A STUDENT GEOGRAPHIC ATLAS FOR NATURAL AND SOCIAL SPACES LEARNING

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ABSTRACT

The conception of a geographic atlas for students has as its basic proposal the elaboration of a systematic collection of representations put together for a specific intellectual purpose.

The proposed atlas considers, as a first step for its conception, the coordination of two basic orientations: the teaching about maps and the teaching using maps. The former is the approach of the space representation made by children. The latter involves the student learning about the context arranged on the map.

The atlas begins with an ABC, where we present the basic cartographic elements for children, in a sequential order, according to the student’s mental development stages.

It initially deals with Brazil: the metropolitan regions, the noteworthy spaces, the major regions, the Brazilian territory as a whole, and the geo-economic regions. Next, the atlas presents a series of continents and, finally, the World.

The thematic content is an intellectual endeavor involving the geographic knowledge: nature and society. In this context, the maps show nature evaluated as natural resource to society, which ends up being transformed, through the intervention of society, increased by science, technology and information, into environmental issues.

ANTECEDENTS

Since geography institutionalized itself as a university course, late in the 19th century, mostly with a cultural value to graduate elementary and second grade school teachers, the geographic atlases had widespread diffusion.

They emerged as selections and simplifications of the general, national and regional atlases that evolved from simple collections – an easy way to collect maps – to a systematic organization with specific intellectual purpose, certainly crystallized by the capitalist production’s mode, which had been hegemonic from that time on.

The Vidal de la Blache “Atlas general”, in its first edition of 1894, in Paris, was a classic, which inspired numberless derivations in France as well as in other countries both of reference atlases and student atlases. Yet, the Grosselin-Delamarche “Atlas de géographie phisique, politique et historique” edited in Paris in 1896 was specifically addressed to the geography and history French courses.

Almost thirty years before, in 1868 the Cândido Mendes de Almeida “Atlas do Império do Brasil” was published. It was the first Brazilian student atlas, which was adopted by the Imperial Colégio de Pedro II, in Rio de Janeiro.

In Brazil, in the seventies, the RODRIGUES (1977) atlas constituted a true model for other publications of the same kind including ours. It had the specific purpose of presenting a convenient book size to facilitate the children’s handling, besides having an objective content, which was in accordance with school curricula.

Today we have an enormous and varied range of student atlas as a result of the epistemological evolution and the transformation of atlas cartography and of the market economy statement, with more world-wide acceptance. Some of them continue with the old traditions, including terrible graphic and syntax errors of representation, and do not teach anything new. Others direct themselves to more elaborated conceptions, specially recently, such as the electronic atlas, a new and effective way of providing an approach to the interactive and dynamic forms according to reality in its geographic contents.
THE METHODOLOGICAL BASIS

The elaboration of a student geographic atlas is not a simple task. It is not enough to simplify the maps; neither makes them more attractive, nor selects the easiest themes. Indeed, these components should be taken into consideration, but they are not the essentials ones. This tradition persists and so the specific methodological basis is being neglected. This methodology is the base for the considerations about the construction of the notion of space and its representation. It has as its principal source, among others, the psychogenetic studies of Jean PIAGET and his associates, and from other works, such as the ones of VYGOTSKY, which deals with the relations between the speech as a symbolic activity, the time constitution and the memory construction. (PIAGET and INHELDER, 1972) (VYGOTSKY, 1998)

In Brazil, we have the contributions of the Professor Lívia de OLIVEIRA, which in her Ph.D. research established a model and a correct orientation for that type of work. She also has instituted a true school with highly qualified disciples. (OLIVEIRA, 1989)

As we elaborated our student atlas, we had as a main objective, that of, not only making a ready-made maps collection, but also a compounding systematic organization of representations with a specific intellectual purpose. We constructed those representations from selected themes with the use of consistent data, with the purpose of revealing up-to-date information, providing the student the understanding of certain issues which the student has to face as he searches for the knowledge of reality which surrounds him. (WURMANN, 1989)

Therefore, the maps not are viewed as they traditionally are, as mere illustrations of textbooks, but as revealing representations of issues, which will be dealt with and discussed in the geography courses, opening space for a conscientious and critic reflection.

