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Reviews of Web Sites, CD ROMs, Books

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Web Sites

Web Sites on Geographic Information Systems and Mountain Development

The sites providing information on geographic information systems (GIS) are so numerous that it is impossible to offer an overview of useful sites. The following sites are entry points either for GIS related to development or general information on GIS software and GIS data. A search for GIS and mountain development leads to very little output—the most usable being the Mountain Forum Web site.

GIS Newsletter of the German Technical Cooperation

www.gtz.de/lamin/english/download/index.html#GIS
"News and Views on the Use of GIS for Projects in Developing Countries" is an interesting newsletter produced by the German Technical Cooperation (GTZ) at irregular intervals. It provides useful information relating to GIS in the development context.

United States Geological Service

www.geography.usgs.gov/
The United States Geological Service (USGS) provides a wide range of GIS and Remote Sensing application and background information. Additionally it is a very good entry point for satellite image acquisition and GIS data.

Mountain Forum

www.mtnforum.org/
The Mountain Forum (MF) online library contains many articles, notes, notices, and other items posted by MF members. Use of the search function will show the range of experience with GIS in mountain development documented in this easily accessible library.

United Nations Institute for Training and Research Explorations in GIS Technology

www.clarklabs.org/Unitar.asp?cat=2
This site provides information on a workbook series developed and distributed by Clark University's Clark Labs (the creator of IDRISI GIS software) through a memorandum of understanding with the United Nations Institute for Training and Research (UNITAR). The series is of interest to a wide audience, including resource managers, researchers in each workbook's application area, educators, and anyone interested in learning more about GIS. Six volumes are currently available, one of which is explicitly on GIS and mountain environments. The individual workbooks can be ordered online.

Environmental Systems Research Institute

www.esri.com/
Environmental Systems Research Institute (ESRI) was founded in 1969 as a privately held consulting firm that specialized in land use analysis projects. It is now one of the world's leading manufacturers of GIS software packages (in particular the well-known ARC/INFO and ArcView). The site is useful for GIS specialists rather than beginners and is an important source of information on training programs, white papers, etc. ESRI also provides worldwide GIS datasets (Digital Chart of the World) free of charge.

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CD-ROMs

Land, People and Water: Spatial Tools and Agricultural Technologies for Sustainable Development in the Highlands of Southwest Uganda

Multimedia CD-ROM with in-built programs. Nairobi, Kenya: World Agroforestry Centre (ICRAF), 2002. Currently free of charge.

This CD-ROM has 3 different sections: (1) geographic information system (GIS) database and GIS maps of southwest Uganda, (2) characterization of agroecosystems, (3) technologies for agricultural intensification. The idea of producing the CD-ROM is interesting; some of the content has significant value and should help improve the food production and environmental conservation in rural areas of Uganda. However, the design leaves the user with some frustration because the CD-ROM does not autostart, and at least 5 different software programs need to be downloaded (some from the CD-ROM and others from the Web) before the user can access all the components.

Section 1 contains an interesting approach to deliver GIS maps and data tables. However, accessing the maps is not trivial, and the process to get it all operational is somewhat frustrating and definitely not very user-friendly. One needs first to read how the Map Atlas program works and then access the maps. Section 2 covers the characterization of the agroecosystems of southwest Uganda and is done well because the material is integrated and relatively easily accessible. Section 3 is a final report of what agrotechnology tools should be used to improve food production. It addresses the aspects of food production and the use of successful technologies and practices to

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improve food production and sustainability of land use in rural areas of southwest Uganda. This section is in the traditional form of a report in digital version and does not take advantage of multimedia technology tools. It is a pity that these 3 sections are not integrated and accessible from a single platform rather than from at least 5 different software packages. This is definitely not a user-friendly format that I would recommend, considering that we now have access to such programs as "Director" or "Toolbook" that allow us to access all information from the same platform in an interactive manner.

A number of different agencies were involved in the production of the CD-ROM, and the information provided is valuable and should help in expanding and intensifying agriculture in the study area. It contains recommendations on what the best crop production options are at different elevations and in different agroclimatic zones. The report not only provides an assessment of the best land use options in terms of crops and biophysical conditions but also considers socioeconomic constraints such as field fragmentation and market price fluctuations. Data are provided on best crop choices and niche markets due to climatic constraints. Successes in introducing agricultural technologies are also highlighted. Overall, the information provided will help donor agencies to set priorities for development assistance in areas that have a high potential of success. However, one shortcoming is the prevailing emphasis on individual crops rather than on cropping systems that are sustainable. The problems of land degradation are addressed in Section 2 and innovative ways that minimize soil erosion and maintain soil fertility are highlighted.

