Actes du XIVème Congrès UISPP, Université de Liège,
Belgique, 2-8 septembre 2001

Acts of the XIVth UISPP Congress, University of Liège,
Belgium, 2-8 September 2001

SECTION 17

PRÉHISTOIRE DE L'AMÉRIQUE
AMERICAN PREHISTORY

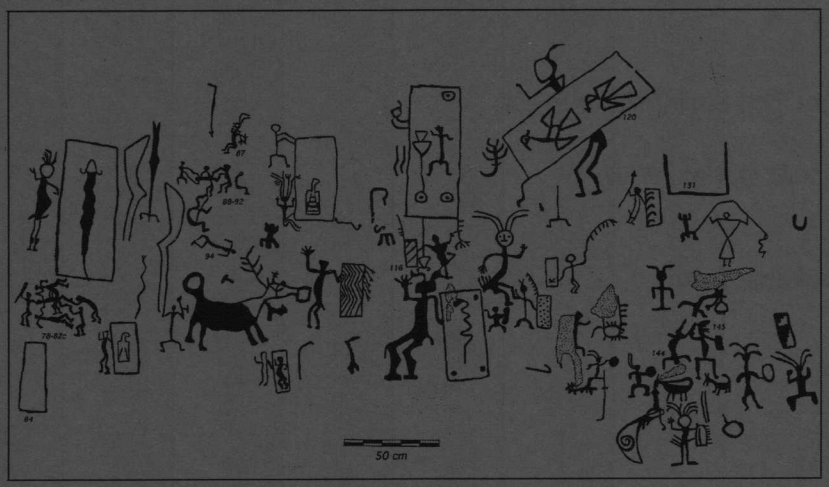
C 17.1
Change in the Andes: Origins of Social Complexity, Pastoralism and Agriculture

Coordinateurs / Coordinators:
Hugo D. Yacobaccio & Daniel E. Olivera

Sessions générales
General Sessions

Édité par / Edited by
Le Secrétariat du Congrès

Président de la Section :
Sergio Purin



BAR International Series 1524
2006

This title published by

Archaeopress
Publishers of British Archaeological Reports
Gordon House
276 Banbury Road
Oxford OX2 7ED
England
bar@archaeopress.com
www.archaeopress.com

BAR S1524
Acts of the XIVth UISPP Congress, University of Liège, Belgium, 2-8 September 2001
Section 17: Préhistoire de l'Amérique / American Prehistory
Sessions générales et posters / General Sessions and Posters
C 17.1: Change in the Andes: Origins of Social Complexity, Pastoralism and Agriculture

Avec la collaboration du Ministère de la Région Wallonne
Direction générale de l'Aménagement du territoire, du Logement et du Patrimoine
Subvention n° 5/13532

Mise en page / Editing : Rebecca MILLER

Marcel OTTE, Secrétaire général du XIVème Congrès de l'U.I.S.P.P.
Université de Liège
Service de Préhistoire
7, place du XX août, bât. A1
4000 Liège Belgique

Tél. 0032/4/366.53.41
Fax 0032/4/366.55.51
Email : prehist@ulg.ac.be
Web : http://www.ulg.ac.be/prehist

ISBN 1 84171 961 7

Printed in England by The Basingstoke Press

Typesetting and layout: Darko Jerko

All BAR titles are available from:

Hadrian Books Ltd
122 Banbury Road
Oxford
OX2 7BP
England
bar@hadrianbooks.co.uk

The current BAR catalogue with details of all titles in print, prices and means of payment is available free from Hadrian Books or may be downloaded from www.archaeopress.com

SOCIAL COMPLEXITY IN SOUTH ANDEAN HUNTER-GATHERER SOCIETY

Hugo Daniel YACOBACCIO

Résumé : Les chasseurs-cueilleurs complexes se distinguent de ceux dites chasseurs "égalitaires" ou "généralisés". Ils se caractérisent par leur mobilité résidentielle, réduite ou sédentaire, par l'inégalité sociale, la spécificité économique et artisanale, et par l'amplitude de zones d'échange. Deux questions principales seront débattues dans ce travail. La première concerne l'analyse des causes de la complexité à la lumière d'approches théoriques actualisées et d'évidence archéologique. La seconde concerne le processus de domestication de plantes et des animaux comme un élément qui doit être considéré comme une caractéristique des chasseurs-cueilleurs de la période holocène des Andes du Sud et particulièrement sur les aspects relatifs au sédentarisme, aux hiérarchies et à la technologie de prestige. Dans cette optique, l'objectif du travail réalisé est de soutenir l'idée que certains éléments de la complexité sociale se sont développés dans une région au sein de la société de chasseurs-cueilleurs et que la domestication des camélidés a été le résultat de ce développement.

