FIELD TRIP
TO GOD’S WELL,
FARQUHAR’S BEACH AND
MILK RIVER BATH

On Saturday, March 28th, 27 JGS members and friends participated in a field trip to Farquhar’s Beach, God’s Well and Milk River Bath, in southern Clarendon. The trip was led by Dr. Stephen Donovan, geology department, UWI.

The first stop was at God’s Well, a spectacular sink hole in the Miocene Newport Formation, north of Round Hill. It was most probably formed by roof collapse of a major underground cavern. The feature is oval and measures between 25m to 40m in diameter, has near vertical sides, and the distance to the water level below is approximately 25m. God’s Well is drained to the west, where it issues as a spring at the head of the Alligator Hole River. In the mid-1980s, it was the site of tragedy and death, involving a group of cave divers exploring the underwater caves which connect into God’s Well.

The next stop was unscheduled; a brief detour to the NRCA’s Canoe valley visitor centre. Although they were not seen by the group, three manatees (sea cows) have been cued in the river since the 1980s, in an effort to encourage them to breed. The experiment failed and experts have recently determined that all three animals are females. Many of the JGS members present expressed the view that the time has come to release them, to rejoin the tiny population of manatees which still exists in Jamaica.

The principal stop of the field day was at the fishing community at Farquhar’s beach, and involved a beach walk along a remote and undeveloped stretch of coastline, to examine the Round Hill Beds, which are exposed as cliffs. Farquhar’s black sand beach is composed primarily of titanomagnetite and titanohematite crystals with lesser amounts of feldspar, quartz and calcite. The deposits are located at the mouth of the Rio Minho and westwards along the coast, so the sources of

The oyster bank of the Round Hill beds, dipping towards the beach. The Round Hill beds are Plio-Pleistocene in age and are overlain unconformably by late Quaternary conglomerates (upper right), containing soils and land snails.
photo: Stephen K. Donovan

Two specimens of the oyster Crassostrea virginica preserved in life position and surrounded by small specimens. The left hand specimen (above the 15cm ruler) has juvenile oysters attached to the outside of the shell.
photo: Stephen K. Donovan
JAMAICA’S MINERAL SPRINGS

Geologists divide Jamaica’s mineral springs into hot springs and cold springs. The hot, thermal springs can be further classified into three groups on the basis of location and chemistry.

Milk River Bath is one of two warm, radioactive springs located in Clarendon (the other is at Salt River further east). Milk River Bath is one of the most radioactive springs in the world (nine times more radioactive than Bath in England, and more than fifty times that at Vichy in France).

In the Blue Mountains, the springs are warm and sulphurous. The most famous is at Bath in St Thomas, where the water temperatures are hot, ranging from 45 to 54 degrees Celsius. The main constituents of the water are sodium, chloride and sulphate. Other hot springs are located at Garbrand Hall, and Johnson River in St Thomas, and Guava River in Portland. They are associated with the Blue Mountain inlier. There are historical reports of other hot springs in the area, but these could not be located during a geological survey in 1981.

The third group consists of an isolated hot spring in St Ann, located at Windsor on the north coast. It is warm and hypersaline.

Many of Jamaica’s cold mineral springs are at coastal locations, such as Sans Souci Hotel (Ocho Rios), Rockfort, and Black River. They usually flow from limestone areas and are mixtures of sea water and calcium bicarbonate groundwater. The mineral baths at Rockfort are supplied by springs arising from a fault at the base of Long Mountain, and are enriched with sulphate. The waters of Black River Spa contain traces of iron, copper, phosphate and fluoride.

Interestingly, both Milk River Bath in Clarendon and Bath in St Thomas have similar legends about their discovery, usually involving a slave who escapes after being severely beaten, and whose wounds are miraculously healed after bathing in nearby waters. The slave then supposedly returns to his master, divulges his secret and is rewarded in some way.

The material are probably the Cretaceous inliers of central Jamaica. Erosion and transportation by rivers flowing southward, would have brought the material to the coast, whence it was dispersed westwards by longshore currents.

Outcropping along the coast are cliffs composed of highly fossiliferous material. They are a succession of more or less sandy limestones and siliciclastics, with a fossil fauna dominated by benthic molluscs (clams, oysters, snails) and benthic foraminifers, with less common corals, echinoids (sea eggs), barnacles and trace fossils. The beds dip steeply towards the sea or are vertical, and the outcrop is incised in places by faults. The age of the Round Hill beds is uncertain, but they may be late Miocene.