It is not clear to what extent the recommendations and successful practices can be applied to other parts of Uganda and other African mountain regions, but the CD-ROM should be considered as a first step in trying to make complex information available to a larger audience. However, to make this information readily available to people in the developing world, the CD-ROM design should be improved, with the information provided in a more integrated and user-friendly way, accessible from a single platform.

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Books

Die Degradierung der Gebirgswälder Nordpakistans: Faktoren, Prozesse und Wirkungszusammenhänge in einem regionalen Mensch-Umwelt-System

By Udo Schickhoff. Stuttgart: Franz Steiner Verlag, 2002. xv + 285 pp. €74. ISBN 3-515-07572-0.

Finishing on the somber note that progressive mountain forest degradation in Northern Pakistan will not be brought to a halt, presuming that the present level of use remains unchanged, this book—whose title is translated as *The Degradation of High Altitude Forests in Northern Pakistan*—could easily be taken as a late doomsday prophecy of the "Theory of Himalayan Environmental Degradation" variety. Unlike the proponents of this theory, however, the author avoids the pitfalls on which it is based. The database on which the book is based is impressive, at least with respect to the physical variables, and covers a large part of the North West Frontier Province. The study pays due attention to spatial and temporal differentiation of ecological processes and societal developments that influence these processes. Abandoning simplistic relationships, it presents a detailed study of forest structure and extension, development cycles, and degradation on a regional scale. In order to remedy some of the research deficits of the *Himalayan Dilemma* context, an interdisciplinary, integrated perspective is advocated that links changes in the political and socioeconomic systems to environmental processes.

Two important differences between Northern Pakistan and the Nepal Himalaya can be recognized. The coniferous forests of Northern Pakistan are mainly a source of timber and firewood and have little if any impact on agriculture in the area. And second, anthropogenic influences are of major importance. The degradation of forest resources is recognized as a social problem with basically social causes, and Schickhoff is aware of the complexity of the problem and avoids blaming population growth as the sole factor of change.

The main parts of the analysis—forest ecology, its social underpinnings, and the relationships between the two—are reflected in the book's structure. Given the stated importance of human factors, it is regrettable that the analysis of demographic, economic, political, and cultural factors is less elaborate, in both volume and depth. The 2 introductory chapters provide an overview of the area in terms of geological, pedological, hydrographical, and climatic conditions that determine tree growth and structure, and describe coniferous forest communities with high use potential and market value (pine, spruce, fir, cedar).

Chapter 3 analyzes the extent of degradation, presents a number of methods of measurement, and discusses the results. The reduction of forest cover is palpable, particularly in the southern areas and the lower parts of forests. Decomposition analysis suggests that deforestation is a more recent phenomenon. This

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stringent, well-researched physical examination is then related to the sociopolitical and economic development of the area in the following chapters. Degradation, a key term in the study, concerns the successive loss of the forest system to meet the basic user needs of society. According to Blaikie and Brookfield (1987), degradation should be seen as an equation that has both negative (loss) and positive (ie, reforestation) variables. Whereas reforestation may be difficult because of changing soil and microclimatic conditions after depletion and slow growth, an increased use of kerosene by army personnel and local residents and the use of *bonni* (valley oasis) forests for firewood and fodder hold the potential of regulating and perhaps counteracting forest depletion. Other positive developments such as the greater availability of clean and cheap energy from hydroelectric sources and changes in technology (ie, from *chagool*, open fire places, to the closed *angethi* stove) have been ignored. In the analysis of anthropogenic causes of forest degradation, postcolonial use of the forests (timber trade) is correlated with road construction into the area. A number of useful tables on the history of civil and forest administration are presented.

Schickhoff regards the political division and special political status of the area as the key to understanding the exploitation of mountain forests as they lead to a lack of effective planning, control, and authority of the forestry department and, instead, favor the timber mafia—a community of interest comprised of contractors, politicians, and forest owners. Providing equal political status to the northern areas would, however, not guarantee sustainability or change the mismatch of mountain–lowland relations. Rather, as admitted, new institutions at the local level that involve local participation and strategies, such as forest committees, bear the prospect of counteracting exploitative practices. This issue is, however, not sufficiently explored.

