BIRDS AS FOOD

Anthropological and Cross-disciplinary Perspectives

edited by

Frédéric Duhart and Helen Macbeth

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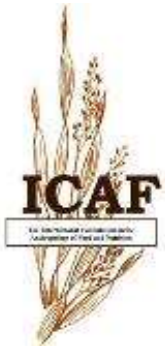

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Right: Braised squab (*Columba livia domestica)* Hong Kong, China;

Front cover bottom row:

Left: Quail Forestiere (*Coturnix japonica*), Hossegor, France;

Right: Song thrush (*Turdus philomelos*), Donostia-San Sebastián, Spain;

Back cover:

Top: Pomeranian Geese (*Anser anser domesticus*), Rosengarten, Germany;

Bottom: Braised chicken feet (*Gallus gallus domesticus*), Macao, China.

PREFACE

The International Commission on the Anthropology of Food and Nutrition promotes cross-disciplinary discussion by bringing together contributors from different sub-disciplines within Anthropology and beyond from other disciplines in conferences on food-related topics. The chapters in this volume arise from such a conference, entitled, *Birds as Food: Cross-Cultural and Cross-Disciplinary Aspects,* which was held in Sopron, Hungary, in the summer of 2012.

We thought that a free e-book would be an excellent sustainable tool to communicate science in a world where the access to expensive books and journals remains a serious problem for too many students and citizens. For this reason, we chose a format that was easy to use and allowed full colour illustrations and a font size that made the print clearly readable even on a small tablet.

Of priority, the editors wish to thank Wulf Schiefenhövel and Georg Bohák who, so successfully, organised the Sopron conference, and especially we thank Wulf Schiefenhövel who stimulated and received the earliest written texts. The Hungarian-German Foundation, *Pro Lingua et Cultura Germanica,* The Austrian Ethnomedical Society, The Bonafarm Group of Hungary, The Institute for Animal Sciences in the University of West Hungary, Mosonmagyaróvár, and the Hotel Pannoniamed, Sopron, are thanked for supporting the conference in various ways. We are most grateful to all the contributors for their papers and for their patience with our comments and the many delays in finalising this electronic book. Last but not least we thank the two referees for their positive support for the book and the many constructive points that they made.

We hope that readers enjoy the result.

HM and FD
January 2018

LIST OF CONTRIBUTORS

Dr. Alicia Aguilar
Faculty of Health Sciences
Universitat Oberta de Catalunya (UOC), Spain

Dr. med. vet. Bruno Beljak
Centre for Preservation and Development of Rural Areas, Croatia
and PhD candidate at Department of Medical Anthropology
Medical University of Vienna, Austria

Dr. Daria Deraga
Department of Biological Anthropology
Instituto Nacional de Antropología e Historia, Mexico

MA Frédéric Duhart
Faculty of Gastronomic Sciences
Mondragon University, Spain

Dr. Almir Chaiban El-Kareh
Historian and anthropologist (retired)
Previously of History Department
Universidade do Estado do Rio de Janeiro, Brazil

Dr. Vet. Mauro Ferri
Naturalist and birdwatcher
Monumenti Vivi, Italy

Eric Garine, Katia Buissereth, Jonathan Chambon, Mohamed Essouci,
Gaële Guillouet, Isaura Mancilla, Jean Wencélius and the
Ethnoscience class of 2001
Université de Paris Ouest Nanterre, France

Msc. José Concepción Jiménez López
Dirección de Antropología Física
Instituto Nacional de Antropología e Historia, Mexico.

Dr. Helen Macbeth
Anthropology Department
Oxford Brookes University, UK

Dr. F. Xavier Medina
UNESCO Chair on Food, Culture and Development
Faculty of Health Sciences
Universitat Oberta de Catalunya (UOC), Spain

Dr. Richard Ralston
Department of African American Studies
University of Wisconsin, USA

Dr. Gabriel Saucedo Arteaga
Nutrición Aplicada y Educación Nutricional
Instituto Nacional de Ciencias Médicas y Nutrición, Salvador Zubirán, Mexico

Prof. Dr. Wulf Schiefenhövel
Human Ethology Group,
Max Planck Institute for Ornithology, Germany

Dr. Tatiana Voronina
Department of Russian Ethology
Institute of Ethnology and Anthropology
Russian Academy of Sciences, Moscow, Russia.

INTRODUCTION

Indian Peacock *(Pavo cristatus)*
Photograph © Frédéric Duhart

A FEATHERED FEAST

by Frédéric Duhart and Helen Macbeth

Introduction

For anyone who wants to understand what it is to be human in all its complexity it is good to consider the relationships established between our species and all the other species that coexist with us on earth and to face the challenge of accepting the biocultural nature of *Homo sapiens*. From yeasts to whales, many species, whether fungi, plants or animals, are able to delight anthropologists interested in food issues, who then identify their forms of incorporation into the diet of diverse human groups or the modalities of their rejection by others, and who may analyse their contribution to nutrient intake or their symbolic value in specific locations, etc. Around 10,000 species exist in the bird class of the Western scientific taxonomy, Aves, and so constitute a small part of this fascinating biocenosis[1].

