

Topografien der Nation Politik, kartografische Ordnung und Landschaft im 19. Jahrhundert [Topographies of the Nation Politics, Cartographic Order and Landscape in the 19th Century] By David Gugerli and Daniel Speich Zurich Chronos Verlag, 2002 ISBN 3-0340-0548-2 Pp 264, illus Euros €29.90 (cloth) [Chronos Verlag Eisengasse 9, CH-8008 Zurich, Switzerland]

This book with a somewhat cryptic title tells the story of the triangulation, surveying and production of the first map of Switzerland as a whole, based on precise surveying methods. The project, undertaken between 1832 and 1865, was directed by Quartermaster-General Guillaume-Henri Dufour (1787–1875), which is why the 'Topographische Karte der Schweiz' (Topographical Map of Switzerland, 25 sheets, scale 1:100,000) is frequently called the 'Dufour map'. This francophone Swiss general had—in contrast to his predecessors as quartermasters, Konrad Finsler and Johann Ludwig Wurstemberger—received formal training in the sciences at the *École Polytechnique* in Paris and the *École du Génie* in Metz. Furthermore, while in French service, he had acquired a great deal of practical experience in the field (on Corfu) with surveying and cartographic representation, notably of mountainous surfaces.

Gugerli and Speich conceive 'both scientific-technological and aesthetic landscapes not as regions, nor as kinds of space, nor as objects, but rather as results of irreversible social processes' (p. 219), and they therefore regard the Dufour map as a set of results produced by historical social processes (p. 17). Accordingly, they explore the 'triangular relationship between power, knowledge and space' (p. 15) through their study of this internationally famous cartographic accomplishment.

The first part of the book, 'Die Karte und der Bundesstaat' (The Map and the Federal State) traces the origin of the gigantic project in the context of the *Confœderatio Helvetica's* internal political development. Although the Swiss federal state was not formally founded until 1848, some initial central administration had existed before that date, mainly in the form of a permanent general staff. The authors, therefore, regard the Swiss military structures as the first seeds of subsequent central government and thus as a key element in the development of unified statehood, which was closely related to the liberal upheavals of the regeneration period (1815–1848). While the Dufour map was taking shape, and particularly after its completion, it was not only regarded as the first really national undertaking, but also praised as an immediately perceivable visual expression of Swiss nationhood and political unity ('common fatherland'). In 1883, during the First Swiss Exhibition in Zurich, all 25 sheets, coloured and mounted together as one large map, were displayed opposite the main entrance, where the quasi three-dimensional representation of the physical landscape immediately caught the eye of every visitor. Also mentioned is the interesting topic of the assignment of names in the course of surveying (that is, giving names to formerly unnamed mountain peaks, orthographic standardization), which sometimes sparked heated controversies. For example, the highest Swiss mountain situated in the Monte Rosa massif (4,634 metres) was still called *Höchste Spitze* (highest peak) in the first edition of the Dufour map, but in 1863, it received the name *Dufour Spitze* (Dufour peak) in honour of the *directeur de la carte*.

The second part of the book, 'Perspektivenwandel' (Changing Perspectives) deals with surveying techniques, particularly the exact measurement of the base line situated in the Canton of Berne, which is more than 13 kilometres long. This was accomplished by the astronomer Johannes Eschmann in autumn 1834. Also treated in this part are questions of organization (bureaucratic formalization and adequate compilation of data). We learn that Dufour's project did not have to start from scratch. Indeed, for certain regions reliable triangulation and surveys existed; for Valais, there were surveys prepared by the experienced mountaineer, explorer and cleric Joseph Anton Berchtold. The problem of the scientific validation of results (mainly those of base measurement) is also treated extensively in part two.

In part three, 'Tücken der Landschaft' (Vagaries of the Landscape), the authors turn to the difficulties posed by landscape and climate in the course of triangulation and plane-table surveying. They describe the hardships that the surveyors had to endure in Alpine regions, especially at high altitudes. Although the surveying engineers, few of whom had any experience working in high mountain regions, did not go above 3,000 metres at most, their workplaces were often at several days' distance from any human settlement. They had to depend on assistance from the mountain folk living there, who quite often were mistrustful and sometimes completely refused to co-operate by serving as guides or carrying instruments.

Gugerli and Speich conclude their study by discussing the problem of the cartographic representation of the third dimension, which naturally was crucial in the case of a mountainous country like Switzerland. Against considerable opposition Dufour decided to use a special graphic method of representation, whereby protrusions in the landscape are indicated by hachures and also by lighting from the north-west, which, although non-existent on the northern hemisphere, creates the impression that higher parts of the landscape, particularly high mountain ranges, are 'physically' protruding. To this day, this method of representation is characteristic of Swiss cartography and is imitated in many other countries.

The two Swiss authors have presented us with a work that is solidly documented (*inter alia* based on Dufour's correspondence), and which, in spite of the somewhat dry subject matter, is exciting to read.

Johannes Dorflinger
University of Vienna, Austria