The sociopolitical analysis hinges on the distinction between private and government-protected forests. The former comprise 78% of forest cover concentrated in Chilas and Darel/Tangir in the southern part of the study area. Most of the timber trade to the lowlands stems from these forests, and they are therefore the most heavily affected. Although they may officially be labeled private, it should have been made clear that the proper category of ownership is common forest (albeit with local modifications). In Tangir, the traditional (Pashtun) resource management called *Wesh* has not been introduced, as wrongly stated. Instead, 2 principles of differentiation, *kaom* and *raom*, are enacted to manage resource use (Aase 2000). *Kaom* can be translated as ethnic group and the 3 *kaoms* of Shin, Yashkun, and Kameen are considered to be the aboriginal Tangiris (*holosha kaom*). Only those 3 groups have exclusive pasture rights that were extended to comprise timber rights as well. *Raom* denotes the spatial division of the valley. Each *raom* is entitled to a corresponding part of the forests. This means that a certain forest is the common property of the *holosha kaoms* who live in the *raom* to which the forest belongs. The revenue paid by timber contractors is divided equally among the *holosha* families living in that specific *raom*.

This example indicates that the analysis of human systems, and particularly of sociocultural variables, lacks rigor and depth. The important issue of perception of ecological processes by the population has not been addressed at all. The prospect of a holistic synthesis established in the Introduction seems to be raising the stakes too high, but, despite its shortcomings, this book represents a significant contribution to the study of ecological change in the regional forestry system of Northern Pakistan.

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Yours Today, Mine Tomorrow? A Study of Women and Men's Negotiations Over Resources in Baltistan, Pakistan

By Ingrid L. P. Nyborg. Noragric PhD Dissertation #1. Ås, Norway: Noragric, Centre for International Environment and Development Studies, Agricultural University of Norway, 2002. viii + 250 pp. Available free of charge from ingrid.nyborg@noragric.nlh.no. ISBN 82-575-0510-2.

This is a competent and well-written thesis. The research was conducted over a period of 4 years, with support from Noragric and, in Pakistan, the Aga Khan Rural Support Programme (AKRSP). The study looks at negotiations between men and women for resources in a high mountain valley in western Baltistan, in a changing context. It deals with issues of rights over resources, local power relations, social differentiation by class and caste, and the processes of change that affect how men and women deal with their environment.

The first part sets the stage for the discussion of strategies people use to achieve their aims. There is a brief description of the geographical setting of the study area, which is placed in the larger context of Pakistan, its politics, and the status of women in Pakistan. This is followed by the philosophical and empirical methods used in the research. A

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rationale is given for using a case study approach, using formal and spontaneous meetings. Interaction with the villagers was mainly in the form of discussions. After each case study, dealing with issues like access to agricultural land, the collection of firewood, and the right to construct a high pasture dwelling, the author gives an analysis.

The strategies used in the struggle for resources or power by men and women are the subject of the following chapters. The people are undergoing change, even in this high mountain village. Proximity to Skardo, the capital of Baltistan, about a 1.5-hour drive by jeep, and the fact that men and women are engaged in income-earning activities, mean that this is not a static, uniform society, but one which is complex and dynamic. Among the strategies used are networking, enlisting outside allies—both official and from other villages—and using religious and other known venues for gaining influence such as village heads. The author also describes the way that men and women use rumors to block access to others. This was also her own experience as it was initially used against her project.

To find out about social differences within the village, one technique was to ask the men and women separately to rank themselves by their wealth or well-being. This would affect how well they could negotiate or why they felt powerless in relation to others. Forest resources, in which this high mountain village is rich, are being affected by change, by both overuse and governmental restrictions. The information gained by the ranking was applied to the issue of accessing the forests of the valley.

The research is systematic and detailed, and the book reads well. However, there are gaps and questions left unanswered, given that qualitative methods were used. One issue deals with the author, who does not situate herself in the research enough. Having stated that a researcher's presence will make a difference to the outcome of the study, she should follow that up with more about how the villagers viewed her, her husband and 2 small children, living in the village on a daily basis for 4 years. Indeed, it is only by reading the acknowledgment and the photo credits that we learn that they were with her. Her admission that she was "not living closely with a family" should continue with how exactly she was living.

Another problem is that there are no good maps of the region, so it is difficult to find out exactly where the Basho valley lies. There is a sketch map on the last page, which we are told was drawn by the villagers. Or was it just identified by the villagers? Map-making is a technical art and illiterate people, although they know their landscape intimately, may not grasp the symbols used in maps. In any case, the map is inadequate because it is the only map of the area.

Although the use of case studies and the studies themselves are good, the analyses sometimes leave out important issues, even though they are included in the philosophical discussion in the methodology section. What is missing is the recognition of people as more than the sum of their actions: they have attitudes, beliefs, and histories. For example, in the analysis on well-being and ranking, perhaps men and women did not rank themselves as wealthy not only because they would then not be obliged to give as much in charity to the poor (the author's given reason) but also for reasons of modesty (traditional peoples are known to be innately courteous)—or it could be to avoid the "evil eye" (traditional peoples believe in the supernatural)—by not boasting about their wealth.

