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LANGUAGE IN PICTURES

The Development and Uses of Pictorial Statistics

By Rudolf Modley

Executive Director, Pictorial Statistics, Inc.

Up to the twentieth century the Bamum tribe in West Africa had lived without a written language of its own. It was only in the year 1900 that King Nyoya, impressed by contacts with Europeans and Arabian traders, ordered some of the wise men of his tribe to invent signs to represent the words of the native language. The result of the work of the Bamum dignitaries was a picture language in its purest form; the signs were crude drawings of huts, cattle, colanuts and other things which played an important part in the life of the tribe or its individual members.

But it was only for a few years that the language remained in this early form. Soon drastic changes began to take place; signs which originally had pictorialized only one object began to represent entirely different things. Thus a drawing of two eyes, originally representing the *eye* (which in Bamum is called *li*) became also the sign for *name* (which is also called *li*) and by 1907 the same drawing began to be used in any word in which the syllable *li* occurred. The signs, originally pictorial symbols, thus became sound symbols, representing syllables. A German missionary from whom we have reports on the early Bamum language reported 348 symbols for the time when this phonetization started.

BAMUM SIGNS



Adapted from "Die Schrift" by Hans Jensen.

But our story moves on—new reforms occurred before the language was ten years old. The changes were twofold, affecting both the symbols and what they represented. The symbols lost more and more of their pictorial quality and developed into simple strokes and dots. And only in very few cases did the symbols represent a whole word: sometimes they stood for syllables. But more frequently they represented single sounds, like the A, B, C of our own alphabet. This latest development was reached in 1918. Today, a letter from King Nyoya or from his successor would be composed of the 70 syllable—and sound symbols of the "modern" Bamum language.

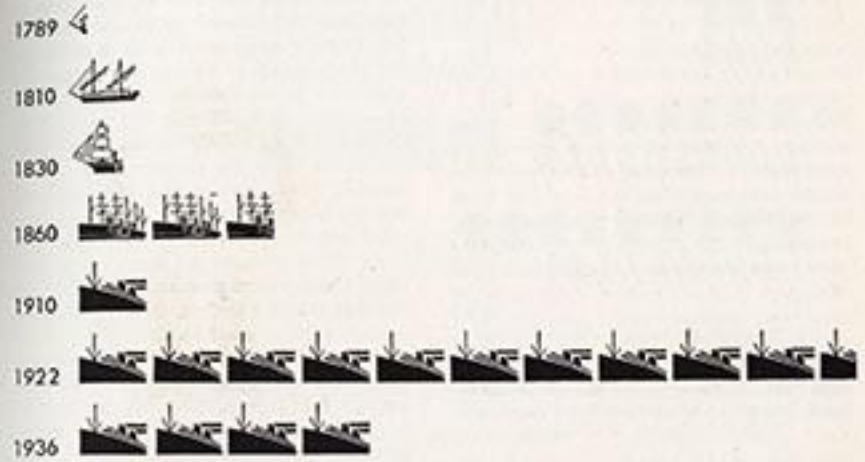


The trade mark of Pictorial Statistics, Inc.

The origin and development of the Bamum language passes before our minds like a motion picture of our own written language. If we study it carefully we can notice several things of major importance.

We see that languages start as picture writing, that it is the first and most natural impulse to represent a hut by a picture of a hut and a cow by a picture of a cow. At this stage a language is truly universal and international. Anybody can read Egyptian, Cretian, Chinese, African and early American word-symbols—as long as they are in their first pictorial stage. It does not lack a certain irony that a language becomes unintelligible to the large majority of mankind as soon as it "develops." This majority consists not only of the foreigners but also of those who cannot or will not master the complicated sound symbols which make up our modern languages. It is not the purpose of this article to point out the valid reasons which caused the abandonment of generally comprehensible picture languages in favor of the abstract sound symbols which form the modern written languages, but rather to point out that a definite loss was suffered when languages lost their pictorial quality and to indicate how that lost quality may be restored.