In one of the most remarkable sections, oyster beds of 3.3 metres thick can be observed. They have been identified as Crassostrea virginica and individual shells are 15 inches or more in length. Given the reputed aphrodisiac qualities of oysters, one can only imagine their gastronomic impact had human beings been around in those days.

Many of the individual fossils are in life position, and the beds appear to have been a reef-like bank similar to those being formed by the same species in the American Gulf Coast region at the present day.

At another location, there are trace fossils. Trace fossils are so-called by geologists because it is not the animal itself that has been preserved, but evidence that it once lived in that location; an example would be the fossilised burrowing system of a crustacean.

At a number of locations on the walk, Dr Donovan gave enlightening discourses and demonstrations on the field interpretation of the orientation of bedding planes, how to identify geological discontinuities, and the field identification of fossils and trace fossils.

The final stop was at the famous Milk River Bath and Spring. The Milk River spring discharges through an east-west trending fault at the foot of Round Hill. North of the hotel another spring flows into a shallow well. The main spring provides a supply of water to the bathhouses at the Hotel. The springwater at Milk River issues from the limestone of the Newport Formation, close to the contact between the limestone and the alluvium of the Milk River.

The temperature of the water in the bathhouse is 33 degrees Celsius (although at the well site it is 37 degrees). The springs have a high level of radioactivity due to the presence of radon. They are one of the most radioactive mineral baths in the world, and bathers are limited to only 20 minutes in the bath. The springs contain up to 16 percent more chloride than sea water, and the calcium/sodium ratios are also higher, perhaps due to the increased solubility of calcium carbonate in the spring water.

It is thought that much of the spring water is derived from sea water entering the South Coast Fault at depth, mixing with ground water from limestone near the surface. The source of the radon is probably at an appreciable depth.

On a historical note, the land at Milk River was conveyed to the Justice of Vere in 1791 by its owner Jonathan Ludford, additional land was acquired, and the bathrooms were first opened to the public in 1794.

At the end of the field trip a number of people in the group enjoyed the reputed therapeutic powers of the bathhouse, whilst the rest slaked their thirsts in the time-honoured manner of those exhausted by field trips under the hot tropical sun.

The Society would like to thank Dr Stephen Donovan for leading a most informative and entertaining field trip with style and flourish, and for permission to borrow freely from his detailed field guide in preparing this report.

NETHERLANDS EMBASSY TALK

On Wednesday 30th March, Mr Nico Jonker, the Netherlands Ambassador to Jamaica, presented an illustrated talk to JGS members. His talk began by noting basic features of the geography and history of the Netherlands; half the country is below sea level, its population is 15 million and its area is four times that of Jamaica. Its colonial possessions once included Indonesia, as well as Suriname and the Netherlands Antilles.

The country is a prosperous industrial society, actively involved in development cooperation; for example the Dutch Government provides Jamaica with US $12 million per annum. He touched on his country’s ex-
The Netherlands has a vibrant tourist industry with the European Community. One of its sister societies in the Eastern Caribbean, the Geographical Association of Trinidad and Tobago is enjoying a revival, and has introduced a 12-page newsletter for its members. Called Geobeat it is edited by Rose-Lee Brown, a teacher at St Stephen’s College, Princes Town near San Fernando, and graduate of the geography department, UWI. Two issues have appeared to date. The newsletter contains a selection of news items, information on the Society's activities, information and suggestions about field trips and field work, and a section called 'Play as you learn', containing games and puzzles for geographers.

It is intended that the two societies will share information from their newsletters, from time to time. For example, in interest of the February issue (#2) of Geobeat was an item on John Niles, a geographer well known in the region for his book Certificate Geography for the Caribbean (MacMillan) and his extensive work with CXC geography since 1977. A teacher of some 24 years standing, he was appointed as the first Curriculum Officer in geography for Trinidad & Tobago by the Ministry of Education in 1993. The work he has accomplished in his new role was warmly appreciated in the newsletter, especially through visiting schools in a monitoring and advisory capacity, and in workshops designed to facilitate the introduction of S.B.A. (School Based Assessment) for CXC geography.

Another item of interest was an interview with Judy Rocke, currently teaching at New Grant Anglican School. Judy obtained a first class honours degree in geography at UWI in 1993, the first 'first' in the department in seventeen years. In the interview, Judy talked about her rural background, her life in the south of Trinidad, her early teaching career, and particularly about her experiences and friends in Jamaica.