Consequently, we will not justify this book about birds as food by writing that these animals are particularly noteworthy or that their contribution to food supplies is especially remarkable: the same words could be used to introduce a collection of essays about fishes, mammals, or even insects. So, we just prefer to write that the *raison d'être* of this book is that some birds captured the attention of the authors of the following chapters. To understand how they do so, you are not required to share the opinion that these feathered animals have a particular charm nor to be a lover of culinary masterpieces such as the Cantonese style roast goose (Figure 1), the Spanish partridge in escabeche (Figure 2), the Peruvian *ají de gallina* (Figure 3) or the Ethiopian *doro wat* (Figure 4). Birds are so common in the oecumene, that it is almost impossible to observe and to try to understand all the human beings who live and who, *a fortiori*, eat anywhere in the world, without encountering the local society's representations of some bird and its uses and functions.

[1] Charles Gald Sibley and Burt Leavelle Monroe estimated that there were 9672 living bird species at the end of the twentieth century (1990). We must add to them, the birds that cohabited with humanity during a period, but were extinct at this time – at least around 500 species (Hume and Walters 2012).

Figure 1: Cantonese style roast goose (*Anser cygnoides*)
Photograph © Frédéric Duhart

Figure 2: Red Partridge (*Alectoris rufa*) in escabeche
Photograph © Frédéric Duhart

The conference

This volume originated from a conference that the IUAES Commission on the Anthropology of Food and Nutrition (ICAF) organised in Sopron, Hungary, in July 2012. During this event, following the intellectual tradition of the structure of ICAF's annual conferences, diversity of fieldwork and cross-disciplinary dialogue were deliberately sought.

Figure 3: Peruvian *Ají de gallina*

Photograph © Frédéric Duhart

Figure 4: Ethiopian *Doro Wat*

Photograph © Frédéric Duhart

Even though all the conference participants were not eventually able to contribute to this collection of essays, the chapters selected for this volume remain an invitation to readers to enjoy an abundant and transcontinental feathered feast. The chapters can be read separately to satisfy a curiosity about one species or region, or the elements that

demonstrate links between chapters can be pursued for their common consideration of the consumption of birds as food.

Framework of this volume

After the Introduction, our selection starts with a section entitled 'Birds and Humans' which is composed of three chapters. In 'Birds as Food: An Evolutionary Perspective', Wulf Schiefenhövel puts the eating of bird flesh by humans in a global context that is both archaeological, relating to early human ancestors, and contemporary. The archaeological perspective he outlines progresses from the killing of larger birds for their feathers to be used in decoration to the evidence of particular scrapings on fossilised avian bones, which denote removal of the meat presumably for human consumption. His chapter progresses to the domestication of the chicken, a topic echoed in later chapters, but it emphasises the knowledge, that people in traditional societies have, of the flora and fauna in their habitats, including the birds.

In continuation of this section, Frédéric Duhart, in his chapter 'An Ornithological and Cultural Perspective on Birds as Food', invites one to think about the forms of coexistence between human groups and wild bird populations, the ways that human societies coevolved with domesticated bird species and the consequences of birds in human diets and cuisines. Numerous species are referred to in his text. Some of them are the inevitable ones, such as the Passenger Pigeon (*Ectopistes migratorius*); others are worthy of attention, even if they are much less well known, such as the discreet Daitō Bush Warbler (*Cettia diphone restricta*).

In the last chapter of this section, 'Edible or Disgusting? Notes on the Cultural Value of Birds among Students in Paris (France, 2011)', Eric Garine and his students take this global concept of humans eating birds into a totally modern context by researching the views and attitudes of students in a Parisian university today about the edibility of different bird species. At this stage, it seems relevant to point out that there is generally a distinction in the English use of the words 'edible' and 'eatable', where the latter is usually taken to mean that the substance will not cause ill effects when consumed and the former involves taste preferences, both at the cultural and the individual level

(MacClancy et al. 2012). Yet, the use of these words is variable and to add complication, the word 'inedible' may be used to mean not liked or not culturally acceptable or sometimes that it might actually cause physical harm, while the use of 'uneatable' has been heard in regard to poor cuisine. This language problem simply has to be condoned in a chapter in English about research held in French, but the problem in definition runs through this interesting study of contemporary French students' knowledge of and taste for different birds as food.

Yet, the chapter provides detailed quantitative information on the ethnozoological knowledge of the students about birds in general, followed by a discussion of which birds are considered edible and which disgusting. This information is then followed by a further quantitative study of which birds the students had eaten recently and which they had ever eaten. What emerges from this analysis is that chickens, turkeys and ducks are the most commonly recognised types of poultry and the most frequently eaten by these generally urban French students.

Of course, urbanised France is not an exception. Domestic birds play an important part in numerous diets everywhere in the world. So, the second part of this volume, entitled 'Breeding, Preparing and Eating Poultry', is dedicated to this perspective. It is composed of seven chapters and logically starts with an evocation of the chicken (*Gallus gallus*), the animal most commonly bred for food on our planet. Based on historical sources, 'Frying Fowl in Early and Modern America: Cultural and Home Economy Aspects of Chickens as Working People's Food in Southern USA Prior to Global Commodification' by Richard D. Ralston shows how the background of the now global Kentucky Fried Chicken lies in the southern States of USA. The relevance of West African traditional cooking, because of slavery, and the affordable price of chickens for 'slaves, sharecroppers and hired agrarian workers' in the American South East is central to this chapter. Historical information here is derived from early cookery books and other published recipes. Ralston emphasises the role of cooks at home in retaining the legacy of chicken cooking since the days of slavery.

