

**THE EXPERIENCE OF UTILIZATION THE ANAMORPHOSIC DRAWINGS
IN TEACHING ECONOMIC GEOGRAPHY.**

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Abstract

A map is the base of geography. With its help people study the world around them. The map can not only reflect the reality but it teaches to form a personal opinion towards a world, that quickly changes and towards some global problems of the human society.

The role of the map is very important in teaching economic geography. Every well-educated person should know how to read a map and how to interpret it. Maps are concrete and have clear time link. The maps are more comprehensible than any scientific books or articles, that's why children can easily compare and understand them even in primary school.

The experience shows that the new untraditional materials can be used with success as well, as the traditional ones. For example, this new kind of anamorphosic drawings described in this article.

1 What is the problem?

A famous Russian poet Boris Pasternac once said: "A day lasts longer than a century." Everyone knows such days-days full of events, impressions and energy. Sometimes people remember them longer than the whole years of their lives. Our memory has its own way of counting time.

That was a painting of Salvador Dali "The Constancy of Time" (1931) who tried to sketch a manner of time to break its rhythm and its ability of being distort in human consciousness. The painter used the distorts of space in order to show the distorts of time. Geometric forms lost their regular outlines. Salvador Dali called such "experiments - anamorphosis" (from Greek anamorphosis - distorted).

Anamorphosis are distorted drawings, abnormal transformations, appearing normal from one point. Lately this term has been widely used in geography.

2 Difficulties in reflection of socially-economic indexes on a map.

For depicting a globe on a map, people use different projections (a projection of Mercators, conical, azimuth projections, etc.). And it does not depend on the topic as the depiction of the globe is always the main aspect. Sometimes the objects (especially economic) are represented unevenly. Let us think of a representation of the cities in Europe and Africa. Is that possible to show economic potential of a single state if it is marked on a map only by a point ? These are serious problems. The cartographers usually do not try to change a mathematical base; they just work out new methods of showing a topic of a map.

3 Some facts from the history of creation anamorphosis drawings.

In the beginning of the 20-th century scientists have made efforts to plot economics material avoiding regular cartographic projections. German cartographer Vichel was the first who tried to use a distorted drawing of a globe (1903). He published his maps of the "Number of the population." Later this method was used for illustrations in its different modifications.

The Russian geographers N.N. Baranckye and A.I. Preobrajenskye described this invention like: "...very witty, though 'savage' from the point of view of geography." They concluded that this map has some advantages but it is not a real map as it does not have any mathematical grounds. That's why they have not recommended this method and the Russian cartographers did not work with them for a long period of time.

But the research works were continued. New projections, which gave an opportunity to compose exact and strict anamorphosis maps, were created (Vasilevskye, 1970). The particular feature of these projections was in the inclusion of a main exponent in their equation. This way gave an opportunity to increase the amount of the information in the most compact parts of the map. But when we use this method, the cartographic netting changes and the contours of the continents and of the states transform.

This method was not accepted. Furthermore, this is rather difficult to create these maps. And plus the psychological barrier was not overcome. These maps are rare in Russian atlases, though in the foreign atlases they come across rather often.

It is still a problem to show a link of two different indexes on an economic map. The scientists continue the research works. Now we have at our disposal the results of the experiences fulfilled by American and Russian scientists. They work on a problem of creation the anamorphosis maps with the help of a computer.

4 What are the anamorphosis?

These are graphic drawings, which differ from the traditional maps; they transform metric geographic space depending on the topic of a map. For example, the square of a state on this map does not reflect the size of the territory, but a size of any economic or social index (gross domestic product, military expenditure, population, etc.).

What can we see on this map? Surely, it is an unusual picture of the world. Where are the familiar contours of the continents, of the states? One can even not recognize them on a very carefully depicted computer map, and it is nearly impossible to recognize them on a hand-made map. For example the states of the world are replaced by rectangles or by any other geometric figures. Its space relationships (territory neighborhood) should be also considered.

This method has many navigates. It allows to show expressively a real geographic situation. It gives an opportunity to compare economic or any other potential of different countries. It helps to make individual conclusions as well as to form personal opinion towards economic, social and cultural levels of a region or of a whole state.

The choice of any geographic figure depends on the imagination of an author. They frequently try to reproduce familiar outlines of the states, using a number of geographic figures. That's why there are as many maps as many authors we have.

5 Is Africa always bigger than Europe?

Let us look at the anamorphosis drawings, which though have some scarcities and can only serve as the examples, not as models. They are extremely beneficial and useful; they help teachers to explain various themes of the lessons (such as "World Population", "World Economy", "Global Problems Of The Humanity").

It is rather complicated to reflect the value of a demographic index on any map (except the map "Density of The World Population"). We know, that 5 billion's world population grows daily for 3 persons (quarter of million a day). That means that in 90-s every year growth of the world population will reach the point of 90-100 million of inhabitants. Most of inhabitants will appear in the poorest countries-in the countries, which can not provide people's needs now and will not be able to do it in the future.

These tendencies can be represented on anamorphosis maps "World Population", using two indexes : the number of the population in different countries and the tempos of the growth of the population. This can be made, using drawing shading or colored backgrounds. Later the teachers can explain that these 2 exceeding percents of the population growth slow down socially -economic development of the countries. For example, in Africa the annual average population growth will hold on the point of 2.9-3.0%. It provides fast growth of the African countries population share in the whole world population, for example, in 1950 - 8.9%, in 1990 - 12.1%, in 2025 (as a forecast) it will be 18.8%, in 2050 - 21%. South Asia will still remain the most populated region of the world. And on the contrary, the part of the European and North American part in the World population will decrease greatly.

We can also show other demographic and socially - economic indexes on anamorphosis maps. For instance, it is possible to demonstrate the demographic problem and the problem of lack of food, the level of medical service, etc. Using anamorphosis maps the students can notice that the socially - economic potential of the most regions of Africa, Asia and Latin America is much lower than the potential of their population.

"Gross Domestic Product" (GDP) map shows the proportion of every state in the general economic world potential. The background of a map reflects the index of the GDP per capita (this characteristic is widely used to illustrate economic level of the states), or the tempos of the gross domestic product for a certain period of time. These anamorphosis maps will represent socially - economic backwardness of the poorest countries, their lowest level of economic development. In this case there will be underlined quick growth of "New Industrial Countries" and China.

So the students are able to make all the conclusions themselves and answer the question: "Is Africa always bigger than Europe?" .

Conclusion

There are many variants and possibilities to create maps. They help to teach geography on a higher professional and information level. Students can form such maps themselves. This is a creative process, it helps to work with the statistical materials, to develop a logical way of thinking, helps to remember the material about the political world map.