If you want to make contact with the Geographical Association of Trinidad & Tobago, in order to obtain their newsletter for yourself or your school, or to send them material about Jamaica, or to arrange penpals for your students, a few contact persons are listed below:

President: Charlene Costelloe, St Augustine’s High School
Vice President: Patricia Rangoolam, Naparima Girls’ High School
Secretary: Rampeyari Laalla, Pleasantville Senior Comprehensive School
Public Relations Officer: Michael Gabriel, Holy Faith Convent, Penal
Editor, Newsletter: Rose-Lee Brown, St Stephen’s College, Prince’s Town.

NIGERIAN EMBASSY TALK

On Wednesday, 27th April, Mr B.J. Zanna, the Deputy High Commissioner at the Nigerian Embassy gave an interesting talk about his country. He introduced the audience to its geography and its complicated make-up of different ethnic groups. He focused on that huge country’s search for a viable administrative structure. Prior to 1914, the British administered Nigeria through separate North and South Protectorates. When the country gained its independence in 1960, the unified Federal structure inherited from the British was unworkable, because of the dominance of the North.

Since the Biafran civil war (1967-1970), the country has been seeking a more balanced Federation; 12 states were created by President Gowon in the aftermath of the civil war. This number was increased to 19 in 1976 and 21 in 1986. A new federal system was introduced in 1990 expanding the number of states to 30. But the problem is where to stop the process of administrative fragmentation, because Nigeria has over 300 ethnic groups in the country.

In the late 1960s, Nigeria experienced an oil boom, and benefitted from the high prices for oil after the OPEC crisis of the 1970s. A development programme was embarked upon based on the high price of oil at that time (US $40 per barrel). For example, free education was introduced and there were many state-funded development projects. But there was little investment in the productive sector. After oil prices collapsed, the government had to borrow huge sums of money, and inevitably the IMF stepped in, and imposed a harsh programme of structural adjustment.

Other points touched on concerned minor boundary problems arising from the receding shoreline of Lake Chad (and the sudden appearance of new islands in the lake), protracted border disputes with Cameroon, and the location of the new capital, Abuja, in the middle belt of the country, an area of minority tribes which was badly depopulated during the slave trade.

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CHAIR OF ENVIRONMENTAL MANAGEMENT

Elizabeth Thomas-Hope has been appointed to the James Seivwright/Moss Solomon Snr. Chair of Environmental Management. The Chair has been endowed by the Grace Kennedy Foundation and the appointment is to UWI’s Centre for Environment and Development, located on Mona Campus.

Professor Thomas-Hope, a Jamaican, was formerly in the geography department at the University of Liverpool, and has published widely on population mobility and migration. Her most recent book is *Explanation in Caribbean Migration* (Macmillan, 1992). In the past, she was attached to ISER, and several of her PhD students have worked in Jamaica. She has brought groups of UK geography undergraduates here on field work. We wish her every success in her new post, look forward to a fruitful collaboration with the geography department, and welcome her to the JGS.

IAF/UWI SEMINAR IN TRINIDAD

Postgraduate Athea Johnson presented a paper based on research in progress at the annual IAF/UWI Fellows seminar, held in June this year at the St Augustine Campus, UWI. Her work is documenting the pressure on traditional resource management systems of five communities located in the Black River lower morass wetland. The area is slated to become a National Park, and is opening up to ecotourism.

M.PHIL FOR PAULETTE MEIKLE

Paulette Meikle has been awarded an M.Phil degree for her thesis entitled ‘The changing patterns of root crop production and marketing in Jamaica’.

The research analysed the spatial and temporal patterns of root crop production in Jamaica over a fifteen year period. The focus was two communities, Sawyers in Trelawny, an area specializing in yellow yam for the export market, and Cascade in Hanover, which produces for the domestic market.

Detailed field data on cropping systems, agronomic practices and decision-making, in the realms of crop production and marketing, were compiled and analysed, and the rural development contexts of the two communities were contrasted. The project’s fieldwork was funded by an IAF/UWI Fellowship.

Paulette presented a paper on her research at the 1992 British-Caribbean Geography Seminar which has been published (see this page).

In addition to tutoring and demonstrating, Paulette lectured first year climatology when the department was short-staffed. Presently, she is employed as a research officer on the Rio Grande Valley Rural Development Project, a project funded jointly by the Dutch and Jamaican Governments. She is working with Dr Wim Etema, a Dutch geographer and rural development consultant, who was formerly editor of the well known journal TESG. Wim is a recent recruit to the JGS.

FIRST FACULTY OF NATURAL SCIENCES CONFERENCE

Two papers were presented by members of the geography department at the first FNS Conference held in May, on Mona campus.