This is followed by information on seemingly unrelated events, such as the Depression and the new road system, that became factors in the commercial success of a series of roadside restaurants using a

new pressure-cooker technology and a 'secret blend of traditional herbs and spices' developed by H. C. 'Colonel' Sanders in 1939, to be known as Kentucky Fried Chicken (KFC) restaurants. Today KFC outlets total in the tens of thousands globally. As well as an intriguing section on uses of chicken or hen words allegorically, Richard D. Ralston provides a serious final section on the importance of the affordable chicken as a staple in the diets, and so the nutrition, of people of all socioeconomic levels.

Still keeping to discussions of the Galliformes, three chapters on Turkey (*Meleagris gallopavo*) follow. In the first of these, '*Huaxolotl*, *Guajolote*, *Huilo* or *Cocono*: A Mesoamerican Resident of Rural and Popular Class', Gabriel Saucedo Arteaga and José Jiménez López discuss the Mexican wild turkey, which they refer to throughout the chapter by its indigenous name of '*Huaxolotl'* in order to emphasise that local people make a clear distinction between the traditional Mexican birds and the products of the modern turkey industry ('*Pavo'*). The *huaxolotl* still exists as a wild bird, but is also domesticated and bred in a traditional way, today mostly only by rural and peasant families. The chapter briefly introduces the archaeology and ethnohistory of the species *Meleagris gallopavo* and goes on to include information on nutritional properties of the Mexican subspecies and its use in some traditional recipes. Primarily, the chapter emphasises its role in Mexican culture and how that role differs from the now ubiquitous, often frozen, turkeys and turkey meat sold today in supermarkets around the world.

'Turkeys on the Table: A Story of Many Changes and Some Misconceptions' by Helen Macbeth is about the consumption of turkey in English-speaking cultures. She starts with an autoethnography about having turkey at Christmas in the 1940s both in England and in northern USA where turkey is also an important part of the celebratory 'Thanksgiving dinner' in November. However, while considering the history of the geographic spread of this transatlantic species, she reports on an incorrect misconception she held about the history of the spread of turkey as a culinary dish in both UK and USA. She then found that the same misconception was commonly held by most Anglophones that she interviewed, and so she went on to explore popular views about the

history of having turkey at Christmas, and again found misconceptions were common.

Of further interest in this chapter is change over the last half century in the economic status of the turkey, from being an expensive bird, pre-ordered at the family's butcher for a special occasion, such as for Christmas or in celebration of the coronation of Queen Elizabeth II, to the many options for buying turkey meat today. It can still be bought as an expensive, slowly reared bird, pre-ordered from a local turkey farmer, whereas turkey meat can now also be found in many different forms in supermarkets, where, whether fresh or frozen, whether as whole birds or as diced or minced turkey meat, it is now one of the cheapest meats available in Britain.

In 'Turkeys in the Zagorje Region of Croatia: A Case of Study from a Cult Bird to a Frozen Bird', Bruno Beljak draws our attention to a Croatian heritage breed of *Meleagris gallopavo gallopavo*, the *Zagorje Puran* ('turkey from Zagorje'), which has gained cult status in Croatia and now has been classified with Protected Geographic Indication (PGI). In his chapter, he provides information on its local distribution and the relevance of the Zagorje rural environment and history to this distribution, followed by information on the export elsewhere of this bird, honoured for its quality of meat when the turkey is raised slowly in the traditionally slow way in the district of Zagorje. As in the previous two chapters the cultural patterns and the social context of this bird are described, and again comparison of its meat with the meat of supermarket turkeys is part of the story.

Some domestic Anatidae are also notable food providers. In '*Confit, Foie Gras* and *Magret*: a Short History of the Mule Duck in Southwest France', Frédéric Duhart reports on a unique bird, the mule duck, which is a result of crossbreeding the Muscovy duck (*Cairina moschata*) with the Mallard duck (*Anas platyrhynchos*). The chapter includes information on both parental groups and the history of breeding the mule duck, and its acceptance in France, but continues with information on some diversity of breeds. This chapter then concentrates on the culture, production and certain culinary presentations of foie gras and force-fed duck meat in France, with details about individual chefs and innovations in the twentieth century. Duhart does not omit mention of the very vocal opposition elsewhere

to that force feeding, but the discussion dwells on the ethno-knowledge developed in early modern rural villages of south west France and so the biocultural dynamics in the relationship between the mule duck and human society.

Discussion of a bird that is still far less commonly eaten follows, as the increasing production and marketing of the ostrich (*Struthio camelus*) is the subject of the next two chapters. In 'Ostrich Meat between Exoticism and Regular Consumption', Alicia Aguilar and F. Xavier Medina take a primarily nutritional line in describing the health values of the meat of this African bird, now being promoted elsewhere in the world with a detailed analysis and comparison of the nutritional constituents of ostrich meat in comparison with lamb, beef, chicken and turkey. They show how the meat of the ostrich has preventative effects against cardiovascular and cerebrovascular disease and mortality, and that the ostrich's meat is red and high in iron and other trace elements which are lower in other poultry species. Following this analysis, the chapter continues with information on the commercial spread of farming this exotic bird from Africa to Europe, providing global production data, while South Africa remains the prime producer and exporter of ostrich meat. They give 2015 data on the consumption of and expenditure on ostrich meat in Spain compared to other meats, drawing attention to the higher price. The conclusion brings the nutritional information together with the production and cost issues to consider the likelihood of, but obstacles to, any significant increase in consumption of ostrich meat in Spain.