In the enterprise of the proposed atlas, we think that the first step for its conception is the coordination of two basic orientations:

- **the map teaching** – this elaboration is based on the theoretical-methodological approach of the space representation made by children;
- **the teaching with the use of maps** – this involves the spatial continuity, from the nearest, which is well known by the child and where she has lived on – the place – to the unknown far – the World space – with the possibility to be learned by its representation

In parallel, we structured the graphic language of thematic cartography. This language has its basis in the postulates established by BERTIN from his studies initiated in the fifties and found in his works: “Sémiologie graphique” (1973) and “La graphique et le traitement graphique de l’information” (1977). This Author suggests a vision of the construction of maps, diagrams and networks (organization-graphs, flow-charts, chronological-graphs and dendritically-graphs) as belonging to an image world distinct from figures and graphic arts. The formers have a monosemic structure, while the latter are polysems. He established the syntax of the graphic representation’s language, rendering its semiotics.

Bertin considers that to create a map signifies to explore on the bi-dimensional plane the correspondences between all the elements of same spatial information components: the locations given by geographic coordinates. This is the location component. The two dimensions (X, Y) of the plane identify the location of a place (Longitude and Latitude). They characterize the geographical order: we cannot change the location of Madrid with that one of A Coruña. This is the domain of the topographic cartography. This is the cartographic base. (BERTIN, 1973; 1977)

Nevertheless, the maps can say much more about each place, besides only answering the question: “Where is it?” It can characterize them. This is the domain of the thematic cartography.

To represent the theme, as in the qualitative ($\neq$)\(^1\), order (O) or quantitative (Q)\(^2\) aspects, as with the point, line or area manifestation, we must explore in maps, sensible visual variations with compatibles perceptive properties.

The qualitative aspect ($\neq$) answers to the question “What?” characterizing diversity relations between the places. To deal with it we employ qualitative representation methods. The order aspect (O) answers to the question “At what order?” characterizing order relations between the places. To show them we mobilize order representation methods. The quantitative aspect (Q) answers to the question “How much?” characterizing proportionality relations between the places. To explore it we utilize quantitative representation methods.

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\(^1\) Related to the diversity.
\(^2\) Related to the proportionality.
THE ATLAS

We are sure that, based on all contributions, which were given since the Third International Congress of Statistics held in Vienna in 1857 up to now, we may take on a methodological orientation proposal. This orientation must count with a structure based on the following precise postulate – the thematic maps can be constructed taking into account several methods: the one more appropriate to the characteristics and to the manifestation forms (in points, in lines, in areas) of the reality phenomenon considered in each theme, as in the qualitative, order or quantitative approach. We also can take on an appreciation under the static point of view, establishing the static cartography or dynamic one, in so doing we will structure the dynamic cartography. We should also point out that the phenomenon that makes up the reality, which will be represented on a map, might be discerned from an analytical or a synthetically reasoning point of view. In this sense, we have, on one side, an analytical cartography – dealing with themes based on analytic maps, paying attention to its constituent elements to an extreme, through the junction or superposition. On the other hand, we have a synthetically map, based on maps of synthesis, with the purpose of fusing its constituent elements into “types”. (RIMBERT, 1968) (CUENIN, 1972) (MARTINELLI, 1990; 1991; 1998; 1999; 2003)

At last, we were concerned with the thematic content organization based on the orientation of SANTOS (1994) and SANTOS & SILVEIRA (2001) for current geographic studies looking at the present and not loosing sight of the ever-present combination of nature and society.

As we thought of this atlas, we print on its cover the dynamic of the contemporary reality: nature, basic resource, were enriched with human society’s evolution and progress, by a growing content of science, technology and information to, at the end, constitute the social space in which we live in day by day.

THE ATLAS ABCs

In order to be coherent with the proposed directions, the Atlas starts with an ABCs, where we present the basic elements of student cartography, in a sequence that keeps up with the cognitive development steps of the child reasoning.

To begin with, we expose the symbolization moment, activity that children mobilize with facility, by means of the substitution of actions or objects with symbols or signs. To the children these signs may be images or words; it will be an imitation.

Therefore, we begin this activity with the construction of the relation between the sign (what the child draws) and the signification (what the child think). It is the creation of the map legend.

We explore this operation in the atlas, by signs implanted on a map in its real location, showing through a little window opened in the map, the sign-signification relation, as it is done in the map legend, we illustrate the signification of the sign through the referent object photo.

