Links in a food-web illustrate direct trophic relations among species, but there are also indirect effects that can alter the abundance, distribution, or biomass in the trophic levels. For example, predators eating herbivores indirectly influence the control and regulation of primary production in plants. Although the predators do not eat the plants directly, they regulate the population of herbivores that are directly linked to plant trophism. The net effect of direct and indirect relations is called trophic cascades. Trophic cascades are separated into species-level cascades, where only a subset of the food-web dynamic is impacted by a change in population numbers, and community-level cascades, where a change in population numbers has a dramatic effect on the entire food-web, such as the distribution of plant biomass.

Keystone Species

A keystone species is a species that is disproportionately connected to more species in the food-web. Keystone species have lower levels of biomass in the trophic pyramid relative to the importance of their role. The many connections that a keystone species holds means that it maintains the organization and structure of entire communities. The loss of a keystone species results in a range of dramatic cascading effects that

alters trophic dynamics, other food-web connections and can cause the extinction of other species in the community.

Sea otters (*Enhydra lutris*) are commonly cited as an example of a keystone species because they limit the density of sea urchins that feed on kelp. If sea otters are removed from the system, the urchins graze until the kelp beds disappear and this has a dramatic effect on community structure. Hunting of sea otters, for example, is thought to have indirectly lead to the extinction of the Steller's Sea Cow (*Hydrodamalis gigas*). While the keystone species concept has been used extensively as a conservation tool, it has been criticized for being poorly defined from an operational stance. It is very difficult to experimentally determine in each different ecosystem what species may hold a keystone role. Furthermore, food-web theory suggests that keystone species may not be all that common. It is therefore unclear how generally the keystone species model can be applied.

The Biome

Ecological units of organization are defined through reference to any magnitude of space and time on the planet. Communities of organisms, for example, are somewhat arbitrarily defined, but the processes of life integrate at different levels and organize into more complex wholes. Biomes, for example, are a larger unit of organization that categorize regions of the Earth's ecosystems mainly according to the structure and composition of vegetation. Different researchers have applied different methods to define continental boundaries of biomes dominated by different functional types of vegetative communities that are limited in distribution by climate, precipitation, weather and other environmental variables. Examples of biome names include: tropical rainforest, temperate broadleaf and mixed forests, temperate deciduous forest, taiga, tundra, hot desert, and polar desert. Other researchers have recently started to categorize other types of biomes, such as the human and oceanic microbiomes. To a microbe, the human body is a habitat and a landscape. The microbiome has been largely discovered through advances in molecular genetics that

have revealed a hidden richness of microbial diversity on the planet. The oceanic microbiome plays a significant role in the ecological biogeochemistry of the planet's oceans.

The Biosphere

Ecological theory has been used to explain self-emergent regulatory phenomena at the planetary scale. The largest scale of ecological organization is the biosphere: the total sum of ecosystems on the planet. Ecological relations regulate the flux of energy, nutrients, and climate all the way up to the planetary scale. For example, the dynamic history of the planetary CO₂ and O₂ composition of the atmosphere has been largely determined by the biogenic flux of gases coming from respiration and photosynthesis, with levels fluctuating over time and in relation to the ecology and evolution of plants and animals.

Urban Geography

Urban geography is the study of urban areas. That is the study of areas which have a high concentration of buildings and infrastructure. These are areas where the majority of economic activities are in the secondary sector and tertiary sectors. They often have a high population density.

Urban geography is that branch of science, which deals the study of urban areas, in terms of concentration, infrastructure, economy, and environmental impacts.

It can be considered a part of the larger field of human geography.

However, it can often overlap with other fields such as anthropology and urban sociology. Urban geographers seek to understand how factors interact over space, what function they serve and their interrelationships.

Urban geographers also look at the development of settlements. Therefore, it involves planning city expansion and improvements. Urban geography, then, attempts to account for the human and environmental impacts of the change. Urban geography focuses on the city in the context of space throughout countries and continents.

Urban geography forms the theoretical basis for a number of professions including urban planning, site selection, real estate development, crime pattern analysis and logistical analysis.

Areas of Study

There are essentially two approaches to urban geography. The study of problems relating to the spatial distribution of cities themselves and the complex patterns of movement, flows and linkages that bind them in space. Studies in this category are concerned with the *city system*. Secondly there is the study of patterns of distribution and interaction within cities, essentially the study of their inner structure. Studies in this category are concerned with the *city as a system*. A succinct way to define urban geography that recognizes the link between these two approaches within the subject is then, that "urban geography is the study of cities as systems within a system of cities."

Site and Situation

Site describes the location of a city with respect to its soil, water supply and relief, or more still the actual point on which a settlement is built while situation describes the surrounding area of the city such as other settlements, rivers, mountains and communication. Locations for cities are usually chosen for good reasons. Benefits of certain locations can include:

- A wet area: water is a constant necessity for urban areas and is difficult to transport. For this reason many cities are located near or adjacent to rivers.
- A dry area: in wet areas a dry area offers protection from flooding and marshland.
- Easy access to building materials: stone, wood or clay are necessary for the construction of cities and are difficult to transport long distances.
- A strategic defensive position: historically many cities have been constructed on high ground in order to make attack more difficult and to give a good view of surrounding land (for example, Quebec City). River meanders are also used as partial moats. Some cities were also built in swampy areas for the same reason (for example, Paris).

- fuel supply: most cities were initially constructed near wood for burning and cooking. Today many cities are constructed near coal, oil and gas mines to make use of those resources (for example: Newcastle, Glasgow, Pittsburgh, Essen).
- A food supply: cities need some nearby land to be suitable for animal grazing or crop growing.
- A travel intersection point and bridging points: it is often useful for a city to be located at the intersection of rivers, roads or train lines in order to facilitate travel and trade. Bridging points are shallow areas that allow easy construction of bridges, (for example: London, Cologne).
- Historically many cities grew at so-called "break-of-bulk" points along navigable rivers, where a local obstacle such as rapids required trade goods to be trans-shipped from larger boats to smaller boats, for example: Chicago, Montreal.
- Shelter and aspect: it is desirable to construct cities located on the side of a slope that is protected from incoming winds, and in a direction that receives maximum sun exposure.

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Cities as Centres of Manufacturing and Services

Cities differ in their economic makeup, their social and demographic characteristics and the roles they play within the city system. These differences can be traced back to regional variations in the local resources on which growth was based during the early development of the urban pattern and in part the subsequent shifts in the competitive advantage of regions brought about by changing locational forces affecting regional specialization within the framework of the market economy. Recognition of different city types necessitates their classification, and it is to this important aspect of urban geography that we now turn. Emphasis is on functional town classification and the basic underlying dimensions of the city system.

The purpose of classifying cities is twofold. On the one hand, it is undertaken in order to search reality for hypotheses. In this context, the recognition of different types of cities on the basis of, for example, their functional specialization may enable the identification of spatial regularities in the distribution and structure of urban functions and the formulation of hypotheses about the resulting patterns. On the other hand, classification is undertaken to structure reality in order to test specific hypotheses that have already been formulated. For example, to test the hypotheses that cities with a diversified economy grow at a faster rate than those with a more specialized economic base, cities must first be classified so that diversified and specialized cities can be differentiated. The simplest way

to classify cities is to identify the distinctive role they play in the city system.

There are three distinct roles:

1. Central places functioning primarily as service centres for local hinterlands.
2. Transportation cities performing break-of-bulk and allied functions for larger regions.
3. Specialized-function cities are dominated by one activity such as mining, manufacturing or recreation and serving national and international markets.

The composition of a cities labour force has traditionally been regarded as the best indicator of functional specialization, and different city types have been most frequently identified from the analysis of employment profiles. Specialization in a given activity is said to exist when employment in it exceeds some critical level. The relationship between the city system and the development of manufacturing has become very apparent.

The rapid growth and spread of cities within the heartland-hinterland framework after 1870 was conditioned to a large extent by industrial developments and that the decentralization of population within the urban system in recent years is related in large part to the movement of employment in manufacturing away from the traditional industrial centres. Manufacturing is found in nearly all cities, but its importance is measured by the proportion of total earnings received by the inhabitants of an urban area.

When 25 per cent or more of the total earnings in an urban region are derived from manufacturing, that urban areas is arbitrarily designated as a manufacturing centre. The location of manufacturing is affected by myriad economic and non-economic factors, such as the nature of the material inputs, the factors of production, the market and transportation costs. Other important influences include agglomeration and external economies, public policy and personal preferences. Although it is difficult to evaluate precisely the effect of the market on the

location of manufacturing activities, two considerations are involved: the nature of and demand for the product and transportation costs.

URBANIZATION

Urbanization is the physical growth of urban areas as a result of global change. Urbanization is also defined by the United Nations as movement of people from rural to urban areas with population growth equating to urban migration. The United Nations projected that half of the world's population would live in urban areas at the end of 2008. Urbanization is closely linked to modernization, industrialization, and the sociological process of rationalization. Urbanization can describe a specific condition at a set time, ie. the proportion of total population or area in cities or towns, or the term can describe the increase of this proportion over time. So the term urbanization can represent the level of urban relative to overall population, or it can represent the rate at which the urban proportion is increasing.

Movement

As more and more people leave villages and farms to live in cities, urban growth results. The rapid growth of cities like Chicago in the late 19th century and Mumbai a century later can be attributed largely to rural-urban migration. This kind of growth is especially commonplace in developing countries.

The rapid urbanization of the world's population over the twentieth century is described in the 2005 Revision of the UN World Urbanization Prospects report. The global proportion of urban population rose dramatically from 13% (220 million) in 1900, to 29% (732 million) in 1950, to 49% (3.2 billion) in 2005. The same report projected that the figure is likely to rise to 60% (4.9 billion) by 2030. However, French economist Philippe Bocquier, writing in THE FUTURIST magazine, has calculated that "the proportion of the world population living in cities and towns in the year 2030 would be roughly 50%, substantially less than the 60% forecast by the United Nations (UN), because

the messiness of rapid urbanization is unsustainable. Both Bocquier and the UN see more people flocking to cities, but Bocquier sees many of them likely to leave upon discovering that there's no work for them and no place to live."

According to the UN State of the World Population 2007 report, sometime in the middle of 2007, the majority of people worldwide will be living in towns or cities, for the first time in history; this is referred to as the arrival of the "Urban Millennium" or the 'tipping point'. In regard to future trends, it is estimated 93% of urban growth will occur in developing nations, with 80% of urban growth occurring in Asia and Africa. Urbanization rates vary between countries. The United States and United Kingdom have a far higher urbanization level than China, India, Swaziland or Niger, but a far slower annual urbanization rate, since much less of the population is living in a rural area.

Urbanization in the United States never reached the Rocky Mountains in locations such as Jackson Hole, Wyoming; Telluride, Colorado; Taos, New Mexico; Douglas County, Colorado and Aspen, Colorado. The state of Vermont has also been affected, as has the coast of Florida, the Birmingham-Jefferson County, AL area, the Pacific Northwest and the barrier islands of North Carolina. In the United Kingdom, two major examples of new urbanization can be seen in Swindon, Wiltshire and Milton Keynes, Buckinghamshire. These two towns show some of the quickest growth rates in Europe.

Causes

Urbanization is not always attributed to high density. In Manila, the cost of living has forced residents to live in low quality slums and shanty towns. Urbanization occurs naturally from individual and corporate efforts to reduce time and expense in commuting and transportation while improving opportunities for jobs, education, housing, and transportation. Living in cities permits individuals and families to take advantage of the opportunities of proximity, diversity, and marketplace competition.

People move into cities to seek economic opportunities. A major contributing factor is known as “rural flight”. In rural areas, often on small family farms, it is difficult to improve one’s standard of living beyond basic sustenance. Farm living is dependent on unpredictable environmental conditions, and in times of drought, flood or pestilence, survival becomes extremely problematic. In modern times, industrialization of agriculture has negatively affected the economy of small and middle-sized farms and strongly reduced the size of the rural labour market.

Cities, in contrast, are known to be places where money, services and wealth are centralized. Cities are where fortunes are made and where social mobility is possible. Businesses, which generate jobs and capital, are usually located in urban areas. Whether the source is trade or tourism, it is also through the cities that foreign money flows into a country. It is easy to see why someone living on a farm might wish to take their chance moving to the city and trying to make enough money to send back home to their struggling family.

There are better basic services as well as other specialist services that aren’t found in rural areas. There are more job opportunities and a greater variety of jobs. Health is another major factor. People, especially the elderly are often forced to move to cities where there are doctors and hospitals that can cater for their health needs. Other factors include a greater variety of entertainment (restaurants, movie theaters, theme parks, etc) and a better quality of education, namely universities. Due to their high populations, urban areas can also have much more diverse social communities allowing others to find people like them when they might not be able to in rural areas.

These conditions are heightened during times of change from a pre-industrial society to an industrial one. It is at this time that many new commercial enterprises are made possible, thus creating new jobs in cities. It is also a result of industrialization that farms become more mechanized, putting many labourers out of work. This is currently occurring fastest in India.

Economic Effects

In recent years, urbanization of rural areas has increased. As agriculture, more traditional local services, and small-scale industry give way to modern industry the urban and related commerce with the city drawing on the resources of an ever-widening area for its own sustenance and goods to be traded or processed into manufactures.

Research in urban ecology finds that larger cities provide more specialized goods and services to the local market and surrounding areas, function as a transportation and wholesale hub for smaller places, and accumulate more capital, financial service provision, and an educated labour force, as well as often concentrating administrative functions for the area in which they lie. This relation among places of different sizes is called the urban hierarchy.

As cities develop, effects can include a dramatic increase in costs, often pricing the local working class out of the market, including such functionaries as employees of the local municipalities. For example, Eric Hobsbawm's book *The age of the revolution: 1789-1848* (published 1962 and 2005) chapter 11, stated "Urban development in our period [1789-1848] was a gigantic process of class segregation, which pushed the new labouring poor into great morasses of misery outside the centres of government and business and the newly specialised residential areas of the bourgeoisie. The almost universal European division into a 'good' west end and a 'poor' east end of large cities developed in this period." This is likely due the prevailing south-west wind which carries coal smoke and other airborne pollutants downwind, making the western edges of towns preferable to the eastern ones.

Similar problems now affect the developing world, rising inequality resulting from rapid urbanisation trends. The drive for rapid urban growth and often efficiency can lead to less equitable urban development, think tanks such as the Overseas Development Institute have even proposed policies that encourage labour intensive growth as a means of absorbing the influx of low skilled and unskilled labour. Urbanization is often

viewed as a negative trend, but can in fact, be perceived simply as a natural occurrence from individual and corporate efforts to reduce expense in commuting and transportation while improving opportunities for jobs, education, housing, and transportation. Living in cities permits individuals and families to take advantage of the opportunities of proximity, diversity, and marketplace competition.

Environmental Effects

The urban heat island has become a growing concern and is increasing over the years. The urban heat island is formed when industrial and urban areas are developed and heat becomes more abundant. In rural areas, a large part of the incoming solar energy is used to evaporate water from vegetation and soil. In cities, where less vegetation and exposed soil exists, the majority of the sun's energy is absorbed by urban structures and asphalt. Hence, during warm daylight hours, less evaporative cooling in cities allows surface temperatures to rise higher than in rural areas.

Additional city heat is given off by vehicles and factories, as well as by industrial and domestic heating and cooling units. This effect causes the city to become 2 to 10° F (1 to 6° C) warmer than surrounding landscapes. Impacts also include reducing soil moisture and intensification of carbon dioxide emissions.

In his book *Whole Earth Discipline*, Stewart Brand argues that the effects of urbanization are on the overall positive for the environment. Firstly, the birth rate of new urban dwellers falls immediately to replacement rate, and keeps falling. This can prevent overpopulation in the future. Secondly, it puts a stop to destructive subsistence farming techniques, like slash and burn agriculture. Finally, it minimizes land use by humans, leaving more for nature.

Changing Forms

Different forms of urbanization can be classified depending on the style of architecture and planning methods as well as historic growth of areas.

In cities of the developed world urbanization traditionally exhibited a concentration of human activities and settlements around the downtown area, the so-called in-migration. In-migration refers to migration from former colonies and similar places. The fact that many immigrants settle in impoverished city centres led to the notion of the "peripheralization of the core", which simply describes that people who used to be at the periphery of the former empires now live right in the centre.

Recent developments, such as inner-city redevelopment schemes, mean that new arrivals in cities no longer necessarily settle in the centre. In some developed regions, the reverse effect, originally called counter urbanisation has occurred, with cities losing population to rural areas, and is particularly common for richer families. This has been possible because of improved communications, and has been caused by factors such as the fear of crime and poor urban environments. Later termed "white flight", the effect is not restricted to cities with a high ethnic minority population.

When the residential area shifts outward, this is called suburbanization. A number of researchers and writers suggest that suburbanization has gone so far to form new points of concentration outside the downtown both in developed and developing countries such as India. This networked, poly-centric form of concentration is considered by some an emerging pattern of urbanization. It is called variously exurbia, edge city (Garreau, 1991), network city (Batten, 1995), or postmodern city (Dear, 2000). Los Angeles is the best-known example of this type of urbanization.

Rural migrants are attracted by the possibilities that cities can offer, but often settle in shanty towns and experience extreme poverty. In the 1980s, this was attempted to be tackled with the urban bias theory which was promoted by Michael Lipton who wrote: "...the most important class conflict in the poor countries of the world today is not between labour and capital. Nor is it between foreign and national interests. It is between rural classes and urban classes. The rural sector contains most of the poverty and most of the low-cost sources

of potential advance; but the urban sector contains most of the articulateness, organization and power. So the urban classes have been able to win most of the rounds of the struggle with the countryside...". Most of the urban poor in developing countries able to find work can spend their lives in insecure, poorly paid jobs. According to research by the Overseas Development Institute pro-poor urbanisation will require labour intensive growth, supported by labour protection, flexible land use regulation and investments in basic services.'

Urbanization can be planned urbanization or organic. Planned urbanization, ie: planned community or the garden city movement, is based on an advance plan, which can be prepared for military, aesthetic, economic or urban design reasons. Examples can be seen in many ancient cities; although with exploration came the collision of nations, which meant that many invaded cities took on the desired planned characteristics of their occupiers. Many ancient organic cities experienced redevelopment for military and economic purposes, new roads carved through the cities, and new parcels of land were cordoned off serving various planned purposes giving cities distinctive geometric designs. UN agencies prefer to see urban infrastructure installed before urbanization occurs. Landscape planners are responsible for landscape infrastructure (public parks, sustainable urban drainage systems, greenways etc) which can be planned before urbanization takes place, or afterward to revitalize an area and create greater livability within a region. Concepts of control of the urban expansion are considered in the American Institute of Planners.

URBAN AREAS

Census statistics for urban areas are produced both because of the widespread interest in information for areas *per se* (as they are more readily identifiable as the traditional towns and cities of Great Britain than are administrative areas, most of which comprise a mixture of both urban and rural land), and for the complementary purpose of dividing the country.s

population between those living in urban areas and those living in rural areas.

Furthermore, the Statistical Office of the European Communities (SOEC) requested member countries to define large urban agglomerations (of 100,000 or more population) after the 1980 round of censuses. This part of the Report covers the concept of an urban area and some of the variety of ways in which such areas may be defined. The definitions used for urban areas identified in this listing differ between areas in England and Wales and areas in Scotland.

The Concept

The traditional concept of a town or city would be a free-standing built-up area with a service core with a sufficient number and variety of shops and services, including perhaps a market, to make it recognisably urban in character.

It would have administrative, commercial, educational, entertainment and other social and civic functions and, in many cases, evidence of being historically well established. A local network of roads and other means of transport would focus on the area, and it would be a place drawing people for services and employment from surrounding areas. It would often be a place known beyond its immediate vicinity. Urban areas in Britain are, however, more complex. On one hand, historically free-standing towns have, over the years, grown and coalesced into continuously built-up areas, and subsidiary central places have developed as suburbs and satellite towns. This was recognised in the definition of conurbations used in the 1951 Census. At the other extreme, some historic towns have stagnated and have lost central place functions.

General Definitions of Urban Areas

An obvious way to define a town is in terms of its administrative boundary—that is, the area administered by a city, borough or town council. This is the method that had been followed in censuses in Great Britain up to and including 1971. In England and Wales, until re-organisation of local government

in 1974, the division of the country between boroughs, urban districts and rural districts provided an approximate urban/rural split, and in Scotland, until reorganisation in 1975, the division between cities, burghs and district councils provided a similar split.

But there were serious disadvantages in the use of such administrative boundaries. They tended to change only infrequently and thus often did not reflect the development of a town. Sometimes the boundary lay well beyond the town's built-up area (over-bounding) and included tracts of rural countryside. More often they lay within the built-up area (under-bounding) and so included only part of the totality of the urban area.

The local government boundaries established after reorganisation in the mid-1970s, and in use at the time of the 1991 Census, were almost entirely unsuited for the definition of urban areas because many districts had been deliberately drawn up to bring together towns and the surrounding rural countryside into single administrative units.

There are, however, at least three other approaches to defining an urban area. It may be defined either in terms of the built-up area (the bricks and mortar approach); or, alternatively, it may be defined in terms of the areas for which it provides services and facilities-the functional area. The functional area may embrace not only the built-up area but also free-standing settlements outside the urban area together with tracts of surrounding countryside if the population in these surrounding areas depends on the urban centre for services and employment.

A third method is to use density (either of population or of buildings) as an indicator of urbanisation. However, implementation of any of these approaches involves some arbitrary decisions in drawing up boundaries because, in practice, towns tend to merge physically and functionally with neighbouring towns and their hinterlands. The first attempt to define urban areas in a census was made after the 1951 Census and a limited range of statistics was published in the

General Report from that Census⁹. After the 1966 Sample Census, the then Ministry of Housing and Local Government produced an analysis of de facto urban areas. But neither of these provided a suitable base for statistics for urban and rural areas to be produced from later censuses.

A new initiative was therefore necessary for the 1981 Census. The request from SOEC for member countries to define large urban agglomerations after the 1980 round of censuses, coincided with research at the then OPCS and the Department of Environment (DoE) into new methods of defining urban areas.

In England and Wales, two methods were considered: the first based on a combination of population density and land use; and the second on the extent of urban development indicated on Ordnance Survey (OS) maps. The latter was selected as it met the needs of both OPCS and DoE and enabled internationally comparable statistics to be produced for SOEC and the United Nations.

Basically, the same criteria were adopted for defining urban areas in the 1991 Census. In Scotland, the method used was a mix of the bricks and mortar approach and the population density methods. The definition of an urban area in England and Wales. Generally, the terminology urban and rural has no fundamental definitional basis. The starting point in the definition of urban areas in England and Wales in this Report is the identification of areas with land use which is irreversibly urban in character.

The definition used to identify urban land use is modelled on the developed areas classification produced by DoE, which, in turn, is based on the National Land Use Classification.

Land included as Urban Land Comprises

- Permanent structures and the land on which they are situated (built-up site); for this purpose, land is defined as the ground covered by a permanent structure and any ground enclosed by, or closely associated with, such a structure;

- Transportation corridors (such as roads, railways and canals) which have built-up sites on one or both sides, or which link up built-up sites which are less than 50 metres apart;
- Transportation features such as airport and operational airfields, railway yards, motorway service areas and car parks;
- Mine buildings (but mineral workings and quarries are excluded);
- Any area completely surrounded by built-up sites. Areas such as playing fields and golf courses are excluded unless they are completely surrounded by built-up sites.