Abstract: Complex hunters differ from the so called egalitarian or generalized hunters, because individuals do have not equal access to resources. They are characterized by reduced residential mobility, social inequality, economic and craft specialisation, and longstanding exchange networks. Two main issues are of central importance and therefore discussed in this paper. The first concerns the causes of complexity in the light of current theoretical approaches and the archaeological evidence. The second considers the process of domestication of plants and animals as part of the elements that might be seen as characteristic of complex hunter-gatherers. These are further discussed in the context of Holocene hunter-gatherers of the Southern Andes, especially those aspects related to sedentism, hierarchies, and prestige technology. In this vein, the goal of this paper is to set forth the idea that several elements of complexity evolved in the region within hunter-gatherer society, and camelid domestication is the outcome of this development.

INTRODUCTION

Archaeologists have been concerned with hunter-gatherer societies for a long time. Many believed that these societies were characterised by high mobility, flexible social groups, and low density populations. These characteristics were taking into account to define the Original Affluent Society (OAS) model, a concept that shaped our notions about hunter- gatherers over the last forty years (Ingold 1999, Rowly-Conwy 2001). However, some ethnographic examples show that certain hunter-gatherer groups were highly complex: displaying social inequalities, specialised economy, and high population densities. The same was also true for some past societies of hunter-gatherers, of which the most outstanding examples are the Natufian in the Levantine region of the Near East, the Ertebølle culture of northern Europe, the Jomon culture in Japan, and the Classic Thule Inuit Culture in the Arctic (Barnes & Okita 1999, Bar-Yosef 1986, Bogucki 1999, Henry 1985, Imamura 1986, Rowly-Conwy 2001, Zvelevil 1996, Zvelevil & Lillie 2000).

The emergence and nature of complexity in hunter-gatherers has been the focus of a growing interest by archaeologists since the '80s (Bender 1978; Price & Brown 1985; Testart 1982). From these studies, it is clear that contemporary (ethnographically speaking) complex hunter-gatherers are defined by social relations in which the leader exerts control over labour, whilst social differentiation could be hereditary (Arnold 1996: 78). Ames & Maschner (1999: 25-29) give a series of elements which characterise complex hunter-gatherers. These are:

1. They are semi- (reduced residential mobility) to fully sedentary. The consequences of this are that people own and control property, and tend to make investments in the places where they live.
2. Economies are based on producing large amounts of processed and stored foods, and are household-based.
3. They manipulate their environment to increase productivity.
4. They have complex technologies.
5. They have larger populations and higher population densities than generalised hunter-gatherers.
6. They have social hierarchies, permanent leadership positions with high status, prestige, and even power.

Therefore, other aspects of society, such as economy, are also important in order to characterise complexity besides social relationships. Rowly-Conwy (2001: 42) constructs a four-fold typology of hunter-gatherers, being the type 1 the OAS model, and naming "non-OAS" groups those that were previously classified roughly as "complex". Non-OAS groups also have some degree of variation that allows the author to recognise three types:

1. Logistic groups that do not defend territories, such as most Inuit.
2. Logistic groups that do defend territories -many of Woodburn´s delayed return groups.
3. Sedentary groups who invariably defend territories and store resources, forming a continuation from type 3.

As we can see, the axis of the classification is territoriality, but not fully sedentism because types 2 and 3 have some degree of mobility. For this author, if we can demonstrate archaeologically "... a degree of sedentism or locate a cemetery, other aspects of complexity, harder to see archaeologically, may be confidently predicted" (Rowly-Conwy 2001: 44).

Two main issues are of central importance and therefore discussed here. The first concerns the causes of complexity in the light of current theoretical approaches and the archaeological evidence. The second considers the process of domestication of plants and animals as part of the elements that might be seen as characteristic of complex hunter-gatherers alongside sedentism, social hierarchies and inequalities, specialised economy, long-term exchange networks, and the presence of prestige technologies. These are further discussed in the context of Holocene hunter-gatherers of the Southern Andes, especially those aspects related to sedentism, hierarchies, and prestige technology. In this vein, the goal of this paper is to set forth the idea that several elements of complexity evolved in the region within hunter-gatherer society, and camelid domestication is the outcome of this development.

