A New Section

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A New Section

With this issue, MRD inaugurates "MountainViews", a new section that will feature comments from our readers. Readers are invited to submit their views on the specific contents of the journal and on issues of general interest to the MRD community.

Comments

The Historical Impacts of Hydroelectric Power Development on Traditional Mountain Irrigation in the Valais, Switzerland

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The problem of competing uses of natural resources is already acute throughout the world and seems fated to increase with rising population and higher levels of development. Often, this competition for resources pits indigenous and contemporary resource management schemes against one another, with unsustainable levels of resource use the frequent result. In this context, the article by Darren Crook, "The Historical Impacts of Hydroelectric Power Development on Traditional Mountain Irrigation in the Valais, Switzerland" (Vol 21, No1, February 2001) is of interest. It implicitly raises the crucial question of the robustness of traditional uses of natural resources and their resistance to present-day economic and legal arrangements. After presenting the recent history of the coexistence of communally managed irrigation systems and hydroelectric power generation in the Swiss Alps, the author concludes by underlining the mutual benefits for optimal resource use of respecting local populations and their rights.

However, while the Valais region offers valuable insights to students of property rights and resource use, it is not clear that they are the ones Mr Crook provides. In fact, I think he advances partially correct answers to the crucial questions, but his article does not actually ask these questions.

Ample research has suggested that the *bisse* system resolved many issues of allocation, distribution, efficiency, and equity and, indeed, these are well worth studying because of their relevance to contemporary resource management issues at the national and international scales. In particular, the sophisticated combination of common property regimes with privatized rights in the Valais seems to be a key to the absence of "tragedy of the commons"-type problems of resource depletion and to have permitted efficient and equitable water use. I am not convinced, however, that the robustness of this system over centuries is the reason for relatively smooth transition and the coexistence of *bisses* and hydroelectric plants. I would rather argue that traditional agriculture has diminished so much that current demand for irrigation water can be accommodated by the electric companies. The historic decision-making structures were crucial to effective regulation of water in the past, but Crook does not show that this local control over water has ever seriously threatened the operation of hydroelectric plants in the Valais. Would relations be the same if agriculture were truly profitable, even expanding? In this case, would hydroelectric power plants really be so willing to concede water that they otherwise would need? Would they end up enhancing *bisses,* even if it were to their detriment, just because they respected local organizational structures? I think for the most part, *bisse* organization is irrelevant because there is no real competition for use and therefore there is no cost to accommodating local rules.

What happens where there is real competition for use? The Valais example could nevertheless be instructive in such a context. Graciela Chichilnisky (1994) has written about the implications for sustainable resource use when there is confrontation between systems with well-specified and those with poorly defined property rights. She shows how overexploitation is bound to result because the full cost is not internalized for the use of common property resources. At the same time, because they are often not supported by a strong judicial system, common property rights will not be recognized and indigenous populations not consulted. Thus, Crook is correct in affirming that developing countries are unlikely to become engaged in conciliatory resource allocation arrangements. Clear specification of rights is a necessary first step. Crook's article could delude us into thinking it is a sufficient one. If the stakes are high, it is unlikely that powerful companies or states will "recognize, respect, and adhere to preeminent traditional water rights" without a costly fight. In the Valais, it is not adaptation and innovation of the *bisse* system but rather its increasing irrelevance that explains the success of hydroelectric power plants' ability to negotiate their access to water. In some communities, *bisses* run just to provide pleasure for tourists. This has a flexibility that does not threaten power plants but would be impossible if *bisse* water were necessary for agriculture. The key question is therefore not about the impact of hydroelectric power on traditional irrigation systems.

The importance of *bisse* organization, and therefore the "right" answer to the "wrong" question, is that rights were clearly specified and there was a mix of private and common regimes that assured both efficient and equitable use. Moreover, power-sharing mechanisms impeded consolidation of control by individuals or small groups. These are features we need to know more about: They could in the future constitute significant compo-

nents of environmental regulations at the international as well as national and local levels. It is the traditional Valaisan system itself, not its transformation, that teaches us important lessons about property rights. It is far from certain that the traditional property rights regimes (that include not only *bisses* but also pasture and forestlands) will be maintained in the Valais in an increasingly open economy. Their historic configuration nevertheless has a general relevance for resource allocation that extends far beyond their geographic context.

REFERENCE

Chichilnisky G. 1994. North–South trade and the global environment. *The American Economic Review* 84:851–874.

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It is correct that the origins of the first *bisses* remain unknown, but the main phase of development (15th century) can be historically explained.

Due to climate warming at the beginning of the 12th century and, above all, to significant population growth, there was an initial extension of the *bisses,* especially between 1250 and 1350. The great period of *bisses* construction occurred in the beginning of the 15th century. Pierre Dubuis, Professor of History at the University of Geneva, has clearly pointed out the cause of this extension. We must remember that a traditional society, based on cereal cultivation and sheep breeding, lived in this area without an irrigation system. In the middle of the 14th century, the Valais was struck by the Plague. The decrease of population meant less demand for crops. Rather than letting land revert to a wild state, local communities turned cultivated land into pasture. The development of *bisses* was the result of economic reorientation. The *bisses* played a major role in the design of a specific agro-pastoral mountain production system. Local populations raised cows not only for subsistence but also because the economy focused on export, notably of cheese. The *bisses* were needed to irrigate meadows and to increase yield. Grass was produced to feed the cattle during the winter. The construction of *bisses* stabilized after 1500, probably due to more humid and colder climatic conditions (Little Ice Age). In 1860, the railway reached Sion, the capital of the Valais, heralding the arrival of cheap cereals. There was an increase of cattle rearing in response and consequently an extension of the irrigation system.

What is interesting about the *bisses* is their long history. They have not been a static element. They have been used for purposes other than meadow irrigation, including vineyard and fruit tree irrigation, for example. These choices were made depending on market conditions.

With the decline of mountain agriculture in the second part of the 20th century, the importance of *bisses* has also declined. In the regional context of the Valais, it is hard to agree with the philosophical perspective expressed by the author: "A *bisse* will survive economically only where it provides real livelihood opportunities at the household level" (p 52). In fact, 75% of the farming concerns in the Valais are a secondary activity (Institut d'économie rurale, ETHZ, 2000). Agriculture itself does not play a major economic role. The *bisses* appear to have continued to evolve through time. Even if they are still a part of the agricultural infrastructure, they play a role in tourism nowadays and also in social identity, the link between the two being patrimony.

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