Again, Nyborg's observation that she was surprised that villagers were inclined to mistrust AKRSP because it is an Ismaili organization, even though most of its staff in Baltistan were Shia, displays an unawareness of class. The Shias who work in AKRSP are educated, middle-class elites. Her own translator appears to be one such person. Some may even have been to Canada or Britain for university degrees. It should not then be surprising that the average Balti farmer is suspicious of their intentions, regardless of their religious affiliation.

Another weakness is revealed in the section on gender relations and the status of women in Pakistan. To a casual observer, it would appear relevant to speak of the Big Picture, before focusing on women in Baltistan. But Nyborg has written on the background and history of Baltistan and its inclusion, only after 1948, into Pakistan. Ethnohistorically, it belongs with Tibet and, after Islam was introduced, with Iran. Therefore, to write at length on the situation and treatment of women in Pakistan is misleading because it has little to do with a very different group of people who have, in fact, been treated as a dependent territory, if not a colony by central government.

Despite these weaknesses, the book will be of interest and a useful introduction to development workers, policy makers, and others who are not aware of the intricate arrangements so-called "simple" people make as they go about their day-to-day living.

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Great Himalaya: Tourism and the Dynamics of Change in Nepal

By Sanjay Kumar Nepal, Thomas Kohler, and Bernhard Rudolf Banzhaf. Zurich: Swiss Foundation for Alpine Research, in collaboration with the Centre for Development and Environment, University of Berne, 2002. 92 pp. ISBN 3-85515-106-7.

This report is a synthesis of findings from the Nepal Tourism Research Project (NTRP), a joint initiative of the Swiss Foundation for Alpine Research, Zurich, Switzerland, and the Centre for Development and Environment of the Institute of Geography at the University of Berne. Its objective is to enhance understanding of the factors shaping the development and impacts of tourism in Nepal since the 1950s, using 3 comparative case studies: the Sagarmatha (Mt Everest) National Park, the Annapurna Conservation Area, and the Mustang Conservation Area. Based on the results of extensive, long-term research (eg, 5 master's theses and 1 PhD dissertation were completed during the life of the NTRP), the result is a timely, detailed, and practical contribution that is essential reading for all those involved in the field of sustainable mountain tourism.

The report, beautifully illustrated with glossy photographs, maps, and graphics, is divided into 4 sections: introduction, the historical development of tourism in Nepal, biophysical and social impacts, and recommendations based on the lessons learned. Section I, "Tourism as a Key to Sustainable Mountain Development," reminds us of the importance of tourism to mountain communities: 25% of global tourism is concentrated in mountainous terrain. A review of the extensive and largely unregulated growth of tourism in Nepal since the 1960s and 1970s is provided, followed by a summary of several negative impacts that have occurred as a result (eg, increased firewood consumption, landscape degradation, garbage, erosion of cultural traditions and values). Nevertheless, the authors firmly believe that tourism can play a major role in conserving mountain environments, improving stakeholder livelihoods, and strengthening local community positions in local to national policy making—if based on the principles of sustainability and equity.

Part II, "Historical Precedents, the Environment, Communities, and Livelihoods," describes the environmental, social, and economic conditions within the 3 case-study regions before the advent of tourism. Traditional military service, trade between Tibet and Nepal, migrant labor, social hierarchy, and class structure are reviewed because these have influenced region-specific response to the extensive growth of mountaineering and tourism from the 1950s onward. As one example, the demonstrated proclivity of the Sherpa people for high-altitude support work that began in the early 1900s, their reputation for tolerance and cheerfulness, and their comparative freedom from religious taboos may well have paved the way for their rapid advancement from high-altitude porters in the 1950s to the world-class climbers and businessmen they are today. In contrast, tourism-related employment in the Annapurna region, less visited by the early mountaineers, did not accelerate until the introduction of high-volume trekking in the 1970s. Upper Mustang, on the other hand, remained a "restricted area" to tourists until 1992, when a government-imposed policy of controlled tourism unexpectedly funneled most of the profits out of the region.

Part III, "Impacts of Mountain Tourism: Trends and Issues," documents the growth of tourism for each region through detailed narrative, tables, and graphics illustrating comparative chronological events, increases in the number of lodges, and yearly visitor numbers. The environmental impacts of mountain tourism in each region are reviewed (eg, forest impacts, fuelwood consumption, garbage accumulation, trail degradation), followed by a discussion of various social and economic impacts (eg, the development of community-based tourism, new jobs, resurgence of historical trade, higher socioeconomic stratification). The latter section is personalized by 6 case studies of people living in the Annapurna Conservation Area; these case studies bring to life the analyses of the preceding discussions. The importance of involving local communities in all phases of community-based tourism development is stressed in the discussion of policy, institutions, and communities. Collectively, the 3 separate experiences dramatically illustrate how different policies, environments, and institutional frameworks have determined the paths of tourism development in the 3 study regions over time.