THE DEFINITION OF COMPLEXITY

Complexity in hunter-gatherers is the outcome of a combination of several social and environmental conditions and for that reason is highly variable, while sedentism, inequality, and specialised economy are central elements for the definition. For certain authors, the reduction in mobility is the main factor for the emergence of complexity. Price & Brown (1985:8; see also Kelly 1995) state that "complexity arises as a solution to the problems of reduced mobility", because emigration is no longer possible to solve situations of stress. Reduced residential mobility may arise as a solution to environmental situations (i.e. long droughts) or pressure in inter-group relationships. This situation leads to a change in territorial behaviour by increasing the degree of residential stability during the annual cycle. A sedentary group of hunter-gatherers is tethered to local resources, in particular those that can be stored. Increasing personal ownership of technologies and resources can occur and in this way egalitarian practices, such as sharing, may collapse (Hayden 1992; Price & Brown 1985; see Ingold 1999). Brian Hayden (2000) thinks that the creation of surpluses, sedentism, and competition is enabled by basic technological innovations that permit the procurement and processing of resources that could sustain over-exploitation. In this way, sedentism arises as a consequence of technological change. For Mithen (1996:221), the causes of sedentism are uncertain, but it seems to have originated out of decisions made to deal with abrupt and short-term climatic fluctuations. *Whatever the causes that generate sedentism, this reduction in mobility seems to be the key factor in the development of social complexity in hunter-gatherers.*

Inequality is just one dimension of the elements that define complex hunters. Although it is considered as a central issue by many scholars, they, however, do not agree on the way in which it first appeared (Arnold 1996; Hayden 1994; Kelly 1995; Testart 1982). Alain Testart supports the idea that food storage is the initial phase allowing sedentism and, through the individual appropriation of stored food, certain individuals may gain prestige (1982:43-44). Brian Hayden considers that technological competence emerges as a way of transforming abundant resources in scarce goods. Or again, highly demanded services fuel the rise of inequalities, as the "accumulators" manipulate the resources to their own benefit (Hayden 1994). Robert Kelly (1995:310) argues, following the initial ideas by Price & Brown (1985), that a reduction in residential mobility ending up in sedentism is the trigger that puts in motion an array of socio-political changes (an ethnographic example of this can be found in Aldenderfer [1993]). In any case, we must keep in mind that inequality is the main consequence of a scenario in which sedentism and the individual appropriation of produced or exchanged goods and/or resources take place.

Alongside inequalities, complex societies of hunter-gatherers are also characterised by specialised economies and craftsmanship. Economic specialisation may follow an earlier intensification in the use of one or a few key resources. Part-time artisans may be engaged in the production of prestige artefacts that supply - and maintain - exchange networks, and hence inter-group interaction, such as extended kinship and/or inter-marriage relationships.

The domestication of plants and animals was a major breakthrough in human history. It occurred in several parts of the world, mostly in a relatively short timespan. The archaeological evidence shows that in several areas where complex hunter-gatherer societies evolved, they began the domestication of plants and animal either as a local process or by adoption from other groups (Table 1). I would like to argue here that the domestication of plants and animals is a possible, although not a necessary, outcome of the development of complexity among hunter-gatherers. The archaeological record of certain areas of the world, such as that of Southwest Asia and Southern Andes, indicate that the initial steps to domestication were taken by complex hunter-gatherers. Incipient animal control, for example, as is the case with protective herding, needs reduced residen-tial mobility for the control of sedentary animal popu-lations (Harris 1996, Yacobaccio & Vilá 2001). The suggestion that domesticated plants and animals initially developed as parts of prestige technologies can only be understood as resulting from social pressures within a complex hunter-gatherer context (Hayden 1995).

THE CASE OF THE SOUTHERN ANDES

Archaeologists believe that social complexity arises in the Southern Andes (composed by the south of Peru and Bolivia, Northern Chile, and Northwestern Argentina) in general, and in Northwestern Argentina in particular, together with the spread of agriculture and ceramic technology in the so-called "Formative" period (Castro & Tarrago 1992; Tarragó 1999). But evidences demonstrate that social complexity existed well before 3,000 years BP. Archaeological evidence of the highlands (Puna de Atacama) of Argentina and Chile will be presented to support that argument.

