

"EVALUATION OF SPACIAL PERCEPTION BY PUPILS (STUDENTS)
OF THE GEOGRAPHY COURSE THROUGH AERIAL PHOTOGRAPHIES"

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1. INTRODUCTION.

Phenomena of human perception are more and more interconnected with geographical studies considering the advanced knowledge in the field of human cognition, which are being developed in several segments of the psychological and geographical sciences.

Geography is a bridge-science between the environment and man himself. The perception of the environment and of the phenomena related to it, depend on the particular universe each individual forms in his subconscience and on his culture.

The main objective of this work is to verify the perception of the elements of the landscape, by pupils newly-admitted to the Geography course of the Federal University of Parana, Brazil, as well as to adequate the syllabuses (programmes) of some of the subjects, using aerial photographs.

2. BIBLIOGRAPHICAL REVIEW.

According to TUAN, 1980, nowadays the researches in the field of Geography, concerning perception, were performed aiming at different goals and the resulting works are highly dissimilar and may be grouped under five kinds:

- a) the way human beings, in general, discern and frame their own world;
- b) environmental perception and attitude, as a dimension of culture or of interaction between culture and environment;
- c) attempts to infer environmental attitudes and values, with the aid of researches, questionnaires and psychological tests;
- d) changes in the environmental evaluation, as part of a study of the history of culture;
- e) the meaning and history of environments, such as suburbs, country, etc.

Still according to TUAN, the perception, attitude, value and vision (sight) of the world are among the key-words in the works produced in this area of knowledge. Perception is as much the answer of the senses to the external impulses, as well as the deliberate activity in which certain phenomena are clearly registered, while others recede or are blocked. A great deal of what we discern has a value for ourselves, for biological survival or to render us favourable pleasures.

The human being has in the sight one of his most valuable senses, possessing stereoscopical seeing. The human eyes are seated in a position that limits the visual field. Binocular vision helps man to see the objects very clearly as tridimensional bodies. Even so, time and experience are necessary for the full de

velopment of tridimensional vision.

The scale of human perception is proportional to the acuteness and to the amplitude of our perceptive organs and to the purpose we are destining our observation.

Nature consists mainly of discrete objects: trees, animals, rocks, human beings, etc.

The human mind is adapted to organize the phenomena into segments and to set them in order according to its levels of experiments, which are transferred to the involving physical reality.

The "MANUAL OF PHOTOGRAPHIC INTERPRETATION", 1975, of the AMERICAN SOCIETY OF PHOTOGRAMMETRY defines Photointerpretation as "the act of examining photographic images at the aim of identifying objects and determining its meanings". It points out as well that aerial photographs are the raw material for photointerpretation.

A great deal of information can be obtained from a sole aerial photo, due to the daily subsistence of man upon his habitat. The use of stereoscopes, which render the visualization of the contents of images in the third dimension easier, offers a solid foundation for photointerpretation. Besides, there are the elements of image interpretation, aiming at helping in interpretation, as objects may appear in photos in hundreds or thousands of variations: Size, Shape, Shadow, Tone and Color, Texture, Pattern, Site, Association and Resolution.

Photointerpretation is connected to some branch of human knowledge, therefore not existing by itself; so, according to the American Society of Photogrammetry, it may be applied to the following sciences: Agronomy, Archaeology, Astronomy, Biology, Ecology, Geography, Geology, etc. It is up to the photointerpreter to develop abilities through the study and inference of the phenomena to be exploited in the aerial photographs.

Besides, there is a set of factors which regularize the quality of the works of photointerpretation: the person performing the work, types of photographs and available instruments; objective of the interpretation, scale and other specifications of the map and ready for use correlate knowledge.

The great majority of subjects in which photointerpretation processes are applied, undergo the following periods of probation: a) detection; b) recognition and identification; c) analysis; d) conclusion; e) classification; f) idealization. The first presents a direct relationship with the visibility of the objects to be interpreted, depending on: type of object, type of subject, type of scale and quality of photographs. The second step establishes "what the object is". Sometimes this step is called Photo-Reading. The analysis outlines groups of objects having an identifiable individuality by photointerpretation. The process of conclusion is the most complex one as it is based on the convergency of evidence, leading to classification, thus establishing the identity of the surfaces or objects. Through idealization, the lines of what is really seen on the photoimage are worked out.