Anne Lyew-Ayee and Wilma Bailey presented a paper entitled ‘An analysis of the pattern of family planning service delivery points in Jamaica’. The second paper was presented by postgraduate student Vileith Davis-Morrison entitled ‘Agriculture, rural development and the environment in the Rio Grande Valley, Portland’.

PHYSICAL GEOGRAPHY COURSES EXPANDED

Former graduates of the department will remember that in final year, geomorphology and climatology were once taught as a single course. Recently, the physical geography teaching programme has been expanded to accommodate the growing interest in the environment, and the skills and research experience of its present complement of physical geography lecturers. Two courses, Advanced Physical Geography I (Geomorphology) and, from this semester, Advanced Physical Geography III (Climatology) have replaced the single course which was previously offered.

**Recent Journal Articles by Members of Geography Department**


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MAY PEN SPHERE OF INFLUENCE SURVEY

Perez Cross writes... The JGS organised a sphere of influence survey for secondary schools on Saturday, February 5th. It involved some fifty students and seven teachers from eight schools (Manchester, St Jago, Holy Childhood, Immaculate Conception, St Andrew, Excelsior and Calabar). The day’s activities were centred on central Jamaica’s largest town, May Pen (pop. 47,000).

The exercise was aimed at exposing secondary students, especially 5th and 6th formers, to field survey methods in a way which allows them to explore and discover information previously unknown to them. The large number of participating students made the exercise easier to complete in the allotted time. For the questionnaire survey, the students fanned out in pairs along the Central Business District (CBD) to interview persons engaged in business activities.

Students were allowed to interview as many people as possible within the allotted time. The main objective was to ascertain how near to, or far from, the town the respondents travelled to shop or to sell.

May Pen is a major market and administrative centre for its parish, Clarendon. It has all the features and services typical of a sub-regional centre, such as a large market, local government offices, some regional offices of central government, some statutory departments, regional social services/institutions like Police, Fire, Health, Postal and Education, branches of major financial institutions and a wide range of commercial, retailing and wholesaling activities.

Some survey findings

Sample respondents formed a ratio of male 45% to female 55%. Approximately 64% of the sample were under 30 years of age, and 73% lived within a ten-mile radius of the town and its immediate environs.

The furthest point from which any of the respondents travelled was Mandeville. Mode of travel to May Pen was divided equally between public transport (bus or taxi) and walking. Occupational status was quite varied, including the following categories: housewife, farmer, market vendor, tailor, student, model, store clerk, handy worker, businessman and unemployed. The sample included both vendors and shoppers, and they were asked about their main reasons for doing business in May Pen. The main reasons cited were proximity (distance) to home (46% of vendors and 36% of shoppers), and sales/prices (18% of vendors and 27% of shoppers), respectively.

Most respondents gave May Pen a good rating for service functions; 82% gave the town an approval rating of 6 or greater (on a scale whose maximum 10 was 'excellent'). The major services used (excluding the market) were banks, health and postal service followed by educational and entertainment facilities. Items cited most frequently as absent or poor: infrastructure improvements (road repairs and renovation of the town’s buildings); and job creation/enhancement opportunities (i.e., new factory or training centre).

May Pen’s CBD and Land Use patterns

May Pen is essentially a “one road town” with the majority of its commercial activity concentrated along a commercial strip from Main Street, where it crosses the train lines, to Manchester Avenue and to Mainhead Road. These roads, in spite of junctions, tend to run into each other. Commercial activity along side streets tends to fade after four or five lots, giving way to residential landuse. The town does not have a grid pattern road network, like Kingston or Spanish Town, but a linear, ribbon development form.

The students were given group assignments to map particular stretches of the commercial strip between the railway tracks at the eastern end of Main Street and the Chapelton road junction in the west.

Table 1 summarizes the findings; we can see that May Pen offers a wide range of commercial retailing and service activities, as well as other non-commercial and service establishments. Relative to other towns in central Jamaica, May Pen ranks very high in terms of the range of facilities offered.

The students handled the exercise well. No follow-up weekend was organised, but students and teachers were encouraged to collate and use the data as a school project.

Perez Cross is a geography graduate who works in the Town Planning Department. He was assisted in organising this project by his colleague Janet Hyde.

SCHOOL BASED ASSESSMENT (SBA) AND CXC

The new School Based Assessment for CXC geography is creating considerable interest and comment amongst teachers both in Jamaica and around the Caribbean. Teachers are encouraged to write to the Newsletter to share their experiences and ideas about this important new development in the geography curriculum in Caribbean schools.