The Holocene in this region was characterised by environmental fluctuations (Núñez & Grosjean 1994; Yacobaccio 1998). The 8,500-5,000 BP timespan witnessed a generally dry and hot period punctuated by periods of heavy storms,

Table 1. Complex hunters and their relation with local domestication processes.

Context	Place	Date (*)	Local Domestication Process
Natufian	Levant (Near East)	12,700 BP	Yes (9,500 BP)
Jomon	Coast of Japan	12,000 BP	No (Adopted, 2,400 BP
Ertebølle	Baltic Coast	6,000 BP	No (Adopted, 5,000 BP)
Chinchorro	Coast of North Chile	8,900 BP	No (Adopted, 3,780 BP)
Puna Highlands	Argentina and Chile	5,300 BP	Yes (4,800 BP)
Northwest Coast	USA and Canada	3,500 BP	No

(*) Radiocarbon years before present. Date of the onset for the evidence of elements of social complexity.

perhaps every 200 years (Grosjean *et al.* 1997). Better local conditions (i.e., abundance of water) were available for the hunter-gatherer populations in certain areas. More humid conditions were established from 5,000 BP onwards, in a process that reached a maximum about 3,800-3,600 years BP (Yacobaccio 1998: 389-390). During all these periods the environment was characterized by patches that concentrate resources scattered over the landscape.

The first indications we have for analysing social complexity come from the end of the middle Holocene. This information, coming from a few key sites, is important because it suggests that the pathways to complexity could have originated in this period, as seen by the appearance of sites, like Isla Grande, with stone enclosures in the Loa River region by 6,000 years BP (Núñez 1983:81-82). Many of these refugia were heavily utilized like Puripica (P33 and P34), Hornillos 2, Quebrada Seca 3, and other locations on the margins of the Loa river, and in the Arica highlands (Aschero 1994, Grosjean *et al.* 1997, Pintar 1996, Santoro & Núñez 1987). By late Holocene times, such evidence increases substantially comprising the appearance of large sites, new and more complex mortuary practices, prestige technology, long-term exchange net-works, and also data pointing towards a new relationship between people and camelids beyond hunting.

Evidence for reduced mobility

From 5,300 BP onwards, substantial sites with stone-made habitation structures appear in the region, and have been interpreted as evidence of reduced residential mobility or even sedentism (Núñez 1981). Some of them, like Tulan 52 and Puripica 1, have between 20 to 40 circular structures interspersed with courtyards and cover a surface of about 400m² to 540m². The habitations gave evidence of domestic activities and, in one case, storage-pits. Outside the dwellings, especially in the courtyards, mortars and pestles were found in high quantities. Also, evidence of long-distance exchanges can be seen in the occurrence of Pacific Ocean shells and, possibly, obsidian. In Puripica 1, inside one habitation structure a sandstone with depictions of camelids was found. Both sites show an intensive use of camelids, whilst osteometric data suggest that segments of the camelid population could have been under the protection of local hunting groups (Yacobaccio 2001).

Burial Patterns and Prestige Technology

A series of interesting funerary elements was retrieved in the 1930's by an amateur archaeologist from Inca Cueva 4. Later research on this site assessed that the archaeological and human remains came from layer 1a, which is dated between 5,200 and 5,300 years BP. At least one mummified body deposited in a flexed position, possibly a female, was recovered. The corpse was wrapped with a netting textile, over which there was a blanket of camelid skin covering the body; on her head she had a decorated basket-like hat. In addition, with this individual there were several selected body parts from other individuals, such as a skull of an adult man without mandible; a child skull; a mummified head with two articulated cervical vertebrae, and several mummified body parts of children (legs, feet, skull). Amongst valuable objects, it is worth noting beads of marine and spring-water shells, guacamayo (*Ara militaris*) feathers, decorated baskets, wood-carved bowls, wood cradles, wool- and vegetal-fibre ropes, and blankets made of camelid skins.

Also, it is important to note the inhumation of layer E2 of Huachichocana III, dated around 3,400 BP, because of its rich offerings. An 18-year-old man was inhumed; along with the body, disposed in a flexed position, the numerous offerings included not only objects manufactured with local raw materials, but also others possibly obtained from lowland peoples through exchange. Examples of these are wood-carved parrot heads with incised decoration, a stick with geometric designs, necklaces made with shells-beads from the Pacific Ocean and other from newborn camelid scapulae, baskets, twinned textiles and polished stone-pipes (for a detailed description see Fernandez Distel 1986). Behind the body was disposed a camelid head with the two first cervical vertebrae attached. Allometric studies allowed us to infer that this specimen was of equal weight and size as modern pack-llamas (Yacobaccio & Madero 1992). This context may be indicative of individual access to prestige goods (local and foreign), including domesticated camelids, which could have played an important role as a prestige animal.