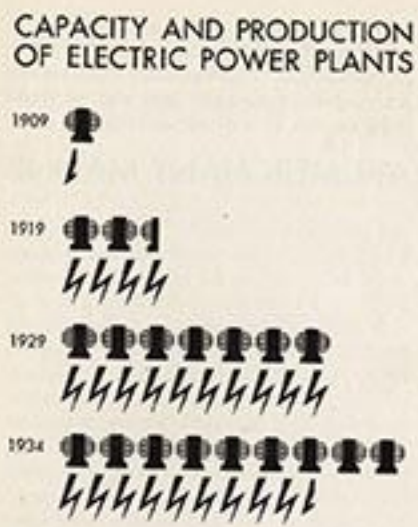
GROWTH OF THE AMERICAN MERCHANT MARINE



Simplest form of pictorial chart. From "The United States: A Graphic History," by Hacker, Modley and Taylor. Modern Age Books, Inc., New York.

It can be restored by the introduction of a supplementary picture language which will be intelligible to the "illiterate" and the foreigner as well as to the educated American. We call this language a picture language because it is based on the same principle which the Bamum dignitaries followed when they originated their first symbols: to draw things so that they are self-explanatory whenever they can be. And we call it a supplementary language because it does not take away any of the functions which our written language performs; rather it enlarges the scope of the written language by widening the audience and putting its message in a more precise form by making it visually obvious.

The greatest service which this method can perform is in one field which has been sorely neglected—the graphic presentation of facts. There the conventional forms, the statistical table, the bar chart and curve, the pie chart and the organization chart have done twofold damage. They have not only failed to give their message to the student in the classroom, to the reader of the news-

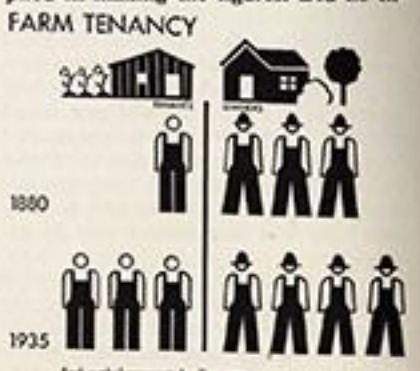


From "Electric Power on the Farm," edited by David Cushman Coyle for the Rural Electrification Administration, Washington.

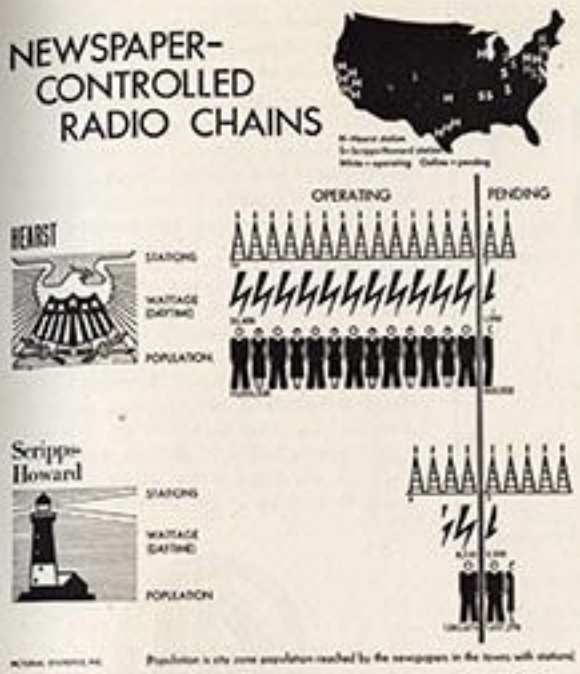
paper; they have actually built up a resentment against fact-presentation which in its intensity recalls the resentment which used to be prevalent against spinach. Let me present to you the Popeye of statistics—pictorial statistics.

Pictorial statistics developed from an analysis of the shortcomings of the conventional graphs. I would consider as the most serious shortcoming the fact that one bar chart (or curve or pie chart) looks like any other one. Thus a chart showing the growth in the circulation of a magazine may look exactly like one showing the number of deaths from cancer over a period of time. Now there is something wrong with a graphic method of presentation in which this may happen. And it is at this place that pictorial statistics turned to the experiences gained from the study of the picture languages to get its first principle: to introduce self-explanatory pictorial symbols to replace the enigmatic bars and curves. Again a drawing of a hut stands for a hut, a picture of a cow for a cow. It is not always simple to devise symbols by which we are able to make a quick direct connection with the object of discussion. A magazine has a standard appearance so that a simplified reproduction of the magazine might be a logical symbol. Frequently the problem will be more difficult. Thus cancer deaths may have to be shown by the sword symbol already associated with campaigns for the control of cancer superimposed upon the gravestone—symbol of death. No matter how difficult the process of designing the symbol, the result must be the same: that the graphic part of the finished chart carries the message and not the legend alone.

