gathered the bulk of the material that was to fill his book. The further events until October 2002 are summarized by Hutt in chapter 15 in a kind of postscript. It is also here that he discusses the refugees' not entirely successful endeavours at self-organization with all their shortcomings and inconsistencies, as well as the international commitment to the people in the refugee camps in Nepal. Finally, Hutt describes the longstanding efforts of the governments of Nepal and Bhutan to find a solution to the problem through bilateral talks, as well as India's reluctance to help in arriving at a settlement.

Michael Hutt's extremely well-founded study successfully analyses the Bhutanese refugee issue. He has not missed any aspect that could be important for a better understanding of the problem. The author knows how to write in an absorbing way despite the high scholarly standard of the book. He not only describes the refugee issue but, in passing, also provides a comprehensive insight into Bhutan's political system and its historical evolution in general. There is nothing negative to criticize; at best one could mention that a glossary of the numerous Nepalese and Bhutanese terms explained in the text would have been welcome at the end of the book.

L'eau, Miroir d'une Société. Irrigation paysanne au Népal central by Olivia Aubriot. Monde Indien, Sciences Sociales 15e-21e siècle. Paris: CNRS Editions 2004. Pp. 321, 29 figures, 14 maps, 14 tables, 22 plates. ISBN: 2-271-06204-7.

Reviewed by Dietrich Schmidt-Vogt, Bangkok

The interaction of societies and water is a subject that has fascinated scientists since Karl Wittfogel's seminal speculations in his book *Oriental Despotism* on the emergence of centralized power within the "hydraulic" irrigation-based societies of tropical Asia. The contribution to this subject by Olivia Aubriot, who describes herself as an agronomist-anthropologist but whose leanings are obviously more strongly towards anthropology than towards agronomy, is a study of water management in a village of the Middle Hills of central Nepal that is largely based on the cultivation of irrigated rice. Aubriot is in the tradition of French studies on irrigation, which was initiated by Pierre Gourou, and for which today the prominent representative for High Asia is Corneille Jest. For Nepal, her studies supplement the work on irrigation and water management in the Middle

Hills by Ostrom, Martin, Prachanda Pradhan and Ujial Pradhan, Shivakoti, and Yoder.

The book is an abbreviated and revised version of the doctoral thesis by Olivia Aubriot: *Eau: Miroir des Tensions. Ethno-histoire d'un système d'irrigation dans les moyennes montagnes du Népal central*, submitted at the Université de Provence (Aix-Marseille I) in 1997. Field research for the thesis was carried out in the village of Aslewacaur over several visits between 1990 and 1994. The author claims to have received major inspiration for her work from E. R. Leach's study *Pul Eliya: A Village in Ceylon. A study of land tenure and kinship*, and has chosen a multidisciplinary approach, combining anthropological, agricultural and geographical perspectives embedded in a historical matrix.

L'eau, Miroir d'une Société consists of an introduction and four chapters followed by an extensive annex. Chapter 1 provides the historical background to an understanding of the development of irrigation within the larger framework of agricultural intensification in central Nepal. In chapters 2 to 4, the focus is on irrigation in Aslewacaur: chapter 2 introduces the village, and discusses the construction and maintenance of the main channel of Aslewacaur – the centrepiece of its irrigation network – in its historical and political dimension; and chapters 3 and 4 contain an analysis of water distribution in both time (chapter 3) and space (chapter 4).

The village of Aslewacaur is situated in Gulmi district of central Nepal at 700 m. altitude. The author describes the village as unique or singular in many respects, most prominently because of its homogeneity in terms of topography, land use and social composition in a Middle Hill context, where diversity is the rule. Aslewacaur is located on an elevated river terrace, which overlooks the confluence of the Kali Gandaki and Barigad rivers. Most of its fields are laid out on the comparatively flat and plateau-like surface of the river terrace, and most of them (81%) are irrigated. The houses are scattered among the rice fields, a settlement pattern which underscores the prominent influence of irrigated space on village life. The social structure of Aslewacaur is also homogeneous to an unusual degree: 88% of its inhabitants are high-caste Brahmins, and 90% of these belong to the Pandey clan, which is divided into the two groups of Jaisi and Bagale. Social dynamics within the village are largely determined by the interaction of these two closely related groups. Irrigation in Aslewacaur is also characterized by singularities, above all by the historical origins of the irrigation network ("L'histoire de l'implantation du réseau d'irrigation d'Aslewacaur est singulière…", p. 25) and by the use of a water clock to measure the time allotted to the irrigation of each field.