The prerequisite for the recognition of an urban area is that the area of urban land should extend for 20 hectares or more. Separate areas of urban land are linked if less than 50 metres apart. Land between built-up sites is not regarded as urban unless it satisfies one of the conditions. The critical factor in the recognition of an urban area is a minimum population of approximately 1,000 persons.

However, as there was no prior information on the 1991 populations of areas of urban land, a proxy threshold was applied by excluding areas with less than four 1991 Census Enumeration Districts (EDs). This resulted in the exclusion of some areas of urban land with more than 1,000 population, but very few above 2,000. A rule recommended by the United Nations and used by a number of European Community members states is that areas of urban land of 20 or more hectares that are less than 200 metres apart are linked to form a continuous urban area.

Major urban agglomerations, such as Greater London and the metropolitan counties, are sub-divided in order to provide a more useful set of statistics and to enable some comparisons to be made with previously published census data. Some smaller urban agglomerations are also subdivided where appropriate, and, where possible, previously separate urban centres, where urban land has since merged, are also subdivided.

Identification of Urban Areas in England and Wales

The first stage was the updating, by Ordnance Survey (OS) of the 1981 set of 1:10,000 scale transparent overlays depicting the extent of urban land as defined by the criteria above as at 1 April 1991. These overlays were updated at OS headquarters from information supplied by each of their local field offices, making use of local intelligence including recent urban development which might not have been fully surveyed. The second stage was for OS to digitise the boundaries of the areas of urban land, including the subdivisions used in 1981. A computer analysis of the digitised boundaries and the population-weighted centroids of the 1991 Census EDs was then carried out.

This process identified those ED centroids within or near the boundary of each area of urban land. An ED was then defined as urban if its centroid was either within the area of urban land or within a buffer zone of 150 metres of it. From detailed inspection of a sample of areas, this buffer zone minimised the misclassification of EDs as rural when they were really urban in character, or vice versa.

Those areas of urban land with four or more such EDs were then classified as urban areas. Inspections were carried out on newly emerging urban areas in 1991, and on any 1981 urban areas that had apparently disappeared, to confirm that the treatment of these areas had been correct; similarly with those areas in 1981 that had merged or split.

CITIES AS CENTRES OF MANUFACTURING AND SERVICES

Cities differ in their economic makeup, their social and demographic characteristics and the roles they play within the city system. These differences can be traced back to regional variations in the local resources on which growth was based during the early development of the urban pattern and in part the subsequent shifts in the competitive advantage of regions brought about by changing locational forces affecting

regional specialization within the framework of the market economy.

Recognition of different city types necessitates their classification, and it is to this important aspect of urban geography that we now turn. Emphasis is on *functional town classification* and the basic underlying dimensions of the city system.

The purpose of classifying cities is twofold. On the one hand, it is undertaken in order to search reality for hypotheses. In this context, the recognition of different types of cities on the basis of, for example, their functional specialization may enable the identification of spatial regularities in the distribution and structure of urban functions and the formulation of hypotheses about the resulting patterns.

On the other hand, classification is undertaken to structure reality in order to test specific hypotheses that have already been formulated. For example, to test the hypotheses that cities with a diversified economy grow at a faster rate than those with a more specialized economic base, cities must first be classified so that diversified and specialized cities can be differentiated.

The simplest way to classify cities is to identify the distinctive role they play in the city system. There are three distinct roles.

1. *Central places* functioning primarily as service centres for local hinterlands.
2. *Transportation* cities performing break-of-bulk and allied functions for larger regions.
3. *Specialized-function* cities are dominated by one activity such as mining, manufacturing or recreation and serving national and international markets. The composition of a city's labour force has traditionally been regarded as the best indicator of functional specialization, and different city types have been most frequently identified from the analysis of employment profiles. Specialization in a given activity is said to exist when employment in it exceeds some critical level.

The relationship between the city system and the development of manufacturing has become very apparent. The rapid growth and spread of cities within the heartland-hinterland framework after 1870 was conditioned to a large extent by industrial developments and that the decentralization of population within the urban system in recent years is related in large part to the movement of employment in manufacturing away from the traditional industrial centres. Manufacturing is found in nearly all cities, but its importance is measured by the proportion of total earnings received by the inhabitants of an urban area. When 25 percent or more of the total earnings in an urban region are derived from manufacturing, that urban area is arbitrarily designated as a manufacturing centre.

The location of manufacturing is affected by myriad economic and non-economic factors, such as the nature of the material inputs, the factors of production, the market and transportation costs. Other important influences include agglomeration and external economies, public policy and personal preferences. Although it is difficult to evaluate precisely the effect of the market on the location of manufacturing activities, two considerations are involved: the nature of and demand for the product and transportation costs.

BEHAVIOURAL GEOGRAPHY

Behavioural geography is an approach to human geography that examines human behaviour using a disaggregate approach. Behavioural geographers focus on the cognitive processes underlying spatial reasoning, decision making, and behaviour. In addition, behavioural geography is an ideology/approach in human geography that makes use of the methods and assumptions of behaviourism to determine the cognitive processes involved in an individual's perception of, and/or response and reaction to its environment.

Behavioural geography is that branch of human science, which deals with the study of cognitive processes with its response to its environment, through behaviourism.

Issues in Behavioural Geography

Because of the name it is often assumed to have its roots in behaviourism. While some behavioural geographers clearly have roots in behaviourism due to the emphasis on cognition, most can be seen as cognitively oriented. Indeed, it seems that behaviourism interest is more recent and growing. This is particularly true in the area of human landscaping.

Behavioural geography is an approach to human geography that examines human behaviour using a disaggregate approach. It draws from early, behaviourist works such as Tolman's concepts of "cognitive maps".

More cognitively oriented, behavioural geographers focus on the cognitive processes underlying spatial reasoning, decision making, and behaviour. More behaviourally oriented geographers are materialists and look at the role of basic learning processes and how they influence the landscape patterns or even group identity.

The cognitive processes include environmental perception and cognition, way finding, the construction of cognitive maps, place attachment, the development of attitudes about space and place, decisions and behaviour based on imperfect knowledge of one's environs, and numerous other topics.

The approach adopted in behavioural geography is closely related to that of psychology, but draws on research findings from a multitude of other disciplines including economics, sociology, anthropology, transportation planning, and many others.

THE PROCESS OF URBAN DEVELOPMENT

Urban Area

An urban area is characterized by higher population density and vast human features in comparison to areas surrounding it. Urban areas may be cities, towns or conurbations, but the term is not commonly extended to rural settlements such as villages and hamlets.

Urban areas are created and further developed by the process of urbanization.

Measuring the extent of an urban area helps in analysing population density and urban sprawl, and in determining urban and rural populations (Cubillas 2007).

Unlike an urban area, a metropolitan area includes not only the urban area, but also satellite cities plus intervening rural land that is socio-economically connected to the urban core city, typically by employment ties through commuting, with the urban core city being the primary labour market.

In fact, urbanized areas agglomerate and grow as the core population/economic activity center within a larger metropolitan area or envelope.

Metropolitan areas tend to be defined using counties or county sized political units as building blocks. Counties tend to be stable political boundaries; economists prefer to work with economic and social statistics based on metropolitan areas. Urbanized areas are a more relevant statistic for determining per capita land usage and densities (Dumlao & Felizmenio 1976).

Definitions

They vary somewhat amongst different nations. European countries define urbanized areas on the basis of urban-type land use, not allowing any gaps of typically more than 200 meters, and use satellite photos instead of census blocks to determine the boundaries of the urban area.

In less developed countries, in addition to land use and density requirements, a requirement that a large majority of the population, typically 75%, is not engaged in agriculture and/or fishing is sometimes used.

Australia

In Australia, urban areas are referred to as “urban centres” and are defined as population clusters of 1000 or more people, with a density of 200 or more persons per square kilometre.

Canada

In Canada, an urban area is an area that has more than 400 people per square kilometre and has more than 1,000 people. If two or more urban areas are within two kilometres of each other, they are merged into a single urban area. The boundaries of an urban area are not influenced by municipal or even provincial boundaries.

China

In China, an urban area is an urban district, city and town with a population density higher than 1,500 persons per square kilometre. As for urban districts with a population density lower than 1,500 persons per square kilometre, only the population that lives in streets, town sites, and adjacent villages is counted as urban population.

France

In France, an urban area is a zone (*aire urbaine*) encompassing an area of built-up growth (called an "urban unit" (*unité urbaine*); close in definition to the North American urban area) and its commuter belt (*couronne périurbaine*). Although the official INSEE translation of *aire urbaine* is "urban area", most North Americans would find the same as being similar in definition to their metropolitan area.

Japan

In Japan urbanized areas are defined as contiguous areas of densely inhabited districts (DIDs) using census enumeration districts as units with a density requirement of 4,000 inhabitants per square kilometre (10,000/sq mi).

Norway

Statistics Norway defines urban areas ("tettsteder") similarly to the other Nordic countries. Unlike in Denmark and Sweden, the distance between each building has to be of less than 50 meters, although exceptions are made due to parks, industrial areas, rivers, and similar. Groups of houses less than

400 metres from the main body of an urban area are included in the urban area.

New Zealand

Statistics New Zealand defines New Zealand urban areas for statistical purposes as a settlement with a population of a thousand people or more.

Poland

In Poland, official "urban" population figures simply refer to those localities which have the status of towns (*miasta*). The "rural" population is that of all areas outside the boundaries of these towns. This distinction may give a misleading impression in some cases, since some localities with only village status may have acquired larger and denser populations than many smaller towns.

Sweden

Urban areas in Sweden (*tatorter*) are statistically defined localities, totally independent of the administrative subdivision of the country. There are 1,940 such localities in Sweden, with a population ranging from 200 to 1,252,000 inhabitants.

England and Wales

The United Kingdom's Office of National Statistics produced census results from urban areas since 1951, since 1981 based upon the extent of irreversible urban development indicated on Ordnance Survey maps. The definition is an extent of at least 20 hectares and at least 1,500 census residents. Separate areas are linked if less than 200 metres apart. Included are transportation features.

United States

In the United States there are two categories of urban area. The term *urbanized area* denotes an urban area of 50,000 or more people. Urban areas under 50,000 people are called *urban clusters*. Urbanized areas were first delineated in the United States in the 1950 census, while urban clusters were added in

the 2000 census. There are 1,371 urban areas and urban clusters with more than 10,000 people.

The U.S. Census Bureau defines an urban area as: "Core census block groups or blocks that have a population density of at least 1,000 people per square mile (386 per square kilometer) and surrounding census blocks that have an overall density of at least 500 people per square mile (193 per square kilometer)."

The concept of Urbanized Areas as defined by the U.S. Census Bureau are often used as a more accurate gauge of the size of a city, since in different cities and states the lines between city borders and the urbanized area of that city are often not the same. For example, the city of Greenville, South Carolina has a city population under 60,000 but an urbanized area over 300,000, while Greensboro, North Carolina has a city population over 200,000 but an urbanized area population of around 270,000 — meaning that Greenville is actually "larger" for some intents and purposes, but not for others, such as taxation, local elections, etc.

The largest urban area in the United States is that of New York City, with its city proper population exceeding 8 million and its metropolitan area population almost 19 million. The next four largest urban areas in the U.S. are those of Los Angeles, Chicago, Miami and Philadelphia. About 70 percent of the population of the United States lives within the boundaries of urbanized area (210 out of 300 million). Combined, these areas occupy about 2 percent of the United States. The majority of urbanized area residents are suburbanites; core central city residents make up about 30 percent of the urbanized area population (about 60 out of 210 million).

Urban Development:

- Development
- Market Conditions
- Typology
- Actors
- "Development Process"

- Local Dependence: Politics of Economic Development
- The process of constructing the built environment—adding value
- Driven by the marketplace

Market Conditions:

- Real Estate is both a commodity & platform for economic activity— the specific role of real property is associated with 'rent'
- Absolute rent— premium (gov't regulation, cartels, speculation)
- Monopoly rent – single use provider
- Differential rent— relative versus marginal

Location:

- An expansion of the built environment, or fixed infrastructure, promotes economic well being
- Fixed capital investment in the built environment is highly interest sensitive
 - for example, credit cards v. mortgages
 - built environment is an effective barometer of the overall economy & control
- 4 Scenarios & Relationship to "Rent"
 - high interest =little investment
- Shortage (high rent)
- Abundance (low rent)
 - low interest=high investment
- Speculation (low rent)
- Unmet demand met (initially high w/decrease)
- Capital investment is not uniform across space—at any scale
- Shifting patterns of investment maximize profits & minimize costs in the face of uncertainty
- Smith's (1984) homogenization & differentiation
- Old v. new

Actors:

- Developers
- Politicians
- Banks
- Builders
- Speculators
- Real Estate Agents

Actors, or City Makers, vary by:

- Financial resource
- Motive or purpose
- Market function
- Timeline

The decisions of various actors produce 4 types of real estate development:

- Immediate
- Dealer (jungle-exchange)
- Collect 'rent', production \$, new investment.
- Generic actor (bazaar-use)
- Personal/corp. use, self finance
- Future
- Speculator (circus-exchange)
- Borrow \$, capital gain, dynamic
- Planner (organism-use)
- Public \$, economic restructuring, coordination
- Impact on Market & Urban Geography has been a function of
- Landowners (financial, wealthy, or industrial)
- Parcel size & holdings
- Restrictive covenants
- Speculators (or place entrepreneurs)
- Serendipitous
- Active (small to medium)
- Structural (large)

Contemporary Human Geography

- Creates increased value through speculation
- Impact on Market & Urban Geography has been a function of
 - Developers
 - Perhaps most important decision-makers
 - Have developed specialties & important linkages
 - Builders
 - Consumers
 - Facilitators (agents, financiers, & others)
 - Government

Development Process:

- Stage 1 Preliminary
 - Conceptualizing, site selection, & feasibility
- Stage 2 Implementation
 - Financial, building, & marketing
- Stage 3 Facilities Management
 - Operation & maintenance
- Market response
- Scale of development resulted in consolidation & vertical integration
- Increasingly flexible mixed-use developments
- Decreasingly simple subdivision
- Niche marketing
- Local speculation is decreasingly a local process
- Globalization

Local Dependence:

- Local governments & business coalitions increase the local dependence of firms & capital investment through expanded and enhanced fixed capital
- New schools
- New IT investment
- Improved roads

Urban sociological theories:

- The classical theories of urban sociology are divided from the works of European sociologists like Karl Marx, Tonnies, George Simmel, Max Weber and those of American namely Park Burgess, Lowis Wirth and Redfield.
- The reflections of the earlier sociologists throw light on the anti-urban feelings. The great city, metropolis a paradigm of an inhuman, debasing social environment for Tonnies. Simmel felt that the money economy of the cities destroyed the social life.
- Weber and Wirth explained how mass urbanization nullified opportunities or political participation. Charles Booth and Rowntree wrote the sociography of life in the cities.
- Marx and Engels condemned the consequences of urbanization under capitalism. They viewed the concentration and misery of the mass of workers in the new urban agglomerations as a necessary stage in the creation of a revolutionary force. For them pauperization and material degradation was one aspect of urbanization but equally important was the destruction of the social nexus of the traditional community and its replacement by the utilitarian world of the city. Both for theory and practice communism depended on urbanism.
- Mumford in his book 'The city in history' sees cities as enlarging all dimensions of life as the scattered as the scattered activities of society are brought together so releasing the energies of mankind in a tremendous explosion of creativity. The city has augmented capabilities for participation and widened the basis of personal experience.
- In the writings of Neo-Marxists like Mills, Marcuse, Fromm there is a consensus that conditions of capitalist urbanization are mutilative of the personality, inhibitive of community formation, destructive of social engagement or involvement and conducive to apathy,

alienation and anomie. Class consciousness is inhibited and diverted in mass movements, unreason and not reason typifies social response.

- Sociologists from Tonnies to Wirth developed counter-theory to Marxism for the explication of social change led to acceptance of a fundamental cleavage between rural and urban, tradition and modernism which was in sharp opposition to any variant on Marxist theories of development. The urban is accepted as a frame of reference and the urban society as a specific mode of social organization becomes the object of scientific study.
- Tonnies in his book *Community and Society* explained the impact of the market economy on traditional forms of social association; the implications of urbanization and the development of the state for the conduct of social life and the mechanisms of social solidarity in an individualized society. The distinction he draws between the two forms of human association, *gemenischaft* and *gesellschaft* has become the basis for a succession of typologies of which the best known are the pattern variables formulated by Parsons and folk-urban typology drawn by Redfield and Wirth.
- George Simmel presents social interaction in terms of abstract categories. The study of society could only proceed by means of logical analysis of the forms of association. The forms are cognitive categories. Simmel belonged to the neo-Kantian tradition which frankly denies the possibility of the study of the natural or the social world without selection and ordering by the observer. Simmel was trying to expound on three themes; first the consequences of a money economy for social relationships. Second the significance of numbers for social life and lastly the scope for the maintenance of independence and individuality against the sovereign powers of society.
- Max Weber in his 'The City' has defined the city on the basis of political and administrative conception. To

constitute a full urban community a settlement must display a relative predominance of trade-commercial relations with the settlement as a whole displaying the following features:

- o fortification
- o market
- o a court of its own and at least partially autonomous law
- o a related form of association
- o partial autonomy and voting rights

Weber rejects cities governed by religious groups or where the authority is enforced on personal rather than universalistic basis. He recounts a process in which the development of the rational-legal institutions that characterize the modern city enabled the individual to be free from the traditional groups and therefore develop his individuality. He emphasizes the closure, autonomy and separateness of the urban community and stressed that the historical peculiarities of the medieval city were due to the location of the city within the total medieval political and social organization.

Characteristics of urban society:

- i. The urban society is heterogeneous known for its diversity and complexity.
- ii. It is dominated by secondary relations.
- iii. Formal means of social control such as law, legislation, police, and court are needed in addition to the informal means for regulating the behaviour of the people.
- iv. The urban society is mobile and open. It provides more chances for social mobility. The status is achieved than ascribed.
- v. Occupations are more specialized. There is widespread division of labour and specialization opportunities for pursuing occupations are numerous.
- vi. Family is said to be unstable. More than the family individual is given importance. Joint families are comparatively less in number.

- vii. People are more class-conscious and progressive. They welcome changes. They are exposed to the modern developments in the fields of science and technology.
- viii. Urban community is a complex multigroup society.
- ix. The urban community replaced consensus by dissensus. The social organization is atomistic and illdefined. It is characterized by disorganization, mental illness and anomie.
- x. Mass education is widespread in the city increasing democratization of the organizations and institutions demand formal education.

URBAN CHANGE

The past two decades have been a period of far reaching change for urban areas in the developed nations. Almost all urban activities have been affected by the processes of change, to such an extent that even the concepts of urbanisation itself must be questioned. Naturally, there are profound consequences for our understanding of urban land issues.

Perhaps the most basic factor to be confronted is that a number of powerful forces have been conspiring in those countries with market economies to direct growth away from large cities. By the middle of this century there were signs from some of the largest cities, including London, that after nearly two hundred years of rapid urban growth the rate was slackening. In the middle 1970s a reversal from urban population concentration to deconcentration was widely identified in the USA by Beale (1975), Berry (1976) and Vining and Strauss (1977) amongst others. The results of the 1981 and 1991 censuses revealed that the process was well established in Britain too, and in fact had been since the 1950s. Hall and Hay (1980) summarised the growth trends, particularly from North American evidence, as moving:

1. from larger to smaller metropolitan areas
2. from metropolitan cores to fringes
3. from urban to rural areas

4. from older manufacturing areas to newer service areas.

It soon became clear that these processes were very widespread and complex in their impact. The fact that they went beyond mere suburbanisation and local decentralisation led to the use of the term counterurbanisation. This process of counterurbanisation has been comprehensively reviewed for a large number of countries by Champion (1989). In this review, Frey (1989) suggested that it was the 1970s which represented the important decade of transition with counterurbanisation in the USA, at least, being a reaction to the economic shocks of the age. Champion concluded that by the end of the 1980s counterurbanisation was widespread but not universal. Some countries and cities continued to experience urban concentration and in others there were signs that the pace of counterurbanisation was slowing. Population figures for London, for example, suggest that some growth has resumed since 1984 and this prompts the possibility of a fresh reversal, back to the pre-turn-around pattern. Until further evidence becomes available there must remain some doubts about whether the 1970s represented a temporary hiccup in the pattern of urban growth, linked perhaps to cyclical economic depression, or signalled a long term tendency towards population dispersal and urban decline.

Whether temporary or permanent, certain explanations can be cited in this pattern of urban restructuring. First there is an economic dimension, expressed through changing patterns of urban employment. The large industrial cities of the western world have lost much of their industrial *raison d'être* in the face of competition from the newly industrialising countries in the Pacific rim and elsewhere. This has resulted in a dramatic decline in the number of industrial jobs in the urban heartlands of Britain, Germany, France and the USA. For example between 1971 and 1987 the following manufacturing job losses were recorded: London Local Labour Market Area, 602,000; Birmingham, 149,000; Glasgow, 110,000; Manchester, 103,000; Liverpool, 101,000 (Champion and Townsend 1990). The manufacturing plants which remain in these countries have been forced to change their modes of production, reduce and

restructure their labour forces and choose new locations. At the same time, substantial growth has been recorded in service sector jobs; in Britain, for example, over 2.5 million service jobs were created in the period 1971–84 (ESRC 1989). Almost without exception these jobs had different labour and locational requirements from the manufacturing jobs which had previously sustained the cities, and hence they led to different land use needs.

In the social sphere too the 1970s and 1980s witnessed far reaching changes. The impact of changing age structures, family sizes and marriage patterns upon housing requirements and urban development has already been alluded to. In addition, changing lifestyle preferences, growing environmental awareness and increasing personal affluence for many encouraged people to seek work and residence in small towns with better living conditions, cleaner environments, lower crime levels and lower local government rates. In the process the size and power of the big cities has been weakened.

These two processes have been encouraged by improvements and growth in transport which has been both a prime mover and an enabling factor. In the West European countries for which statistics are readily available, traffic volume measured in millions of vehicle kilometres, increased on average by 17.5 per cent between 1984 and 1988. In the USA, starting from a much higher baseline of vehicle useage, the increase was 8.1 per cent. (International Road Federation 1989). In Great Britain, the ownership of cars and light goods vehicles increased by 23 per cent in the decade 1975–85 (Dept of Transport 1986). On the one hand transport congestion and delays in large cities have acted as a disincentive to industrial location, and on the other hand the growth in motor traffic has opened up outer suburban areas and small towns, both for industrial/office employment and for residential purposes. Even changes in the technology and handling of seaborne freight, and the dramatic decline in liner passenger traffic have hit many large port cities severely. This can be seen particularly clearly in the contemporary land use patterns of major dock areas.

Finally, government policies have played a significant part in the pattern of differential growth between large cities and other localities. In Britain, for example government policy during and after the Second World War actively encouraged the decentralisation of industry. Regional policy as variously operated in the postwar years, coupled with new town development programmes resulted in economic activity deserting the older and bigger cities in some measure. Similarly, in West Germany the regional planning policy (Kontuly and Vogelsang 1989) and in France the *villes moyennes* programme (Winchester and Ogden 1989) militated against big cities.