It is interesting to put this Spanish experience beside the experience in Mexico described by Daria Deraga in the chapter 'Ostrich as Food in Mexico: From Livestock Production to Consumer Preferences'. She outlines the complexity of, and yet the increase in, farm production in Mexico of the South African ostrich, pointing out the skills needed to handle these birds and the risks and bruises incurred. Her chapter includes original ethnographic material on the work and experience on a modern Mexican ostrich farm. Unlike the previous chapter, she includes some of the health risks to these birds, who were badly hit during an avian influenza epidemic in 2013. Such information about production of the birds is balanced with interviews about views on consuming this meat, carried out especially among

some young adults in west Mexico. The chapter provides some commercial values of ostrich meat both in Mexico and over the border in USA, but concludes with a discussion about future acceptability and so the economics of raising ostriches, in which she includes mention of selling ancillary products, such as those made from the hides of the ostrich.

Four chapters compose the third section of the volume which is entitled 'Societies and Bird Consumption'. These essays are concerned with the consumption of bird species in specific geographic areas and by specific societies. The first of these relates to the consumption of swifts, starlings and sparrows in Italy and other parts of Europe. The chapter is primarily about the artificial nests created to attract wild birds, and whereas the central theme and probable origin is about building these structures so that humans could access the fledgeling birds and eggs as food, Ferri's information ranges from the terracotta bird pots of some areas to the structures built into the walls not just of dovecotes and special bird towers, but also of barns, houses, churches, belfries, etc. in Italy. With changing attitudes to eating small, wild birds in the twentieth century, these structures have largely been destroyed or fallen into disrepair, but Ferri draws attention to some that remain. He concludes by describing new modern interests in creating artificial nests to protect wild bird species whose traditional nesting options have been reduced due to different architectural patterns.

The following chapter 'Eating Parrots and Being Brazilian with Pleasure' by Almir Chaiban El-Kareh provides a social history about Brazil exemplified through information on culinary practices in relation to the consumption of birds, as the Portuguese and others who made up Brazilian society interacted with an indigenous population. The history is told with plentiful references and quotations from writers, contemporary with each period discussed, primarily of the nineteenth century. Of significance in his essay is the construction of a Brazilian national identity, and in this regard Almir Chaiban El-Kareh refers in particular to the *Cozinheiro Nacional ou coleção das melhores receitas das cozinhas brasileira e europeias,* abbreviated for use in English as the 'National Cook', a book published in the 1882. In its pages, many of the recipes concern animals that are native to Brazil, for example macaws and other exotic game. His point is that even for

people now living in urban centres or on plantations these recipes originated from the experience of families who had lived in the interior parts of Brazil. In this way these recipes not only combined knowledge of local fauna as possible ingredients, but also formed pieces in the jigsaw of 'Brazilian identity'.

In the chapter 'Chicken, Goose and Quail: The Tradition of Eating Birds in Russia', Tatiana Voronina first describes patterns of hunting wild birds, rules and prohibitions, but goes on to describe cultural information on religious and other beliefs about different birds, both wild and domestic. This is followed with a discussion of nineteenth century culinary practices regarding birds, all supported with quotations from contemporary literature. Her information on chickens includes consideration of the etymology of the Russian word for chicken. She provides detailed nineteenth century export data on birds and eggs from Russia to other European countries and continues with coverage of twentieth century information on eating birds and eggs in the Soviet era. Her final, brief section is on the contemporary situation, concluding that domestic and wild birds were, from antiquity to the present day, food on the table of Russians and in the menus on festival days.

The last chapter, by Wulf Schiefenhövel, 'Birds for Women, Birds for Men: Food Taboos and Nutritional Wisdom among the Eipo of the Highlands of West-New Guinea', concentrates on one geographic area and covers past and contemporary ethnographic and ornithological material in the highlands of West-New Guinea. The chapter concentrates in particular on the beautiful birds of paradise and the fascinating habits of the bower birds. Wulf Schiefenövel's knowledge of the Eipo derives from over forty years of contact with these people, and he outlines their physique, health and nutrition, saying that they would hunt and consume many species of birds. However, certain traditions are associated with certain birds, which he exemplifies with the ritual gifts of a bird of paradise. The chapter describes their traditions about different local avian species, and explains how in the low protein diets of the Eipo, these rituals that preferentially allocate such meat to women and children are of evolutionary benefit by providing extra protein to growing children and vitamins and trace elements to women, who through procreation cycles

have extra needs. With this chapter, we have been able to start and finish the numbered chapters of this volume with contributions by Wulf Schiefenhövel, the prime and energetic organiser of the conference without which this selection of interesting papers would not have been collated.

Finally, Frédéric Duhart provides an Epilogue emphasising that human groups exist and have always existed in their diverse ecosystems interacting with bird populations, but that the choices about the consumption of some but not of other birds vary with different cultural groups. He includes a discussion of aversions and poisons, whether lethal or less harmful, and how these are sometimes used. He reminds readers that frequently humans distinguish themselves in hierarchical orders and how edible birds can play a role in identifying such a scheme. The chapter summarises how different avian species are identified with different cultural meanings and traditions, concluding how human-bird relationships are strong and either due to cohabitation with wild species or to coevolution with domesticated species. His final allusion is to Memphis Meats' contemporary development of 'clean poultry' meat, cultivated synthetically from chicken or duck cells.