Having trekked and worked in the Khumbu, Annapurna, and lower Mustang regions since 1973, I found the first 3 sections to be very well researched and filled with thoughtful comparative analyses, new insights, and provocative questions yet to be fully answered. Furthermore, Part IV, "Strategies for Sustainable Mountain Development," is particularly attractive, providing a list of practical, field-based strategies in direct support of sustainable mountain tourism and conservation. The strategies and recommendations are outlined under the categories of Tourism Development, Tourism and Society, Tourism and the Environment, Institutional Development, and Risks and Uncertainties. Collectively, they provide a cutting-edge checklist for the field practitioner, decision maker, and tourism industry, highlighting the importance of

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planning at the local and regional levels, education (tourist, lodge owner, school children), increased awareness of environmental issues, and the vulnerability of tourism to global events and uncertainties (eg, tourism has decreased by more than 60% since 2001 for various national and global reasons, although it can be expected to rebound at some point in the near future).

A worthwhile addition to this list might have been the recommendation that reliable baseline data be established before launching any new mountain tourism initiative, so that the actual linkages between the social objectives (eg, livelihood improvement, capacity building, policy) and biophysical objectives (eg, landscape, resource conservation) could be better ascertained over time. For example, the report mentions on several occasions how the hypothesis that "increased incomes from tourism will result in better conservation" has not always proven to be true. Under this popular hypothesis, lodge owners in the Khumbu alpine zone could be expected to have made efforts to protect the fragile, high-altitude ecosystems that draw the tourists year after year—but, as mentioned in the report, the region has experienced a severe depletion of slow-growing shrub juniper for fuelwood during the past 20 years. These and a number of other popular tourism-related assumptions still require more thorough quantitative and qualitative assessment during the life of any community-based project. Likewise, the adventure tourism industry itself needs to play a much more active role in promoting sustainable mountain tourism, specifically in providing financial support to the community-based projects that are attempting to preserve the cultural and natural attributes of the regions, from which these agencies derive their substantial incomes and profits.

Regardless of these minor caveats, this report combines detailed, refreshingly honest research results with practical, field-tested recommendations for dealing with the complexities of sustainable mountain tourism development. It provides a valuable tool for planners, decision makers, the scientific community, development agencies, and tourism practitioners that I can recommend without reservation.

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Rocky Mountain Futures: An Ecological Perspective

Edited by Jill S. Baron. Washington, DC: Island Press, 2002. xxviii + 325 pp. US$32.50. ISBN 1-55963-953-9.

When I was growing up in the 1950s, my family made an annual summer trip to Colorado, Wyoming, and New Mexico to visit relatives. These trips were a great adventure for someone from the eastern United States. The West was mountains, new rocks, new birds, and a new color to the landscape. My grandmother and her twin sister had been born at the turn of the 20th century and grew up in Leadville, CO. Their father, my great-grandfather, had owned 2 silver mines, managed 2 others, and been a deputy sheriff. He died in 1915. The silver boom was just coming to an end, and in a real sense, according to my grandmother, also the Wild West. On these trips, we frequently went to Leadville to visit the family graves. The old mines, the mine tips, and the small run-down houses and the 1900 architecture of the business street all appealed to my image of the West. Outside town, the wild streams and forested slopes were wilderness to my young eastern eyes.

When I was an undergraduate, I returned one summer with my grandmother. Looking at the mountains around Leadville, she said how much better they looked now with trees everywhere. She talked about how the runoff from the mine tailings used to turn all the streams bright yellow and orange. If you wanted to go fishing, you had to go higher up above in the smallest mines to find streams with fish still alive. As we drove along the narrow scenic highways, she pointed out the small mines that occurred every half mile or so. Many were still leaking orange chemicals into the streams. This landscape was not the West I had seen when I was young. Colorful Colorado!

Like my recognition in the early 1960s, ecologists were also beginning to recognize in North America that much of their wilderness was not that at all but had a history of both First Nations people and European Americans. This has resulted in a significant amount of research that examined the effects of humans on landscapes previously seen as undisturbed (eg, Raup 1966) and even as wilderness areas (eg, C. Ahlgren and I. Ahlgren 1984). At least 3 new fields developed out of this research: landscape ecology, conservation biology, and environmental history. All 3, in part, saw understanding of the past as giving insight into the future.