Of course charts using pictures have been made before. At some time you must have seen pictures of an enormous Russian soldier and a little American soldier with a caption that the Soviet Union has, let us say, ten times as many soldiers as the United States. What was wrong? Two things, First the illustration is misleading; there are *more* Russian soldiers, *not bigger* ones! Second, the method is bad from the graphic point of view because the eye cannot judge areas indicated within irregular shapes with any degree of correctness. You do not know what measure the artist has applied in making the figures. Did he increase the height, area or volume of the American ten times to get the size of the Russian? The defects of these early pictorial representations lead to the second principle: to show changes in quantity by changing the *number* of symbols, not their size, area or volume.



Showing that the increase of tenant farmers was greater during the period from 1880 to 1935 than the increase in farm owners. From "Farmers Without Land" Public Affairs Committee.



Pictorial treatment of radio, newspaper and magazine statistics. Prepared for *Tide Magazine*, 1937.

Through the application of these two principles our charts become easily understandable and statistically correct. But we demand more than this. We insist that our charts be attractive and simple. I list these qualities together because they are the result of one and the same process—elimination, in two different fields. Elimination of all unnecessary statistical detail makes the chart simple. And although elimination of non-essentials is listed here only in third place, it really is vitally important if we are to produce a good chart. Again and again the men who work on the statistical and on the graphic end of pictorial statistics have to stop and go over their work eliminating features which do not prove to be indispensable, thus placing greater stress on the message which must be put across.

By re-introducing pictorial symbols, by making changes in quantity patent and by simplifying its presentations, pictorial statistics become universally intelligible. Graphic presentations of facts, hitherto dodged by everybody desirous of appealing to large audience, become desirable. The clearness and simplicity by which the new picture language captures its audience are based on many rules and regulations of which the above three are the most important. Discussed in more detail, they fill a whole book.[1]

Pictorial statistics were born out of necessity. Their birthplace was Vienna, the birthday in the early 1920's.[2] At this time the City of Vienna was facing a tremendous educational task. The war had left the city with depleted finances, a terrific infant mortality, appalling housing conditions. The depression had swept away all basis for budgeting. The complete taxation system had to be replaced, houses had to be built, kindergartens and clinics established. The whole task needed the understanding and cooperation of the entire population. But how could a starving population be in-

[1] See the author's HOW TO USE PICTORIAL STATISTICS, Harper's, 1937. Price $3.00.

[2] An earlier forerunner in the United States is mentioned in W. C. Brinton's book, GRAPHIC METHODS OF PRESENTING FACTS, in 1912. This isolated example did not influence the later developments.



Application of pictorial statistics to a map. Prepared for Harcourt, Brace & Co.

terested in housing taxes, in budgeting, in infant mortality? Pictorial statistics were the answer. The Social Museum in Vienna was filled with them; the people came by thousands to study them and their own problems.

In the early 1930's pictorial statistics crossed the Atlantic. In 1934 Pictorial Statistics, Inc. was established and since then the method has been widely used. First used extensively in government publications, it soon found a broad field in newspaper and magazine promotion, book publishing, trade association work, and is today in general use.

Having started with statistical work almost exclusively, Pictorial Statistics is now applying a pictorial approach to the portrayal of non-statistical facts. Several samples of simple fact presentations have been included in the illustrations with this article.

The wide acceptance of the method and the continuously expanding field of application (non-statistical facts, animated motion pictures, and dioramas) have changed Pictorial Statistics, Inc. from a two-man organization to a diversified business organization. The specific requirements of design which the method demands have often made it hard to find the right people to do the work properly. But the writer of this article, who has watched the organization grow from the first, is confident that it is now fully equipped to serve all who may care to use it.



Showing how a symbol can be used as a trade mark. Designed for the Third World Power Conference, Washington, 1936.



Strips such as these not only tell a story but add to the decorative effect of a report. From "New York Advancing Toward Social Security." Annual Report of the Department of Public Welfare for 1936, New York, 1937.

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