Conclusion

So, even though, of course, many fascinating avian species and many tasty cooked birds are missing from this volume, we hope that these chapters will in some way feed your hunger for knowledge and your thoughts about birds as food.

References

Hume, J. P. and Walters, M. (2012) *Extinct Birds*, Bloomsbury Publishing, London.

MacClancy, J., Macbeth, H. and Henry, J. (2007) Introduction: Considering the Inedible, Consuming the Ineffable. In: MacClancy, J., Henry, J. and Macbeth, H. (eds), *Consuming the Inedible. Neglected Dimensions of Food Choice*, Berghahn Books, Oxford, pp. 1-15.

Sibley, C. G. and Monroe, B. L. (1990) *Distribution and Taxonomy of Birds of the World*, Yale University Press, New Haven.

Section One

BIRDS AND HUMANS

Dinner is served! Pigeons (*Columba livia domestica*) in Santiago de Chile
Photograph © Frédéric Duhart

CHAPTER 1
BIRDS AS FOOD: AN EVOLUTIONARY PERSPECTIVE

by Wulf Schiefenhövel

In the Ice Age, humans of the northern hemisphere had to cope with a harsh environment, but enjoyed relatively easy access to animal protein. Large herds of reindeer and horses, gigantic mammoths and other large game provided, during their regular movements between seasonably visited pastures, big quantities of meat for *Homo sapiens neanderthalensis* and later for *Homo sapiens sapiens*. Furthermore, it is important never to forget aquatic sources of protein.

Modern archaeological research with its high-technology methodology can retrieve even the minutest traces of evidence on animal bones where human teeth or stone scrapers, knives and similar tools have left marks. There is thus no doubt that early humans, from *Homo habilis* onward, defleshed animal bones (Anton et al. 2014) to get better access to the meat. At the same time or later they started to hunt large game and ate meat and bone marrow, providing, among other nutrition, essential amino acids and fat with its high caloric value (Navarette et al. 2011). Insects, which are common in primate food, provided similar valuable nutrients and have most probably always played an important role in the nutrition of our species and that of our immediate and more distant ancestors (Schiefenhövel and Blum 2007).

In those early days, did birds play a similarly important role in the daily food supply? We have no way of knowing precisely, but can safely assume that humans of those times, like members of traditional societies around the world, utilised birds, perhaps especially their eggs, as important elements in their diet. Eggs are particularly nutritious and readily available, if one knows where to collect them. In some parts of our planet, this is easy, in others difficult, even connected to high risk, like collecting eggs from steep cliffs (Hoffman 1990).

Given the fact that there are non-human primates and humans which gather insects for food, it is the more surprising that in the primatological literature only one field study was discovered which described chimpanzees feeding on nestlings (5 cases) and eggs (3 cases) (Hladik 1973) (Figure 1). This was a group of 8 apes which were freed

Figure 1: Chimpanzees with small bird

Photograph © C. Marcel Hladik

from captivity and reintroduced to a forest in Gabon, i.e. they had before been exposed to some form of human environment. Whether this can explain the uniqueness of the observations or whether some other factors were involved to bring about this obviously very rare behaviour in *Pan troglodytes* is an open question. Some aspects of the documented mode of foraging are particularly noteworthy:

a) chimpanzees of this group were successful in getting eggs even from nests built on the remotest twigs;

b) they were obviously very much attracted to nests, visited also old nests and destroyed them;

c) they were very aroused by a member of the group having caught a nestling and often chased this individual;

d) sharing of this bird meat with other individuals than offspring did not happen;

e) in one observed case, a chimpanzee ate the bird slowly, taking very small bites and intermittently eating pieces of bark of a tree taken off by gnawing movements with the incisors – the meal took 20

minutes. The mixing of plant food with animal protein from non-insect sources is quite typical for chimpanzees in other regions as well. It probably helps the digestion of this rare food to which the intestinal system of the species may not be well adapted.

Chimpanzees occasionally hunt colobus monkeys; in fact, while eating and sharing their catch they betray high arousal and the importance of this rare and therefore probably valuable food. Why do the other chimpanzee groups not go for birds and their eggs? Of course, adult birds are difficult to come by, as, provided they have recognised the danger, they can fly away at an instance. However, nestlings and bird eggs are, as the careful long-term field study in Gabon demonstrates, not principally out of reach of the apes. For some reason, non-human primates have not developed a general pattern of eating birds, which is a surprising insight. One reason may be that meat protein is just a rare addition to their usual diet of fruits, leaves and insects, or perhaps their 'optimal foraging strategy' (Smith 1983) steers them away from winged animals.

We humans, on the other hand, are a bird eating species. Only very recently have birds moved into the focus of archaeology and have indeed become a 'hot topic'. A whole conference was devoted to bird-human relationships, summarised in the informative editorial by Blasco & Peresani (2016) who challenge the long-held belief that constraints connected to optimal foraging would prevent humans from including elusive birds in their diet. Ethnographic data prove the opposite: there is, most probably, no human society on this planet where birds are not used as food.