Ecologists and others no longer regard any part of North America as still largely "natural" but have increasingly seen the landscape as modified by humans. This has come as a shock to many, particularly mountain people, who were more prone than most to talk of mountains as the last remaining wilderness. To the citizens of the United States, this kind of crisis of confidence has occurred before. In the early 1900s (in my grandmother's day), F. J. Turner postulated that the loss of the frontier (continuous land available to be homesteaded) would lead to the decline of what had made the United States great (it is interesting that no similar concern occurred in Canada when its frontier disappeared). Again, in the 1980s, came

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the realization that the United States was very close to being at the end of the "first-cut." In other words, most productive, unprotected forests had now been cut at least once. "Old-growth," the very essence of wilderness, was close to disappearing.

Jill Baron, an ecologist with the US Geological Survey at Colorado State University, has brought together a small group of researchers who have spent much of their professional lives documenting the changes in Rocky Mountain ecosystems. This book fits into an increasing number of books that look at the ecological and environmental history and try to learn from the past. There are easily some 60 books in the last 15 years from all parts of the world exploring this topic. The scholarly books such as Baron's fall into roughly 3 types. The first are studies that are essentially environmental in viewpoint and written mostly by natural scientists; *Rocky Mountain Futures* fits into this category. The second type is by historians and social scientists, ranging from documenting history to postmodern approaches to how humans imagine the world. Finally, economists and environmental planners try to see the economic and social forces behind resource utilization. Occasionally, but rarely, all 3 of these groups are brought together.

Rocky Mountain Futures is a very comprehensive coverage of the effects humans have had on the natural environment of the Rockies in the United States. The book is divided into 4 parts. The first gives the climate, geomorphology, biogeography, and paleoenvironment. The second part considers the ecological effects of mining, forestry, livestock grazing, water use, fire, and roads. The third part takes a more spatial view of human influence by dividing the Rockies into alpine, subalpine, montane, and intermountain grasslands. The final part is a rather eclectic collection called case studies. As a summary of the environmental history and the present issues in the Rocky Mountains of the United States, this is, in my opinion, the best we have so far. It is accessible to everyone.

I was somewhat disappointed that the Canadian Rockies were represented by only one chapter. They have had a different environmental history, and a comparison would have been interesting. A look at the map of the Rocky Mountains facing page 1 of the book shows how much of the Range was not discussed.

One thing that the book forcefully brings out is how very little research has been done. In developing any management plans, one must have a depth of research that has thrashed out the effects of different policies. This depth of professional practice in the refereed literature does not exist in the way it does in, for instance, medicine or engineering. Why has the richest country in the world not spent more on this environment?

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Making Tibet Food Secure: Assessment of Scenarios

Nyima Tashi, Liu Yanhua, and Tej Partap. Kathmandu, Nepal: International Centre for Integrated Mountain Development, 2002. xiv + 171 pp. US$20.00 (developed countries); US$15.00 (developing countries); US$10.00 (ICIMOD member countries). ISBN 92-9115-572-1.

This book makes several important contributions. It fills a knowledge gap about food production and food security issues for one of the world's less-documented mountain regions and brings together and presents in a well-organized fashion data about Tibet that are not found easily elsewhere. It also introduces to the wider world the work of an author, Nyima Tashi, who represents the younger generation of development professionals in Tibet. *Making Tibet Food Secure* is based on the research for his PhD dissertation and thus, although it contains much useful data and good technical analyses, suffers from being more narrowly focused on the technical aspects of food production, an approach that is well suited to a scientific dissertation, but not going as far as one might wish to consider the wider context. The other 2 authors, Liu Yanhua and Tej Partap, are eminent scientists who supervised this research. The role of the International Centre for Integrated Mountain Development (ICIMOD) was also important, not just in publishing the book. ICIMOD conceived the scheme and raised the funds that supported the main author and other young Tibetan scholars to study for their doctorates, in the process introducing them to the mainstream of international mountain development work. Such initiatives are important to the development of mountain areas and, as we see from this book, allow such regions to make their own important contributions to the wider world.

The first chapter sets the scene by outlining definitions and describing concepts of food security, such as the 1983 Food and Agriculture Organization of the United Nations' definition of food security that emphasizes "physical and economic access" to basic food needs. Such broader definitions of food security take into account aspects of production and exchange, but the authors quickly eliminate exchange as being of much use, briefly stating that Tibet's remoteness and lack of roads do not allow for useful

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exchange mechanisms, and go on to establish the main thrust of their argument: "In such circumstances, to produce enough food within the region and to minimize the dependency of acquiring food through exchange are the essence of food security." Although this argument holds sway for most of the book, the final chapter holds out the prospect of a more broadly defined approach.