The history of irrigation in Aslewacaur is treated as part of the history of the intensification of land use in the Middle Hills of Nepal. The cultivation of irrigated rice as it is practiced at Aslewacaur has its origins in the plains of northern India and was introduced to Nepal by high-caste Hindu migrants

from the 15th century onwards. Cultivation of irrigated rice at Aslewacaur, according to Aubriot, resembles the practice in Northern India, both because of the flat topography of the village territory, and because of Brahmin dominance in the village. The spread of irrigated rice cultivation in the hills of Nepal accelerated at about the beginning of the 20th century as part of a general trend towards intensification of land use in the Middle Hills of Nepal, which also brought in its train the introduction of crop rotations, and the transition from communal to individual user patterns. At Aslewacaur, the expansion of irrigated land at the beginning of the 20th century was brought about through the initiative of one individual – Tilochan Pandey, who as collector of land tax had reason to benefit from the increase of irrigated land. He laid the foundation for irrigation at Aslewacaur by organizing and financing the construction of the main channel between 1893 and 1896. The local farmers initially rejected the channel, which thus fell into disrepair due to lack of maintenance. The project was revived eighteen years later on the orders of the then prime minister Chandra Shamsher Rana, who threatened the villagers with confiscation of their land in case of non-cooperation with Tilochan Pandey: a case in point for Aubriot to demonstrate that even though irrigation systems in the hill zone of Nepal were in most cases established through local initiative, state intervention was also occasionally practiced.

The water clock is a central image or leitmotif, used by Aubriot to very good effect as an indicator of the close relations in Aslewacaur between water management, social structure, and cosmic order. A water clock, which consists of a bowl with a small hole in its bottom, placed inside a larger water-filled bowl, measures time units through a process of submersion: the small bowl fills with water and sinks to the bottom when it is full, thus completing one unit at a time. The water clock is thus a water clock in a double sense: water is used as a medium to regulate the amount of water for irrigation by measuring the time of its supply for distribution. The water clock is introduced at the very beginning of this book to point toward a paradox: the exact and minute measurement of water for irrigation, which resembles the practice in dry areas where water is scarce, in a region where water is plentiful. This observation provides a starting point for the central argument of Aubriot's study: the allocation and distribution of water is determined primarily by the social structure of the village and only secondarily by environmental constraints or technical considerations. The water clock as an instrument that is normally used by astrologers is emblematic also of the linkage between irrigation and the cosmic order, i.e. the arithmetical correspondences that exist between the signs of the zodiac and the irrigation cycles, which, moreover, are named after these signs. The use of the water clock and of astrological terminology is interpreted by Aubriot as a device for lending additional legitimacy to an irrigation order in a Brahmin society, where the arts of calculation and astrology are held in high regard.

The core chapters of Aubriot's book are dedicated to the exploration of the interconnectedness of social structure, landholding patterns, and distribution of water. Aubriot finds that water for irrigation is distributed according to membership in kin groups or lineages. The close association that exists between lineage and distribution system is beautifully expressed by the ambiguous meaning of the term *kule bhāī* used in a booklet on the history of the irrigation system of Aslewacaur. It can be translated as both 'brothers of the channel' or 'brothers of the lineage', and highlights the close correlation between kinship group and user group. The social structure of Aslewacaur is characterized by the division of the Pandey clan into the Jaisi lineage and the Bagale lineage group – and the further division of these units into sub-lineages. Irrigation time measured by the water clock is allocated between lineages and within lineages between groups of the same genealogical order. As the landholdings of the various kin groups are grouped together, the social structure of Aslewacaur imprints itself on the landholding pattern, which is made visible in village space through irrigation structures and irrigation patterns. As the author puts it: "The imprint of kinship on water appears as an imprint on the land transcribed by the distribution of water" (p. 193, my translation). The social division of Aslewacaur into two major groups and landholding complexes is clearly illustrated by the map on p. 189, which shows the bipartition of the territory into a western half dominated by the Bagale and an eastern half dominated by the Jaisi group. The division of land between these two groups and their subgroups determines the distribution of water. This is shown by the alignment of the three secondary channels which distribute water from the main channel throughout the village perimeter. Two channels irrigate the Bagale lands in the western half of the irrigation network, while the third channel irrigates the Jaisi holdings in the eastern half. The geography of water distribution and the geography of landholdings are supplemented by history because the irrigation infrastructure reflects the pattern of land ownership at the time of its installation.