Alongside counterurbanisation, another major concept which helps to articulate the changing land use needs of modern urban society, is that of the postindustrial city. Hall (1988), in particular, suggested that Britain at least is well along the road to a postindustrial economy. Somewhat earlier he had suggested, along with others (Brothie *et al.* 1985) that the microelectronic information technology revolution was beginning to produce changes in our pattern of living and working at least as profound as those produced by the Industrial Revolution, but within a shorter time frame.

The land use consequences of these trends, especially those of counterurbanisation and postindustrialism are still unclear and subject to intense speculation. But the general implications for urban and quasi-urban land patterns can be outlined. In short, the massive forces of economic and social restructuring are having, and will continue to have, profound significance for urban land. The overall pattern of change can be broken for convenience into two major components.

On the one hand, most large cities show signs of serious inner area problems. The loss of job opportunities, the concentration of deprived social groups, the collapse of the urban infrastructure, the unpopularity of many public sector developments and the difficulty of attracting private sector investment have all combined to sweep away the previous vitality of many of these areas. The immediate consequence has been to throw the inner city land market into turmoil. Land

which once had a relatively high demand, and hence value, attracts little commercial interest once those traditional uses have deserted the city. As a result, vacant and underused land has become a common characteristic of such areas.

Conversely, the demand for land on the urban periphery, and in small towns throughout the outer metropolitan fringe is relatively buoyant. In Britain, Hall (1988:16) suggested that even if the major urban agglomerations succeed in stabilising their populations, the continued growth of what he terms the Golden Belt and Golden Horn regions in the southern half of the country will 'entail a voracious demand for conversion of rural land for urban purpose'. This then is the general context, a massive and relatively recent restructuring of urban areas and their economies, even to the extent that our traditional notions of the city as a settlement form must be reexamined. It raises many issues about our understanding and use of urban land, which will be addressed in the following chapters.

URBAN PLANNING

Urban, city, and town planning integrates land use planning and transportation planning to improve the built, economic and social environments of communities. Regional planning deals with a still larger environment, at a less detailed level. Urban planning can include urban renewal, by adapting urban planning methods to existing cities suffering from decay and lack of investment. In the Neolithic period, agriculture and other techniques facilitated larger populations than the very small communities of the Paleolithic, which probably led to the stronger, more coercive governments emerging at that time.

The pre-Classical and Classical periods saw a number of cities laid out just as to fixed plans, though many tended to develop organically. Designed cities were characteristic of the Mesopotamian, Harrapan, and Egyptian civilizations of the third millennium BCE. Distinct characteristics of urban planning from remains of the cities of Harappa, Lothal, and Mohenjo-daro in the Indus Valley Civilization (in modern-day

northwestern India and Pakistan) lead archeologists to conclude that they are the earliest examples of deliberately planned and managed cities.

The streets of many of these early cities were paved and laid out at right angles in a grid pattern, with a hierarchy of streets from major boulevards to residential alleys. Archaeological evidence suggests that many Harrapan houses were laid out to protect from noise and enhance residential privacy; many also had their own water wells, probably for both sanitary and ritual purposes.

These ancient cities were unique in that they often had drainage systems, seemingly tied to a well-developed ideal of urban sanitation. The Greek Hippodamus has been dubbed the "Father of City Planning" for his design of Miletus; Alexander commissioned him to lay out his new city of Alexandria, the grandest example of idealized urban planning of the ancient Mediterranean world, where the city's regularity was facilitated by its level site near a mouth of the Nile. The Hippodamian, or grid plan, was the basis for subsequent Greek and Roman cities. The ancient Romans used a consolidated scheme for city planning, developed for military defense and civil convenience. The basic plan consisted of a central forum with city services, surrounded by a compact, rectilinear grid of streets, and wrapped in a wall for defence. To reduce travel times, two diagonal streets crossed the square grid, passing through the central square.

A river usually flowed through the city, providing water, transport, and sewage disposal. Many European towns, such as Turin, preserve the remains of these schemes, which show the very logical way the Romans designed their cities. They would lay out the streets at right angles, in the form of a square grid. All roads were equal in width and length, except for two, which were slightly wider than the others. One of these ran east–west, the other, north–south, and intersected in the middle to form the centre of the grid.

All roads were made of carefully fitted flag stones and filled in with smaller, hard-packed rocks and pebbles. Bridges were

constructed where needed. Each square marked by four roads was called an *insula*, the Roman equivalent of a modern city block. Each *insula* was 80 yards (73 m) square, with the land within it divided. As the city developed, each *insula* would eventually be filled with buildings of various shapes and sizes and crisscrossed with back roads and alleys. Most *insulae* were given to the first settlers of a Roman city, but each person had to pay to construct his own house.

The city was surrounded by a wall to protect it from invaders and to mark the city limits. Areas outside city limits were left open as farmland. At the end of each main road was a large gateway with watchtowers. A *portcullis* covered the opening when the city was under siege, and additional watchtowers were constructed along the city walls. An aqueduct was built outside the city walls. The collapse of Roman civilization saw the end of Roman urban planning, among other arts. Urban development in the Middle Ages, characteristically focused on a fortress, a fortified abbey, or a (sometimes abandoned) Roman nucleus, occurred "like the annular rings of a tree", whether in an extended village or the centre of a larger city. Since the new centre was often on high, defensible ground, the city plan took on an organic character, following the irregularities of elevation contours like the shapes that result from agricultural terracing.

The ideal of wide streets and orderly cities was not lost, however. A few medieval cities were admired for their wide thoroughfares and orderly arrangements, but the juridical chaos of medieval cities (where the administration of streets was sometimes passed down through noble families), and the characteristic tenacity of medieval Europeans in legal matters prevented frequent or large-scale urban planning until the Renaissance and the early-modern strengthening of central government administration, as European (and soon after, North American) society transited from city-states to what we would recognize as a more modern concept of a nation-state. Florence was an early model of the new urban planning, which took on a star-shaped layout adapted from the new star fort, designed to resist cannon fire.

This model was widely imitated, reflecting the enormous cultural power of Florence in this age; “[t]he Renaissance was hypnotized by one city type which for a century and a half—from Filarete to Scamozzi— was impressed upon utopian schemes: this is the star-shaped city”. Radial streets extend outward from a defined centre of military, communal or spiritual power. Only in ideal cities did a centrally planned structure stand at the heart, as in Raphael’s *Sposalizio* (Illustration) of 1504.

As built, the unique example of a rationally planned quattrocento new city centre, that of Vigevano (1493–95), resembles a closed space instead, surrounded by arcading. Filarete’s ideal city, building on Leone Battista Alberti’s *De re aedificatoria*, was named “Sforzinda” in compliment to his patron; its twelve-pointed shape, circumscribable by a “perfect” Pythagorean figure, the circle, took no heed of its undulating terrain in Filarete’s manuscript. This process occurred in cities, but ordinarily not in the industrial suburbs characteristic of this era which remained disorderly and characterized by crowding and organic growth. Following the 1695 bombardment of Brussels by the French troops of King Louis XIV, in which a large part of the city centre was destroyed, Governor Max Emanuel proposed using the reconstruction to completely change the layout and architectural style of the city. His plan was to transform the medieval city into a city of the new baroque style, modeled on Turin, with a logical street layout, with straight avenues offering long, uninterrupted views flanked by buildings of a uniform size.

This plan was opposed by residents and municipal authorities, who wanted a rapid reconstruction, did not have the resources for grandiose proposals, and resented what they considered the imposition of a new, foreign, architectural style. In the actual reconstruction, the general layout of the city was conserved, but it was not identical to that before the cataclysm. Despite the necessity of rapid reconstruction and the lack of financial means, authorities did take several measures to improve traffic flow, sanitation, and the aesthetics of the city.

Many streets were made as wide as possible to improve traffic flow.

In the 1990s, the University of Kentucky voted the Italian town of Todi as the ideal city and "most livable town in the world", the place where man and nature, history and tradition, come together to create a site of excellence. In Italy, other examples of ideal cities planned just as to scientific methods are Urbino, Pienza, Ferrara, San Giovanni Valdarno, and San Lorenzo Nuovo. Many Central American civilizations also planned their cities, including sewage systems and running water.

In Mexico, Tenochtitlan was the capital of the Aztec empire, built on an island in Lake Texcoco in what is now the Federal District in central Mexico. At its height, Tenochtitlan was one of the largest cities in the world, with over 200,000 inhabitants. Shibam in Yemen features over 500 tower houses, each rising 5 to 11 storeys high, with each floor being an apartment occupied by a single family. The city has some of the tallest mudbrick houses in the world, some over 100 feet (30 meters) high. In the developed countries of Western Europe, North America, Japan, and Australasia, planning and architecture can be said to have gone through various paradigms or stages of consensus in the last 200 years. Firstly, there was the industrialised city of the 19th century, where building was largely controlled by businesses and wealthy elites.

Around 1900, a movement began for providing citizens, especially factory workers, with healthier environments. The concept of the garden city arose and several model towns were built, such as Letchworth and Welwyn Garden City in Hertfordshire, UK, the world's first garden cities. These were small in size, typically providing for a few thousand residents. In the 1920s, the ideas of modernism began to surface in urban planning. Based on the ideas of Le Corbusier and using new skyscraper-building techniques, the modernist city stood for the elimination of disorder, congestion, and the small scale, replacing them with preplanned and widely spaced freeways and tower blocks set within gardens.

There were plans for large-scale rebuilding of cities in this era, such as the Plan Voisin, which proposed clearing and rebuilding most of central Paris. No large-scale plans were implemented until after World War II, however. Throughout the late 1940s and 1950s, housing shortages caused by wartime destruction led many cities to subsidize housing blocks. Planners used the opportunity to implement the modernist ideal of towers surrounded by gardens.

The most prominent example of an entire modernist city is Brasilia in Brazil, constructed between 1956 and 1960. By the late 1960s and early 1970s, many planners felt that modernism's clean lines and lack of human scale sapped vitality from the community, blaming them for high crime rates and social problems.

Modernist planning fell into decline in the 1970s when the construction of cheap, uniform tower blocks ended in most countries, such as Britain and France.

Since then many have been demolished and replaced by other housing types. Rather than attempting to eliminate all disorder, planning now concentrates on individualism and diversity in society and the economy; this is the post-modernist era. Minimally planned cities still exist. Houston is a large city (with a metropolitan population of 5.5 million) in a developed country without a comprehensive zoning ordinance.

Houston does, however, restrict development densities and mandate parking, even though specific land uses are not regulated.

Also, private-sector developers in Houston use subdivision covenants and deed restrictions to effect land-use restrictions resembling zoning laws. Houston voters have rejected comprehensive zoning ordinances three times since 1948. Even without traditional zoning, metropolitan Houston displays large-scale land-use patterns resembling zoned regions comparable in age and population, such as Dallas. This suggests that non-regulatory factors such as urban infrastructure and financing may be as important as zoning laws in shaping urban form.

URBAN MOBILITY

Evolution of Urban Mobility

Rapid urban development occurring across much of the globe implies increased quantities of passengers and freight moving within urban areas. Movements also tend to involve longer distances, but evidence suggests that commuting times have remained relatively stable in the twentieth century, approximately 1.2 hours per day.

This means that commuting has gradually shifted to faster transport modes and consequently greater distances could be traveled using the same amount of time. Different transport technologies and infrastructures have been implemented, resulting in a wide variety of urban transport systems around the world. In developed countries, there have been three general eras of urban development, and each is associated with a different form of urban mobility:

- *The walking/horse-car era (1800–1890)*. Even during the onslaught of the industrial revolution, the dominant means of getting around was on foot. Cities were typically less than 5 kilometers in diameter, making it possible to walk from the downtown to the city edge in about 30 minutes. Land use was mixed and density was high (e.g. 100 to 200 people per hectare). The city was compact and its shape was more or less circular. The development of the first public transit in the form of omnibus service extended the diameter of the city but did not change the overall urban structure. The railroad facilitated the first real change in urban morphology. These new developments, often referred to as trackside suburbs, emerged as small nodes that were physically separated from the city itself and from one another. The nodes coincided with the location of rail stations and stretched out a considerable distance from the city center, usually up to a half-hour train ride. Within the city proper, rail lines were also laid down and horse-cars introduced mass transit.

- *The electric streetcar or transit era (1890–1920s)*. The invention of the electric traction motor created a revolution in urban travel. The first electric trolley line opened in 1888 in Richmond. The operating speed of the electric trolley was three times faster than that of horse-drawn vehicles. The city spread outward 20 to 30 kilometers along the streetcar lines, creating an irregular, star-shaped pattern. The urban fringes became areas of rapid residential development. Trolley corridors became commercial strips. The city core was further entrenched as a mixed-use, high density zone. Overall densities were reduced to between 50 and 100 people per hectare. Land use patterns reflected social stratification where suburban outer areas were typically middle class while the working class continued to concentrate in the central city.
- *The automobile era (1930 onward)*. The automobile was introduced in European and North American cities in the 1890s, but only the wealthy could afford this innovation. From the 1920s, ownership rates increased dramatically, with lower prices made possible by Henry Ford's revolutionary assembly-line production techniques. As automobiles became more common, land development patterns changed. Developers were attracted to green-field areas located between the suburban rail axes, and the public was attracted to these single-use zones, thus avoiding the evils of the industrial city. Suburban home building companies were no longer willing to subsidize privately owned streetcar companies to provide cheap access to their trolley-line neighborhoods. Transit companies ran into financial trouble, and eventually transit services throughout North America and Europe became subsidized, publicly owned enterprises. As time went on, commercial activities also began to suburbanize. Within a short time, the automobile was the dominant mode of travel in all cities of North America. The automobile has

reduced the friction of distance considerably which has led to urban sprawl.

Urban Transit

Transit is predominantly an urban transportation mode, particularly in large urban agglomerations. The urban environment is particularly suitable for transit because it provides conditions fundamental to its efficiency, namely high density and high short distance mobility demands. Since transit is a shared public service, it potentially benefits from economies of agglomeration related to high densities and from economies of scale related to high mobility demands. The lower the density in which a transit system operates, the lower the demand, with the greater likelihood that it will be run at a loss and may have to be subsidized. Transit systems are made up of many types of services. Different modes are used to provide complementary services within the transit system and in some cases between the transit system and other transport systems.

Each of its components is designed to provide a specific array of services. Among the defining factors of urban transit are frequency, flexibility, costs and distance between stops:

- *Metro system.* A heavy rail system, often underground in central areas (parts above ground at more peripheral locations), with fixed routes, services and stations. Transfers between lines or to other components of the transit system (mainly buses and light rail) are made at connected stations. The service frequency tends to be uniform throughout the day, but increases during peak hours. Fares are commonly access driven and constant, implying that once a user has entered the system the distance traveled has no impact on the fare. However, with the computerization of many transit fare systems, zonal/distance driven fares are becoming more common.
- *Bus system.* Characterized by scheduled fixed routes and stops serviced by motorized multiple-passenger vehicles (45–80 passengers). Services are often synchronized with other heavy systems, mainly metro

and transit rail, where they act as feeders. Express services, using only a limited number of stops, can also be available, notably during peak hours. Since metro and bus systems are often managed by the same transit authority, the user's fare is valid for both systems.

- *Transit rail system.* Fixed rail comes into two major categories. The first is the tram rail system, which is mainly composed of streetcars (tramways) operating in central areas. They can consist of up to four cars. The second is the commuter rail system, which is composed of passenger trains mainly developed to service peripheral/ suburban areas through a heavy (faster and longer distances between stations) or light rail system (slower and shorter distances between stations). Frequency of services is strongly linked with peak hours and traffic tends to be imbalanced. Fares tend to be separate from the transit system and proportional to distance or service zones.
- *Shuttle system.* Composed of a number of privately (dominantly) owned services using small buses or vans. Shuttle routes and frequencies tend to be fixed, but can be adapted to fit new situations. They service numerous specific functions such as expanding mobility along a corridor during peak hours, linking a specific activity center (shopping mall, university campus, industrial zone, hotel, etc.) or aimed at servicing the elderly or people with disabilities.
- *Paratransit system.* A flexible and privately owned collective demand–response system composed of minibuses, vans or shared taxis commonly servicing peripheral and low density zones. Their key advantage is the possibility of a door-to-door service, less loading and unloading time, less stops and more maneuverability in traffic. In many cities in developing countries, this system is informal, dominant and often services central areas because of inadequacies or high costs of the formal transit system.

- *Taxi system.* Comprises privately owned cars or small vans offering an on-call, individual demand–response system. Fares are commonly a function of a metered distance/time, but sometimes can be negotiated. A taxi system has no fixed routes, but is rather servicing an area where a taxi company has the right (permit) to pick up customers. Commonly, rights are issued by a municipality and several companies may be allowed to compete on the same territory. When competition is not permitted, fares are set up by regulations.

Contemporary transit systems tend to be publicly owned, implying that many decisions related to their development and operation are politically motivated. This is a sharp contrast to the past when most transit systems were private and profit driven initiatives. With the fast diffusion of the automobile in the 1950s, many transit companies faced financial difficulties, and the quality of their service declined. They were purchased by public interests, mainly for the sake of providing mobility. As such, public transit often serves more a social function of public service and a tool of social equity than any sound economic role. Transit has become dependent on government subsidies, with little if any competition permitted as wages and fares are regulated. Transit systems tend to have limited relationships with economic activities, particularly in suburban areas.

Reliance on urban transit as a mode of urban transportation tends to be high in Asia, intermediate in Europe and low in North America. Since their inception in the early nineteenth century, comprehensive urban transit systems had significant impacts on the urban form and spatial structure. Three major classes of cities can be found in terms of the relationships they have with their transit systems (Cervero, 1998):

- *Adaptive cities.* True transit-oriented cities where urban form and urban land use developments are coordinated with transit developments. While central areas are adequately serviced by a metro system and are pedestrian friendly, peripheral areas are oriented along transit rail lines.

- *Adaptive transit.* Cities where transit plays a marginal and residual role and where the automobile accounts for the dominant share of movements. The urban form is decentralized and of low density.
- *Hybrids.* Cities that have sought a balance between transit development and automobile dependency. While central areas have an adequate level of service, peripheral areas are automobile-oriented.
- Contemporary land development tends to precede the introduction of urban transit services, as opposed to concomitant developments in earlier phases of urban growth. Transit authorities operate under a service warrant. This has led to a set of considerations aimed at a higher integration of transit in the urban planning process, especially in North America, where such a tradition is not well established. Local land use impacts can be categorized in three dimensions of relationships with transit systems, including accessibility to the transit system, the convergence of local movements to transit stations and the integration of local land use with urban transit:
- *Accessibility.* The sole purpose of a transit stop is to provide accessibility to the transit system, such as stops along a bus route. Land use impacts for the stop are often minimal, if non-existent, with basic facilities to accommodate waiting time such as shelters. Accessibility defines the local market area of a transit service. For instance, for a new residential area, a minimum catchment area of 400 dwelling units or 1,000 residents within a 450-meter walk distance to a transit stop is often required for an extension of service. In a low transit use environment, accessibility to a transit stop has little if no impact on land use as access is a mere matter of convenience to a marginal segment of the population. As the level of transit use increases, accessibility has a significant impact on local land use by favoring band-like developments along transit lines,

since a growing share of the local population uses transit as a factor of urban mobility.

- *Convergence.* This generally applies to more important transit stops, notably rail and subway stations with terminal structures, including waiting areas and basic services. The transit station is a point of convergence of local traffic and often serves more than one mode. The impacts on land use are varied, ranging from park-and-ride facilities to activities that take advantage of flows, such as restaurants and convenience stores, and possibly office activities. The stations have to consider the nature and scale of movements generated. Convergence in a low level of transit use implies walking from the vicinity, basic park-and-ride possibilities and occasional drops and pickups by passenger vehicles. Transit subsystems, such as local buses, rarely converge to stops/terminals in a low transit use environment, since the demand would not justify them. As transit use increases, the convergence function may become significant, with substantial park-and-ride facilities and dedicated local transit routes collecting passengers for the stop/terminal.
- *Integration.* Large, multi-level terminals with well-integrated high-density planning designs. Local land use is consequently highly linked with the transit system, which supports a large share of the mobility. The terminal acts as a local central place with its implied hierarchy of land uses with adjacent commercial activities. Medium and low density residential areas are located further away. There are different possible levels of integration, from simple terminal design with little local impact to high integration to local land use where transit is dominant. Significant transit terminals offer opportunities to integrate local land use to transit accessibility.

From a transportation perspective, the potential benefits of better integration between transit and local land uses are

reduced trip frequency and increased use of alternative modes of travel (i.e. walking, biking and transit). Evidence is often lacking to support such expectations. Community design can consequently have a significant influence on travel patterns. Land use initiatives should be coordinated with other planning and policy initiatives to cope with automobile dependence. However, there is a strong bias against transit in the general population because of negative perceptions, especially in North America, but increasingly globally. As personal mobility is a symbol of status and economic success, the users of public transit are perceived as the least successful segment of the population. This bias may prevent transit use by a segment of the population.

7

Social Geography

Social geography is the branch of human geography that is most closely related to social theory in general and sociology in particular, dealing with the relation of social phenomena and its spatial components. Though the term itself has a tradition of more than 100 years, there is no consensus on its explicit content, as the nature of that relation, of both its components, and of social space (if being conceptualized as the intersection of these), remain subjects of ongoing debate and research. In 1968, Anne Buttimer noted that “with some notable exceptions, (...) social geography can be considered a field created and cultivated by a number of individual scholars rather than an academic tradition built up within particular schools”.

Since then, despite some calls for convergence centred on the structure and agency debate, its methodological, theoretical and topical diversity has spread even more, leading to numerous definitions of social geography and, therefore, contemporary scholars of the discipline identifying a great variety of different social geographies. However, as Benno Werlen remarked, these different perceptions are nothing else than different answers to the same two (sets of) questions, which refer to the spatial constitution of society on the one hand, and to the spatial expression of social processes on the other.

The different conceptions of social geography have also been overlapping with other sub-fields of geography and, to a

lesser extent, sociology. When the term emerged within the Anglo-american tradition during the 1960s, it was basically applied as a synonym for the search for patterns in the distribution of social groups, thus being closely connected to urban geography and urban sociology. In the 1970s, the focus of debate within American human geography lay on political economic processes (though there also was a considerable number of accounts for a phenomenological perspective on social geography), while in the 1990s, geographical thought was heavily influenced by the “cultural turn”.

Both times, as Neil Smith noted, these approaches “claimed authority over the ‘social’”. In the American tradition, the concept of cultural geography has a much more distinguished history than social geography, and encompasses research areas that would be conceptualized as “social” elsewhere. In contrast, within some continental European traditions, social geography was and still is considered an approach to human geography rather than a sub-discipline, or even as identical to human geography in general.

HISTORY

Before the Second World War

The term “social geography” (or rather “géographie sociale”) originates from France, where it was used both by geographer Élisée Reclus and by sociologists of the Le Play School, perhaps independently from each other. In fact, the first proven occurrence of the term derives from a review of Reclus’ *Nouvelle géographie universelle* from 1884, written by Paul de Rousiers, a member of the Le Play School. Reclus himself used the expression in several letters, the first one dating from 1895, and in his last work *L’Homme et la terre* from 1905. The first person to employ the term as part of a publication’s title was Edmond Demolins, another member of the Le Play School, whose article *Géographie sociale de la France* was published in 1896 and 1897. After the death of Reclus as well as the main proponents of Le Play’s ideas, and with Émile Durkheim turning

away from his early concept of social morphology, Paul Vidal de la Blache, who noted that geography “is a science of places and not a science of men”, remained the most influential figure of French geography.