More evidence of prestige objects has also been recovered from Inca Cueva 7. This small cave was first used as a "corral" or a place to keep camelids in captivity as revealed by a dung-layer located at the bottom of the sequence. Over this a huge quantity of remarkable artefacts

Table 2. Total number of hunter-gatherers sites in the Southern Andes readiocarbon dated, those that have quantitative faunal analyses, and number of camelid indentified by period.

Period	Total number of sites	Number of sites with bone counts	Number of camelids specimens
Early Holocene	15	8	6807
Middle Holocene	5	2	1289
Late Holocene	13	8	26534

was disposed. These two episodes were dated at 4,080 and 4,030 BP, being radiometrically speaking synchronous. Some of these objects are pyro-engraved flutes, bone flutes, decorated bone spatulae, sticks decorated with geometric designs made of hard wood, pipes made of puma (*Felis concolor*) long-bones, baskets, pyro-engraved gourds (*Lagenaria siceraria*), and a host of textiles (see Aguerre, Fernandez Distel & Aschero 1973). This assemblage has been interpreted as belonging to an individual (or individuals) of high status (Aschero & Yacobaccio 1998).

Intensification of camelid use and domestication

Intensification in the use of camelids through time is also evident. In early Holocene sites camelids amount to 48.9% of the total identified bones, but by middle Holocene this increases to 70.3%. In the late Holocene camelids predominate (85.9%) while other resources dramatically diminish (Table 2).

But this rise is not only dependent on increasing hunting pressures by hunters. Several indicators show that new relationships between people and camelids were developing at this time. These include an increase in animal size as noted from osteometric analysis, evidence for captivity of animals and, possibly, changes in their coat as well (Yacobaccio & Vilá 2001). As mentioned already, at 3,400 years BP a camelid of the size of a pack-llama appears in the archaeological record. A relationship of protection (see Harris 1996) could have been developed, in which local groups of hunter-gatherers with reduced residential mobility managing segments of camelid population afforded them protection from natural predators and access to forage and water. Hence, by unintentional selection these changes came about.

CONCLUSION

We can argue that in the Southern Andes, certain archaeological scenarios suggest that elements of complexity came about before 5,000 BP. New mortuary practices, such as the inhumation of isolated heads indicate the beginning of a practice associated with rising socio-economic complexity, and defended territories (Smith 1995: 80-81; Yacobaccio 2000). Reduced residential mobility is also noted, as seems to indicate the appearance of substantial sites with storage facilities. The abundance of mortars and pestles in the courtyards of these sites could show that the activities involved in their use could have been done in a highly visible community space that favoured opportunities for social contacts between households (Wright 2000).

Prestige technologies are based on the principle of displaying one's wealth, power, or control over labour and resources (Hayden 1995:258). Nearly all the recovered artefacts that can be classified as prestige technology were made with exotic raw materials, many of them having elaborated geometric designs. Some artefacts, such as bags, could have been traded from other populations of hunter-gatherers living in the eastern lowlands.

The intensification in the use of camelids, the appearance of new management strategies that includes protective herding which produces a bigger camelid, allow us to infer that a process of domestication was beginning. As have been said, domestic camelids could have played also a role as a prestige animal, as can be inferred from the contexts of Inca Cueva 7, and Huachichocana III E2 burial.

The archaeological record of the Late Holocene from the highlands of the Southern Andes is indicative that several changes were happening in hunter-gatherers populations. This does not mean sudden transformations, but new configurations to changing environmental and social conditions that favoured the appearance of large and complex groups (Kosse 1994).

Acknowledgments

I would like to acknowledge the readings and comments of an earlier version of this paper to Eleni Asouti, Brian Hayden, and Kevin Lane. I am grateful to Bibiana Vilá who read the final version. I also thank Françoise Bengolea who translated the abstract into French. This paper was written while I was in a visiting research position at the Institute of Archaeology, University College London.

