EIGTH INTERNATIONAL CARTOGRAPHIC CONFERENCE
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NEW TRENDS IN CARTOGRAPHIC DESIGN OF SCHOOL MAPS IN BULGARIA

Paper submitted
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Some of the basic requirements towards a map as a flat representation of actual ground are that a map should be precisely clear and illustrative and that it should supply qualitative, quantitative, true and accurate information of an area and actual ground. Those general requirements for clarity and accuracy of school maps are of utmost importance and they seem to be an obligatory methodological condition.

Pupil's map - reading or getting the meaning of " the realism of a map" (Sandford, 1975) is a complex process which has several stages- from the simple perception of the conventional signs through word and number interpretation of the cartographic information to the logic processing and re-creating objective reality. That general scheme however is strictly specific for the various age groups of school children, their individual intellects, scientific- cognitive interests and so on which implies that a differenciated selection of means of representation should be made at map-making.

On the other hand it is required that a teaching map should have an optimum dose of information and that it should be entertaining to a maximum degree. A map has to inspire the student's interests, it should be attractive both for its beautiful appearance and skillful cartographic and artistic reproduction of contents. A map is not meant only to supply fast and accurate information it should also cater for the aesthetic education

of students, and for acquiring good habits for independent work and creative logic thinking. Elements of compulsion in the training- educative process, when working with such a map, should be decreased to a very small degree.

Those basic and very important requirements towards teaching maps might be achieved in various ways; by using various methods and means of representation, and most of all through conscientious carefully aimed directing of the scientific methodological lay-out and map - making process of creative work.

School-teaching cartography in Bulgaria hasn't traversed a very long way but it has had an intensive way of development. In the years that followed the victory of the socialist revolution our cartography shaped its own form and production profile. More than 150 sorts of teaching History and Geography wall maps have been published, about 30 plastic relief maps and models, six geography and four history atlas books for the various grades at school (some of the maps have been published in million copies) four sorts of geography globes, work books with contour maps, etc. One can say that the basic demands of our schools are supplied not only in regard to quantity but in regard to varieties of themes (topics) as well. There appears a necessity of periodical reprinting and publishing revised editions and renewing maps that have already been published. Some quite new themes for the changed curriculum are being treated : aiming more complete cartographic illustartion of teaching material. A revaluation of the traversed way is being done at the same time. New teaching methods and ways of understanding are being researched; cartographic means of representation

and solution of problems at which artistic ways of depicting are applied on the map for the lower classes make their sure way.

The efforts of the work-group of the Bulgarian cartographers are directed mainly towards solving problems in the following trends; searching for brighter and functionally connected range of tints; to search for more realism for the symbolic conventional signs; application of graphic and vivid artistic pictures and miniature; more simple forms for the letter and number print; new shapes for framing; using new synthetic paper and foils for poly-graphic operations and so on.

The range of colours in various degrees of density, brightness and mixing are related to the universal means of representation in cartography (Nazarov, 1962). The advantages of coloured depicting are based first of all on a high degree of visualness. The tinted areas on the map are the first to appeal to the eye and draw attention and retain it for a longer time.

The lack of intensity and contrast at colouring our teaching maps (both wall maps and atlases) is a defect that is gradually being removed. For the case both joined teaching-methodological and science-technical discussions and research and exploration work carried out in that field helped a lot (Coen and others , 1971). The new (school) teaching maps published in the last two or three years are noted for being more expressive and placard-like. The background tints are more densed, clearer and contrasting. Colours of the spectrum of wave length(500 -600 m.microns) that best stimulate the eye at various shades of light are used mostly for painting the headline areas. Adjacent areas are usually tinted in softer, pale, pastel

hues of colour in order to produce some sort of "poly-plane" effect of the picture and to balance its whole outward appearance.

Another peculiarity at the choice of tints is to look for closer functional relation between the hues of colours and the phenomena which are being mapped. It is obvious that there is a tendency to use colours that contribute to the natural shades of hue of the objects and at the same time to stick to the traditionally settled tints (tonality of colours). Thus for instance in order to mark (depict) branches of industry the following colours have sort of gained their rights to use: brown - for electric power production, orange - for metallurgy, red - for machinebuilding industry, violet - for chemical industry, green - for timber and wood processing, light blue - for textile industry, yellow - for canning and food industry and so on.

Similar examples might be given for maps on different themes (topics). On political maps the territory of the Soviet Union is usually coloured pink; purple - for France; green - for England and so on. In this way school children acquire strong habits and associations for more efficient and faster map-reading.