One of his students, Camille Vallaux, wrote the two-volume book *Géographie sociale*, published in 1908 and 1911. Jean Brunhes, one of Vidal’s most influential disciples, included a level of (spatial) interactions among groups into his fourfold structure of human geography. Until the Second World War, no more theoretical framework for social geography was developed, though, leading to a concentration on rather descriptive rural and regional geography.[note 3] However, Vidal’s works were influential for the historical Annales School,, who also shared the rural bias with the contemporary geographers, and Durkheim’s concept of social morphology was later developed and set in connection with social geography by sociologists Marcel Mauss and Maurice Halbwachs.

The first person in the Anglo-american tradition to use the term “social geography” was George Wilson Hoke, whose paper *The Study of Social Geography* was published in 1907, yet there is no indication it had any academic impact. Le Play’s work, however, was taken up in Britain by Patrick Geddes and Andrew John Herbertson. Percy M. Roxby, a former student of Herbertson, in 1930 identified social geography as one of human geography’s four main branches. By contrast, the American academic geography of that time was dominated by the Berkeley School of Cultural Geography led by Carl O. Sauer, while the spatial distribution of social groups was already studied by the Chicago School of Sociology. Harlan H. Barrows, a geographer at the University of Chicago, nevertheless regarded social geography as one of the three major divisions of geography.

Another pre-war concept that combined elements of sociology and geography was the one established by Dutch sociologist Sebald Rudolf Steinmetz and his Amsterdam School of Sociography. However, it lacked a definitive subject, being a combination of geography and ethnography created as the more concrete counterpart to the rather theoretical sociology.

In contrast, the Utrecht School of Social geography, which emerged in the early 1930s, sought to study the relationship between social groups and their living spaces.

Post-War Period

In the German-language geography, this focus on the connection between social groups and the landscape was further developed by Hans Bobek and Wolfgang Hartke after the Second World War. For Bobek, groups of *Lebensformen* (patterns of life), formed by both social factors and the landscape, were at the center of social geographical analysis. In a similar approach, Hartke considered the landscape a source for indices or traces of certain social groups' behaviour. The best-known example of this perspective was the concept of *Sozialbrache* (social-fallow), *i.e.* the abandoning of tillage as an indicator for occupational shifts away from agriculture.

Though the French *Géographie Sociale* had been a great influence especially on Hartke's ideas no such distinct school of thought formed within the French human geography. Nonetheless, Albert Demangeon paved the way for a number of more systematic conceptualizations of the field with his (posthumously published) notion that social groups ought to be within the center of human geographical analysis. That task was carried out by Pierre George and Maximilien Sorre, among others.

Then a Marxist, George's stance was dominated by a socio-economic rationale, but without the structuralist interpretations found in the works of some of the French sociologists of the time. However, it was another French Marxist, the sociologist Henri Lefebvre, who introduced the concept of the (social) production of space. He had written on that and related topics since the 1930s, but fully expounded it in *La Production de L'Espace* as late as 1974. Sorre developed a schema of society related to the ecological idea of habitat, which was applied to an urban context by the sociologist Paul-Henry Chombart de Lauwe. A more analytical ecological approach on human geography was the one developed by Edgar Kant in his native Estonia in the 1930s.

and later at Lund University, which he called “anthropo-ecology”. His awareness of the temporal dimension of social life would lead to the formation of time geography through the works of Sven Godlund and Torsten Hägerstrand.

Economic Inequality

Differences in national income equality around the world as measured by the national Gini coefficient. The Gini coefficient is a number between 0 and 1, where 0 corresponds with perfect equality (where everyone has the same income) and 1 corresponds with perfect inequality (where one person has all the income, and everyone else has zero income).

Economic inequality has existed in a wide range of societies and historical periods; its nature, cause and importance are open to broad debate. A country's economic structure or system (for example, capitalism or socialism), ongoing or past wars, and differences in individuals' abilities to create wealth are all involved in the creation of economic inequality. There are various Numerical indices for measuring economic inequality. Inequality is most often measured using the Gini coefficient, but there are also many other methods.

Magnitude of Inequality in The Modern World

A study by the World Institute for Development Economics Research at United Nations University reports that the richest 1% of adults alone owned 40% of global assets in the year 2000. The three richest people possess more financial assets than the lowest 48 nations, combined. The combined wealth of the 10 million dollar millionaires grew to nearly \$41 trillion in 2008. In 2001, 46.4% of people in sub-Saharan Africa were living in extreme poverty. Nearly half of all Indian children are undernourished, however even among the wealthiest fifth one third of children are malnourished.

Although a discussion exists about the recent trends in global inequality, the issue is anything but clear, and this holds true for both the overall global inequality trend and for its between-country and within-country components. The existing

data and estimates suggest a large increase in international (and more generally inter-macroregional) component between 1820 and 1960. It might have slightly decreased since that time at the expense of increasing inequality within countries.

Causes of Inequality

There are many reasons for economic inequality within societies. These causes are often inter-related.

Acknowledged factors that impact economic inequality include:

- The labour market
- Innate ability
- Education
- Race
- Gender
- Culture
- Wealth condensation
- Development patterns
- Personal preference for work, leisure and risk

The Labour Market

A major cause of economic inequality within modern market economies is the determination of wages by the market. Inequality is caused by the differences in the supply and demand for different types of work. In a purely capitalist mode of production (*i.e.* where professional and labour organizations cannot limit the number of workers) the workers wages will not be controlled by these organizations, nor by the employer, but rather by the market. Wages work in the same way as prices for any other good (*i.e.* supply and demand). Employers who offer a below market wage will find that their business is chronically understaffed. Their competitors will take advantage of the situation by offering a higher wage to snatch up the best of their labour. For a businessman who has the profit motive as the prime interest, it is a losing proposition to offer below or above market wages to workers.

Professional and labour organizations may limit the supply of workers which results in higher demand and greater incomes for members. However, limiting the supply of workers may cause unemployment in that particular field. In effect, some workers end up with higher than market wages at the expense of their newly unemployed co-workers. This creates an economic inequality in itself. Members may also receive higher wages through collective bargaining, political influence or corruption, as Henry Hazlitt elaborated.

A job where there are many willing workers (high supply) competing for a job that few require (low demand) will result in a low wage for that job. This is because competition between workers drives down the wage. An example of this would be jobs such as dish-washing or customer service. Competition amongst workers tends to drive down wages due to the expendable nature of the worker in relation to his or her particular job.

There are some economic myths regarding this subject. For example, population growth and technological change are often blamed for economic inequality. In discussing population growth, a critic might say "populations growth tends to increase the supply of all workers which may result in lower incomes, especially when combined with greater productivity per worker." This ignores the facts, however. This assumes that the world is a fixed economic pie and that any population growth results in fewer resources to go around.

However, this has never been observed empirically. If this were the case we would see humans as a whole getting poorer and poorer over time, as populations have consistently increased over the course of history. This mistake is famously attributed to Thomas Malthus. In fact, humans have become far wealthier over the past few centuries, even in the poorest parts of the world. Many people who make this mistake lack a sense of historical perspective. For example, anyone who believes that Africa is poor today would be shocked to learn that historically, Africa along with the rest of the world was far poorer centuries ago compared to the Africa of today.

Likewise, technological progress is sometimes described as harmful because it makes workers more efficient—this is simply untrue and ignores all empirical evidence on the matter. According to Paul Romer, this conclusion is largely ignorant of the facts, since this would assume that all the technological progress we've made in the past few hundred years has been to the detriment of human society. Technological progress increases the total amount produced by a society, as well as the average amount produced by each member of a society. While some technological change does result in income inequality, the cumulative effect of technological change has been to make the poorest of society today better off than the poorest of society was years ago. For example, Romer explains that the average American has seven times more purchasing power today than he or she had in 1900.

A job where there are few able or willing workers (low supply), but a large need for the positions (high demand), will result in high wages for that job. This is because competition between employers for employees will drive up the wage. Examples of this would include jobs that require highly developed skills, rare abilities, or a high level of risk. Competition amongst employers tends to drive up wages due to the nature of the job, since there is a relative shortage of workers for the particular position. The final results amongst these supply and demand interactions is a gradation of different wages representing income inequality within society.

Innate Ability

Many people believe that there is a correlation between differences in innate ability, such as intelligence, strength, or charisma, and an individual's wealth. Relating these innate abilities back to the labour market suggests that such abilities are in high demand relative to their supply and hence play a large role in increasing the wage of those who have them. Otherwise, such innate abilities might also affect an individual's ability to operate within society in general, regardless of the labour market.

Various studies have been conducted on the correlation between IQ scores and wealth/income. The book titled "IQ and the Wealth of Nations", written by Dr. Richard Lynn, examines this relationship with limited success; other peer-reviewed research papers have also been criticised harshly. In his book *The Mismeasure of Man*, Stephen Jay Gould claimed that testing intelligence is a flawed endeavor as the tests and the statistical models used to evaluate them are inherently flawed. There is also the highly contested study *The Bell Curve* which suggests that individuals at either extreme of the "intelligence spectrum" are left out of the main streams of society. These are usually individuals who are deemed "unsuccessful" in the light of sociability, according to the study.

Education

One important factor in the creation of inequality is variation in individuals' access to education. Education, especially in an area where there is a high demand for workers, creates high wages for those with this education. As a result, those who are unable to afford an education, or choose not to pursue optional education, generally receive much lower wages. During the mass high school education movement from 1910–1940, there was an increase in skilled workers which led to a decrease in the price of skilled labour. High school education during the period was designed to equip students with necessary skill sets to be able to perform at work. In fact, it differs from the present high school education, which is regarded as a stepping stone to acquire college and advanced degrees. This decrease in wages caused a period of compression and decreased inequality between skilled and unskilled workers.

GLOBALIZATION

Trade liberalization may shift economic inequality from a global to a domestic scale. When rich countries trade with poor countries, the low-skilled workers in the rich countries may see reduced wages as a result of the competition, while low-skilled workers in the poor countries may see increased wages. Trade

economist Paul Krugman estimates that trade liberalisation has had a measurable effect on the rising inequality in the United States. He attributes this trend to increased trade with poor countries and the fragmentation of the means of production, resulting in low skilled jobs becoming more tradeable. However, he concedes that the effect of trade on inequality in America is minor when compared to other causes, such as technological innovation, a view shared by other experts. Lawrence Katz estimates that trade has only accounted for 5-15% of rising income inequality. Some economists, such as Robert Lawrence, dispute any such relationship. Lawrence, in particular, argues that technological innovation and automation has meant that low-skilled jobs have been replaced by machine labour in wealthier nations, and that wealthier countries no longer have significant numbers of low-skilled manufacturing workers that could be affected by competition from poor countries.

Gender, Race, and Culture

The existence of different genders, races and cultures within a society is also thought to contribute to economic inequality. Some psychologists such as Richard Lynn argue that there are innate group differences in ability that are partially responsible for producing race and gender group differences in wealth (see also race and intelligence, sex and intelligence) though this assertion is highly controversial. The concept of the gender gap also tries to explain differences in income between genders.

Culture and religion are thought to play a role in creating inequality by either encouraging or discouraging wealth-acquiring behavior, and by providing a basis for discrimination. In many countries individuals belonging to certain racial and ethnic minorities are more likely to be poor. Proposed causes include cultural differences amongst different races, an educational achievement gap, and racism. In many countries, there is a gender income gap which favours males in the labour market. For example, the median full-time salary for U.S. women is 77% of that of U.S. men. Several factors other than discrimination may contribute to this gap.

On average, women are more likely than men to consider factors other than pay when looking for work, and may be less willing to travel or relocate. Thomas Sowell, in his book *Knowledge and Decisions*, claims that this difference is due to women not taking jobs due to marriage or pregnancy, but income studies show that that does not explain the entire difference. Men are far more likely to engage in dangerous occupations which often pay more than positions desired and sought by women.

The U.S. Census's report on the wage gap reported "When we account for difference between male and female work patterns as well as other key factors, women earned, on average, 80 per cent of what men earned in 2000... Even after accounting for key factors that affect earnings, our model could not explain all of the differences in earnings between men and women."

The income gap in other countries ranges from 53% in Botswana to -40% in Bahrain. In the United States, among women and men who never marry or have children, women make more than men. Additionally, women who work part-time make more on average than men who work part-time.

GLOBALIZATION, POVERTY AND FOOD SECURITY

Dimensions of Globalization

According to UN-DAW (1999), "Globalization has become the catch-all term used to refer to those various phenomena and processes that are brought about by changes towards world economic integration. □It therefore lacks a neat definition". Its economic dimensions, however, cover the closely related but distinct concepts of openness or liberalization, integration and interdependence of nations.

From this statement, many faces of globalization are widely recognized with varied expectations. These include capital expansion, trade expansion or trade liberalization, cultural integration, financial liberalization, increased information and technology flows, increased labour mobility, changing

consumption patterns and so on. Central to all these is increased exchanges or trade. Thus trade liberalization is one of the most touted features of globalization. □

In the agricultural sector or in other primary production or craft economies, trade liberalization was jumpstarted by structural adjustment policies (SAPs). To these economies, SAPs continue to be the major face of globalization and has been analyzed more than other facets. In this regard, it is always difficult to disentangle trade effects from other globalization effects. □ In these discussions of the micro level analysis of globalization, we shall also focus on the liberalization policies that have shaped agricultural growth process in Africa.

Central to this is the theory of inequality as it affects unequal partners. □ Globalization effects are expected to be positive for all trade participants, and although there will be net gains and net losses; it is propounded that the net gain will outweigh the net loss (World Bank, 2001).

But in recognizing the inherent equity considerations in the response to the same set of opportunities by different (unequal) actors, it remains doubtful that the net gain will augur well for long term human development especially in poorer countries or between different groups within the same country. According to Elson (1989), adjustment means change and change means costs as well as benefits, losers as well as winners. Change must therefore be managed so as not to leave inequities in is distribution of costs and benefits. And according to ADB (1992), all must be carried along into the income-growth process that liberalization offers, if Africa is to achieve the self-sustaining growth that has always eluded it. As stated by Elson and quoted in Gladwin (1991);

“And if greater reliance is to be placed on private enterprise, we need to ask, whose enterprise? The enterprise of the woman farmer (*on whom household subsistence is hinged*) or the enterprise of (*male-managed, household, market-bound*) agribusiness and merchant with monopoly power? The enterprise of women cooperatives or that of a multinational corporation?” □

These diametric concerns symbolize the lack of synergies between the macro and micro impacts of liberalization and central to this is the creation rather than the eradication of (feminized) poverty and food insecurity in Africa.

Poverty and Food Insecurity in Africa

In sub-Saharan Africa, a large and increasing proportion of the population subsist on per capita income of less than one dollar a day. The share of the population falling below the poverty line is as high as 50 per cent. Although all indices of poverty are well manifested in sub-Saharan Africa's Human Development Indices (World Bank 1999), the heart of the problem is food insecurity.□ From statistical projections, aggregate cereals demand and supply balances for African countries indicate a likely increase in imports from 9 million metric tons in 1990 to 27 million metric tonnes by 2020. And given the obvious difficulties in mobilizing resources to finance imports and the implications on local food availability (IITA, 1993), deterioration in the food security will result, unless revolutionary departures are made from current production patterns.

Agriculture is not only the primary source of food in Africa; it is the principal means of livelihood in its predominant rural settlements. The challenges then are, not only to drastically reduce net import demands and make agriculture a major source of export earning, but more critically, to achieve agriculture-led industrialization towards the attainment of structural reforms as are called for by increasing world integration.□ Although the problems are both policy-induced and structural in nature, our concern is on the structural challenges that tend to constrain the desired social and economic transformation of agriculture and that reinforce poverty and food insecurity.

Food Security and Poverty: A Look at Measurement Issues

The evidences of poverty and food insecurity have never been so clear and alarming in their proliferation as in the last decade.□ But more worrisome is the conflict in the manifestations.

The World Food summit secured international commitment, in 1990, to reduce the number of undernourished people by half by the year 2015. Five years on, statistics show that an increasing number of people remain food insecure (800 million by 2000) (World Development Report, 2000). Yet this contracts with the supposed progress being made to reduce by half the world's population living in absolute poverty over the same period, which indicates that the international development community is on track (Meyers, 2001).□ This implies that different indices are being measured or equally likely that progress in one area is negatively affecting the other.□ So, is hunger or food insecurity a symptom of poverty and in what ways are they linked?

The above paradox makes a clear distinction between food production and food access. Here is where poverty comes into the equation of food security.□

A poor nation may increase its food production, national food self-sufficiency and economic growth to lift itself upward in the poverty statistics, but sections of its people may remain food insecure because of other factors that affect their access to the food.□ Suffice it, then, to say that development indices that focus on increased production of food alone are inadequate to capture the pattern of its distribution between populations and within populations.

Poverty characteristics are important in the construction of poverty indicators. Therefore, the relevance of human development indicators (HDI) rather than money-metric or income measures, GDP measures or other macroeconomic structure have been seen to be more appropriate (Human Development reports). The characteristics of the poor are also contextual and so are the manifestations of poverty in different populations. The need for the voice of the people in poverty assessment and the design of poverty reduction measures therefore remain very valid.□ The PRSP strategy is aimed at streamlining the objectives of macroeconomic growth with those of human development. It also emphasizes the contextual sing poverty knowledge and reduction strategies.

The gender dimension of poverty is particularly reinforced in agrarian economies where the poor are characterized by landlessness, invariable (inelastic) supply of labour, likely to live in female-headed households, likely to be farm labourers rather than farm owners, remote from development assistance due to time constraints, hunger as well as literacy and health constraints and so on (Akanji, 1998). As a result, the consonance of gender development indicators with other human development measures is a necessary condition in poverty assessment. The relationship of growth with poverty has been shown not to be a foregone conclusion, as nations, which recorded high economic growth especially during structural adjustment, also recorded high levels of poverty incidence and high-income concentration. The distributional aspects of growth are therefore more relevant to the measurement of poverty.□ This view is reinforced by the fact that there is considerable correlation between the trends in Human Development Indicators, Gender Development Indicators and Human Poverty Indices.

This implies that growth is a necessary but insufficient condition for poverty reduction.□ Sub-Saharan Africa has lagged behind both in its macroeconomic structure, human development and gender development indicators, compared with other developing and developed areas. It would then be tempting to say that the problem of poverty in SSA is induced both by slow growth and social inequalities and that pro-growth policies like liberalization are insufficient to achieve balanced and sustainable growth with equity. Liberalization policies, in their standard prescription will need to be looked at through a different kind of lens.

Expectations from Liberalization for Agriculture

The perspective goal of market liberalization worldwide and especially in Africa, as embodied by different forms of economic (structural) adjustment, is *structural transformation (ST)* (Killick 1990).□ This is hinged on market-led growth strategies rather than protectionist 'soft' government for Africa's predominant agricultural sector.

ST entails the development of manufacturing and service sectors, such that the relative importance of agriculture declines (over time). That is, the percent of labour-force in agriculture and the percent of GNP from the sector decline as labour specialization proceeds (O'Brien, 1991). An interrelated set of changes in economic structure, including internal consumption, production mechanism, external trade and capital flows, domestic savings and investment behaviour are necessary mechanisms that must catapult the primary production system into a higher technological realm which is required to sustain industrial development. □ In short, globalization as epitomized by liberalization policies is expected to be the cure-all for Africa's poverty and food insecurity, if and only if Africa's economic structure can be modified towards more efficient production system, systemic industrialization, modernization of agriculture via increased commercialization, specialization, based on comparative advantage and a gradual shift from agricultural-led to industrial-led macroeconomic development.

In assessing the linkages, Kanji (2002) identifies two main approaches, which may yield different results. Mainstream economic approach and Socio-economic approach. The former takes the neoclassical view of liberalization whereby potential effects of SAPs for instance are beneficial:

- Free movement of goods and services
- Increased specialization based on comparative advantage
- Increased allocative efficiency in resource use
- Increased technical efficiency by using more capital and technology rather than inefficient labour
- Enhanced production towards export-led growth
- Appropriate pricing leading to positive supply response
- Increased aggregate production leading to increased food security
- Increased farm income leading to poverty reduction (at least in money-metric terms)

However, these standard response parameters do not consider the way that policies are specified and their differential

outcomes, if all cannot respond according to these standards. As a result, the poor and other vulnerable groups may not benefit. Also the perspective of food security is over-generalized. □ Food security is not about the food or the commodity but about people and hunger (IFPRI, 1991). Nominal production of food does not guarantee affordability to the poor or accessibility to non-producers. In the last two decades, world output of food has doubled but the world's population of the hungry has also doubled. □ As empirical proof, SSA's dependence on trade, as measured by share of GDP from trade increased from 38% to 43% between 1988 and 2000. At the same time, her share of world trade had declined in real terms. Its dependence on primary goods still remained above 80% from oil and non-oil, mainly agriculture. Price volatility of primary commodities led to declining terms of trade which was 21% below its 1970 level. Over the same period, the percentage of poor people remained the same in 1998 as it was in 1987, in spite of increased trade volume. Social indicators also showed a decline, going by HDI estimates. □ The conclusion is that growth effects need to consider other related social variables, mainly distribution effect of increased income. Growth in the □ poor's income need to be decomposed into growth and distribution effect.

The socio-economic approach introduces the realities of capabilities, vulnerabilities and sustainability of livelihoods. Desirable outcomes, therefore, go beyond income gains to welfare gains, reduced vulnerability, improved food security and sustainable use of natural resources, which have strong equity considerations and therefore work up from micro to macro.

DIVERSITY OF PREFERENCES

Related to cultural issues, diversity of preferences within a society often contributes to economic inequality. When faced with the choice between working harder to earn more money or enjoying more leisure time, equally capable individuals with identical earning potential often choose different strategies. This leads to economic inequality even in societies with perfect equality in abilities and circumstances. The trade-off between

work and leisure is particularly important in the supply side of the labour market in labour economics.

Likewise, individuals in a society often have different levels of risk aversion. When equally-able individuals undertake risky activities with the potential of large payoffs, such as starting new businesses, some ventures succeed and some fail. The presence of both successful and unsuccessful ventures in a society results in economic inequality even when all individuals are identical.

DEVELOPMENT PATTERNS

Simon Kuznets argued that levels of economic inequality are in large part the result of stages of development. Kuznets saw a curve-like relationship between level of income and inequality, now known as Kuznets curve. According to Kuznets, countries with low levels of development have relatively equal distributions of wealth. As a country develops, it acquires more capital, which leads to the owners of this capital having more wealth and income and introducing inequality. Eventually, through various possible redistribution mechanisms such as social welfare programs, more developed countries move back to lower levels of inequality. Kuznets demonstrated this relationship using cross-sectional data. However, more recent testing of this theory with superior panel data has shown it to be very weak.

WEALTH CONDENSATION

Wealth condensation is a theoretical process by which, under certain conditions, newly-created wealth concentrates in the possession of already-wealthy individuals or entities. According to this theory, those who already hold wealth have the means to invest in new sources of creating wealth or to otherwise leverage the accumulation of wealth, thus are the beneficiaries of the new wealth. Over time, wealth condensation can significantly contribute to the persistence of inequality within society.