Chapters 2 through 9 follow a logical sequence that readers will find useful. Chapter 2 provides summary data about Tibet, describing agroecological zones, cropping patterns, and characteristics of the people. Chapter 3 is titled "Access to Food" and elaborates the key point made in Chapter 1—that "Tibet has a low level of food security" and very few opportunities for gains from exchange mechanisms, even between farmers and local markets, much less with markets in China. The authors state that there is a "vicious cycle of hidden hunger in poor areas" and conclude that the only way forward is for Tibet to produce enough food internally, the risks of any other approach being too high.

Chapters 4 through 6 are the best part of the book. Chapter 4 describes major food-production systems in Tibet, Chapter 5 is about zonal variations in production of major foods, and Chapter 6 outlines food-production changes over time, with some trends being analyzed beginning as far back as the 1950s. These chapters constitute the heart of the research that led to this book and contain good summaries of large amounts of data, most of which should be understandable to the average reader. The production systems typology laid out at the beginning of Chapter 4 is especially helpful. Chapter 6 describes the use of regression-analysis models, but the conclusions are accessible to the average reader. In general, one could wish for similar descriptions of other remote mountain regions.

Changing food preferences and demands are discussed in Chapter 7. In summary, the situation is changing rapidly in Tibet because of close interactions with urban areas of China. Although the authors do not say so, such trends are evident in most, if not all, mountain regions, suggesting that the strategy of internal food self-sufficiency supported in this book might not address adequately the irreversible trends toward the increasing interdependence of mountain and "down-country" economies. Chapter 8 describes food demand—supply variations from the 1950s up to the mid-1990s. The authors conclude that "At present, in Tibet as a whole, the total per capita calorie production is just about self-sufficient," although the extent varies by zone. This is partly because of the rapid opening up of the market for food products between Tibet and the cities of China. However, the data presented appear to question the assertion in Chapter 2 that Tibet has a low level of food security. The explanation given is that poor people cannot afford to make use of market exchange mechanisms. But if poverty is the main constraint, the solutions proposed in Chapter 9 do not seem to go far enough.

Chapter 9, which concludes the main part of the book, describes the potential to enhance food production, arguing in favor of improved technical approaches to increasing yields, as well as means by which to diversify crop production. As eminent scientists with considerable expertise in crop production issues, the authors are clearly on familiar ground while making these arguments and proposing solutions. But as the final chapter suggests, the understandable commitment to local capacity building processes need not be confined only to food production.

Chapter 10 almost appears to be tacked on to the rest of the book. It recognizes that food security is not just about local production, and also that there is a broader context in which poverty is perhaps the greater limitation faced by Tibet. In the process, this chapter opens up a dialogue that goes well beyond the arguments made in the main body of the book. It suggests consideration of food security as part of a broader set of livelihood issues by making better use of Tibet's competitive advantages, for example, making sustainable economic use of rare and valuable plants, developing the use of solar energy, increasing hydropower generation, and exploiting the tourism and mining sectors. Unfortunately, this point is made at the very end of the book, having not been analyzed in earlier chapters or even discussed in any depth in this chapter. It includes hints that the longer-term solution to improving the well being and food security of people in Tibet might depend more on increasing their leverage to gain advantage from the inevitable trend towards greater integration with the wider world, rather than depending exclusively on producing more food locally.

A growing body of evidence from many remote and marginalized mountain regions suggests that managing interdependence with down-country economies has the greatest influence on local development trends. To put it in the terms with which the authors began their argument, Chapter 10 makes the case that, whereas regions such as Tibet must look for ways to increase local food production, this will not be enough if ways are not found to also take advantage of exchange mechanisms. Rather than being the final chapter of this book, perhaps this could become the first chapter of another book about livelihoods in Tibet that builds on the excellent work done here—while going on to consider the wider context of poverty and livelihood options as well as the economic interactions between

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Tibet and down-country regions. It would be especially useful to examine such issues in what remains one of the most remote mountain regions of the world.

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Dynamics of Rockslides and Rockfalls

By Theodor H. Erismann and Gerhard Abele. Berlin and Heidelberg: Springer Verlag, 2001. 316 pp. US$99.00. ISBN 3-540-67198-6.