The legend is the place where we present the sign explanations employed in the map. The easiest signs for youths are the iconographic ones, derived directly from the referent objects, having great analogy with them. However, the cartography’s evolution abandoned this simplistic solution, adopting very abstract signs; many of them become conventional symbols.

Then, we explored the gradual construction of the space notion by the student, which initiates itself by the space of action. Once this concept is totally learned they can get to the conceived one. This happens along an intermediary stage and goes from the operative to the formal space learning. The child will substitute the action by the representation, which will permit him to reason about a space that is expressed on the map, first in a intuitive form and than in a operative one, even without having experienced it.

This construction demands a gradual operation through spatial relations. The first spatial relations, the simplest ones, which the children establish, are the topologic ones. They locate things through the touch, the sight and through theirs own movements, throughout objects in the space and their localization: near/far, inside/outside, above/below.

Then, the students consider the projective relations, who have interdependence with the Euclidean relations structuring conjointly the three fundamental dimensions of the Euclidean space. To locate, the children will coordinate the right/left, front/behind, above/below positions, first, in relation to themselves, after, in relation to somebody else placed in front to them and, and finally, coordinating several points of view.

The children can, now, assimilate the orientation notions, understanding the cardinal points in the wind rose to orient them, which must be based in their own experience obtained with the observation of the sun in its apparent movement during the day. We can observe this movement from east to west. Thus, the sun trajectory provides the east-west direction. The north-south direction is perpendicularly to that one. The student may do this experience, positioning the wind rose facing the east where the sun rises. He can still confirm this, fixing a stake on the ground and
verifying that, when the sun attain its highest point in the sky, the stake shadow is the shortest and projects itself to the side that points to the south direction, this happens in our hemisphere, the south hemisphere. The opposite is the north.

We also may use a globe illuminate at one of its sides by a lamp to illustrate the rotation movement of the Earth, which produces the day-night alternation, in a continuous sequence. Turning the globe from west to east, we demonstrate the sun apparent movement during the whole day, for who is for example in Brasilia. Fixing a head colored pin in this point and imagining ourselves near it, the sun will appear in the east when the day breaks, indicating the east side of the city and it will set at the west side in the evening, pointing to the west of the same city.

In the same way, with the construction of the spatial projective relations, which makes it possible to conserve their point of view, the children may have the capacity to establish, conjointly, Euclidean spatial relations, which determine and keep reciprocal distances. Thus, to locate they may establish associations of measurements and distances between objects, which are related to a coordinate system and linked to a reference point.

After this, we go on to the localization on the Earth surface, which will be transferred to the map, which requires a more complex elaboration based on the projective and Euclidean relations: the geographic coordinates, the formalization of the longitude and the latitude of a place on the globe and on the map.

This is the arriving point of the construction of space. Now, the pupils will be able to locate themselves and to orient themselves using abstracts references, such as those found in maps, essential activities to their own spatial organization.

Now the scale question comes up. We must manage to transfer the spatial reality to a paper sheet or to a computer monitor. It is necessary to mobilize the reasoning, which involves the operations of proportional reduction.

We may work the scale notion, firstly in a qualitative form. If we take the photo of a young lady from a frontal point of view, and if we focus only on the face we could get details of the image. If we take the same picture from the whole body, from at a distance we get the picture of the whole and for sure, we will not be able to notice certain details, therefore it is a small-scale picture.

After that, we present the scale in its metric proportion. We transpose the same reasoning to the zenithal view, the view from the air collected by an airplane for a large-scale map and collected from satellite for a small-scale map.

In the same frame, the air photo records, with details, the streets, blocks of houses, squares, bridges, and notable buildings of Recife city, while the satellite image shows the whole east portion of the Pernambuco state. We may notice that by the coastline design, the location of Recife, Olinda, Porto de Galinhas, Barra das Jangadas and Cabo de Santo Agostinho. In the same way, we have the corresponding maps: the map of the town in large-scale representation (1:10,000) and the state map in small-scale representation (1:1,000,000).

The children may start to obtain an understanding regarding this matter at the laboratory class through the following steps: we can try to represent on a piece of paper the students desk, the classroom, the school, the district, the county, the state, the country, the continent, and finally the whole world. The small-scale models work as a miniature of reality and as mediators in this reasoning.