However, this raises questions concerning the dynamics of a living community in the context of an irrigation infrastructure which has frozen the social structure of the past in space – dynamics which in the case of Aslewacaur are driven by demographic changes, gender imbalances caused by the temporary migration of male labourers to India, the permanent migration of households to the Terai, as well as the transition from an economy based on exchange to an economy based on monetarization, and conflicts over resources. Aubriot shows that the tensions between the two major social groups, the Jaisi and Bagale, which materialize as conflicts over the distribution of water and the maintenance of the irrigation infrastructure, constitute a major problem for the village. Her interest in and concern for this particular aspect of water management is attested by the title of her original doctoral thesis. At the bottom of this tension lies an attitude of superiority assumed by the Jaisi, who consider themselves the

founders of Aslewacaur and who occupy a more powerful position within the village than the late-coming Bagale. On the water management level, these tensions have led to a growing imbalance of participation by the two groups in maintenance works and the appearance of the first symptoms of physical degradation of the irrigation infrastructure. A formidable hazard are the disruptions of water supply due to landslides, which constitute a serious danger to the irrigation channels. In discussing the village response to this particular risk, Aubriot returns to the paradox of a management system that meticulously regulates water distribution in the face of an apparent surplus of this resource. She argues that it is precisely the awareness of the ever-present threat of water shortage that prompts villagers to regulate their water use with so much attention to detail. Careful measurement of water for irrigation is therefore an element not of the management of a scarce resource but of the management of a prevalent risk. The response to damage by landslides also supports the author's argument that the layout of irrigation structures is determined prominently by social rather than by technical considerations. When one of the secondary channels was damaged by a landslide in 1990, initial attempts to realign the channel away from the zone of risk were overridden by the wish to maintain the channel in its original location in conformity with the distribution pattern of kin groups.

The author is clearly enamoured of her choice of the mirror as a metaphor for the inter-linkages between water and society. The question is, however, whether the mirror-image really captures the essence of the relationship that Aubriot has analyzed so carefully. By clinging to it, Aubriot involuntarily invokes a social determinism from which she has otherwise been trying to distance herself. That water is not just a reflection of social structure and relations, but also a medium for cooperation or conflict with repercussions on society is an aspect of water-society relations that is not conveyed by such an image.

This is a very good book by an anthropologist endowed with an excellent sense of space and of spatial structures, and of their potential and significance as indicators of social structures as well as media for social interaction. The social structures underlying the temporal and spatial patterns of irrigation are meticulously researched, and the patterns themselves presented very clearly in verbal and visual form. The book is richly illustrated with graphs, showing above all the intricate ramifications of lineages and sub-lineages, as well as with maps showing field structure, irrigation structures and temporal and spatial irrigation patterns. The plates are of variable quality. In contrast to the good colour photographs, the 15 black and white photographs are of poor quality, most probably on account of technical problems connected with the conversion of digital files to prints. They are too small in size and lacking in contrast to be helpful. The author writes in a lucid style, and the ease with which she tackles the presentation of the complex and sometimes confounding intricacies of kinship relations

deserves admiration. The language is refreshingly free of the technical jargon that has been generated within the literature on sustainable development, and which is used by so many authors to make their writing appear more relevant. Quite the contrary, Aubriot's study of the tensions underlying the management of water resources, even in a relatively homogenous village, is a healthy antidote to the unmitigated user-group enthusiasm currently in vogue in the literature. That in explaining the causes of these tensions she attributes more weight to kinship affiliation than to socioeconomic parameters such as poverty, vulnerability etc., may diminish the value of her contribution in the eyes of some, and earn her the reproach of nurturing a genealogical bias. Her monograph is, however, a convincing and well-documented reminder not to lose sight of a determinant of human-environment relations, which does play an important role in many societies, and for the study of which anthropologists are particularly qualified.

***Social Demography of Nepal*, *Census 2001* by Harka Gurung. Lalitpur: Himal Books 2003. Pp. vi, 59; 15 tables, 11 figures, 6 annexes. ISBN 99933 43 55 2.**

Reviewed by David Seddon, Norwich

This little monograph sets out – in a number of short sections, backed up by tables and figures – selected data from the 2001 census, and makes some comparisons with the 1991 census in particular. These data relate largely to the numerical distribution and change over time of social categories in Nepal, defined variously by caste, ethnicity, religion and language. In addition, there is some discussion of literacy among the social categories identified. Migration is barely addressed, apart from some consideration of population change, by what is referred to as "native area", between 1991 and 2001. Other possible topics – including those relating directly to demography (e.g. fertility and mortality rates, age and sex distribution) as well as school enrolment, higher education, health status and other indicators of well-being (e.g. income), political involvement, etc. – are not discussed.

It is an interesting and provocative compilation, as much for what it omits as for what it covers. The main text (pp. 1-34) consists of an Introduction, a section on Caste and Ethnic Groups (pp. 3-10), a section on Linguistic Groups (11-18), a section on Religious Groups (19-21), a section on