Methods of geographical delimination

KARTEN UND PLÄNE

1 *Topographischer Atlas der Schweiz,* 1:25 000, Blatt 177, 191, 228, 242, 243. Eidgenössische Landestopographie Bern. 2 *Katasterpläne* 1:5 000 der Gemeinden Wädenswil, Richterswil, Schönenberg, Hütten. Kantonales Vermessungsamt Zürich. 3 *Katasterpläne* 1:5 000 der Gemeinden Wollerau und Freienbach. Kantonales Vermessungsamt Schwyz. 4 *Vergrößerungen der Meßtischblätter des Top. Atlas* für die Gemeinden Feusisberg, Menzingen, Neuheim. Eidgenössische Landestopographie Bern. 5 *Geotechnische Karte der Schweiz.* Blatt II. Geotechnische Kommission der Schweiz. Natf. Ges. Bern.

METHODS OF GEOGRAPHICAL DELIMITATION

The present study attempts to improve the cartographic methods used in geographical delimitation by examining the frontier area between the Swiss Cantons of Schwyz, Zug and Zurich. When we analyse a certain region it is not enough to take into consideration, as GRANÖ does, the four optical features such as the crust of earth, water, vegetation and matter transformed by man and animal, nor may we confine ourselves to the elements of virgin country as PASSARGE originally suggested. Rather, we must include in our examination all the border-forming features of landscape and reduce to a minimum the subjective elements of our method. This can be done best by means of figures. With the developed method, the so-called grid method all the regional elements which on initial inspection of the region have been found to be border-forming are mapped out and maps of distribution are drawn for each element. These are covered with a grid the mesh-width of which must depend on the appearance of the objects to be delimitated. It must not be too wide as that might increase our margin of error, neither should it be so narrow as to exclude certain objects from the units of the grid. It is, therefore, best to use average values. Then the appearance of border-forming elements in each unit is numbered or measured and represented by density or frequency numbers. The next process consists in determining the decisive limits or guide numbers for the drawing of the isolines. An isoline separates zones of various density or intensity of a regional element. We have now got to decide which density figure is best adapted to the delimitation. The size of the guide number may be calculated by means of statistics, by repeated field inspections or by purely empirical methods. Relative borders are represented by boundaries of a different type. They compare the predominance of two characteristics such as religious denomination, house-types, vegetation zones, with each other and separate them. These boundaries, too, are drawn by means of number maps. A third type of boundary, the structure borders, are obtained by inspecting the area of distribution of border-forming elements. Physiognomically considered, the structure borders are most effective as a rule. Then the relative borders follow. Generally speaking it is the isolines which appear least striking to the eye, moreover, the physiognomical effectiveness of isolines largely depends on the gradient of the border-forming element in question. Synthesis of landscapes is achieved in a purely cartographical way by superimposition of the borders. Here it is methodically advantageous first to determine the so-called core area by which is meant a region which is surrounded by physiognomical structure borders. Such a core area may, however, be plotted by isolines or faintly perceptible relative borders. It is the collective term for landscapes of the lowest order. From this core area the first order landscape or unit area has to be selected. Basic condition for such a unit area must be its convincing structural unity. Once the unit area is determined the landscapes of second, third, fourth and fifth order have to be worked out as follows: A landscape of the second order is obtained by removing the isolines limiting the first order landscape or the faintly showing relative border, which brings about the largest increase of area. In order to obtain landscapes of the third, fourth or fifth order, further similar boundary types have to be eliminated correspondingly. The landscape of the highest order will be found, in the end, to be identical with the core area. The ordinary number, at the same time, indicates the degree of complexity of a landscape. Between the core areas are the border zones. They are classified according to their separation effects. Mathematically this effectiveness appears as the quotient of the frequency of border lines running through the border zones and their average width. This relation indicates how many border lines per km there are in the cross profile of a border belt. This systematic process of separating various landscapes is very practical and easy to apply and produces satisfactory results. The present study shows that the grid method can be successfully applied to Swiss conditions. It will certainly prove useful for the analysis of small area units in other regions, too. It remains to be seen whether it is equally applicable to large area analysis, but a careful and appropriate selection of the characteristics as well as corresponding cartographic lines are likely to produce satisfactory results even in such large area cases.