The representation of the Earth’s surface, which is spherical, on a map, which is plane, is a very complex question in the area of map comprehension.

The atlas makes this operation through projections, which will always present some form of deformation. The same happens when we attempt to flat on the table an orange skin. The cartography does this with the aid of developable geometric surfaces, which may be the involving cylinder, the involving cone and the tangent plane, where the earth sphere is projected. From these surfaces, when we develop and flatten on the plane, we have respectively, the cylindrical, the conic and the azimuthally projections.

The map construction is something that makes the students very curious and at the same time very confused. In fact, in order to make a map we need knowledge of various sciences and we need experience in sophisticated areas. Most of them today are computerized.

The atlas fourth cover, displayed in a simplistic and illustrative form, was placed in a selected place from which we can appreciate the whole landscape in an oblique view, we took air photos in a zenithal view, and through a special optical and digital depiction technique, we could arrive to the final map design.

After completing this introductory part, we enter in the map language field. To dominate this field we must know the basic rules of its grammar. These rules establish that the graphic representation has as its purpose the graphic transcription of the relations of diversity, order and proportionality among the observed objects by visual relations of the same nature. Therefore, we transcribe the diversity relation by a visual diversity, the order relation by a visual order and the proportionality relation by a visual proportionality. If we know how to manage very well all these orientations, we really know the syntax of this language. (BERTIN, 1973; 1977) (BONIN, 1975; 1979; 1982) (GIMENO, 1980) (BORD, 1984) (BONIN and BONIN, 1989) (BLIN and BORD, 1993) (MARTINELLI, 1990; 1991; 1998; 1999; 2003)

It must be evident, in these operations, the relations between the sign meanings (not only the relation between their meaning and their signification, which is already described on the map legend.)

In order to get the students to reach this reasoning it is necessary to get them started with the visual variables, which are variations perceptible to sight, and so doing they will understand their perceptive proprieties. They
must perceive visual variations of, shape (round, square, triangular), value (from clear to dark), color (green, yellow, red), graining (from a thin texture to a thick one), orientation (vertical, horizontal, inclined) and size (little, medium, large).

The professor can now, direct the student to an understanding of map construction and its reading, analysis and interpretation. The student will manage the logic thinking operations; and so these representations will be useful, that is, they will disclosed images about the information content, promoting an understanding in the search of knowledge, as we mentioned at first.

**THE ATLAS IN ITS MAP COLLECTION**

We open the map ensemble that compounds our atlas with reference representations of what is nearest, i.e. the space where the student lives, in relatively large-scale maps. These are the Metropolitan regions. We selected six major regions due to their population: São Paulo, Rio de Janeiro, Belo Horizonte, Porto Alegre, Recife and Salvador. After that, we managed to include important spaces, which are: Brasília and the Brazilian megalopolis.

These maps are the simplest ones. They are reference maps. They fundamentally record, through appropriated signs, the geographic elements of basic interest: cities, rivers, roads, railways, ports, airports, etc. Therefore, reading it is something very simple. They also allow the exploration of the spatial relations as, spatial continuity, and inclusion (Osasco County is in the São Paulo metropolitan region), neighborhood (São Caetano do Sul is neighboring São Paulo), involvement (the São Paulo metropolitan region brings together other counties besides São Paulo and its neighbors). Others spatial relations are possible, as separation (Osasco, although neighboring São Paulo is separated from it by political borders, the county boundary) and order or succession (Francisco Morato is at the north, São Paulo at the center, and Juquitiba at the South of the São Paulo metropolitan region).

At a more refined analysis level, these maps reveal the political and administrative organization of the metropolitan regions, having as the center of dynamism the city, the central place of the region, which has a close connection with the cities around it, which, in turn, make up each region. We also emphasized the urban area continuities, which by joining several counties, shows an elevated number of people concentrated in this constructed space, expressing the cohesion between theirs inhabitants and its activities. Other components were highlighted: the presence of industrial parks and the strong nodular aspect of the road networks, which is completed by the airports and the ports.

To emphasize the spatial continuity and the bonding of these polarized areas with its surroundings; every map of the atlas shows the cities, the access roads and other geographic elements outside of the regional boundaries.