As an example of wealth condensation, truck drivers who own their own trucks often make more money than those who do not, since the owner of a truck can escape the rent charged to drivers by owners (even taking into account maintenance and other costs). Hence, a truck driver who has wealth to begin with can afford to buy his own truck in order to make more money. A truck driver who does not own his own truck makes a lesser wage and is therefore stuck in a Catch-22, unable to buy his own truck to increase his income.

As another example of wealth condensation, savings from the upper-income groups tend to accumulate much faster than saving from the lower-income groups. Upper-income groups can save a significant portion of their incomes. On the other hand, lower-income groups barely make enough to cover their consumptions, hence only capable of saving a fraction of their incomes or even none. Assuming both groups earn the same yield rate on their savings, the return on upper-income groups' savings are much greater than the lower-income groups' savings because upper-income groups have a much larger base.

Related to wealth condensation are the effects of intergenerational inequality and housing inequality. The rich tend to provide their offspring with a better education, increasing their chances of achieving a high income. Furthermore, the wealthy often leave their offspring with a hefty inheritance, jump-starting the process of wealth condensation for the next generation. However, it has been contended by some sociologists such as Charles Murray that this has little effect on one's long-term outcome and that innate ability is by far the best determinant of one's lifetime outcome.

Inflation

Some Austrian school economists have theorized that high inflation, caused by a country's monetary policy, can contribute to economic inequality. This theory argues that inflation of the money supply is a coercive measure that favours those who already have an earning capacity, disfavours those on fixed income or with savings, thus aggravating inequality.

They cite examples of correlation between inflation and inequality and note that inflation can be caused independently by "printing money", suggesting causation of inequality by inflation.

HYDROPOWER DEVELOPMENT IN INDIA

Resource Potential

India is endowed with rich hydropower potential; it ranks fifth in the world in terms of usable potential. This is distributed across six major river systems (49 basins), namely, the Indus, Brahmaputra, Ganga, the central Indian river systems, and the east and west flowing river systems of south India.

The Indus, Brahmaputra and Ganga together account for nearly 80% of the total potential. In the case of Indus the utilization is, however, governed by the Indus Water Treaty with Pakistan.

The economically exploitable potential from these river systems through medium and major schemes has been assessed at 84,044 MW at 60% load factor corresponding to an installed capacity of around 150,000 MW. Only 32,325 MW has been established. The status of development of hydropower on a region-wise and basin-wise basis. In addition, pumped storage sites with an aggregate capacity to the tune of 94,000 MW have also been identified, but only about 5,000 MW have so far been developed.

The assessment of small hydro (up to 25 MW) potential has indicated nearly 10,000 MW distributed over 4,000 sites. It is estimated there is still an unidentified small hydro potential of almost 5,000 MW.

Hydropower development commenced over a century ago in India with the installation of a 130 kW power station in the Darjeeling district of West Bengal, almost in pace with the world's first hydro-electric station in the United States. However, to date only about 20% of the country's vast hydro potential has been harnessed. The share of hydropower in the total

installed capacity has also decreased over the years; from over 50% in 1960-61 to nearly 26% now.

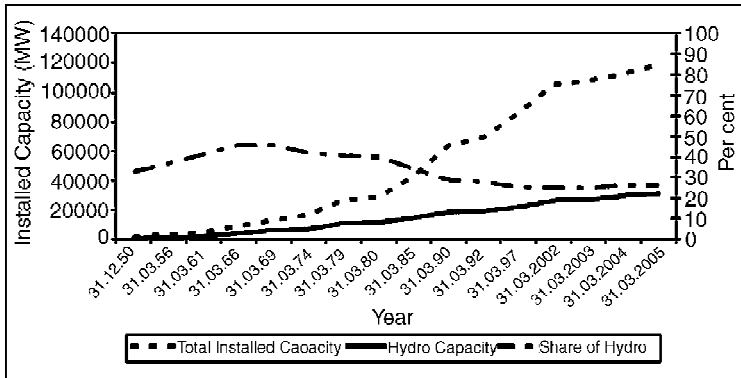


Fig. Growth of Installed Hydropower Capacity

Barriers in Development

The main barriers/concerns that have come in the way of development of hydropower projects.

Longer Gestation Period and Capital Intensive Nature of the Projects.

Preparation of detailed projects reports (DPRs) for hydropower projects takes relatively longer period than for thermal projects because reliable hydrological, geological, seismological and environmental studies have to be carried out for a longer period.

Thus hydropower projects generally entail a long gestation period. In addition to this, these projects are comparatively capital intensive. In the context of resource shortages and continuing power shortages, thermal projects (coal, liquid fuel and gas), which need a relatively short gestation period, have been getting priority in fund allotments.

Dearth of Good Contractors

A matter of concern in the execution of large projects is the dearth of competent and resourceful contractors, as it often results in time and cost overruns of hydro projects.

Inter-state Aspects

A large number of hydropower projects having common river systems between adjoining states are held up on account of inter-state aspects. Some of these projects have received the techno-economic clearance (TEC) of CEA but the investment sanction could not be accorded due to inter-state aspects. A number of projects have also not been accorded CEA clearance on account of inter-state issues.

Environmental Impact and Rehabilitation Issues

Important environmental concerns in hydro-electric projects are:

- Rehabilitation of project-affected people;
- Deforestation;
- Likely submergence of archaeological, religious and historical monuments;
- Protection of flora, fauna, forests, and wildlife;
- Degradation of catchment area;
- Disaster potential in the event of earthquakes, reservoir induced seismicity, surplusing of reservoirs, etc.

Rehabilitation of project-affected people is also a major issue in implementation, especially in case of storage-based hydro development. It is essentially a human problem and has to be dealt with understanding and sensitivity. In fact, many times it is one of the main reasons for the delay in the execution of projects. Sardar Sarovar, Indira Sagar, Bansagar Tons and Tehri are some of the hydro projects where the progress had been severely hampered in the past from sustained opposition to project construction by environment activists and project-affected people.

Valuation of Forestland Based on Net Present Value

The manner of valuation of forest landdiverted for non-forestry purposes based on the net present value (NPV) of diverted land has been a matter of concern for developers of hydropower projects. As per the recommendations of a Centrally

Empowered Committee (CEC), the NPV of forestland diverted for non-forest use has been charged at ₹ 5.80-9.20 lakhs per hectare, depending upon the density of forest involved. Under NPV, the state government has to pay to the CEC the NPV of forestland lost to mining and other projects, including resettlement.

State governments, in turn, have asked for exemption in case of projects such as government hospitals, schools, and rainwater harvesting meant for public welfare. In some cases, it is argued that loading of NPV on the project may result in increase in tariff of hydro-electricity. There is thus an urgent need to rationalize NPV calculations of forestland in case of hydroelectric projects.

The matter had also come up before the Supreme Court of India, which has directed the formation of a committee to look into various issues pertaining to assessment of NPV. The Energy and Resources Institute is also undertaking a study to analyse various aspects of NPV calculation for hydroelectric projects in India.

Law and Order Problems

disturbed law and order is one of the factors causing delay in project execution and even suspension of work. Some of the hydropower projects affected due to these problems are Dulhasti, Upper Sindh, Doyang and Dhansiri.

Land Acquisition Problems

The problems arising in acquisition of land for hydropower project are causing suspension and delay in the construction activities. Thein Dam, Doyang, Ghatgar pumped storage plants are some of the projects affected in the past due to this problem.

Geological Surprises

The features of the hydropower projects being site specific, depend on the geology, topography and hydrology at the site. The construction time of a hydro project is greatly influenced by the geology of the area and its accessibility. Even when

extensive investigation using new techniques of investigations are undertaken, an element of uncertainty remains in the sub-surface geology and the geological surprises during actual construction cannot be ruled out. This in turn adds to the construction risks.

Power Evacuation

A number of the hydropower projects are located in remote sites and the home states do not have adequate demand.

Timely provision of power evacuation system presents many complexities in such cases, since:

- The beneficiaries are to be identified well in advance,
- Where there are serious right-of-way constraints, excess capacity would have to be built in one go considering likely future development of projects in the evacuation corridor.

This could result in high transmission tariffs initially and also adversely affect sustainability of the project in case of slippages in projects. These issues are especially relevant in case of projects in NER.

Lack of Private Sector Interest

The private sector has also not been evincing much interest in taking up hydro projects in view of non-availability of adequately investigated projects, construction risks, etc.

Tariff and Regulatory Issues

The existing tariff formulation norms for hydro projects (based on a cost plus approach) with no premium for peaking services and the provision for 12% free power to distressed states from the initial years are also proving to be deterrents.

Small hydro segment: Development of small hydro often suffered due to inaccessibility of the sites, lack of power evacuation infrastructure, investigation and construction difficulties, land acquisition and financing difficulties, inadequacies in institutional support and in some cases law and order problems.

ECONOMIC NEOLIBERALISM

Economic liberalism is often suspected as one of the causes of economic inequality. John Schmitt and Ben Zipperer (2006) of the CEPR have analysed the effects of intensive Anglo-American neoliberal policies in comparison to continental European neoliberalism, concluding "The U.S. economic and social model is associated with substantial levels of social exclusion, including high levels of income inequality, high relative and absolute poverty rates, poor and unequal educational outcomes, poor health outcomes, and high rates of crime and incarceration.

At the same time, the available evidence provides little support for the view that U.S.-style labour-market flexibility dramatically improves labour-market outcomes.

Despite popular prejudices to the contrary, the U.S. economy consistently affords a lower level of economic mobility than all the continental European countries for which data is available."

MITIGATING FACTORS

Many factors constrain economic inequality - they may be divided into two classes: government sponsored, and market driven. The relative merits and effectiveness of each approach is a subject of debate.

Typical government initiatives to reduce economic inequality include:

- *Public education:* Increasing the supply of skilled labour and reducing income inequality due to education differentials.
- *Progressive taxation:* The rich are taxed proportionally more than the poor, reducing the amount of income inequality in society.
- *Minimum wage legislation:* Raising the income of the poorest workers (though probably increasing unemployment).

- *Nationalization or subsidization of products:* Providing goods and services that everyone needs cheaply or freely (such as food, healthcare, and housing), governments can effectively raise the purchasing power of the poorer members of society.

These provisions may lower inequality, but have sometimes resulted in increased economic inequality (as in the Soviet Union, where the distribution of these government benefits was controlled by a privileged class).

Market forces outside of government intervention that can reduce economic inequality include:

- *Propensity to spend:* With rising wealth and income, a person must spend more. In an extreme example, if one person owned everything, they would immediately need to hire people to maintain their properties, thus reducing the wealth concentration.
- *Unionization:* Although not a market force, *per se*, labour organizations may reduce inequality by negotiating standard pay rates (though probably increasing unemployment). As union power has declined, and performance related pay has become more widespread, economic inequality has mirrored productive inequality.

EFFECTS OF INEQUALITY

Social Cohesion

Research has shown an inverse link between income inequality and social cohesion. In more equal societies, people are much more likely to trust each other, measures of social capital suggest greater community involvement, and homicide rates are consistently lower. One of the earliest writers to note the link between economic equality and social cohesion was Alexis de Tocqueville in his *Democracy in America*. Writing in 1831:—

Among the new objects that attracted my attention during my stay in the United States, none struck me with greater force

than the equality of conditions. I easily perceived the enormous influence that this primary fact exercises on the workings of society. It gives a particular direction to the public mind, a particular turn to the laws, new maxims to those who govern, and particular habits to the governed... It creates opinions, gives rise to sentiments, inspires customs, and modifies everything it does not produce... I kept finding that fact before me again and again as a central point to which all of my observations were leading.

In a 2002 paper, Eric Uslaner and Mitchell Brown showed that there is a high correlation between the amount of trust in society and the amount of income equality. They did this by comparing results from the question "would others take advantage of you if they got the chance?" in U.S General Social Survey and others with statistics on income inequality. Similarly, a 2008 article by Andersen and Fetner finds a strong relationship between economic inequality within and across countries and tolerance for 35 democracies.

Robert Putnam, professor of political science at Harvard, established links between social capital and economic inequality. His most important studies established these links in both the United States and in Italy. On the relationship of inequality and involvement in community he says: Community and equality are mutually reinforcing. Social capital and economic inequality moved in tandem through most of the twentieth century.

In terms of the distribution of wealth and income, America in the 1950s and 1960s was more egalitarian than it had been in more than a century. Those same decades were also the high point of social connectedness and civic engagement. Record highs in equality and social capital coincided. Conversely, the last third of the twentieth century was a time of growing inequality and eroding social capital... The timing of the two trends is striking: somewhere around 1965-70 America reversed course and started becoming both less just economically and less well connected socially and politically.

In addition to affecting levels of trust and civic engagement, inequality in society has also shown to be highly correlated

with crime rates. Most studies looking into the relationship between crime and inequality have concentrated on homicides—since homicides are almost identically defined across all nations and jurisdictions.

There have been over fifty studies showing tendencies for violence to be more common in societies where income differences are larger.

Research has been conducted comparing developed countries with undeveloped countries, as well as studying areas within countries. Daly found that among U.S. States and Canadian Provinces there is a tenfold difference in homicide rates related to inequality.

They estimated that about half of all variation in homicide rates can be accounted for by differences in the amount of inequality in each province or state. Fajnzylber et al. (2002) found a similar relationship worldwide.

Among comments in academic literature on the relationship between homicides and inequality are:

- The most consistent finding in cross-national research on homicides has been that of a positive association between income inequality and homicides.
- Economic inequality is positively and significantly related to rates of homicide despite an extensive list of conceptually relevant controls. The fact that this relationship is found with the most recent data and using a different measure of economic inequality from previous research, suggests that the finding is very robust.
- Research by Richard G. Wilkinson and Kate Pickett has also presented evidence that both social cohesion and health problems are greater in countries or states where economic inequality is highest. For instance, crime rates, mental health problems and teen-age pregnancies are lower in countries like Japan and Finland compared to countries with greater inequality such as the US and UK.

POPULATION HEALTH

Some studies between countries have found a lower health in economically less equal countries. According to professor Andrew Leigh, these differences are not statistically significant; so has also Angus Deaton observed.

When one does not compare a country to other countries but compares each country to the same country before and after changes in economic inequality, one gets more relevant results, and these results show that economic inequality is good for health, life expectancy, economic growth and lower infant mortality. Having a low income does correlate with ill health but others getting richer (increasing income inequality) does not affect this.

Recently, there has been increasing interest from epidemiologists on the subject of economic inequality and its relation to the health of populations. There is a very robust correlation between socioeconomic status and health. This correlation suggests that it is not only the poor who tend to be sick when everyone else is healthy, but that there is a continual gradient, from the top to the bottom of the socio-economic ladder, relating status to health. This phenomenon is often called the "SES Gradient". Lower socioeconomic status has been linked to chronic stress, heart disease, ulcers, type 2 diabetes, rheumatoid arthritis, certain types of cancer, and premature aging.

There is debate regarding the cause of the SES Gradient. A number of researchers see a definite link between economic status and mortality due to the greater economic resources of the wealthy, but they find little correlation due to social status differences. Other researchers such as Richard G. Wilkinson, J. Lynch, and G.A. Kaplan have found that socioeconomic status strongly affects health even when controlling for economic resources and access to health care.

Most famous for linking social status with health are the Whitehall studies - a series of studies conducted on civil servants in London. The studies found that although all civil servants

in England have the same access to health care, there was a strong correlation between social status and health.

The studies found that this relationship remained strong even when controlling for health-affecting habits such as exercise, smoking and drinking. Furthermore, it has been noted that no amount of medical attention will help decrease the likelihood of someone getting type 2 diabetes or rheumatoid arthritis - yet both are more common among populations with lower socioeconomic status.

Lastly, it has been found that amongst the wealthiest quarter of countries on earth (a set stretching from Luxembourg to Slovakia) there is no relation between a country's wealth and general population health - suggesting that past a certain level, absolute levels of wealth have little impact on population health, but relative levels within a country do.

The concept of psychosocial stress attempts to explain how psychosocial phenomena such as status and social stratification can lead to the many diseases associated with the SES Gradient. Higher levels of economic inequality tend to intensify social hierarchies and generally degrade the quality of social relations - leading to greater levels of stress and stress-related diseases.

Richard Wilkinson found this to be true not only for the poorest members of society, but also for the wealthiest. Economic inequality is bad for everyone's health.

The effects of inequality on health are not limited to human populations. David H. Abbott at the Wisconsin National Primate Research Center found that among many primate species, less egalitarian social structures correlated with higher levels of stress hormones among socially subordinate individuals.

UNEMPLOYMENT, STRUCTURAL CHANGE AND GLOBALIZATION

Nearly half of the global labour force works in agriculture. Since the beginning of the 1980s, global agricultural production has increased at a faster rate than the agricultural labour force, and in developing regions agricultural production has

been growing at least twice as fast as in the developed regions between 1980-1992. Moreover, the global agricultural labour force is expected to strongly shrink beginning with the next decade, reflecting decreasing population growth rates and the shifting of labour towards manufacturing and services (ILO 1996). However, this continuing structural transformation of the sector is not associated to rapidly improving employment and living conditions for rural workers. Poverty is still widely diffused and even rising in some parts of Africa and Latin America (UNDP 1997).

The problem of unemployment in developing economies is conceptually very different in urban-industrial and rural-agricultural areas. Urban unemployment relates to problems of appropriate growth strategies in the framework of an increasingly integrated world economy where relatively high labour productivity levels are required. On the other hand, unemployment in rural areas takes the form of serious under-employment of either wage labourers or self-employed farmers, with very low productivity levels. This results in an often dramatic rural poverty, which can be considered the most effective indicator of actual rural unemployment. Urban and rural unemployment, however, interrelate strongly, especially in developing countries with a large share of the labour force concentrated in rural areas. Inadequate rural development limits its labour absorption capacity and may lead to rural-urban migration with negative effects on labour productivity in urban modern sectors. Conversely, economic growth based on urban modern sector development may be constrained if rural areas fail in their role as supplier of food or do not contribute as a source of demand for the production of modern sectors. Thus, rural unemployment has to be addressed in the frame of a developing country's overall growth strategy.

A necessary distinction has to be made between the different models of agricultural production which are associated to specific patterns of land ownership and forms of employment:

- *subsistence agriculture*: in agricultural production carried out for simple subsistence purposes, that is for

immediate consumption, land ownership tends to be communal or of small plots. The main form of employment includes the landless seasonal wage labourer and poor farmers, which represents a large share of the rural population particularly in South Asia and Sub-Saharan Africa, where the subsistence model dominates large parts of agricultural production.

- *domestic market production*: in this model, the production of cash crops prevails, leading to a specialisation in cultivation for local or national markets for food needs or for other agricultural commodities. However, farmers frequently produce also for own consumption needs. Land ownership patterns may be differentiated, with varying size and productivity levels, and require constant or seasonal wage labour. Accordingly, wage labour assumes a larger share of agricultural employment. In East/South East Asia, where this model is dominating, wage labourers frequently maintain a small subsistence activity.
- *export-oriented production*: in the case of cash crop production of staple foods for world markets—such as coffee, tea, cacao, grains, fruits and meats—, the dynamics of the world market rule. Land ownership is dominated by large national holdings or transnational corporations. Employment is waged, with large parts of seasonal workers, and productivity tends to be high. This model is prevailing in many Latin American countries.

The Evolution of Agrarian Employment

During the last four decades, different strategies for integrating rural areas in national models of economic development have been experimented. At the origins of development planning in the 1950s, strategies were strongly biased towards urban modern sector growth in order to compensate for insufficient “natural forces” for growth in the rural areas. Rural development was regarded as a secondary issue and the object of eventual spill-over effects of industrial

development. Rural employment support in this concept was basically related to some form of direct aid to sustain subsistence-oriented self-employment. In many Sub-Sahara African and some Latin-American countries this concept of exclusively urban based development still prevails.

The subsistence model has given way, in the 1970s, to the "Green Revolution" concept which ventured to make agricultural activities a productive factor for national development. It became widely accepted that agriculture can be an engine of growth in the early stages of economic development in countries which still have a large share of their labour force concentrated in rural areas. The successful transition of a developing economy to higher levels of productivity in the modern sectors depends heavily on an integrated development strategy which, parallel to industrial development, emphasises economic growth associated to employment and income generation in the agricultural sector. Rising labour productivity in the agricultural sector provides more purchasing power, which increases the demand for goods and services from other sectors, thereby stimulating overall economic growth. It also improves rural living conditions, acting effectively as buffer against unsustainable rural-to-urban migration and imbalances of the labour market which is generally associated with decreasing productivity and incomes.

Rural development in this strategy is based on productivity growth through mechanisation and industrialisation of agricultural production which may have different intensity depending whether it is oriented at production for the domestic markets or for export. While the domestic market strategy has been widely employed in East/South East Asian developing countries in the 1960s and has been adopted, in the 1980s, also by many South Asian countries, the export market strategy prevailed in many Latin American countries. Both orientations are associated to higher shares of wage employment in agricultural production and to sectoral diversification of rural employment, because of increasing requirements for services and industrial goods.

Lately, it has been objected that rural development strategies based exclusively on the creation of larger economic units and fast productivity growth have often contributed to a growing pauperisation of rural people and to aggravated problems of malnutrition and hunger. Production for markets-associated to specialisation in cash or export crops, rigid layout of fields and pre-set cultivation routines-often contrasts sharply with the more varied peasant farming schemes, in which production for subsistence and for the market are carefully balanced, according to social and ecological criteria. Increasing poverty would contradict a rural development strategy based exclusively on market-orientation and could suggest a model in which subsistence production can find an appropriate place.

High levels of poverty persist especially among the part of landless agricultural wage labourers which have been uprooted from subsistence-oriented smallholdings by the introduction of cash and export crop production, and whose global share in the agricultural workforce is increasing (ILO 1996). However, there are large differences between and within developing regions. It is therefore important to analyse how the different rural development orientations-subsistence, domestic market orientation and export orientation-integrate into overall development strategies and contribute to the diminution of rural-urban development disparities. This can be measured on their respective effects on rural employment and income generation, and on the diversification into non-agricultural rural employment which they are able to stimulate. Both are key challenges for rural development.

The Forms of Rural Employment

In development theory, the relation between economic growth and employment is conceived not only in terms of intersectoral shifts of the labour force, but also in terms of changes in the mode of employment. In the modern sectors, economic growth is strongly associated to the growth of regular full-time wage employment and the corresponding decline of self-employment, resulting in higher productivity and income of workers. The integration of the agricultural sector in this

development scheme supposes that rural modernisation follows the same pattern. There are, however, important structural differences between the sectors which make the integration of agriculture in this employment scheme difficult:

- agricultural commodities normally do not require the same amount of continuous labour input over the whole year. Though the mechanisation and industrialisation of agricultural production has raised the share of wage labourers considerably, this is associated largely to seasonal and occasional wage employment. With full-time wage employment set at 260 working days per year, agricultural wage labourers are estimated to work, on global average, only 170 days per year (ILO 1996). Underemployment is hence a regular and significant feature among agricultural wage workers. Monoculture and one harvest per year which dominate the production for export markets, tend to accentuate this characteristic. Diversified crops and multiple harvest which are associated to local and domestic markets cushion the effect of the natural cycle of a single crop. The sustained productivity growth which accompanies the agricultural production for export markets may thus be inversely related to income generation;
- it results from the above that, in the agricultural sector, formal wage employment and self-employment cannot be considered as mutually exclusive or their duality a constraining factor for development. The persistence of a dual, formal and informal, economy may reduce overall productivity growth. It is, however, a condition to stabilize rural incomes. Country studies show that export-oriented agriculture has significantly helped in employment generation and, by raising returns on labour relative to staple crop farming, in the alleviation of poverty, but that this link is much weaker where employment is only temporary. It follows that the largest probability of a significant drop in poverty and a raise in incomes lies in a combination of cash or export crop

farming and self-employment or off-farm employment (Rodriguey-Smith 1994);

- while in the modern urban economic sectors the size of economic units has a positive impact on wage employment creation, in the agricultural sector labour absorption is much lower on large farms than on smaller farms. Land ownership patterns in countries with export-oriented agriculture favours the concentration in large holdings and the marginalisation of small holdings. This not only negatively affects opportunities of employment creation, but significantly adds to the supply of labour entering the rural labour market, since more and more small farmers become landless workers or are cultivating marginal holdings which cannot ensure their survival and forces them to seek wage employment on a casual basis to supplement their income. Land distribution does not follow the rule of demand and supply. Land is limited and its distribution follows political decisions. Agriculture is therefore a sector in which market rules do not prevail without conditions.