Data from various archaeological sites tell a story that few scholars would have believed possible some years ago: it is now clear that even Neanderthals captured birds, especially birds of prey, butchered them and took their feathers and talons. The latter have been found, for example, in the Croatian site of Krapina (Radovčić et al. 2015) and were convincingly described as forming a kind of necklace or similar body decoration. Making and wearing a piece of jewellery from very powerful, majestic birds of prey has pushed the onset of 'symbolic' behaviour back a good deal from former estimates, which had reckoned that only *Homo sapiens sapiens* was capable of such mental performance.

Furthermore, other finds from Europe during the Ice Age demonstrate (e.g., Finlayson and Finlayson 2016) that a close relationship existed between Neanderthals on the one hand and raptors and corvids on the other hand. Data from the Italian site of Fumane (Romandini et al. 2016) corroborate this claim, and there one also finds marks of cutting and scraping instruments on raptor bird bones, especially those bones of the wings and legs, so that it is likely that feathers and talons were removed this way. The meat was also eaten, as shown by Fiore et al. (2016) in their paper 'From feathers to food': of course, one does not waste a valuable food source.

The Sibudu cave in South Africa yielded similar results (Val 2016): many bird bones were associated with the layers where human occupancy could be shown, among them several bird species like pigeons which are, also to our taste, good to eat. The famous Spanish site in the Atapuerca mountains near Burgos contained a surprisingly large assemblage of birds (Núñez Lahuerta et al. 2016): several species showed up for the first time in this part of Europe. It is very likely that the many bones are there because the meat of the birds was eaten.

Archaeologists carried out experimental work (Pedergnana and Blasco, 2016) to demonstrate that the cut and scrape marks found on pieces of bird bones were actually ones produced in the process of dissecting the animals. In short: a paradigm shift has happened: our ancestors, within the slight chaos of terminology we may name them as *Homo antecessor*, *Homo heidelbergensis*, *Homo sapiens neanderthalensis* and early *Homo sapiens sapiens*, are now all believed to have eaten the meat of smallish birds as well, and not only that of intimidatingly large herbivores.

Back to anthropology and ethnoarchaeology. Why were birds largely considered to range outside the menu of early and modern humans? Is it because so often, ethnographic records do not mention birds as food? Perhaps hunting, trapping or otherwise catching birds was rarely observed or deemed unimportant by the ethnographic fieldworkers. The consumption of small birds, commonly hunted by children and juveniles, usually takes place on the spot where caught and may therefore have escaped some ethnographers' notice.

However, studies which describe food sources in detail (e.g., for New Guinea: Dwyer 1974, Bulmer 1982, Morren 1986; for Indonesia

including New Guinea: Marshall and Beehler 2012; for the Inuit: Hoffman 1990) invariably report, that members of the ethnic group under study eat the meat of many wild birds. As is the case still today (e.g., in many parts of southern Europe) birds are shot and captured in traps, much to the dismay particularly of German animal protectionists who protest that hundreds of thousands of song birds are killed and eaten. For millennia throughout the world, many ingenious methods have been used, borne from the evolutionarily developed mental capacities of humans. Humans, in contrast to their primate cousins, had become able to invent effective strategies of luring, surprising and catching birds in a variety of ways.

It is an interesting aspect of cultural evolution that birds were not the first animals by far to be domesticated, even though one would think it an easy task to take nestlings and gradually train them and their offspring to get used to human proximity and feeding. Dogs are believed to be the first to become the domesticated commensals of humans, at least 14,700 BP (Giemsch et al. 2015), perhaps even 36,000 BP (Germonpre 2009). Probably dogs were not domesticated primarily for food but as companions, helpers during hunting, as watch dogs and similar. This may perhaps have been assisted by the fact that while still young they displayed the Lorenzian babyness scheme, as pets and surrogate children… just as in so many cases of today's modern complex societies.

Archaeological records show that the common chicken (*Gallus gallus domesticus*) was domesticated in North-Eastern China about 7,500 BP and in India about 6,000 BP (Sherman 2002), but not as food. It was raised as an animal which would provide humans, presumably mostly men, a grand spectacle: the cock fight. I have seen cock fights in Balinese villages and was very impressed by the enormous emotionality exhibited by the human trainers of these avian fighters and especially by the spectators of this ancient 'sport', and also by its social role and the amount of betting connected with it. My companions were not sure whether these events, drawing large amounts of people to a specially designed open place, were completely legal (probably not), but nobody was afraid that the police would intervene. It seems that this age-old tournament of ferociously fighting cocks, equipped with razor-sharp blades attached to their feet, was too strongly tied to the

Indonesian, in this case Malay, tradition, just as today many Spanish are not yet willing to give up the corrida.

The finding that domesticating the chicken apparently happened to cater for the blood thirst of human males and not for the protein hunger of their families, is rather counterintuitive because one would think that it is such a natural candidate to be an easily available food source, perhaps more so than larger and possibly less easily domesticated animals such as sheep, goats, cattle, horses and the like.

In the course of the millennia and the centuries many species of birds were, in various parts of the world, successfully domesticated (see also Voronina this volume). Today, chickens are, weight-wise, by far the most important source of protein from domesticated animals in Canada, the USA, Australia, New Zealand and, by a large margin, in Africa, whereas pork is leading the list in Europe and, only slightly ahead of chicken, in Japan (Heinrich Böll Foundation 2014).