Author's Address

Hugo Daniel YACOBACCIO
Sección Arqueología
Universidad de Buenos Aires
CONICET
25 de Mayo 217, 3°piso (C1002ABE)
Buenos Aires, ARGENTINA
E-mail: Yacobaccio@aol.com

Bibliography

AGUERRE, A.M., A.A. FERNANDEZ DISTEL, and C.A. ASCHERO. 1973. Hallazgo de un sitio acerámico en la

Quebrada de Inca Cueva (Pcia. de Jujuy). *Relaciones de la Sociedad Argentina de Antropologia* VII(NS), p. 197-235.

ALDENDERFER, M. 1993. Ritual, Hierarchy, and Change in Foraging Societies. *Journal of Anthropological Archaeology* 12, p. 1-40.

AMES, K.M., and H.D.G. MASCHNER. 1999. *Peoples of the Northwest Coast. Their Archaeology and Prehistory.* London: Thames & Hudson.

ARNOLD, J. 1996. The Archaeology of Complex Hunter-Gatherers. *Journal of Archaeological Method and Theory* 3, p. 77-126.

ASCHERO, C.A. 1994. Reflexiones desde el Arcaico Tardío (6000-3000 AP). *Rumitacana, Revista de Antropología* 1(1), p. 13-17.

ASCHERO, C.A., and H.D. YACOBACCIO. 1998-1999. 20 años después: Inca Cueva 7 reinterpretado. *Cuadernos del Instituto Nacional de Antropologia y Pensamiento Latinoamericano* 18, p. 7-18.

BAR-YOSEF, O. 1986. Late Pleistocene Adaptations in the Levant, in *The Pleistocene Old World: Regional Perspectives*, edited by O. Soffer. New York: Plenum Press, pp. 219-236.

BARNES, G.L., and M. OKITA. 1999. Japanese Archaeology in the 1990s. *Journal of Archaeological Research* 7, p. 349-395.

BENDER, B. 1978. Gatherer-hunter to farmer: a social perspective. *World Archaeology* 10, p. 204-222.

BOGUCKI, P. 1999. *The Origins of Human Society*. London: Blackwell.

CASTRO, V., and M.N. TARRAGO. 1992. Los Inicios de la Producción de Alimentos en el Cono Sur de América. *Revista de Arqueología Americana* 6, p. 91-124.

FERNÁNDEZ DISTEL, A.A. 1986. Las Cuevas de Huachichocana, su posición dentro del precerámico con agricultura incipiente del Noroeste Argentino. *Beiträge zur Allgemeinen und Vergleichenden Archäologie,* 8, p. 353-430.

GROSJEAN, M., L. NÚÑEZ, I. CARTAJENA, and B. MESSERLI. 1997. Mid-Holocene Climate and Culture Change in the Atacama Desert, Northern Chile. *Quaternary Research* 48, p. 239-246.

HARRIS, D.R. 1996. Domesticatory Relationships of People, Plants and Animals, in *Redefining Nature. Ecology, Culture and Domestication*, edited by R. Ellen and K. Fukui. Oxford: Berg, p. 437-463.

HAYDEN, B. 1992. Models of Domestication, in *Transition to Agriculture in Prehistory,* edited by A.B. Gebauer and T. D. Price. New York: Prehistory Press, p. 11-19.

HAYDEN, B. 1995. The Emergence of Prestige Technologies and Pottery, in *The Emergence of Pottery,* edited by W.K. Barnett and J.W. Hoopes. Washington: Smithsonian Institution Press, p. 257-265.

HAYDEN, B. 2000. On Territoriality and Sedentism. *Current Anthropology* 41, p. 109-112.

HENRY, D.O. 1985. Preagricultural Sedentism: The Natufian Example, in *Prehistoric Hunter-Gatherers: The emergence of Cultural Complexity,* edited by T.D. Price and J.A. Brown. Orlando: Academic Press, p. 365-384.

IMAMURA, K. 1996. Jomon and Yayoi: the transition to agriculture in Japanese prehistory, in *The origins and spread of agriculture and pastoralism in Eurasia,* edited by D.R. Harris. London: UCL, p. 442-464.

INGOLD, T. 1999. On the social relations of the hunter-gatherer band, in *The Cambridge Encyclopedia of Hunters and Gatherers,* edited by R.B. Lee and R. Daly. Cambridge: Cambridge University Press, p. 399-410.

KELLY, R. 1995. *The Foraging Spectrum: Diversity in Hunter-Gatherer Lifeways*. Washington: Smithsonian Institution Press.