Alford et al (2000) recently reported the development of Lake Sarez in the Pamir Mountains of Tajikistan. This lake began to form in 1911, when a major coseismic rock avalanche buried the village of Usoi and dammed a headwater tributary of the Amu Darya. Lake Sarez is now 60 km long and over 500 m deep, with an estimated volume of 17 km^3. Breaching of the dam would create a major outburst flood through the Amu Darya river basin from the mountains to the Aral Sea, affecting over 5 million people. Although such an event is thought unlikely and the level of the lake is now monitored, the initial event that triggered the growth of the lake was the catastrophic failure of the mountain slope. Such failures are more common than is appreciated in high mountains, where gravity-driven geomorphological processes dominate the denudational system (Hewitt 1997). Understanding how and why they occur is therefore an important aspect of scientific research into the development of high mountain landscapes because mountains reflect the interaction of constructional tectonic processes and destructive denudational forces (Shroder and Bishop 1998; Burbank and Anderson 2001). It is also important to incorporate considerations of such hazards in the development plans for vulnerable mountain communities (Ives et al 1997). Such a requirement means that processes of initiation, motion, and velocity of rock slope failures need to be understood to predict hazardous areas.

The scientific literature uses a number of terms to discuss large-scale failures of rock slopes. This book uses the term rockslide, and by reading the specific geomorphological examples in Chapter 1, it can be shown that this refers to slope failures of $>10^7$ m^3 of rock that are characterized by long runout distances. It is regrettable that there is no definitive classification or terminology for such features because these are also referred to as rock avalanches in the literature. Although this book starts with good intentions to define the terms within dynamic mechanisms, this is not achieved. Definitions are introduced in Chapter 1.2, where there is much discussion on flow but little on slide, and continued 4 pages later at the beginning of Chapter 2, where definitions are discussed within a geomorphological context. At neither point is an explicit statement made about the choice of "rockslide" as the preferred term. The authors do not distinguish between slides and falls, saying that both will be active in rock mass displacement. This is no doubt true but does not place emphasis on the distinctive long runout distances of rockslides and rock avalanches. Rock falls are ubiquitous within areas of even small local relief, in contrast to rockslides that have a distinct distribution within tectonically active high mountains and are characterized by large debris volumes with long runout distances (Hewitt 2001). Sliding, as implied by the term rockslide, may be only the first major mechanism by which a rock mass begins to move; recent studies have shown that other processes may be subsequently more important (see Davies et al 1999).

The book is divided into 7 chapters. Interestingly, it begins with a chapter that gives detailed geomorphological accounts of a number of case studies of rockslides. These are informative and well illustrated, providing useful background material and setting the scene for the subsequent chapters. However, as the authors point out, this is not a book about the geomorphological record but an attempt to synthesize the physical and mechanical processes by which rockslides are initiated. This theme is advanced in the following chapters, which develop an engineering approach to processes of rock slope failure, disintegration, and displacement. Chapter 3 deals with the mechanisms by which rock is broken down to commence movement. This leads to a consideration of disintegration mechanisms in Chapter 4, and Chapter 5 reviews the displacement mechanisms including lubrication and fluidization. The emphasis in each chapter is clearly on the physical basis for understanding the mechanisms by which rock mass breaks up and is transported.

If this general scientific discussion is to have relevance for predicting actual events, this information must be capable of being used to predict slope failures. Chapter 6 tackles this problem by discussing the analysis of material responses to gravity-induced failure, leading to prediction by attempting to determine velocity values from the morphology of the rockslide. This is seen as important because it will allow prediction of runout values for future events and risk management. The final chapter is a short review of the secondary effects of rockslides—particularly the damming of rivers, the impounding of large lakes, and their subsequent breaching of the rock dam to produce catastrophic floods down-valley.

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This is an important review of the physical processes that drive large-scale rock mass movements. However, although I have great admiration for authors who write a book in a language that is not their first tongue, the English used in this book has a very formal grammar and is difficult to follow for a number of reasons. First, there is too much cross-referencing to other sections of the text, making it difficult to understand the argument being developed in specific chapters. Second, there is much use of italics. Many of these can be understood to give emphasis to specific phrases, yet many others are a seemingly random inclusion of words and phrases. Finally, the authors use numbered points in the text, but often these do not appear in sequence and do not read as important points. The book was therefore very difficult to read, and even the highlights at the end of the book for the "hasty reader" lack an overall statement to synthesize the mechanical information within the text by reference to the field evidence. This is unfortunate because catastrophic mass movements may well be on the increase because of environmental change and increased population pressure in high mountains. As such, a book that reports knowledge of their mechanics will be an important contribution. Sadly, this is not that book.

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Correction:

The editors wish to correct an earlier inaccurate citation appearing in *MRD*. In the article entitled "A Simulation of Biomes on the Tibetan Plateau and Their Responses to Global Climate Change", published in *MRD* Vol 20 No 1, the correct citation for Figure 5, page 86, should read as follows:

Luo Tianxiang 1996. *Patterns of Net Primary Productivity for Chinese Major Forest Types and Their Mathematical Models.* [PhD dissertation]. Beijing, China: Chinese Academy of Sciences.

– Ed.

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