The English term 'fowl' comprises all domesticated birds of the order Galliformes, i.e. besides chicken, it includes the domesticated ducks, geese, pigeons, quail and turkey. The etymological origin of this term is the Germanic word for bird, found in old English *fugol*, similar to the modern German Vogel, whereas the term 'poultry' for domesticated birds comes from the middle English *pultrie*, from old French *pouleterie* and can be traced back to the Latin *pullus*, small animal, which is related to *puer*, little boy. In Roman times *pullus* was also used as a word expressing affection, for instance among lovers. The diminutive of a term for an attractive animal lends itself to this kind of tender semantics; consider the use of the word, 'chick', or in some English counties, 'my duck'. However, wild birds are considered and named 'game' (connected to the Gothic *gaman*, 'being together', 'participation', Danish *gamen*, 'merriment', hence game meaning 'sport', and so 'hunting sport' and from there it has come to refer to 'hunted animals and birds').

This is not the place to pursue the interesting history of domesticating birds further, even though one reason to convene the 35th ICAF conference '*Birds as Food*' in Sopron, Hungary in 2012, was the fact that the University of Western Hungary, in the neighbouring city of Mosonmagyarovar, has an experimental farm dedicated to the study of the native Yellow Hungarian Chicken (Figure

2). The last part of that conference took place in that research institute. For anthropology, it is particularly interesting to know how the different ethnic groups in the world view and value wild and domesticated birds from across the biological, nutritional and symbolic perspectives.

Figure 2: Hungarian Yellow Chicken (*Gallus gallus domesticus*)
Photograph © Frédéric Duhart

As regards hunting wild birds, Neolithic humans hunted the nine species[1] of the New Zealand moa (order Dinornithiformes, Figure 3) so successfully that the eradication of these birds was most probably caused by them (Perry et al. 2014). For birds, such extremely efficient predation by prehistoric human hunters was probably rather rare as most of them can fly away and will often be missed by spears, arrows, darts from blow pipes, etc. The moas, however, like the cassowaries of New Guinea, the emus of Australia and the ostrich of Africa, were flightless birds; they hardly had to fear any enemy until the new species, humans, appeared in New Zealand, only about 750 years ago, and exterminated the birds.

[1] Nine species in six genera. See footnote on p. 35.

Figure 3: North Island Giant Moa (*Dinornis novaezealandiae*)

Photograph © Frédéric Duhart

What Schiefenhövel (this volume) reports on the use of birds in the Eipo society in the highlands of West-New Guinea is probably also true for any other traditional society's culture: local people are extremely familiar with all elements of their environment, especially the living forms, such as plants (Hiepko & Schiefenhövel 1987) and animals. They are, indeed, naturally 'natural scientists'. Richard Vaughan (2010) documented the ornithological knowledge of the Eskimo, now usually called the Inuit. He found that they were excellent observers of wildlife and had a taxonomy comparable, in its logic and classificatory precision, to that used by trained modern zoologists using the Linnaean system. One may argue that this is not surprising because in their seemingly hostile environment any source of protein, no matter how small the animal may be, is of utmost importance.

Yet, this utilitarian view does not do justice to autochthonous taxonomy and biology: local people around the globe do not only know all those animals and plants which are, in some way or other, important for them (either because they are edible or poisonous or of medicinal or ritual significance), but they also know all the others which could easily be left out of their biological encyclopaedia because they are unimportant to them as food or otherwise. A comprehensive ethnoornithology of wild and domesticated birds is still lacking; it would be worthwhile to start such an endeavour soon. In many

cultures, modern acculturation and westernisation has been so fast and so complete that it is high time to document the impressively rich traditional scientific knowledge of wild and domesticated birds, their habitats, their biology, their behaviour and their significance for ecology.

References:

Anton, S.C., Potts, R. and Aiello, L.C. (2014) Evolution of early Homo: An integrated biological perspective, *Science* **345**: 45-45.

Blasco, R. and Peresani, M. (2016) Humankind and the avian world: zooarchaeological evidence for inferring behavioural evolutionary signatures, *Quaternary International* **421**: 1-15.

Bulmer, R. (1982) Human ecology and cultural variation in prehistoric New Guinea. In: Gressitt, J.L. (ed.) *Biogeography and Ecology of New Guinea*, W. Junk, The Hague, pp.169-206.

Dwyer, P.D. (1974) The price of protein: five hundred hours of hunting in the New Guinea highlands, *Oceania*, **44**: 278-293.

Fiore, I., Gala, M., Romandini, M., Cocca, E., Tagliacozzo, A. and Peresani, M. (2016) From feathers to food: Reconstructing the complete exploitation of avifaunal resources by Neanderthals at the Fumane cave, unit A9. *Quaternary International*, **421**: 134-153.

Finlayson, S. and Finlayson, C. (2016) The birdmen of the Pleistocene: on the relationship between Neanderthals and scavenging birds, *Quaternary International*, **421**: 78-84.

Germonpre, M. (2009) Fossil dogs and wolves from Palaeolithic sites in Belgium, the Ukraine and Russia: Osteometry, ancient DNA and stable isotopes, *Journal of Archaeological Science*, **36 (2):** 473-490.