More specifically, the Brazilian megalopolis map goes a step further, expounding, besides the basic geographic components, other important aspects, which consolidated the configuration of this city concatenation which is located between the two largest capitals, São Paulo and Rio de Janeiro: the population and the more dynamic industrial sectors, endowed with great technological development.

Following this we start with a method of the thematic cartography representations: it is the method called Proportional geometric figures, which explores the size of spheres through their volumes, which also are proportional to the county populations with totals over 100,000 inhabitants in 2000.

Next, we approach spaces, which are also near but at middle-scale mapping. The atlas presents the five Brazilian Great Geographic Regions: Norte, Centro-Oeste, Nordeste, Sudeste and Sul. The atlas shows each one in theirs two basic aspects: physical and political.

The physical maps specifically exhibit the relief configuration through layer coloring, according to altitudes, complemented by fluvial networks. To reinforce the usual representation of the increasing altitudinal layers, we use a plastic shadings tinted by a increasing succession of visual values, from the clearest to the darkest, among the warm colors, we superpose all painted relief maps with a visual plastic shading by means of a light and dark effect.

If the student does not live in one of the six-presented metropolitan regions, previously mentioned, he will certainly be included in one of the five Brazilian Great Geographic Regions found in the map. The teacher may look his district up with the student in the local atlases and he will work with the reality that is nearer of each one, inside the Brazilian regional context.

In the scaled knowledge, the thematic content for the Brazilian space, as a whole, is based on a basic overview of the geographic knowledge, both statically and dynamically, as well as in the analytical and synthetically reasoning: nature compounding with society.

In this framework the atlas deals with Brazil’s nature through these maps: Relief and fluvial networks, Relief unities (synthesis map), Geology and natural resources, Hydrographic basins, Climatic components, Climate types (synthesis map) and Native vegetation, with its specific movements. The atlas discerns and evaluates these themes, as a natural resource to society, which culminates with its intervention added by science, technique and information and with the environmental question. To understand the space production by society, viewed from its basic component – the population – in its historic journey, we can see, on maps, apparent forms, as characteristic distribution patterns looked at from different analytically levels, as result of human activities: Political-administrative organization, Agriculture and cattle breeding, Manufacturing industry, Tourism, International trade and Transport networks.
The knowledge of this dynamics allows us to discern, at a synthetically reasoning level, the configuration of a spatial agreement of urban systems polarized by a scaling at six city hierarchic levels, which completes itself in another map; the Technical-scientific informational medium map. This last map reveals that the Brazilian space, at its origins, as a legitimate natural medium, with native people having in nature what was fundamental to their life and with the human society development, which happened in Brazil since 1500, was enriched by increasing amounts of technique, science and information, establishing nowadays a technical-scientific informational medium. (SANTOS, 1994) (SANTOS & SILVEIRA, 2001)

The atlas dealt with all subject relative to the Brazilian territory as a whole, on the maps, always at the same scale to facilitate the comparability among them. In addition, we registered some maps as analytical and others as synthetically maps, to facilitate the teacher’s work with those two reasoning levels – analysis and synthesis. The latter completes the former. Thus, the Relief and fluvial network map deals with this reality aspect, firstly at an analytical level and after at a synthetically one, configuring the Relief unities design. We may say the same about the climate components (analysis) and Climate types (synthesis). At last, concluding the map series, we have the two synthetically maps previously mentioned: that entitled – “Urban systems” and that labeled – “Technical-scientific information medium.”

It was easy to sketch the regions of on this last map, the division in three regional complexes, the Geo-economical macro-regions. These spatial ensembles result from a new work territorial division, exhibiting the social-economic situation and the relations between society and natural space: Amazônia, Nordeste and Centro-Sul. We detailed these three unities in specific large-scale maps, dealing with prominent aspects such as: The most important agricultural and cattle breeding production, Technology (SIVAM – Sistema de Vigilância da Amazônia), Industrial centers typology, Trade, Finances, Fiscal paradises, Transports, Specific interest areas.

After the series of maps of Brazil, the atlas presents the Continents, by means of a scale of major generalities. We presented each one with theirs physical and political maps, complemented by a social-economic and environmental analysis unfolded in four thematic maps: Population, Agriculture and cattle breeding, Industry and Environmental question, not only with a static approach but also with a dynamic approach.