On the basis of this remarks, the empirical evidence-though highly incomplete-indicates that the different rural development models have considerable effects on rural-urban development disparities in terms of income and employment status. In Sub-Saharan Africa which is extremely dominated by subsistence agriculture and has a very low share of rural wage workers (except South Africa) the incidence of poverty is much higher in rural than in urban areas, and the incidence of poverty among agricultural wage labourers is higher than among the rural population in general. The same holds true for Asia in which subsistence agriculture is combined with domestic market orientation in agriculture, accounting for a higher share of rural wage workers. The incidence of poverty in rural as compared to urban areas is, however, much lower in East/South East Asia, which embarked early on domestic market orientation, than in South Asia. Adverse results are shown for Latin America, which is dominated by export-oriented agriculture accompanied with a large share of agricultural

wage workers. Here the incidence of poverty is lower among wage workers than among the rural population in general, though total poverty incidence for both is high (ILO 1996).

For the number of countries for which evidence is available it can be resumed that the combined strategy of subsistence and domestic market orientation appears to be more appropriate to mitigate rural-urban development disparities than either a subsistence or an export-oriented strategy alone. This may, however, depend on the amount of cultivable land and different food security perspectives. The model has worked well in East/South East Asia, partly because of the coincidence with rural outmigration allowing for the redistribution of scarcely available land and requiring food security policies.

This may be similar for many African countries, but different for large parts of South America where problems of availability of land are not that pressing. What is interesting in this context, however, is that this model relates to enhanced requirements for policy to design an integrated development model and that it is not the result of market-driven development. It suggests that the outlook for rural employment is influenced by a set of structural issues, historical factors and entrenched social problems rather than by simplistic views of forces of demand and supply, and this plays a critical role in determining the underemployment and productivity of rural labourers.

UTILITY, ECONOMIC WELFARE, AND DISTRIBUTIVE EFFICIENCY

Economic inequality is thought to reduce distributive efficiency within society. That is to say, inequality reduces the sum total of personal utility because of the decreasing marginal utility of wealth. For example, a house may provide less utility to a single millionaire as a summer home than it would to a homeless family of five.

The marginal utility of wealth is lowest among the richest. In other words, an additional dollar spent by a poor person will go to things providing a great deal of utility to that person, such

as basic necessities like food, water, and healthcare; meanwhile, an additional dollar spent by a much richer person will most likely go to things providing relatively less utility to that person, such as luxury items. From this standpoint, for any given amount of wealth in society, a society with more equality will have higher aggregate utility. Some studies (Layard 2003; Blanchard and Oswald 2000, 2003) have found evidence for this theory, noting that in societies where inequality is lower, population-wide satisfaction and happiness tend to be higher.

Economist Arthur Cecil Pigou discussed the impact of inequality in *The Economics of Welfare*. He wrote: Nevertheless, it is evident that any transference of income from a relatively rich man to a relatively poor man of similar temperament, since it enables more intense wants, to be satisfied at the expense of less intense wants, must increase the aggregate sum of satisfaction.

The old “law of diminishing utility” thus leads securely to the proposition: Any cause which increases the absolute share of real income in the hands of the poor, provided that it does not lead to a contraction in the size of the national dividend from any point of view, will, in general, increase economic welfare. In addition to the argument based on diminishing marginal utility, Pigou makes a second argument that income generally benefits the rich by making them wealthier than other people, whereas the poor benefit in absolute terms. Pigou writes:

Now the part played by comparative, as distinguished from absolute, income is likely to be small for incomes that only suffice to provide the necessities and primary comforts of life, but to be large with large incomes. In other words, a larger proportion of the satisfaction yielded by the incomes of rich people comes from their relative, rather than from their absolute, amount.

This part of it will not be destroyed if the incomes of all rich people are diminished together. The loss of economic welfare suffered by the rich when command over resources is transferred

from them to the poor will, therefore, be substantially smaller relatively to the gain of economic welfare to the poor than a consideration of the law of diminishing utility taken by itself suggests. —Arthur Cecil Pigou in *The Economics of Welfare*.

Schmidtz (2006) argues that maximizing the sum of individual utilities does not necessarily imply that the maximum social utility is achieved. For example: A society that takes Joe Rich's second unit [of corn] is taking that unit away from someone who... has nothing better to do than plant it and giving it to someone who... does have something better to do with it. That sounds good, but in the process, the society takes seed corn out of production and diverts it to food, thereby cannibalizing itself.

ECONOMIC INCENTIVES

Many people accept inequality as a given, and argue that the prospect of greater material wealth provides incentives for competition and innovation within an economy.

Some modern economic theories, such as the neoclassical school, have suggested that a functioning economy entails a certain level of unemployment. These theories argue that unemployment benefits must be below the wage level to provide an incentive to work, thereby mandating inequality and that additionally, it is impossible to lower unemployment down to zero.

Hypotheses such as socialism, dispute this positive role of unemployment. Many economists believe that one of the main reasons that inequality might induce economic incentive is because material wellbeing and conspicuous consumption are related to status.

In this view, high stratification of income (high inequality) creates high amounts of social stratification, leading to greater competition for status. One of the first writers to note this relationship was Adam Smith who recognized "regard" as one of the major driving forces behind economic activity. From *The Theory of Moral Sentiments* in 1759:

What is the end of avarice and ambition, of the pursuit of wealth, of power, and pre-eminence? Is it to supply the necessities of nature? The wages of the meanest labourer can supply them... Why should those who have been educated in the higher ranks of life, regard it as worse than death, to be reduced to live, even without labour, upon the same simple fare with him, to dwell under the same lowly roof, and to be clothed in the same humble attire? From whence, then, arises that emulation which runs through all the different ranks of men, and what are the advantages which we propose by that great purpose of human life which we call bettering our condition?

To be observed, to be attended to, to be taken notice of with sympathy, complacency, and approbation, are all the advantages which we can propose to derive from it. It is the vanity, not the ease, or the pleasure, which interests us. Modern sociologists and economists such as Juliet Schor and Robert H. Frank have studied the extent to which economic activity is fueled by the ability of consumption to represent social status.

Schor, in *The Overspent American*, argues that the increasing inequality during the 1980s and 1990s strongly accounts for increasing aspirations of income, increased consumption, decreased savings, and increased debt. In *Luxury Fever* Robert H. Frank argues that people's satisfaction with their income is much more strongly affected by how it compares with others than its absolute level.

INEQUALITY AND ECONOMIC GROWTH

The Classical Theory

Inequality has a positive effect on economic development. The marginal propensity to save increases with wealth and inequality increases savings, capital accumulation, and economic growth.

The Neoclassical Theory

The neoclassical theory ignores the relevance of income distribution for macroeconomic analysis. It interprets the

observed relationship between inequality and economic growth as a reflection of the growth process on the distribution of income.

The Modern Theory

The modern theory suggests that income distribution, plays an important role in the determination of aggregate economic activity and economic growth.

The credit market imperfection approach, developed by Galor and Zeira (1993), demonstrates that that inequality in the presence of credit market imperfections has a long lasting detrimental effect on human capital formation and economic development. The political economy approach, and Persson and Tabellini (1994), argues that inequality is harmful for economic development because inequality generates a pressure to adopt redistributive policies that have an adverse effect on investment and economic growth.

Evidence

Perotti (1996) examines of the channels through which inequality may affect economic growth. He shows that in accordance with the credit market imperfection approach, inequality is associated with lower level of human capital formation and higher level of fertility, while lower level of human capital is associated with lower growth and lower levels of economic growth. In contrast, his examination of the political economy channel refutes the political economy mechanism. He demonstrates that inequality is associated with lower levels of taxation, while lower levels of taxation, contrary to the theories, are associated with lower level of economic growth.

In their study for the World Institute for Development Economics Research, Giovanni Andrea Cornia and Julius Court (2001) reach policy conclusions as to the optimal distribution of income. They conclude that too much equality (below a Gini coefficient of .25) negatively impacts growth due to "incentive traps, free-riding, labour shirking, and high supervision costs". They also claim that high levels of inequality (above a Gini

coefficient of .40) negatively impacts growth, due to "incentive traps, erosion of social cohesion, social conflicts, and uncertain property rights". They advocate for policies which put equality at the low end of this "efficient" range.

Later studies restricted their analysis to the reduced form relationship between inequality and growth. Forbes (2000) and Barro (2000) examined the effect of inequality on economic growth in a panel of countries. They find a positive and zero effect, respectively, of an increase in inequality on economic growth.

These findings appear to have no bearing on the validity of the theories and are not very informative about the overall effect of inequality. First, these studies examine the effect of inequality beyond its effects through education, fertility, and investment.

For instance, Barro (2000) has found that, once controls for education, fertility, and investment are introduced, there is no relationship between inequality and economic growth in the entire sample. His findings, therefore, suggest that inequality does not have a direct effect on growth beyond its effects through education, fertility and investment. In particular, if the control for fertility is dropped in Barro (2000), the effect of inequality on growth is significantly negative, as predicted by the theory. Moreover, these studies examine the effect of inequality in the short run (*i.e.*, the effect of inequality on the average growth rate in the subsequent 5-10 years), while as suggested by the theories, inequality is likely to have a long-run effect (e.g., via the human capital formation).

The United Nations Research Institute for Social Development (UNRISD)'s 2010 report comes to multiple conclusions, some of which concur with and others that challenge the findings of previous research. The report claims that inequality has risen partly due to neoliberal economic policies that have made it difficult to have high rates of economic growth without increasing inequality. The report acknowledges that there has been a decrease of inequality in the Middle East, North Africa, and sub-Saharan Africa, but the level is still high

in these regions overall (above a Gini coefficient of .40). It also notes that in a study done by the International Labour Organization (ILO), over two-thirds of the 85 countries surveyed experienced a rise in income inequality between 1990 and 2000.

The report looks to the functional distribution of income of a country as an indicator of inequality as well as the Gini coefficient. The functional distribution of income looks at how income is distributed between wage earners and profit earners: the larger the share of GDP wage earners share, the more equal the situation. The report notes that a high growth rate contributes to income inequality when a small portion of the population - profit earners - earns the majority of the money. This is common in situations in which a rise economic growth is caused by a specific sector, such as the technological sector. This picture becomes more muddled in developing countries when one takes into account large informal sectors; these workers earn profits rather than wages, so it's difficult to say if an increase in the share of profit income is helping or harming income inequality.

The UNRISD report also states, in contradiction to Pagano's research, that growth and equity can be "mutually reinforcing" when supported by "well-thought-out economic and social policies". It explains that reducing poverty through growth is difficult when inequality is rampant; wealth and land tends to concentrate in small groups, which in turn excludes the poor from economic participation. The poor have less disposal income to spend and as a result effective aggregate demand lowers, limiting the size of the domestic market. This in turn makes it harder for a country to industrialize, thereby hindering its development.

CAPITAL MARKETS AND POVERTY REDUCTION IN INDIA

In broad terms, USAID sought to improve the efficiency of Indian capital markets, or of the larger Indian financial system. Increased efficiency in the financial sector in turn is expected

to direct financial resources into the sectors where their productivity is highest. This in turn is expected to increase the rate of economic growth. Faster economic growth is then expected to reduce poverty.

The link between increases in income and reductions in poverty is empirically strongly established over the medium and long term. (For shorter periods, the two can move in opposite directions because of a variety of factors. But extreme poverty—the World Bank defines it as \$1 a day per person—prevails only in countries where average incomes are low.) Batchelder and Holt* have drawn upon the historical experience of developing countries on the relationship between economic growth and poverty to make projections for India and other countries of future poverty levels. They provide two scenarios for India. Under the “poor policy” scenario, where government restrictions prevent free markets from operating in capital markets and foreign trade, growth would average 1.2 per cent per capita a year, while it would average 5 per cent per capita under market-based policies.

The difference in poverty between the two scenarios is stark. With poor policies, the number of poor (those with per capita incomes below \$1 a day) increases slightly, from 473 million to 476 million, though their share in the population falls from 51 per cent to 37 per cent. With the faster growth resulting from market-based policies, the number of poor falls from 473 million to 174 million, or from 51 per cent of the population to 14 per cent. (This decline is roughly in line with what occurred in Indonesia over the last 25 years.)

Batchelder and Holt’s scenarios overstate the difference in India. Its policies have moved a substantial distance over the past five years towards free markets for goods and finance, and recent economic growth rates have reflected those better policies. Nevertheless, the basic point is shown by experience. Countries with better policies have substantially faster rates of poverty reduction.

This model, of course, does not separate improvements in capital markets from other policy changes. Improvements in

capital markets alone would be expected to provide some fraction of the impetus to growth found by Batchelder and Holt. This empirical link between market-oriented policies and growth is important in the present context because the link between USAID capital markets projects and poverty reduction is neither direct nor immediate.

At present, the firms that raise capital because of improvements in the structure of the capital market will not make major increases in employment as a result. Nor will the Indian stock market provide a means for the great bulk of small and medium enterprises in India to gain capital for expansion. Improvement in the structure of the equity market will directly affect perhaps several thousand firms, not the millions of smaller enterprises that constitute the mass of business enterprises. (Large firms do dominate output: in India, the 3,000 largest firms account for half of all manufacturing value added.) Small firms will, as elsewhere, need to rely primarily on internally generated savings, funds from family and associates, and borrowing from banks for their capital needs.

Despite these limitations, work in capital markets appears to be a critical element in the rapid reduction in poverty in India in the longer term. The reasons for this lie in past Indian policies. The role of capital markets in Indian development cannot be understood without a theory. The prevailing view among economists is that India is much poorer than it should be in view of its resources.

India's savings rate has always been high, and has grown over the past several decades. The basic education system is weak, but its coverage has increased over time, and literacy has been increasing. Its higher education system is good, and the country has a substantial number of engineers and technicians. (Unfortunately, Indian expertise is more highly rewarded abroad than at home, and the country has had a continuing "brain drain" of skilled people. Major newspapers in India include large numbers of advertisements for foreign jobs.) Thus, the basic challenge in India is efficiency—to permit more to be produced with available resources.

Since independence, the Indian government has given central importance to investment and to capital. With the institution of economic planning in India shortly after independence, the government took control of allocation of investment in both the public and private sectors. The five-year plans set targets for each, by sector of the economy. The basic idea was that capital was the key constraint in the Indian economy.

To move from its present poverty to its rightful place as an industrial country, it was essential that all capital be allocated carefully to avoid waste. Allowing the private sector to invest whatever it wanted and in whatever form it wanted was thought likely to lead to waste of investment capital. Without central planning, firms in some industries would be likely to build too much capacity, while firms in others would build too little. The excess capacity by the overinvesting firms would slow growth because capital would have been usefully employed elsewhere.

The shortages in output from the latter firms would create bottlenecks in the economy. This would prevent firms in other sectors from achieving maximum output, thus also slowing overall growth. The key in this view was to have “balanced growth,” with government setting clear parameters so that firms in all industries knew how much capacity to add. Since the entire economy would move forward in lock step, booms or depressions—or excess capacity and shortages—would all be avoided. Further, the government believed that economies of scale were essential in heavy industry. Private sector operation was likely to lead to competition among firms that were less than optimum size.

For maximum efficiency for heavy industry, there should be only one firm—able to achieve these economies and produce at minimum cost. Here again, capital is used most efficiently and waste is avoided. Since a private monopoly in such an industry would gouge consumers, such “commanding heights” of the economy should be government owned.

In other sectors, private activity would be allowed, but the tendency for business firms to build excess capacity and to

engage in destructive competition would be limited by government controls on new investment. Firms would not be allowed to expand their factories unless they could show that the investment was needed to meet demand. In sum, the Indian planning model was centered on concern about using capital efficiently.

In 1950, the theory had considerable plausibility. The West had recovered from a lengthy depression only through the onset of world war, and the Soviet Union appeared to have made a great leap forward into industrialization through central planning. This theory had two central assumptions that proved fallacious in practice.

First, it was assumed that efficient production resulted more or less automatically from modern, technocratic management of industrial concerns. Getting the maximum production from a set of machines was a straightforward engineering problem. The key problem for economic growth was to ensure that all factories had the proper amount of capital so that the entire productive structure could move forward together.

Second, the types of goods to be produced were conceived of in simplistic terms—tons of steel, numbers of automobiles, pairs of shoes—implicitly assuming that each industry produced homogenous products for which the needs of the economy could be measured quantitatively. The experience since 1950 demonstrates that modern economies are not like that. For the needs of steel-using industry, the problem is not simply the number of tons of steel produced but the number of tons of steel of particular specifications available in a particular place at a particular time. Planning processes are powerless to deal effectively with the qualitative, locational, and temporal dimensions.

Only the flexibility of a market system, where the producer is rewarded for meeting these constraints by the prospect of profit, and punished for failing to do so by the prospect of loss (and bankruptcy), has proven capable of this. The problem of specifications is compounded with consumer goods. If all

consumers preferred size 9 brown penny loafers, the problem of predicting and meeting consumer demand for shoes would be relatively straightforward. But consumer preferences vary widely and change over time.

The second factor, closely related to the first, is technological advancement. Improvement in technology in both manufacturing processes in the world and in design of consumer goods has been rapid.

Consequently, the idea of a knowable and fixed capacity for production for each factory disappears. To remain efficient, managers in each factory have to continually revise their production methods, adding machinery and techniques in line with evolving technology. They need to change the product in line with changing designs and new materials. In sum, they must continually make new decisions about what to produce and how to produce it.

Once the immensity of these problems becomes clear, it becomes evident that central planning is simply not capable of meeting the needs of a modern economy. To cite a specific example, India began producing automobiles under the planning approach, importing the technology and equipment necessary to build a model close to the 1954 Morris Minor. For three decades, production continued of essentially the same vehicle with minimal design and production changes. By the 1980s, India was probably producing 1954 Morris Minors rather efficiently.

However, relatively frozen technology made possible by India's isolation from the world economy and the absence of domestic competition meant that the Indian automobile was technologically obsolescent. No one with access to the alternatives available in the world marketplace would want one. Other countries had found ways to produce better automobiles at lower cost. As with the Soviet bloc when those markets were opened (where it was difficult to find any firm that was producing goods salable on world markets, even at very low prices), it has become clear that the forces of competition are critical to the efficiency of industry in the long run.

What Joseph Schumpeter called “creative destruction” is at the core of modern market economies. Firms and entire industries that do not maintain competitiveness in the long run by adapting new technologies are simply pushed aside. Firms go bankrupt, or are acquired by others, in order to reorganize people and capital equipment into arrangements that can produce efficiently what is wanted by society.

Looking around India, it is clear that much capital is wasted or misallocated. Because of the uncertainty of electric power, business firms have their own generators. Dozens of ships wait in the port of Mumbai for their turn to unload or load. Bungalows for offices and residences of government officials, relics of a quieter day, sit in the shadow of Mumbai skyscrapers on some of the most valuable land in India. More broadly, the amount of economic growth that has occurred in India has not been commensurate with the amount of capital investment that has been taking place. To achieve faster economic growth, and faster reduction in poverty, capital needs to be used more efficiently. This greater efficiency of capital use is the key to converting Mumbai into an Amsterdam or a Singapore. To achieve faster economic growth, the capital market must provide continuous revaluation of the worth of the economy's capital assets through the prices they command in the marketplace. This continuous revaluation makes three important contributions to growth.

- First, it signals to other providers of capital (such as banks) the prospects, and therefore the riskiness, of lending to companies.
- Second, it provides incentives for new firms to enter promising sectors, and for investors to seek out and invest in companies of the future.
- Third, it provides the means, through takeovers of existing companies by more efficient firms, in order to redeploy the capital more efficiently.

In the longer term, restructuring the capital base and the means by which capital can be drawn to the most efficient use provides the most promising way for productivity of labour to

be increased. Increasing labour productivity is the only sure means for steadily increasing wage rates and incomes—of allowing those hard-working but unproductive laborers visible everywhere in Mumbai to acquire the incomes and amenities of their counterparts in Singapore or Amsterdam.

PERSPECTIVES REGARDING ECONOMIC INEQUALITY

There are various schools of thought regarding economic inequality.

Marxism

Marxism favours an eventual society where distribution is based on an individual's needs rather than his ability to produce, inheritance, or other such factors. In such a system inequality would be minimal.

Marxists believe economic equality is necessary for political freedom - saying that when there is economic inequality then political inequality is assured - in such a society currency would be eliminated, the means of production owned in common and non labour jobs eliminated (those whose income depends on rent/profit or surplus value).

Marxists believe that once the means of production are owned in common and worked for utility rather than profit, that all workers receive a voice in a democratic workplace and the money incentive removed, economic equality will be achieved. However, a few economists such as Ludwig von Mises have pointed out what they believe are several logical inconsistencies of this theory. Marxist Leninists believe that, during the transitional period between capitalism and socialism, workers will be paid based on "to each according to labour" as opposed to "to each according to need".

Meritocracy

Meritocracy favours an eventual society where an individual's success is a direct function of his merit, or

contribution. Therefore, economic inequality is beneficial inasmuch as it reflects individual skills and effort, and detrimental inasmuch as it represents inherited or unjustified wealth or opportunities. From a meritocratic point of view, measuring economic equality as one parameter, not distinguishing these two opposite contributing factors, serves no good purpose.

Liberalism

Classical liberals and libertarians generally do not take a stance on wealth inequality, but believe in equality under the law regardless of whether it leads to unequal wealth distribution. Ludwig von Mises (1966) explains: The liberal champions of equality under the law were fully aware of the fact that men are born unequal and that it is precisely their inequality that generates social cooperation and civilization. Equality under the law was in their opinion not designed to correct the inexorable facts of the universe and to make natural inequality disappear. It was, on the contrary, the device to secure for the whole of mankind the maximum of benefits it can derive from it. Henceforth no man-made institutions should prevent a man from attaining that station in which he can best serve his fellow citizens.

Libertarian Robert Nozick argued that government redistributes wealth by force (usually in the form of taxation), and that the ideal moral society would be one where all individuals are free from force. However, Nozick recognized that some modern economic inequalities were the result of forceful taking of property, and a certain amount of redistribution would be justified to compensate for this force but not because of the inequalities themselves. John Rawls argued in *A Theory of Justice* that inequalities in the distribution of wealth are only justified when they improve society as a whole, including the poorest members.

