

there is a consensus among geomorphologists that vegetation has a very large effect on fluvial processes in general, and especially in semiarid and arid environments. Will Graf is to be congratulated for an excellent review of grazing, fire and riparian conditions with respect to runoff and sediment yields, entrenchment, and bank stability. The direct human impacts are in large part not specific to drylands: upstream and downstream effects of dams have been studied in greater detail than presented herewith; urban effects are merely mentioned briefly; and the most interesting direct human impact, that of agricultural development, would have attracted a large readership had it contained more information.

This is a Springer publication and, as such, delivers what we have come to expect from such a publisher: few typos, superb review editing and immaculate tables, drafting and references. It is an essential text for planners in dryland rivers and an interesting addition to any fluvial geomorphologists' library. Volume 3 in Springer's Series in Physical Environment is different from preceding texts because it is the first fluvial geomorphology book to center on climatic peculiarities, or, as the author states in his preface, to develop "a geographic theory for modern dryland rivers." The mere attempt is more than welcome. The extent to which this objective has been achieved will be assessed by the future generation of geomorphologists.

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CARTOGRAPHY IN FRANCE, 1660-1848—SCIENCE, ENGINEERING AND STATECRAFT by Josef W. Konvitz. Chicago: University of Chicago Press, 1987, 214 pp.

"That better maps would be useful was self-evident to individuals and groups involved in assessing and improving France's geopolitical, economic and social conditions." This is the key to Konvitz's stimulating treatise on the mutual relations between statecraft on the one hand, and the science, technology and art of map-making on the other. As a subtitle to the work, one might substitute the author's definition of the second Cassini national map survey: "The conquest of space through measurement." However, the important role of maps in stability and welfare (not to mention warfare) did not come naturally to the agents of government and science. Konvitz traces in detail the evolution of cartography—and the awareness of the effectiveness of maps—in France in an era which was of great significance, socially and politically, to the geographical region covered, as well as conceptually and technologically to the discipline treated.

All mapping, whether it describes the physical landscape or thematic spaces, requires valid base or background maps, and the book starts—appropriately not only from a chronological viewpoint—with a description of the national map surveys, relating the contributions of some of the great cartographers and cartographic dynasties, foremost among them the Cassinis. At the turn of the 18th century, French science, along with that of other countries, is identified with the revolution in units of measure, and considerable space is devoted to this subject. Indeed, "only a uniform

measurement standard could ensure ... geodetic knowledge of sufficient accuracy."

The preliminary contrast, gradual concurrence, and later separation of cadastral mapping and geodetic surveys—endeavoring to bring together science and statecraft—are well-documented. Konvitz asserts that the political (temporary) separation of science from mapping in the late 18th century signaled the end of reformist plans towards basing French economic and social development on rigorous scientific study. The second chapter, *Cartography and the State in the Revolutionary Era*, is concerned mainly with cadastral mapping (i.e., the graphic registration of land holdings), but opens with an interesting treatment of maps as base documents for the delineation and description of political boundaries, a role of cartography that today is being contested. Centralization, aimed at ensuring uniformity of standards and accuracy, is shown to lead to chaos when it tries to collect all mapping material under one roof.

The scene now shifts from land to the depths, with *Maps of Seas* as the title of Chapter 3. While the main topic is the representation of depth, which, in coastal waters, has always been the prime concern of mariners, the subject of marine mapping is introduced by early charts of the Gulf Stream as examples of practical vs. theoretical map work. The evolution of bathymetric contours, and especially the contributions of Buache and du Carla in disseminating this new and, at the time, controversial method, are described in detail. Du Carla's contention that there exists a conceptual difference between underwater and land contours is still valid today; namely, that while the latter can be verified physically and obtained as a continuum (e.g., from aerial photography), the former are based on interpolated values only.

This discussion then leads to Chapter 4, *Maps of Mountains*, which opens with the statement that mapping landforms illuminates some of the differences between science and engineering. The high artistic component—evident even today in relief shading brought to such perfection by the late Eduard Imhof—is perhaps somewhat neglected in the treatment. Stress is laid on the function of the army in the mapping of mountains, but even the armed forces had a "split personality," with their distinction between the fortification engineers of the *corps du génie* and the *ingénieurs géographes militaires*. The progress of the contour line in France is traced from first beginnings around 1750 to its apparently universal adoption, at least for large scales 1:1,000 to 1:10,000), by the Commission on Standardized Cartographic Practices in 1803; but one is left to wonder why the contour line largely disappeared towards modern times before being resurrected.

The last two chapters are devoted to special-subject maps. Chapter 5 deals with *Transportation Planning Maps*, concentrating mainly on inland waterways reflecting the "politique d'eau" of the Old Regime. No wonder that the *Corps de Ponts et Chaussées* took a very active hand in mapping. In the last chapter, *Thematic Cartography*, the author assumes that "the development of thematic mapping appears to have generalized and simplified map usage"; an interesting thought! He states correctly that thematic cartography was (and is) more a matter of ideas than of technical skills. Thus, Peuchet and Herbin wanted to separate statistics from geography, believing that maps of statistics encouraged people to have opinions on matters they were not qualified to judge. Finally, of course, thematic, including statistical, mapping was triumphant in France as in other countries. The book

concludes with an extensive review of cartographic education in France throughout the period surveyed.

Well-researched and detailed treatises of this kind are lacking for most countries, and if some fault could be found with the author's treatment of this subject it is, perhaps, the slight apparent glorification of nearly everything French, and a somewhat offhand comparison with English cartography. The author describes himself as an historian; perhaps this is the reason for some omissions and errors. Thus, the representative-fraction scale in maps is unitless; the adjective "metric" (p. XIX), and especially the cm unit only in the denominator column in the Table on p. XX, are redundant, to say the least. The uninitiated reader who is not aware of the problematical measurement of longitude as against that of latitude might ask why the former is treated in detail, practically nothing being said of the latter. The line of longitude between pole and equator is half, not a quarter, of a meridian as stated on p. 47. And the definition of the meter was 1/10,000,000 not of an arc of meridian from Dunkerque to Barcelona, but of half the meridian passing through these points. That the adoption of decimal units for angles never happened (p. 49) is refuted, among others, by the fact that many pocket calculators today carry decimal angular units (grad). Chloropleth for choropleth (p. 149) is surely a printer gremlin's work.

The merit of this well-produced book lies not only in the excellently documented treatment, but in its bringing French achievements in cartography to the knowledge of the English-speaking community. Anybody attempting to produce a similarly detailed work on another country can certainly learn from Konvitz.

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SYSTEMATIC POLITICAL GEOGRAPHY. M. I. Glassner & H. J. de Blij. New York: Wiley (Revised Fourth Edition), 1988, 617 pp.

Since the appearance of the first edition of *Systematic Political Geography* back in 1967, this work has become a standard text for political geography students, despite the many changes that have been undergone by the discipline during this period. Notwithstanding the appearance of a variety of political geographical texts in recent years, many of them purporting to be general texts (such as Muir, 1975; Dikshit, 1982), and others focussing around clearly developed themes (for example Short, 1982; Taylor, 1985), the survival of *Systematic Political Geography* is evidenced by the appearance of a fourth, revised, edition.

While the book still focuses on the traditional political geographical sub-disciplines, most notably the State, boundaries and the international system, the authors have introduced a number of important changes both in content and style. Three new chapters—the geography of elections, geography of war and peace, and a discussion of outlaws and merchants (covering such topics as the arms trade and terrorism) make their appearance for the first time. Other topics, introduced for the first time in the third edition, such as the law of the Sea, Antarctica and issues of Outer