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Development and Implementation of a Land Information System

Cecile Blake

The Ministry of Agriculture with assistance from the International Development Bank (IDB) are currently implementing the Land Titling Project. One of the main objectives of the project is to establish a Land Information System (GIS) across three departments; the Office of Titles, the Lands Administration Division and the Survey Department.

A GIS can be defined as the set of components (hardware, software and people) for the collection, storage, transformation, analysis, display and dissemination of spatial data which will enable the efficient and effective management of land resources and improve the planning and decision-making process.

Present Situation

The three departments each function under separate statutes and execute different functions. However, their activities in relation to the processing of land matters are interrelated; that is, the work of one department has an impact and complements the other operations. Presently, they operate manual systems requiring the storage, processing and handling of large quantities of paper records.

The Office of Titles processes approximately 40,000 legal instruments yearly. It has inadequate storage facilities and filing systems. Therefore, records are subject to deterioration and damage by insects and pests. The department has an ever-increasing workload which is driven by a pressing demand for new titles and enquiries about existing ones. Thus, the present system is unable to process expeditiously new titles and to provide answers and documents requested by users.

The Lands Administration Division faces similar storage and management problems. The department manages a store of approximately 60,000 land records and 32,500 land settlers' accounts. The filing system is in poor condition and consequently the government is unable to determine the true extent of its land holdings, and settler accounts are generally in severe arrears.

The Survey Department manages cadastral (parcel) and topographic mapping programmes of government. The mapping and surveying functions are done manually, therefore the department can be considered to be technologically deficient. Because it uses manual operations, the delivery time for standard mapping products is typically way above comparable private sector times.

Project Objectives

The project aims to address some of the major problems outlined in the preceding section by establishing an intelligent, wide-area network of a land information (graphical and textual) database linking the three departments. The system should provide efficient storage, quick access, prompt delivery of information to users, enable government to manage its land assets, provide current and up-to-date mapping products and, in addition, deliver new sets of land information products; for example, ortho-photomaps, cadastral maps, and digital topographic mapping files.

Product Activities

The project is at the stage of systems implementation, having passed through the stages of system definition and specification, tendering, evaluation, and equipment acquisition. Fujitsu-ICL Caribbean was awarded the contract for the implementation of the land information system.

The system is based on a UNIX workstation solution, comprised of 23 workstations and 3 servers. Complementing these are peripheral equipment such as:

- printers (line and laser), for hard copy output,
- CD ROM, diskette and tape drives for storage and retrieval of information, plotters (pen and electrostatic) for hard copy map generation,
- digitisers (back-lit and non-back-lit) for the capture of digital map data,
- modems, for the transfer/exchange of digital information,

uninterrupted power supply systems (UPS) for regulating voltage fluctuations and grace time to enable system shutdown in time of utility outages,

digital analytic stereo-plotters, for compilation of digital maps from rectified photographs.

Software acquired to operate on the system covers two main areas. The textual portion of the system is being developed on the Informix (4GL/RDS) set of database tools and the graphical portion will be done on ARC/INFO (ESRI) geographical information system tool box. Additional software to complement the above have also been acquired. For example, Wordperfect and Lotus 123 for UNIX for day-to-day office operations; Hyperscript for the execution of user queries to enable decision support; S-Plus for ARC/INFO which will provide tools for statistical analysis; MicroStation for the manipulation of field data and ARCView for front-end users to execute query and browse operations.

Seven applications being developed are:

(a) For Office of Titles

The Title Enquiry System, to store and retrieve titled property information. The Dealings Tracking System, to track all applications and instruments being processed in the office.

(b) For Lands Administration Division

Land Settlers Information System, to store and retrieve data on settlers assigned lots under a land settlement scheme. Government Land Management System, to store and retrieve data on each parcel of land owned by government. Land Settler Account System, to manage the repayment of settler accounts.

(c) For Survey Department

Graphical Property Database, for the storage and retrieval of information on any parcel of land, titled or untitled. Digital Cadastral Database, to provide graphical dimension to the Title Enquiry System.

To date, five of these applications are in the process of being developed. Three applications for the Land Administration Division are virtually complete and are currently being reviewed by users. The other two applications for the Office of Titles are in their primary stage of development.

Under a separate contract, the photogrammetric section of the Survey Department will
be implementing applications to automate the mapping process using soft copy analytical stereo-plotters and photo scanners to produce digital topographic maps. It has been estimated that the digital compilation of maps will significantly reduce the time required to compile topographic maps. To speed up the process of cadastral surveys the department has also acquired modern digital surveying equipment such as total stations and global positioning stations.