Rawls does not discuss the full implications of his theory of justice. Some see Rawls's argument as a justification for capitalism since even the poorest members of society

theoretically benefit from increased innovations under capitalism; others believe only a strong welfare state can satisfy Rawls's theory of justice.

Classical liberal Milton Friedman believed that if government action is taken in pursuit of economic equality that political freedom would suffer. In a famous quote, he said: A society that puts equality before freedom will get neither. A society that puts freedom before equality will get a high degree of both.

Arguments Based On Social Justice

Patrick Diamond and Anthony Giddens (professors of Economics and Sociology, respectively) hold that pure meritocracy is incoherent because, without redistribution, one generation's successful individuals would become the next generation's embedded caste, hoarding the wealth they had accumulated.

They also state that social justice requires redistribution of high incomes and large concentrations of wealth in a way that spreads it more widely, in order to "recognise the contribution made by all sections of the community to building the nation's wealth."

Claims Economic Inequality Weakens Societies

In most western democracies, the desire to eliminate or reduce economic inequality is generally associated with the political left. One practical argument in favour of reduction is the idea that economic inequality reduces social cohesion and increases social unrest, thereby weakening the society. There is evidence that this is true and it is intuitive, at least for small face-to-face groups of people. Alberto Alesina, Rafael Di Tella, and Robert MacCulloch find that inequality negatively affects happiness in Europe but not in the United States.

Ricardo Nicolás Pérez Truglia in "Can a rise in income inequality improve welfare?" proposed a possible explanation: some goods might not be allocated through standard markets, but through a signaling mechanism. As long as income is

associated with positive personal traits (e.g. charisma), in more heterogeneous-in-income societies income not only buys traditional goods (e.g. food, a house), but it also buys non-market goods (e.g. friends, confidence). Thus, endogenous income inequality may explain a rise in social welfare.

It has also been argued that economic inequality invariably translates to political inequality, which further aggravates the problem. Even in cases where an increase in economic inequality makes nobody economically poorer, an increased inequality of resources is disadvantageous, as increased economic inequality can lead to a power shift due to an increased inequality in the ability to participate in democratic processes.

The main disagreement between the western democratic left and right, is basically a disagreement on the importance of each effect, and where the proper balance point should be. Both sides generally agree that the causes of economic inequality based on non-economic differences (race, gender, etc.) should be minimized. There is strong disagreement on how this minimization should be achieved.

The Capabilities Approach

Developed by Amartya Sen, the capabilities approach – sometimes called the human development approach - looks at income inequality and poverty as form of “capability deprivation”. Unlike neoliberalism, which “defines well-being as utility maximization”, economic growth and income are considered a means to an end rather than the end itself. Its goal is to “wid people's choices and the level of their achieved well-being” through increasing functionings (the things a person values doing), capabilities (the freedom to enjoy functionings) and agency (the ability to pursue valued goals).

When a person's capabilities are lowered, they are in some way deprived of earning as much income as they would otherwise. An old, ill man cannot earn as much as a healthy young man; gender roles and customs may prevent a woman from receiving an education or working outside the home. There may be an epidemic that causes widespread panic, or

there could be rampant violence in the area that prevents people from going to work for fear of their lives.

As a result, income and economic inequality increases, and it becomes more difficult to reduce the gap without additional aid. To prevent such inequality, this approach believes it's important to have political freedom, economic facilities, social opportunities, transparency guarantees, and protective security to ensure that people aren't denied their functionings, capabilities, and agency and can thus work towards a better relevant income.

THE ROLE OF ECONOMIC INEQUALITY

Recently, there has been increasing interest from epidemiologists on the subject of economic inequality and its relation to the health of populations. There is a very robust correlation between socioeconomic status and health. This correlation suggests that it is not only the poor who tend to be sick when everyone else is healthy, but that there is a continual gradient, from the top to the bottom of the socioeconomic ladder, relating status to health. This phenomenon is often called the "SES Gradient". Lower socioeconomic status has been linked to chronic stress, heart disease, ulcers, type 2 diabetes, rheumatoid arthritis, certain types of cancer, and premature aging. Despite the reality of the SES Gradient, there is debate as to its cause. A number of researchers see a definite link between economic status and mortality due to the greater economic resources of the better-off, but they find little correlation due to social status differences.

Other researchers such as Richard G. Wilkinson, J. Lynch, and G.A. Kaplan have found that socioeconomic status strongly affects health even when controlling for economic resources and access to health care. Most famous for linking social status with health are the Whitehall studies - a series of studies conducted on civil servants in London. The studies found that, despite the fact that all civil servants in England have the same access to health care, there was a strong correlation between social status and health.

The studies found that this relationship stayed strong even when controlling for health-affecting habits such as exercise, smoking and drinking.

Furthermore, it has been noted that no amount of medical attention will help decrease the likelihood of someone getting type 1 diabetes or rheumatoid arthritis - yet both are more common among populations with lower socioeconomic status. Lastly, it has been found that amongst the wealthiest quarter of countries on earth (a set stretching from Luxembourg to Slovakia) there is no relation between a country's wealth and general population health - suggesting that past a certain level, absolute levels of wealth have little impact on population health, but relative levels within a country do.

The concept of psychosocial stress attempts to explain how psychosocial phenomenon such as status and social stratification can lead to the many diseases associated with the SES Gradient. Higher levels of economic inequality tend to intensify social hierarchies and generally degrades the quality of social relations - leading to greater levels of stress and stress related diseases.

Richard Wilkinson found this to be true not only for the poorest members of society, but also for the wealthiest.

Economic inequality is bad for everyone's health. Inequality does not only affect the health of human populations. David H. Abbott at the Wisconsin National Primate Research Center found that among many primate species, less egalitarian social structures correlated with higher levels of stress hormones among socially subordinate individuals. Research by Robert Sapolsky of Stanford University provides similar findings.

The Importance of Family Planning Programmes

Family planning programs (including contraceptives) play a major role in population health. For example, the United States Agency for International Development lists as benefits of its international family planning programme:

- "Protecting the health of women by reducing high-risk pregnancies"

- "Protecting the health of children by allowing sufficient time between pregnancies"
- "Fighting HIV/AIDS through providing information, counseling, and access to male and female condoms"
- "Reducing abortions"
- "Supporting women's rights and opportunities for education, employment, and full participation in society"
- "Protecting the environment by stabilizing population growth"

Culture Geography

INTRODUCTION

Cultural geography is a sub-field within human geography. Cultural geography is the study of cultural products and norms and their variations across and relations to spaces and places. It focuses on describing and analysing the ways language, religion, economy, government and other cultural phenomena vary or remain constant, from one place to another and on explaining how humans function spatially.

Areas of Study

The areas of study of cultural geography are very broad.

Among many applicable topics within the field of study are:

- Globalization has been theorised as an explanation for cultural convergence.
- Westernization or other similar processes such as modernization, americanization, islamization and others.
- Theories of cultural hegemony or cultural assimilation via cultural imperialism.
- Cultural areal differentiation, as a study of differences in way of life encompassing ideas, attitudes, languages, practices, institutions and structures of power and whole range of cultural practices in geographical areas.

- Study of cultural landscapes.
- Other topics include spirit of place, colonialism, post-colonialism, internationalism, immigration, emigration and ecotourism.

History

Though the first traces of the study of different nations and cultures on Earth can be dated back to ancient geographers such as Ptolemy or Strabo, cultural geography as academic study firstly emerged as an alternative to the environmental determinist theories of the early Twentieth century, which had believed that people and societies are controlled by the environment in which they develop.

Rather than studying pre-determined regions based upon environmental classifications, cultural geography became interested in cultural landscapes. This was led by Carl O. Sauer, at the University of California, Berkeley. As a result, cultural geography was long dominated by American writers. Sauer defined the landscape as the defining unit of geographic study. He saw that cultures and societies both developed out of their landscape, but also shaped them too.

This interaction between the 'natural' landscape and humans creates the 'cultural landscape'. Sauer's work was highly qualitative and descriptive and was surpassed in the 1930s by the regional geography of Richard Hartshorne, followed by the quantitative revolution.

Cultural geography was generally sidelined, though writers such as David Lowenthal continued to work on the concept of landscape. In the 1970s, the critique of positivism in geography caused geographers to look beyond the quantitative geography for its ideas. One of these re-assessed areas was also cultural geography.

NEW CULTURAL GEOGRAPHY

Since the 1980s, a "new cultural geography" has emerged, drawing on a diverse set of theoretical traditions, including

Marxist political-economic models, feminist theory, post-colonial theory, post-structuralism and psychoanalysis.

Drawing particularly from the theories of Michel Foucault and performativity in western academia, and the more diverse influences of postcolonial theory, there has been a concerted effort to deconstruct the cultural in order to make apparent the various power relations.

A particular area of interest is that of identity politics and construction of identity.

Examples of areas of study include:

- Feminist geography
- Children's geographies
- Some parts of Tourism geography
- Behavioural geography
- Sexuality and space
- Some more recent developments in Political geography

Some within the 'new cultural geography' have turned their attention to critiquing some of its ideas, seeing its views on identity and space as static. It has followed the critiques of Foucault made by other 'poststructuralist' theorists such as Michel de Certeau and Gilles Deleuze. In this area, non-representational geography and population mobility research have dominated. Others have attempted to incorporate these critiques back into the new cultural geography.

AUTO-SEGREGATION

Auto-segregation is the separation of a religious or ethnic group from the rest of society in a state by the group itself. Through auto-segregation, the members of the separate group can establish their own services, and maintain their own traditions and customs. For example, some world tribes have preferred to stay in reservations and not to integrate with the rest of the state's population. By remaining in a reservation or on their original lands, they can preserve their language and beliefs. On the other hand, some supremacist groups self-

segregate to avoid integrating with other groups that they consider inferior. Racists, radical Islamists, Orthodox Jews, ultranationalists, different Hindu castes and other supremacist or ethno-centric groups commonly segregate themselves from other communities through various practices like endogamy. The apartheid system in South Africa is an extreme example of this trend.

Endogamy as Self-segregation

Endogamy encourages group affiliation and bonding. It is a common practice among dislocated cultures attempting to make roots in new countries whilst still resisting complete integration, as it encourages group solidarity and ensures greater control over group resources.

However endogamy can also serve as a form of self-segregation and helps a community to resist integrating with surrounding populations. It thus helps minorities to survive as separate communities over a long time, in societies with other practices and beliefs. Ethno-religious groups which have successfully resisted complete integration for the longest, for example the Romany gypsies, the Ashkenazi Jews of Europe and the white people of South Africa, practise a higher level of endogamy.

Islam typically enforces a limited form of endogamy, Muslim men can take wives from neighbouring non-muslim populations but Muslim women are normally forbidden to marry outside of the Muslim community. This may be to ensure that Islam spreads into surrounding populations and is not diluted through integration with them.

CHILDREN'S STREET CULTURE

Children's street culture refers to the cumulative culture created by young children. Collectively, this body of knowledge is passed down from one generation of urban children to the next, and can also be passed between different groups of children. It is most common in children between the ages of seven and twelve. It is strongest in urban working class industrial districts

where children are traditionally free to “play out” in the streets for long periods without supervision.

Difference from Mass Media Culture

Children's street culture is invented and largely sustained by children themselves, although it may come to incorporate fragments of media culture and toys in its activities. It is not to be confused with the commercial media-culture produced for children, although it may overlap.

Location and Play Materials

Young children's street culture usually takes place on quiet backstreets and sidewalks, and along routes that venture out into local parks, playgrounds, scrub and wasteland, and to local shops. It can often incorporate many found and scavenged materials such as old car seats, tyres, planks, bricks, etc. Sometimes found materials will be combined to create objects. Play will often incorporate crazes.

It also imposes imaginative status on certain parts of the urban realm. In summer children may use scavenged materials to create a temporary and semi-hidden ‘den’ or ‘hideout’ or ‘HQ’ in a marginal area near their homes, that serves as an informal meeting and relaxation place during the summer. An urban area that looks faceless or neglected to an adult may have deep ‘spirit of place’ meanings in children's street culture.

History and Research

Although it varies from place to place, research shows that it appears to share many commonalities across many cultures. It is a traditional phenomenon that has been closely investigated and documented in the western world during the 20th century by anthropologists and folklorists such as Iona Opie; street photographers such as Roger Mayne, Helen Levitt, David Trainer, Humphrey Spender and Robert Doisneau; urbanists such as Colin Ward and Robin Moore, as well as being described in countless novels of childhood. The research of Robin Moore stresses children's need for ‘marginal’ unsupervised areas ‘within running distance’ of homes.

There are now two academic journals devoted to this area, the *Journal of Children's Geographies* and *Play and Folklore*. It has occasionally been central to feature films, such as the *Our Gang* series, *Ealing's Hue and Cry* and some Children's Film Foundation films. Since the advent of distractions such as video games, and television, concerns have been expressed about the vitality-or even the survival-of children's street culture.

Children's Urban Legends

Many informal groups of small children will develop some level of superstitious beliefs about their local area. For instance:- they will believe that there are certain places that are 'unlucky' to step on or touch or that an old woman is a 'witch', or that an abandoned house is 'haunted'. But in some extreme circumstances a consistent mythos may emerge among young children, and across a large area.

One example dates from 1997, The Miami New Times published Lynda Edwards' report "Myths Over Miami", which describes a huge consistent mythology spreading among young homeless children in the American South. The story has been picked up and reprinted many times on internet blogs and websites.

There is no known verification or confirmation that the mythology she describes actually exists, but these "secret stories" are clearly based on known elements of street culture, such as labeling certain places "haunted" or recycling legends of dangerous spirits such as Mary Worth. The object was the basis for Mercedes Lackey's novel *Mad Maudlin*, co-written with Rosemary Edghill.

EARTH IN CULTURE

The cultural perspective on the Earth, or world, varies by society and time period. Religious beliefs often include a creation belief as well as personification in the form of a deity. The exploration of the world has modified many of the perceptions of the planet, resulting in a viewpoint of a globally-integrated

ecosystem. Unlike the remainder of the planets in the Solar System, mankind didn't perceive the Earth as a planet until the sixteenth century.

Etymology

Unlike the other planets in the Solar System, in English, Earth does not directly share a name with an ancient Roman deity. The name Earth derives from the eighth century Anglo-Saxon word *erda*, which means ground or soil. It became *eorthe* later, and then *erthe* in Middle English. These words are all cognates of *Jörð*, the name of the giantess of Norse myth. Earth was first used as the name of the sphere of the Earth in the early fifteenth century. The planet's name in Latin, used academically and scientifically in the West during the Renaissance, is the same as that of *Terra Mater*, the Roman goddess, which translates to English as Mother Earth.

Planetary Symbol

The standard astronomical symbol of the Earth consists of a cross circumscribed by a circle. This symbol is known as the wheel cross, sun cross, Odin's cross or Woden's cross. Although it has been used in various cultures for different purposes, it came to represent the compass points, earth and the land.

Another version of the symbol is a cross on top of a circle; a stylized *globus cruciger* that was also used as an early astronomical symbol for the planet Earth.

Religious Beliefs

Earth has often been personified as a deity, in particular a goddess. In many cultures the mother goddess is also portrayed as a fertility deity. To the Aztec, Earth was called *Tonantzin*—"our mother"; to the Incas, Earth was called *Pachamama*—"mother earth".

The Chinese Earth goddess *Hou Tu* is similar to *Gaia*, the Greek goddess personifying the Earth. To Hindus it is called *Bhuma Devi*, the Goddess of Earth. In Norse mythology, the Earth giantess *Jörð* was the mother of Thor and the daughter

of Annar. Ancient Egyptian mythology is different from that of other cultures because Earth is male, Geb, and sky is female, Nut. Creation myths in many religions recall a story involving the creation of the world by a supernatural deity or deities. A variety of religious groups, often associated with fundamentalist branches of Protestantism or Islam, assert that their interpretations of the accounts of creation in sacred texts are literal truth and should be considered alongside or replace conventional scientific accounts of the formation of the Earth and the origin and development of life.

Such assertions are opposed by the scientific community as well as other religious groups. A prominent example is the creation-evolution controversy.

Physical Form

In the ancient past there were varying levels of belief in a flat Earth, with the Mesopotamian culture portraying the world as a flat disk afloat in an ocean. The spherical form of the Earth was suggested by early Greek philosophers; a belief espoused by Pythagoras. By the Middle Ages—as evidenced by thinkers such as Thomas Aquinas—European belief in a spherical Earth was widespread.

Prior to circumnavigation of the planet and the introduction of space flight, belief in a spherical Earth was based on observations of the secondary effects of the Earth's shape and parallels drawn with the shape of other planets.

Modern Perspective

The technological developments of the latter half of the 20th century are widely considered to have altered the public's perception of the Earth. Before space flight, the popular image of Earth was of a green world. Science fiction artist Frank R. Paul provided perhaps the first image of a cloudless blue planet on the back cover of the July 1940 issue of *Amazing Stories*, a common depiction for several decades thereafter. Earth was first photographed from space by Explorer 6 in 1959. Yuri Gagarin became the first human to view Earth from space in 1961.

The crew of the Apollo 8 was the first to view an Earth-rise from lunar orbit in 1968. In 1972 the crew of the Apollo 17 produced the famous "Blue Marble" photograph of the planet Earth from cislunar space. This became an iconic image of the planet as a marble of cloud-swirled blue ocean broken by green-brown continents.

NASA archivist Mike Gentry has speculated that "The Blue Marble" is the most widely distributed image in human history. A photo taken of a distant Earth by Voyager 1 in 1990 inspired Carl Sagan to describe the planet as a "Pale Blue Dot." Since the 1960s, Earth has also been described as a massive "Spaceship Earth," with a life support system that requires maintenance, or, in the Gaia hypothesis, as having a biosphere that forms one large organism. Over the past two centuries a growing environmental movement has emerged that is concerned about humankind's effects on the Earth. The key issues of this socio-political movement are the conservation of natural resources, elimination of pollution, and the usage of land. Although diverse in interests and goals, environmentalists as a group tend to advocate sustainable management of resources and stewardship of the environment through changes in public policy and individual behaviour. Of particular concern is the large-scale exploitation of non-renewable resources. Changes sought by the environmental movements are sometimes in conflict with commercial interests due to the additional costs associated with managing the environmental impact of those interests.

CULTURAL TRAVEL

Cultural Travel is a type of travel that emphasizes experiencing life within a foreign culture, rather than from the outside as a temporary visitor. Cultural travellers leave their home environment at home, bringing only themselves and a desire to become part of the culture they visit. Cultural travel goes beyond cultural exploration or discovery; it involves a transformation in way of life. This definition was first used by Gary Langer "Travel to Learn".

Transitions Abroad. A way of describing travel that requires a “transition” to a new level of understanding of and appreciation for a foreign culture. The term is often distorted and misused by travel agents, tour operators and international tourism organizations. Culture primarily has to do with people and less with places or things. So visiting museums, touring ancient structures, attending festivals, and eating local food does not provide the same experience as becoming a member of the culture itself. The antithesis of cultural travel is tourism, where people bring their home environment with them wherever they go and apply it to whatever they see.

CULTURAL TOURISM

‘Cultural tourism’ is the subset of tourism concerned with a country or region’s culture, specifically the lifestyle of the people in those geographical areas, the history of those peoples, their art, architecture, religion(s), and other elements that helped shape their way of life. Cultural tourism includes tourism in urban areas, particularly historic or large cities and their cultural facilities such as museums and theatres. It can also include tourism in rural areas showcasing the traditions of indigenous cultural communities, and their values and lifestyle. It is generally agreed that cultural tourists spend substantially more than standard tourists do. This form of tourism is also becoming generally more popular throughout the world, and a recent OECD report has highlighted the role that cultural tourism can play in regional development in different world regions.

Cultural tourism has been defined as ‘the movement of persons to cultural attractions away from their normal place of residence, with the intention to gather new information and experiences to satisfy their cultural needs’.

Destinations

One type of cultural tourism destination is living cultural areas. For an indigenous culture that has stayed largely separated from the surrounding majority, tourism can present

both advantages and problems. On the positive side are the unique cultural practices and arts that attract the curiosity of tourists and provide opportunities for tourism and economic development. On the negative side is the issue of how to control tourism so that those same cultural amenities are not destroyed and the people do not feel violated. Other destinations include historical sites, modern urban districts, theme parks and country clubs, coastal or island ecosystems, and inland natural areas. Only a handful of people take part in these holiday trips each year as opposed to the thousands of people who go on package holidays.

CULTURAL AREA

A cultural area or culture area is a region with one relatively homogeneous human activity or complex of activities. These areas are primarily geographical, not historical and they are not considered equivalent to *Kulturkreis*. A culture area is a concept in cultural anthropology where a geographic region and time sequence is characterized by substantially uniform environment and culture.

The concept of culture areas was originated by museum curators and ethnologists during the late 1800s as means of arranging exhibits. Clark Wissler and Alfred Kroeber further developed the concept on the premise that they represent long-standing cultural divisions.

The concept is criticized by some, who argue that the basis for classification is arbitrary. But other researchers disagree and the organization of human communities into cultural areas remains a common practice throughout the social sciences. The definition of culture areas is enjoying a resurgence of practical and theoretical interest as social scientists conduct more research on processes of cultural globalization.

CULTURAL ASSIMILATION

Cultural assimilation is a socio-political response to demographic multi-ethnicity that supports or promotes the

assimilation of ethnic minorities into the dominant culture. It is opposed to affirmative philosophy which recognizes and works to maintain differences. The term assimilation is often used with regard to immigrants and various ethnic groups who have settled in a new land. New customs and attitudes are acquired through contact and communication.

The transfer of customs is not simply a one-way process. Each group of immigrants contributes some of its own cultural traits to its new society. Assimilation usually involves a gradual change and takes place in varying degrees; full assimilation occurs when new members of a society become indistinguishable from older members.

Cultural Influence

A group can spontaneously adopt a different culture due to its political relevance, or to its perceived superiority. The first is the case of the Latin language and culture, that were gradually adopted by most of the subjugated people.

The second is the case of subjugated, but older and richer culture, which see itself imitated by the new masters, *e.g.* the victorious Roman Republic adopted more from the Hellenistic cultures than it imposed in most domains, except such Roman specialties as law and the military.

Assimilation of Immigrants

Immigrant assimilation is a complex process in which an immigrant fully integrates themselves into a new country. Social scientists rely on four primary benchmarks to assess immigrant assimilation: socioeconomic status, geographic distribution, second language attainment, and intermarriage. William A.V. Clark defines immigrant assimilation "as a way of understanding the social dynamics of American society and that it is the process that occurs spontaneously and often unintended in the course of interaction between majority and minority groups".

It has been found that between 1880 and 1920, the United States took in roughly 24 million immigrants. This increase in

immigration can be attributed to many historical changes. Later, during the cold war from the 1960s through the 1980s and the disintegration of the Soviet Union in the late 1980s, over 1.8 million Jews (including some non-Jewish family members) emigrated from the former Soviet Union.

The major destination countries were Israel (about 1.1 million), the United States (over 400,000), Germany (about 130,000), and Canada (about 30,000). The beginning of the twenty-first century has also marked a massive era of immigration, and sociologists are once again trying to make sense of the impact that immigration has on society and the impact it has on immigrants themselves.

Theoretical Explanations

Researchers have attempted to explain the assimilation rate for post 1965 immigrants in the United States with experiences of immigrants who entered the United States between 1880 and 1920. Many of the methods and theories that are used to assess immigrant assimilation today are derived from earlier immigrant studies.