3. METHODOLOGICAL PROCEDURES.

To evaluate spacial perception, some students newly-admitted to the Geography course were selected. The material here used were couples of panchromatic aerial photographs, scale 1:25.000, covering an area situated in the southern part of the metropolitan region of Curitiba, Brazil.

The students serving as samples are listed below.

Demonstrative panel: Age - Sex - Subjects studied - Semester - Subjects previously studied - Profession - Total of students(%).

AGE	SEX	SUBJECTS STUDIED	SEMESTER	PROFESSION	TOTAL OF STUDENTS (40) (percentage)
19 to 23	M&F	Rudiments of Physical Geography Rudiments of Human Geography Rudiments of Brazilian Geography	2nd.	Primary teachers and students	56%
22 and 23	M&F	Rudiments of Physical Geography Rudiments of Brazilian Geography	2nd.	Students and Bank clerks	33%
19 and 20	F	Rudiments of Physical Geography	2nd.	Students	11%

At first, some basic notions on photointerpretation, such as definition of photointerpretation, steps of photointerpretation, elements of recognition were offered as well as the procedures to obtain the stereoscopic vision for photointerpretation.

After that, each pupil received a pair of photos and, individually, placed them in stereoscopic so as to go with the photo-reading and photointerpretation in itself.

4. DISCUSSION OF THE RESULTS.

With this study, one can classify the identified elements into categories and calculate its percentage. The most remarked aspects in the photos were: cultivation areas (35%); roads (23%); vegetation (26%). However, some environmental clearly visible elements were not fully detected: projected forms (3%) and aspects of the drainage network (13%). The seats of the properties were not identified.

This diagnosis demonstrated that the students admitted to the course have a global vision of the landscape, only recognizing the elements that do not need a more systematical study, as for instance, geomorphology and urbane geography.

5. RECOMMENDATIONS AND CONCLUSIONS.

As the Geography course of the Federal University of Parana, Brazil is structured (framed) into eight semesters, it is recommended that the use of aerial photographs should be introduced gradually.

The first period (semester) of the course (March to June) introduces the student to the geographical and correlate knowledge. In this period the use of aerial photographs is not recommended, as the student has not yet acquired the necessary theoretical foundation to discern spacial organization. Only in the second period (semester) (August to November) the use of aerial photographs in the subjects is recommended, provided they refer to areas familiar to the student.

Once the third period (semester) is started, the use of aerial photographs becomes more effective, as a cast of subjects allowing more efficiency in the use of such aids are introduced into the curriculum (syllabus). There we have subjects related to the field of Physical Geography and Human Geography, they being the basis for the perception of the environment as a whole.

Aerial photographs may be used in the contents of the below listed subjects:

Physical Geography I & II - studying the shapes of the Earth, hydrography and hydrology.

Human Geography I & II - studying the distribution of population and in the study of the organization of the agrarian space.

Physical Geography of Brazil - studying the physical aspects, such as hydrography, projected forms, geomorphology, soils and vegetation.

General cartography - in the working up of thematic cartogrammes.

Geology I and Geomorphology - in the rocky distribution of the earthy crust and its correlation with forms.

Human Geography of Brazil - studying the distribution of population in Brazilian areas.

Biological Geography - in the distribution and study of ecosystems.

Urbane Geography - in the study of spacial settling of cities.

Geography of Parana - studying the physical, human and economical aspects of the State.

Economical Geography - in the spacial distribution of industries and waftage.

It is also recommended that aerial photographs should be used, in the first place, in subjects working with the contents of Human Geography, because one must take into consideration that the students have a previous knowledge of the elements familiar to them in their everyday life. Immediately afterwards they may be introduced in the contents of the physical area about this already known universe.

For the study involving the use of aerial photographs, the pupil should necessarily follow a subject, compulsory in his curriculum (syllabus), offering him the basic knowledge of photogrammetry and photointerpretation.

6. Bibliographical References.

- AMERICAN SOCIETY OF PHOTOGRAMMETRY. Manual of Photographis Interpretation. Virginia, 1960.
- TUAN, Y, FU. Topofilia. São Paulo, DIFEL, 1980.