To finish the atlas, we present a thematic world map collection, which one more time approach the subjects hitherto analyzed at a worldwide scale, both from the static mode and from the dynamic one, in the national and continental space. They are: Relief and fluvial networks, Political division, Plate tectonics, Geology and mineral resources, Climate and ocean streams, Biomes, Population, Agriculture, Industry and technology, International trade, Tourism and Environmental question. We showed the mentioned Political division map in two ways; in an inside, double page map and in a specific large shape map, with the world’s nation flags, attached to the atlas as a poster.

Finally, a world Geo-economic space map represents the global synthesis; we were aiming to integrate the knowledge about the reality around us.

We presented the world time zones at the very end of the atlas and we also adjusted these sectors to the rotational earth movement, visualized by means of the opposition of the day and night on the terrestrial globe.

A large bibliography demonstrates the entire theoretical and methodological basis that directed our atlas elaborations and the sources employed for the thematic map constructions.

A table with geographical comparison emphasizes the major extremes of nature and society in our world today, which was obtained through refined scientific knowledge.

Country international abbreviations, other particular abbreviations and a glossary complete the support information for reading the atlas.

THE REPRESENTATION METHODS OF THE ATLAS

We utilized a whole spectrum of representation methods offered by thematic cartography in the varied range of themes of the atlas, such as the static view, the dynamic view and also the analytically reasoning, as well as the synthetically one.

The selective and qualitative ordered maps employed visual variations such as points, lines or areas to select and to order graphic transcription in accordance with reality manifestations. At the selected areas map, such as the Brazil’s native vegetation map, we made use of the Selective chorochromatic method. In the ordered one, we adopted the Ordered chorochromatic method as such in the Brazil’s geology and mineral resources map.

In the quantitative maps, we applied the Proportional geometric figure method using circles or spheres to represent absolute quantities, such as in the instance of the Brazil’s city populations. We utilized the Choropletic method to express relative values such as ratios (GNP per capita), rates (the mean rate of population annual growth) and percentages (the proportion of state industrial transformation value in Brazil’s total). We also used the Isarithmic method to show continuous phenomena such as the relief, the precipitation and demographic density in Brazil and in the whole world. In our atlas, we adopted the Dot enumeration method to illustrate sparse distribution such as dairy and beef cattle in the Brazil and the main cattle areas in the world.

We dealt with the dynamism of reality by means of maps that show variations through time and linear movements in space. We represented the former by the Choropletic method applied to the mean rate of population
annual growth; however, in this case we used two visual opposed orders selected from cool to warm colors. The movements were illustrated with the adoption of the Flow method: arrows with direction and sense, bonded to its origin, to a destination and to a course for the most varied vectors and, in the case of magnitude representation, a proportional width such as in the oil flows around the world map.

THE DIAGRAMS AND THE INSERT MAPS

Although some diagrams have always been present in atlases, we preferred not to adopt them, except in very specific cases. We consider that map pages should contain only the map and it should be free from any visual interference.

The few diagrams that we displayed were presented in form as projected relief and projected unities of relief profiles, projected geologic sections, hydrologic diagrams, pluvio-thermic graphs, vegetation profiles and population pyramids.

Our atlas employed a depiction by means of a topographic profile, especially for the altitude legends of the physical maps (Relief and fluvial networks) of the Brazil, Brazil’s Great Geographic Regions, Continents and the World.

We also avoided using map inserts for the same reason, which is something very common when we want to enlarge a cartographic detail or to show the space where the page map inserts itself. There were few cases where we employed them. However, the atlas always presented them as complements of the main map. They are: the Oceanic islands of Brazil, the Hawaii state (USA), the Galapagos Islands (EC), the Azores Archipelago (P) and the large urban agglomerates, all of them at the same map scale, attached to the Political world map.

THE PHOTOS

The addition of photos to the atlas did not have the sole purpose of increasing its attractiveness. The importance of the colored landscape representation or of a scene record is irrefutable. Traditionally, geography resorts to this type of notation to stress certain characteristics of the natural or social reality, which is interesting to show or to study. In spite of the polysemic character of the photographic image (multiple meanings), we note that it is a powerful instrument to greatly approximate the public to the scientific studied objects, in which the researchers and the community themselves are involved. The photo has a large social reach, disclosing to the reader, sensible aspects of the society of which he makes part and which would be hard to elucidate only with words.