One of the leading theories in understanding immigrant assimilation came from William I. Thomas and Florian Znaniecki whom published "The Polish Peasant in Europe and America". William I. Thomas and Florian Znaniecki's study on Polish immigrants (1880–1910) assessed how these immigrants built an institutional community in the United States during the Napoleonic War. Another influence on immigrant assimilation came from Robert Park, Ernest Burgess, and William I.

Thomas, in which they trained graduate students to study the experiences of immigrants in Chicago. Robert Park, Ernest Burgess, and William I. Thomas provided these graduate students with theoretical tools such as Park's theory on collective behaviour.

The third theory on immigrant assimilation comes from Gordon's book, *Assimilation in American life*. Gordon highlighted the generational change in immigrant groups, it states that the first generation or foreign born were less assimilated and less

exposed to American life than their American-born children (the second generation), and their grandchildren (third-generation) were more like the American mainstream than their parents.

Theoretical Models to Immigrant Assimilation

The first, classic and new assimilation model sees immigrants and native-born people following a “straight-line” or a convergence. This theory sees immigrants becoming more similar over time in norms, values, behaviours, and characteristics. This theory also expects those immigrants residing the longest in the host population, as well as the members of later generations, to show greater similarities with the majority group than immigrants who have spent less time in the host society. The second, racial or ethnic disadvantage model states that immigrant’s chances to assimilate are “blocked”. An example of this model would be discrimination and institutional barriers to employment and other opportunities.

The third, the segmented assimilation model theorizes that structural barriers, such as poor urban schools, cut off access to employment and other opportunities—obstacles that often are particularly severe in the case of the most disadvantaged members of immigrant groups, and such impediments can lead to stagnant or downward mobility, even as the children of other immigrants follow divergent paths towards classic straight-line assimilation.

Core Measurements to Immigrant Assimilation

Researchers have assessed that assimilation exists among immigrants because we can measure assimilation on four primary benchmarks. These core measurable aspects of immigrant assimilation that were formulated to study European immigrants to the United States are still the starting points for understanding current immigrant assimilation. These measurable aspects of assimilation are socioeconomic status, spatial concentration, language attainment, and intermarriage.

- Socioeconomic Status is defined by educational attainment, occupation, and income. By measuring socioeconomic status researchers want to find out if immigrants eventually catch up to native-born people in terms of human capital characteristics.
- Spatial Concentration is defined by geography or residential patterns. The spatial residential model (based on theories of Park) proposed by Massey states that increasing socioeconomic attainment, longer residence in the U.S, and higher generational status lead to decreasing residential concentration for a particular ethnic group.
- Language Attainment is defined as the ability to speak English and the loss of the individual's mother tongue. The three-generation model of language assimilation states that the first generation makes some progress in language assimilation but remains dominant in their native tongue, the second generation is bilingual, and the third-generation only speaks English.
- Intermarriage is defined by race or ethnicity and occasionally by generation. High rates of intermarriage are considered to be an indication of social integration because it reveals intimate and profound relations between people of different groups, intermarriage reduces the ability of families to pass on to their children a consistent ethnic culture and thus is an agent of assimilation.

Intermarriage came under particular scrutiny by the Jewish community in the early-mid 20th century as Jewish leaders more and more often turned to social scientists to explain why Judaism was a typically endogamic religion. Although intermarriage was viewed as a firm base from which to begin an argument for assimilation, it was also seen as a way to gradually ease the transition into their new culture. Julius Draschler, a graduate student at Columbia University, believed that as long as people are allowed to maintain some differences, such as the Jewish practice of only marrying another Jew, they

will delay the inevitable while simultaneously enriching the nation in the process of their slow assimilation.

While Draschler acknowledged that assimilation was the ultimate endpoint for all American groups, he hoped to prove through his intermarriage studies that, the more gradual the process, the better. Such need to justify (or vilify) the intermarriage practice became increasingly important after the 1950s as Jews (as well as other typically endogamic cultures, such as African-Americans) began to engage in more exogamic relationships.

Immigrant Name Changing as a Form of Assimilation

While the changing of immigrant names is not one of the 4 measurable benchmarks for assimilation outlined by early sociologists, it nonetheless represents a clear abandonment of the old as new immigrants are absorbed into the fabric of society. It is often believed that, due to language barriers, or the lack of training and sensitivity by government officials, names were often changed, without consent, by inspectors on Ellis Island. This general misconstruction of the facts is refuted in an object released by the Immigration and Naturalization Service, claiming that inspectors did not personally take names, instead inventorying the passengers using manifestos created by the shipping companies themselves. As a matter of fact, many immigrants changed their names willingly. It's suggested by the Immigration and Naturalization Service that most name blunders were likely the fault of the origin, and not the destination. Donna Przech, a published and well-known expert in genealogy, suggests a number of alternative explanations for name changing, one of which was a need for employment. A huge surplus of labour began to immigrate to the United States, many of whom were unskilled, with names that were often difficult to pronounce. Employers were not bound by the same anti-discriminatory legislature that they are now, and tended to gravitate towards individuals with more American names.

Comfort and fitting in was also a heavy motivator behind the changing of names. Many, if not most, US immigrants in

the mid 1900's planned to make the United States their new home, permanently. Given this fact, it should come as no surprise that many immigrants welcomed the impending assimilation brought on by their host country. Eager to begin their new lives, many did as much as they could to become "American" as quickly as possible, particularly children. Of course, simplicity was yet another factor in the abandonment of old titles. As immigrants poured in from various European countries, many found their names to be difficult to pronounce and/or spell for many Americans, such as those names with many syllables, or with a large number of Z's.

Policies on Immigrant Assimilation

When considering immigrant assimilation it is important to consider why immigrants migrate. One reason immigrants migrated was the 1986 Immigration Reform and Control Act (IRCA), which legalized 2.3 million formerly undocumented Mexican Immigrants. This Act freed these newly legalized immigrants from the fear of being apprehended, and many of these immigrants moved to states beyond the nearest U.S.-Mexican border.

Modifications for Assessing Immigrant Assimilation

Studies on immigrant assimilation in the 19th century and 20th century conclude that immigrants had a hard time catching up to the same human capital characteristics as native-born people in the 19th century, but studies in the 20th century suggest that immigrants eventually catch up to native born people. Timothy J. Hatton explains this puzzle on immigrant assimilation in the 19th century and in the 20th century. He explores how recent studies have been producing misleading results between the two. Hatton focuses his research on the specification of the earnings function. Hatton argues that that specification of the earnings function should be improved in two ways.

First, immigrants who arrived as children should be treated separately from those who arrived as adults.

Second, specification of the earnings function should be better approximate to the true shape of age-earnings profiles. Hatton points out that with these modifications, the patterns of immigrant earnings which have emerged make more sense with those of the 20th century and with traditional views on immigrant assimilation in the 19th century.

Owning a Home and Immigrant Assimilation

Owning a home can be seen as a step into assimilation. William A.V. Clark explores this link in his book "Immigrants and the American Dream Remarking the Middle Class". Clark is aware that the process of assimilation is more than just being able to purchase a home. He argues that "homeownership" is one of the steps of assimilation, it is becoming part of the community and a neighbourhood, and being a part of the daily activities that take place in a community.

Naturalization and Immigrant Assimilation

Other than marriage, Citizenship is one of the most significant factors in assimilation. The immigration debate focuses not only the number of immigrants, who should be admitted, and who should be allowed to be admitted but also the processes of incorporation and, most importantly, how citizenship should be extended and to whom. For example, should it be extended to those who arrive illegally? Allowing for naturalization of immigrants can create tension in assimilation. On one hand, those who favour the admission of immigrants input that these new residents will help build and enrich the American democratic process. However, others argue that the nature and legitimacy of the nation may be challenged and perhaps even threatened.

New Immigrant Gateways and Immigrant Assimilation

Although it is changing, the overwhelming majority of immigrants still settle in traditional gateway states such as Florida, New York, California, Illinois, Texas, and Massachusetts. It has found that immigrants settle in traditional gateways where there are large populations of foreign-born

people. Walters and Jimenez have illustrated the changes in the geographic distribution and the rates of growth of immigration in the United States.

They show the number of foreign-born individuals in states where the foreign-born population grew by a factor of two or more between 1990 and 2000. Walters and Jimenez found that the largest percentage growth in the foreign-born population, was found in either the Midwest or the South in addition none of the traditional gateways were included in this large percentage growth. Walters and Jimenez noted that a reason these traditional gateways did not have an increase at the same rate of the new gateways was because, new gateways did not have many immigrants to begin with. Walters and Jimenez have argued that this new change in geography could possibly change the way researchers assess immigrant assimilation. They argue that these new gateways are unique and they propose that immigrant assimilation may be different from the experiences of immigrants in more traditional gateways in at least three ways.

First, the long history of immigration in these established gateways means that the place of immigrants in terms of class, racial, and ethnic hierarchies in these traditional gateways are more structured or established on the other hand these new gateways do not have much immigration history therefore the place of immigrants in terms of class, racial, and ethnic hierarchies is less defined and immigrants may have more influence to define their position.

Second, the size of new gateways may influence immigrant assimilation. Having a smaller gateway may influence the level of segregation among immigrants and native-born people.

Third, the difference in institutional arrangements may influence immigrant assimilation. Traditional gateways unlike new gateways have many institutions set up to help immigrants which include legal-aid, bureaus, social organizations. Finally, Walters and Jimenez have only speculated that these differences may influence immigrant assimilation and the way researchers should assess immigrant assimilation.

CIVILIZATION

Civilization is a sometimes controversial term which has been used in several related ways. Primarily, the term has been used to refer to human cultures which are complex in terms of technology, science, politics and division of labour. Such civilizations are generally urbanized.

In classical contexts civilized peoples were called this in contrast to "barbarian" peoples, while in modern contexts civilized peoples have been contrasted to "primitive" peoples. In modern academic discussions however, there is a tendency to use the term in a more neutral way to mean approximately the same thing as "culture" and can refer to any human society associated with any particular geographical location at a particular time, historical or current.

Still, even when used in this second sense, the word is often restricted to apply only to societies that have attained a particular level of advancement, especially the founding of cities, with the word "city" defined in various ways. The level of advancement of a civilization is often measured by its progress in agriculture, long-distance trade, occupational specialization, and urbanism. Aside from these core elements, civilization is often marked by any combination of a number of secondary elements, including a developed transportation system, writing, standards of measurement, contract and tort-based legal systems, characteristic art styles, monumental architecture, mathematics, science, sophisticated metallurgy, politics, and astronomy.

COLONIALISM

Colonialism is the establishment, maintenance, acquisition and expansion of colonies in one territory by people from another territory. Colonialism is a process whereby sovereignty over the colony is claimed by the metropole and the social structure, government, and economics of the colony are changed by colonists-people from the metropole. Colonialism is a set of unequal relationships: between the metropole and the colony,

and between the colonists and the indigenous population. The term colonialism normally refers to a period of history from the late 15th to the 20th century when European nation states established colonies on other continents. In this period, the justifications for colonialism included various factors such as the profits to be made, the expansion of the power of the metropole and various religious and political beliefs. Colonialism and imperialism were ideologically linked with mercantilism. Collins English Dictionary defines colonialism as "the policy of acquiring and maintaining colonies, especially for exploitation."

The Merriam-Webster Dictionary offers four definitions, including "something characteristic of a colony" and "control by one power over a dependent area or people." The Stanford Encyclopedia of Philosophy "uses the term 'colonialism' to describe the process of European settlement and political control over the rest of the world, including Americas, Australia, and parts of Africa and Asia." It discusses the distinction between colonialism and imperialism and states that "[g]iven the difficulty of consistently distinguishing between the two terms, this entry will use colonialism as a broad concept that refers to the project of European political domination from the sixteenth to the twentieth centuries that ended with the national liberation movements of the 1960s."

In his preface to Jürgen Osterhammel's *Colonialism: A Theoretical Overview*, Roger Tignor says, "For Osterhammel, the essence of colonialism is the existence of colonies, which are by definition governed differently from other territories such as protectorates or informal spheres of influence." In the book, Osterhammel asks, "How can 'colonialism' be defined independently from 'colony?'"

He settles on a three-sentence definition:

Colonialism is a relationship between an indigenous majority and a minority of foreign invaders. The fundamental decisions affecting the lives of the colonized people are made and implemented by the colonial rulers in pursuit of interests that are often defined in a distant metropolis. Rejecting cultural compromises with the

colonized population, the colonisers are convinced of their own superiority and their ordained mandate to rule.

COSMOPOLITANISM

Cosmopolitanism is the belief that everyone exists in a globally constructed ethical-political order. The purpose of this paper is to unpack this definition. Such a definition, I believe, strikes at the core of many iterations of cosmopolitanism today. But it is not my intention to provide an intellectual history of the term here. Rather, I will seek to explicate my own understanding of the term in relation to our contemporary epoch.

Many forms of cosmopolitanism today come from a Kantian liberal perspective, basing their conceptions of cosmopolitanism on Kant's articulation of the term. Alternatively, I will seek to provide an interpretation of cosmopolitanism through going to the roots of the word in its first articulations in ancient Greek discourse. Cosmopolitanism has met with much criticism and skepticism in some circles. And such a concept is indeed frightening if it is not critically evaluated in terms of the global era in which we live. This is why I will discuss the global context in which the term "cosmopolitanism" gains meaning today.

After examining this context, I shall begin to unpack my own understanding of the term through looking back at the term's etymological origins. And finally, I will complete the explication of my definition through applying the arguments of the previous part to the global context and laying out some of its normative implications.

The Global Era, or, Why Should We Care

The increased interconnection of people on a global scale has problematized the ethical-political boundaries associated with the nation-state. Such boundaries are by no means obsolete. But as processes of globalization bring people into new

relationships with those beyond their national borders, those borders have increasingly become points of reflection and contention.

Undoubtedly, people have been closely interconnected for thousands of years. And each era has struggled to construct economic, moral, and political frameworks to mediate such interconnections. During the modern era, the international state system was devised in Europe to contain economic and political decision-making under a sovereign authority. Such developments generated struggles to create and sustain ethical-political attitudes framed in terms of national solidarity. Sometimes these ethical-national characteristics were "pre-political," as in the case of Germany; others, such as France, were actively constructed in service of political unification. But in each case, they served to create normative ideals for ethical-political unity.

International laws, customs, and treaties, served as the framework to adjudicate relations with other sovereign nations. Thus with the onset of modernity, the international state system became the primary normative institutional framework to contain ethical-political relationships. And despite its imperfect realization at times, this system has become global in scope. The international state system was conceived over three hundred years ago against the existing socio-political context in Europe. Yet, it has been argued that, today, globalization has significantly altered the ways in which people interact across these political boundaries. The globalization of organized violence, global economic trade and finance, multinational/transnational corporate organization, increased migrations and cultural transmissions across borders, and the potential for global environmental catastrophe have called into question the constructed boundaries of the nation-state and have raised normative questions for ethical and political relationships in an increasingly global age.

Issues of human rights and the decision-making and regulative capacities of supranational governance structures only generated further reflection. Cosmopolitans have responded

to this context with a variety of claims. These claims can be roughly divided into moral and political categories. Moral claims examine what moral or ethical responsibilities result from our shared humanity as it is experienced in a global age. Political cosmopolitanism outlines proposals for legal or political solutions to global problems.

These claims can be broken down as follows:

- Moral
 - Global poverty requires a moral dedication to redistributive efforts across boundaries.
 - The pursuit of national-self interest or unilateral political action should be balanced by concerns for the effect of such actions on the broader global community.
 - Nations have a duty to uphold morally grounded human rights and a responsibility to protect violations of such human rights.
- Political
 - Processes of globalization have threatened the autonomy of nationally based decisionmaking and, in particular, the popular sovereignty of democratic states.
 - People have become subject to an increasing number of decision-making bodies beyond the state without any corresponding rights to participate in their decision-making processes.
 - A number of issues of global or regional concern have emerged that require action beyond the level of the nation-state.

Within the literature on cosmopolitanism, these claims are espoused and contested on both theoretical and empirical grounds. It is not my intention to outline the depths of these debates here, but only to explicate the claims made about the current era in which we live and their importance for understanding the cosmopolitan position.

These arguments are not always made in ways that are compatible with one another. Moral cosmopolitans frequently do not posit political solutions to moral problems, and sometimes argue against them. Some political cosmopolitans deliberately avoid making moral arguments, while others critique them as being metaphysical, imperialist, or incapable of being enforced without proper institutional support. The guiding principle for moral cosmopolitanism is a global moral order based on shared humanity.

For political cosmopolitanism, the guiding principle is a global political order based on shared subjection to political power. Despite their differences, both the moral and political cosmopolitans assume that such problems create certain obligations that are universally binding across national boundaries. The global era creates conditions whereby people exist in ethical and/or political relationships with one another on a global scale. The arguments of both moral and political cosmopolitans serve to posit a normative order that recognizes such a condition.

Constructing Cosmopolitanism: Cosmopolitanism in a Global Era

So what does such an investigation into the ancient Greek roots of the term “cosmopolitanism” offer us in terms of the contemporary global era? We no longer look up into the sky and base an understanding of our ethical-political world on imaginative intimations of cosmos. We now live in a post-metaphysical context where such speculations are viewed as irrelevant with respect to demystified, modern scientific worldviews.

And we no longer live in the tight community of the polis where ethics and politics are loath to be separated. The nation state, in many respects, was envisaged as an ethical-political relationship; however, in the contemporary world of pluralism and multiculturalism, ethics and politics are more easily separated and are often considered irrespective of one another. Also, theories of ethical-political relationships beyond the nation-

state have come under criticism for being irreconcilable with the nation-state system. Despite their continued problems, the democratic nation-state has been the preeminent normative framework for ethical political order in the modern era. And the nation-state system has provided the foundations for adjudicating relationships between states under the normative order of sovereign equality.

Law and legalistic forms of justice are widely administered just as to such a framework. But it is my argument that cosmopolitanism, as it is articulated above, is even more salient today than when it was first articulated nearly twenty-five hundred years ago. The claims of moral and political cosmopolitans portray a global era in which the contemporary practices of people, groups, and institutions, have deepened human interactions on a global level. Such actions construct a global context where ethical and political concerns can no longer, if they ever did, be contained solely within the frame of the nation-state.

People's participation in such a context constructs a world in which individuals and groups are increasingly engaged in ethical and/or political relationships with others beyond their national boundaries. However, corresponding rights and duties have not emerged in order to meet these new conditions. It is within this context that we can apply the cosmopolitan principles articulated above. Many of us no longer share Timaeus or Diogenes' views of the kosmos. However, their discourses were articulated, not in the service of scientifically explaining the natural world, but as a means to investigate and provide normative principles for order in human ethical-political relationships.

Such principles are important for analysing the global era for four reasons:

1. For in a global era, cosmopolitanism suggests that it is necessary to view ethical-political life from a global standpoint. Interrelations on local, national, transnational, regional, and supranational levels require a global frame of analysis. Although globalization might

affect different regions disproportionately, it constructs and intensifies human relations on a global scale. An analysis of people's ethical-political relations must take this into account.

2. The nation-state emerged in a distinctive historical context, and political actors of the time participated—often disproportionately—in forming ethical-political relations to realise state-bound national political orders. As such, in an era of shifting forms of governance on a global scale, it is necessary to assess principles of ethical-political relationships in terms of the contemporary exercise of social and political power.
3. As globalization brings people closer together beyond the frame of the nation-state, people from diverse backgrounds are being brought together in ever widening and deepening relationships. Today, incredibly diverse individuals are increasingly unified around the world. It is crucial now to analyse the ways in which such a unity is constituted and, normatively, how to preserve difference in the face of ever-closer unions.
4. And in a changing context of mounting exercises of power on a global scale, it has become important to evaluate the status and prospects of freedom, particularly the freedom to critically participate in public discourse around the exercise of power on a global scale, in terms of the global era.

The polis, or political association, is currently conceived in terms of the nation-state as it is realised in the international state system. Such a context creates a dualistic political and legal system where formal politics either occurs a) within the framework of the state, or b) between states as political actors themselves. Law is either a) internal to a polity, concerned with citizens, or b) formed through agreements and customs realised between states as the subjects of international law. Some have argued that this necessarily limits the field of political relations to the political within and between nation-states. In other words, because the formal political institutions are state-based,

the normative frame for political action must be limited to national institutions.

In another respect, legalistic conceptions of justice based on national identity, have framed the scope of ethical responsibility either primarily within a national framework. Such an outlook reflects a particular interpretation of the concept of *politês*. Such positions begin from the context of established political institutions as they are distinct from their members. This means that political institutions—often, today, state bureaucracies—exist separately from their members. Politics occurs within these formal political channels by virtue of membership in them. And in that, for some, the membership boundaries of the *politeia* designate ethical-national relationships, ethical relationships should exist at their strongest within the national community.

Cosmopolitan perspectives would view the issue of the ethical-political association from a different perspective. As I have sought to demonstrate in my reflection of *politês* above, the polity is constructed by the actions of those who are a part of it. People come together to form political associations in order to engage in public opinion- and will-formation around governing their lives. This means that ethical-political membership need not be limited to the existing forms of political institutions but should reflect conditions of political action around the globe. Cosmopolitan perspectives suggest that new ethical and political standards might be required to meet the needs of ethical and/or political relationships in the global era where new modes of ethical and political associations are under formation. Such positions are based on the current distribution of governance structures around the globe, the rise of transnational social movements, and the increased intensity of relationships between people beyond formal political boundaries.

Rather than beginning from the given national framework for normatively assessing ethical responsibility and distributing political power, cosmopolitanism would seek to evaluate the current ethical and political practices of individuals, groups, and institutions in the global era.

From this perspective, it is:

- Necessary to reevaluate the current boundaries of ethical and political relationships and determine who are a part of such relationships
- To articulate what rights, duties and responsibilities people owe one another based on such relationships. Such a position is based on the assumption that
- If people are subject to ethical and/or political relationships with others beyond the state, they should have ethical or political standing in that relationship. And thus, this position
- Presupposes the constitutive nature of ethical and political relationships beyond the frame of the nation-state in forming post-national ethical and political communities

In sum, the cosmopolitan perspective takes the interrelations between people around the globe as the constitutive basis for a global ethical-political order of ethical. Cosmopolitanism assumes that the actions of people across the globe in an increasingly globalized era constructs ethical and political relationships that can no longer be bound to the frame of the nation-state. There is, of course, no one articulation of cosmopolitanism today. And the concerns articulated above generate a wide array of empirical analysis, theoretical reflection, and normative postulating. But it is not within the scope of this thesis for me to investigate different articulations of cosmopolitanism today. I have sought only to explicate the principles of cosmopolitanism through interpreting its origins in ancient Greek discourse and applying such an interpretation to the global era.

CULTURAL DIVERSITY

Ethnic origins, religions, and languages are the major sources of cultural diversity. India is a country incredible for its diversity, biological and cultural. It is the natural resources that attracted to the subcontinent many streams of people at

different times, from different directions; bringing together a great diversity of human genes and human cultures. Thus the bulk of the Indian population represents racial admixture in varying degrees. Unlike several other lands where the dominant human cultures have tended to absorb or eliminate others, in India the tendency has been to nurture diversity, which has been favoured by the diversity of the country's ecological regimes. Powerful kingdoms and enumerable dynasties, contributed to the shaping of India's cultural regions. An important source of diversity among the people of India is the cultural identity of particular communities and regions.