Realism and "visualness " on the map are achieved by applying different in manner of drawing symbols or artistically painted conventional signs which reveal a characteristic feature , property or shape of the objects. In this respect the resources of cartography might be considered of no limit (unlimited) and the possibilities of using those resources are really great. Our practical experience (of long years) has led to the

elaboration of varieties of systems of visual cartographic designation which are successfully applied in teaching cartography. Series of artistically painted signs for marking territorial distribution of plants and stockbreeding, branches of industry, Nature beauty spots, historic, architectural or tourist sights and so on are elaborated in our country. A typically Bulgarian way of presentation which has been used ever since the beginning of the sixties is the mapping of sub-branches of industry marking even their separate production on maps for schools of economics (school maps for general economics). Using forms and graphic drawings that are familliar to the pupils in adequate sectors of the circle depicting an industrial sight, we contribute to the realisation of one of the basic requirements towards a map receiving maximum information in minimum time that is getting as much information as possible in a very short time at a high rate of learning (memorizing) because the pupil's attention is not diverted from the map to the legend for references.

The visual language of the map becomes even easier to understand when the convetional signs, no matter how close to actual things they are, are substituted by artistically painted miniatures. A large number of pictures appeared in most of our history teaching maps designed for the lower and intermediate grades. It might be said that the art of graphics and painting find a wider application in the sphere of map production. Creating a new actual events or objects by the means of representation of art and applying them on maps adequately and attaching them to the interior as a whole adds to the map's more interesting structure, its cognitive and

aesthetic value. In such way the requirements that teaching maps should be expressive, attractive and entertaining as a good number of authors state (Balshavina, 1967; Mishetzkaya, 1971 and others) are achieved. In our practice illustrations of art for maps are being treated in different ways- from the simplest monochromatic graphic to the most complex picturesque composition. The themes are not always the most appropriate ones and their insertion on in the maps is not always adequate, sometimes printing is not on the required technical level. According to our opinion more simple and at the same time more expressive manner of implementation should be established. The monochromatic graphic drawing has to be filled in with suitable natural or authentic, genuine made colours that are got directly or through mixing (combination). The black contour does not only set bounds to the figures on the map areas - but it also emphasises the very nature of their individual characteristic features. Thus the forms deprived of whatever chance and insignificant details add to greater exactness and legibility of the composition. Their connection with the background of the map will be more natural, and their printing - to a greater degree -easier.

It is here that we've got to make it clear that some maps, real work of art, were published in our country. Those are the series under the headline "Physico -geographski poyassy i oblasty" zones and regions of the world and the continents (Asia, Africa, North America). Not only the typical representatives of Nature's fauna and flora but the whole background - land and water areas are artistically shown on those maps. That sort of maps are of great interest not only for students but for grown-up

readers as well.

Relief models made by means of vacuum shaping of plastic (synthetic stuffs) are also tinted in shades of colours that are very close to real ones. A new colour scale (spectrum) for relief maps is being experimented, and its aim is to sharpen the visual effect for relief - not to decrease it.

Some decisive steps forward have been made in connection with the arrangement of print on teaching maps. The greater possibilities provided by photo-type-setting with regard to print varieties, size of letters together with the possibilities for faster and cheaper bringing into practice new print garnitures, created conditions for the use of more modern sorts of types of similar and simpler graphic shape, better legibility and varieties of sorts and contrast.

In the last few years serious attention has been paid to frames and forms outside the frame of the wall maps and atlases. Here again traditional "classic map-making" principles made room for lighter and more simple decisions. Only a light background colour which fills in the margins of the map up to its edge is used now instead of the overburdened frames with lots of parallel lines or frames filled in with complicated forms and ornaments usually printed in black. The advantages of background framing are evident when maps are watched for some time in the enviornment the classroom. Light background frames ease one's eyesight. They make for the main part of the contents of a map to protrude to the foreground and at the same time to close symbolically its range without any intrusion. A good choice of suitable background colours makes for creating richer

tonality of colours and at the same time leads to a sort of balance between warm and cold colours and that on its turn leads to optimum visual perceptions from aesthetic point of view. The neutral grey colour in its warmer shades however imposes itself in our practice.

The latest novelty with which Bulgarian cartography can measure strength with the best world standards is the use of a new sort of synthetic paper, with which the process of production of wall maps is not only accelerated and made cheaper but their quality has been improved to a larger degree. Teaching maps that are printed on Japanese synthetic paper "YUPO" are noted for a very high level of polygraph operation. The smooth surface of the paper, its milky whitness, no deformations at all while being printed are factors that guarantee brightness and clarity of colours, sharpness of print, and a very high percent of polygraph reproducing.

In conclusion we've got to say, and make it clear that designing and making a map is a complex, many-sided, creative process. Artistic graphics and painting, colour and semi-tonic plastics are applied to it simultaneously with cartography creative work, printing technique and skill. That is why some authors successfully define cartography as a combination of science, art and technics.

LITERATURE:

1. Башлавина Н.Г. — Учебные карты и атласы. В сб. "50 лет советской геодезии и картографии", М., 1967

2. Мышецкая Е.Н. — Вопроссы школьной картографии. В сб. "Вопросы географии", № 86, М., 1971

3. Назаров В.Н. — Методы и изобразительныи средства в картографии М., 1962

4. Коен Б. и др. — Принципи за оформяне на учебни карти и атласи НИИГиК, С., 1971

5. Сэндфорд Г. — Проблемы восприятия. В сб. "Новые тенденции в изучении и преподавании гоеграфии в школе", М. 1975