Except for the vegetation profile case for the Brazil’s native vegetation, which configures itself as a colored drawing, the only maps complemented by photos were the world maps for Ecosystems, the Agriculture and cattle breeding map, and the Tourism map. In the former two maps, the photos elucidate characteristics of the legend rubrics. In the last map, specially, the illustrations figure as colored postal cards of some major touristy attractions of the world, which are stereotypes in this social practice.

CONCLUDING REMARKS

We consider these methodologies imperative to support any enterprise directed to the idealization of Student geographic atlases. They will confirm its pedagogical role in geography teaching, ensuring that the citizen is actively participating in the social transformation. Certainly, it is increasing his easy access to the communication media both in print and in a digital form, both to natural and social spaces, in his daily live and in any place of the world.

REFERENCES


BIOGRAPHY OF THE AUTHOR

Marcello Martinelli was born in 1937, São Paulo, Brazil. In 1944, he started his basic studies and in 1955, he concluded his High School Level. From 1957 to 1963, he attended his first Fine Arts University Course with the specialty in oil painting. Contemporaneously to these studies, he worked with his father at his factory as woodworker for fine furniture.

In 1966, he participated, as Cartographic Designer, of the São Paulo Atlas Project at the Geography Institute of the São Paulo University, under the orientation of Professor Libault, a French specialist. Related to this job, he reached the bachelor’s degree, at the Geography Course, at the São Paulo University, from 1967 to 1971.

At the post graduation course, he got the Master and the Ph. D. certificates. After that he went to France and Italy for his Postdoctoral studies in two opportunities: 1987 and 1990, respectively.

In 1999, he presented his Highest Professor Degree Scientific Work to the University. Nowadays, with this certificate, he is an Associated Professor at the Geography Department of the São Paulo University of São Paulo, Brazil, with the thesis: “Graphic representations of geography: the thematic maps”.

He has been holding courses and orientations for students from Cartography and Geography graduation and post graduation courses.

Martinelli is author of three student Atlas and three books about the Cartography with the following thematic “Teaching at university level”.
National Geographic Student World Atlas. Description: The new fourth edition of National Geographic’s award-winning Student Atlas of the World is more fascinating and fact-filled than ever, and has gone interactive with new digital extras, including scannable pages that link to photo galleries and quizzes. Dynamic, user-friendly content includes photos, facts, charts, graphics, and full-color political, physical, and thematic maps on important topics. Along the way, you’ll learn about everything from the wheat beers of Bavaria, Belgium’s Trappist ales, and Finnish sahti to British bitters, barrel-aged Californian beers, Vietnamese bia hoi, and more, with full tasting notes for over 500 must-try brews. World History Atlas Ideal for history buffs, teachers, and students, this app offers a chronological and geographical presentation of historical topics and events. Users can travel through the history of humankind from the earliest civilizations to the present. Access information on a wide variety of categories, including military events, famous figures, natural and astronomical occurrences, technical achievements, disasters, humanities, sport, and religion. history4geeks.com. Earth 3D World Atlas Appropriate for ages four and up, this interactive 3D globe app features wonders of the world, po Develop students’ English with Close-Up, a new four-level course for B1, B1+, B2 and to C1 students. Close-Up brings English to life through spectacular National Geographic photography and facts carefully selected to appeal to the inquisitive minds of students. They will discover real places, real people and real English through a ‘Close-Up’ on the world around them. Key features: detailed lesson plans with clear instructions and the key to all tasks from the student’s book; a section of photocopiable support material, which Learn more. Join or create book clubs. Choose books together. Track your books. Bring your club to Amazon Book Clubs, start a new book club and invite your friends to join, or find a club that’s right for you for free. Explore Amazon Book Clubs. Hardcover. “This reference is an inviting introduction to using maps for the young student.” Adrienne Antink of American Reference Books Annual. About the Author. For 120 years the Society’s maps have helped spread geographic knowledge to people around the world. A multi-million-dollar database allows National Geographic to combine the latest data gained by space-age technology with innovative digital mapping techniques to create state-of-the-art political, physical, and thematic maps.