Training and user interaction is a large component of the implementation exercise. There have been continuous training programmes for staff, locally and overseas, in the areas of land management, land law, programming, database management and application usage.

Another major component of the project has been the construction of a new building for the Office of Titles, and the refurbishing of the Lands Administration Division and the Survey Department. This is being done to provide additional space for operations, particularly for the Office of Titles. The other departments are being refurbished to provide the required infrastructure for the installation of a computerised system, such as, the running of network cables and the installation of air-conditioning. After two years of construction and refurbishing, only the Lands Administration Division is complete. Non-completion of the other departments is severely retarding project implementation.

*Cecile is a UWI geography graduate who is employed at the Survey Department. She also successfully completed postgraduate work in this area at ITC in Holland*
CARIBBEAN GEOGRAPHY
1994 VOLUME 5 NUMBER 1

Issues in Caribbean Sustainable Development, edited by Elizabeth Thomas-Hope and David Barker

David Rampall: Contradictions in Caribbean Industrialization as Sustainable Development

Robert B. Potter & Graham M.S. Dann: Globalization, Postmodernity and Sustainable Development in the Commonwealth Caribbean

Robert E. Maguire: Grassroots Development and Community Conflict in Haiti

Thomas Klak: Migrantforming the Caribbean: A review of Jamaica’s Industrial Promotion Policy

Mark Wilson: Jamaica’s Bench Offices: Direct Dial Dependency

Debra Sharkey: Alternative Tourism in Dominica: Problems and Prospects

Janet Momsen: Gender and Sustainable small-scale agriculture in Barbados

Paul Lorah: Legacies of Environmental Degradation and Political Mismanagement: Antigua’s Unsustainable Path

David Watts: Environmental Degradation, the Water Resource and Sustainable Development in the Eastern Caribbean

Dennis Conway & Paul Lorah: Environmental Protection Policies in Caribbean small islands

The Nature of Geography

Geography explores the relationship between earth and society. The geographer’s highest interest is to study the relationship between earth and people on earth. That way he builds a bridge between natural and social science. When geographers look at spatial relations and interactions they ask the questions: Where is what? How is it? Why is it there? Where and how should it be? The answers to these questions describe and explain the location, situation, and interaction within and between places and regions in the world. Central concepts of geographical studies are Location, Place, Space, Spatial Interaction, Region.

Location: People and places have different absolute and relative locations on earth. These are linked by flows of goods, people, and ideas. The knowledge of the location of people and places is the precondition to understanding regional, national and global interdependence.

Places: Places have different natural and human characteristics. Nature produces landforms, soil, climate, waterbodies, vegetation, animal and human life. Humans shape different cultures, settlements, socio-economic systems and lifestyles according to their beliefs and philosophies. Knowledge of the physical characteristics of places and the people’s environmental perception is the basis to understand the interrelations between people and their places.

Space: People make different use of their environment where they live and work. That way they create different cultural landscapes through different patterns of activities. On one hand they are influenced by their physical setting but on the other they transform their surroundings into different man-made environments. Understanding these complex interactions within space provides an important basis for responsible environmental planning, management and protection.

Spatial Interaction: Resources and humans are unevenly distributed across the earth. That way they cause a global interdependence. No country is self-sufficient. Transport and communication systems link the parts of the world. Changes of locations change spatial interrelations and interactions. Insight into spatial interaction leads to the understanding of the current co-operation of people by exchanging goods and information and by migration, but also to the detection of the current problems and to ideas to improve regional, national and international interactions.

Regions: A region is an area that is characterized by selected criteria. Political criteria define, for example, states and cities; physical criteria, climatic and vegetation zones; socioeconomic criteria, developed and less developed countries. Regions are manageable units for studying and developing environments. Geographers define regions of different scales from local to continental and global dimensions. The integrated system of regions leads to the concept of planetary ecosystem. The understanding of the structure and processes of these different regions within the global system is the basis of the regional and national identity of people and their international solidarity as well.


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Look Behind

QUIZ ANSWERS

Country     Capitals
1. Georgia   Tbilisi
2. Armenia   Yerevan
3. Ukraine   Kiev
4. Latvia    Riga
5. Lithuania Vilnius
6. Azerbaijan Baku
7. Uzbekistan Samarkand
8. Kazakhstan Tashkent
9. Estonia   Tallinn
10. Belarus  Minsk

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