KOSSE, K. 1994. The Evolution of Large, Complex Groups: A Hypothesis. *Journal of Anthropological Archaeology* 13, p. 35-50.

LADIZINSKY, G. 1998. *Plant Evolution under Domestication.* Dordrecht: Kluwer Academic Publishers.

MITHEN, S. 1996. *The Prehistory of the Mind.* London: Thames & Hudson.

NÚÑEZ, L. 1981. Asentamientos de cazadores tardíos en la Puna de Atacama: hacia el sedentarismo. *Chungara* 8, p. 137-168.

NUÑEZ, L. 1983. *Paleoindio y arcaico en Chile: diversidad, secuencia y procesos*. Mexico: Ediciones Cuicuilco.

NÚÑEZ, L., and M. GROSJEAN. 1994. Cambios Ambientales pleistoceno-holocénicos: Ocupación humana y uso de recursos en la Puna de Atacama (Norte de Chile). *Estudios Atacameños* 11, p. 11-23.

PINTAR, E.L. 1996. *Prehistoric Holocene Adaptations to the Salt Puna of Northwest Argentina.* PhD Dissertation, Southern Methodist University, Dallas.

PRICE, T.D., and J.A. BROWN. 1985. Aspects of Hunter-Gatherer Complexity, in *Prehistoric Hunter-Gatherers: The Emergence of Cultural Complexity,* edited by T.D. Price and J.A. Brown. Orlando: Academic Press, p. 3-20.

ROWLY-CONWY, P. 2001. Time, change and the archaeology of hunter-gatherers: how original is the "Original Affluent Society"?, in *Hunter-Gatherers, An Interdisciplinary Perspective*, edited by C. Panter-Brick, R.H. Layton & P. Rowly-Conwy. Cambridge: Cambridge University Press, p. 39-72.

SANTORO, C. and L. NÚÑEZ. 1987. Hunters of the Dry Puna and the Salt Puna in Northern Chile. *Andean Past* 1, p. 57-109.

SMITH, B.D. 1995. *The Emergence of Agriculture.* New York: Scientific American Library.

TARRAGO, M.N. 1999. El Formativo y el Surgimiento de la Complejidad Social en el Noroeste Argentino, in *Formativo Sudamericano: Una Revaluación,* edited by P. Ledergerber-Crespo. Quito: Abya-Yala, p. 302-313.

TESTART, A. 1982. *Les Chasseurs-Cueilleurs ou L'Origine Des Inégalités*. Paris: Société d'Ethnographie.

WRIGHT, K.I. 2000. The Social Origins of Cooking and Dining in Early Villages of Western Asia. *Proceedings of the Prehistoric Society* 66, p. 89-121.

YACOBACCIO, H.D. 1998. The evolution of South Andean hunter-gatherers. *IUPPS. Proceedings of the XIII Congress,* 5, p. 389-394. Forli: A.B.A.C.O. Edizioni.

YACOBACCIO, H.D. 2000. Inhumación de una cabeza aislada en la Puna Argentina. *Estudios Sociales del NOA* 4, p. 59-72.

YACOBACCIO, H.D. 2001. La Domesticación de Camélidos en el Noroeste Argentino, in *Historia Argentina Prehispánica*, edited by E. Berberián & A. Nielsen. Córdoba: Editorial Brujas, p. 7-40.

YACOBACCIO, H.D., and C. MADERO. 1992. Zooarqueología de Huachichocana III (Jujuy, Argentina). *Arqueología* 2, p. 149-188.

YACOBACCIO, H.D. and B. VILA 2001. Condiciones, Mecanismos y Consecuencias de la Domesticación de los Camélidos. *Estudios Sociales del NOA* 4(1). In press.

ZOHARY, D., E. TCHERNOV and L. KOLSKA-HORWITZ. 1998. The role of unconscious selection in the domestication of sheeps and goats. *J. Zool. Lond* 245, p. 129-135.

ZVELEBIL, M. 1996. The agricultural frontier and the transition to farming in the circum-Baltic region, in *The origins and spread of agriculture and pastoralism in Eurasia,* edited by D.R. Harris. London: UCL , p. 323-345.

ZVELEVIL, M., and M. LILLIE. 2000. Transition to agricul-ture in eastern Europe, in *Europe´s First Farmers*, edited by T.D. Price. Cambridge: Cambridge University Press, p. 57-92.