Giemsch, L., Feine, S.C., Alt, K., Qiaomei, F., Knipper, C., Krause, J., Lacy, S., Nehlich, O., Niess, C., Pääbo, S., Pawlik, A., Richards, M.P., Schünemann, V., Street, M., Thalmann, O., Tinnes, J., Trinkaus, E. and Schmitz, R.W. (2015) Interdisciplinary investigations of the late glacial double burial from Bonn-Oberkassel, Hugo Obermaier Society for Quarternary Research and Archaeology of the Stone Age. 57th Annual Meeting in Heidenheim: 36-37.

Heinrich Böll Foundation (2014) *The Meat Atlas: Facts and Figures about the animals we eat*, Friends of the Earth, Brussels.

Hiepko, P. and Schiefenhövel W. (1987) *Mensch und Pflanze. Ergebnisse ethnotaxonomischer und ethnobotanischer Untersuchungen bei den Eipo, zentrales Bergland von Irian Jaya (West-Neuguinea), Indonesien*, Reimer, Berlin.

Hladik, C. M. (1973) Alimentation et activité d'un group de Chimpanzees réintroduits en forêt Gabonaise, *La Terre et la Vie*, **27**: 343-413.

Hoffman, B.W. (1990) Bird Netting, Cliff-Hanging, and Egg Gathering: Traditional Procurement Strategies on Nunivak Island, *Arctic Anthropology,* **27(1):** 66-74.

Marshall, A. and Beehler, B. M. (2012) *The Ecology of Papua, Part One. The Ecology of Indonesia Series, Vol. VI*. Tuttle Publishing, North Clarendon, Vermont.

Morren, G.E.B. (1986) *The Miyanmin: Human Ecology of a Papua New Guinea Society,* UMI Research Press, Ann Arbor.

Navarette, A., van Schaik, C.P. and Isler, K. (2011) Energetics and evolution of human brain size, *Nature*, **480**: 91-91.

Núñez-Lahuerta, C., Cuenca-Bescos, G. and Huguet, R. (2016) First report on the birds (*Aves*) from level TE7 of Sima del Elefante (Early Pleistocene) of Atapuerca (Spain), *Quaternary International*, **421**: 12-22.

Pedergnana, A. and Blasco, R. (2016) Characterising the exploitation of avian resources: An experimental combination of lithic use-wear, residue and taphonomic analyses, *Quaternary International*, **421**: 255269.

Perry, G. L.W., Wheeler, A. B., Wood, J. R. and Wilmshurst, J. M. (2014) A high-precision chronology for the rapid extinction of New Zealand's moa (*Aves, Dinornithiformes*), *Quaternary Science Reviews*, **105**: 126-135.

Radovčić, D., Sršen, A.O., Radovčić, J. and Frayer, D.W. (2015) Evidence for Neandertal jewelry: modified white-tailed eagle claws at Krapina. *PLoS One*, **10(3):** e0119802: https//doi.org/10.1371/journal.pone.0119802.

Romandini, M., Fiore, I., Monica Gala, M., Cestari, M., Guida, G., Tagliacozzo, A. and Peresani, M. (2016) Neanderthal scraping and manual handling of raptors wing bones: Evidence from Fumane Cave. Experimental activities and comparison, *Quaternary International*, **421**: 154-172.

Schiefenhövel, W. and Blum, P. (2007) Insects: Forgotten and Rediscovered as Food. Entomophagy among the Eipo, Highlands of West-New Guinea, and in other Traditional Societies. In MacClancy, J., Henry, J. and Macbeth, H. (eds) *Consuming the Inedible. Neglected Dimensions of Food Choice*, Berghahn Books, New York, Oxford, pp.163-176.

Sherman, D. M. (2002) *Tending Animals in the Global Village*, Blackwell Publishing, Hoboken, New Jersey.

Smith, E.A. (1983) Anthropological applications of optimal foraging theory: a critical review, *Current Anthropology*, **24**: 625-651.

Val, A. (2016) New data on the avifauna from the Middle Stone Age layers of Sibudu Cave, South Africa: Taphonomic and palaeoenvironmental implications, *Quaternary International*, **421**: 173-189.

Vaughan, R. (2010) *In Search of Arctic Birds*, Poyser, Devon, UK.

CHAPTER 2
AN ORNITHOLOGICAL AND CULTURAL PERSPECTIVE ON BIRDS AS FOOD

by Frédéric Duhart

Introduction

I could dedicate this chapter to Rodolphe, Jules and the few other cocks that were successively kings of my paternal grandmother's poultry yard when I was a child. During their reign, I spent hours with them. When it ended, I enjoyed them slowly cooked in wine, with onions, carrots, mushrooms and diced cured ham.

Such memories encourage me to look at the food use of birds as a part of the complex coexistence of *Homo sapiens* with the thousands of species that form the group Aves.

Logically, a human society cannot consume the meat or the eggs of a species without being involved in a relationship with some of its specimens. By consequence, 'birds as food' is not only an anthropological concern; it is also an ornithological one. We are able to eat bird products because we interact in two ways with avian populations: we are in cohabitation with wild birds and we coevolve with domestic ones. Beyond a galantine of teal or a Spanish tortilla, there are not only choices by a human community, but also the dynamics of a bird population.

This chapter analyses the food use of bird products, bearing in mind the existence of this complex ecological reality. As there are no bird eaters if there are no birds to be eaten, it is fundamental to begin with some considerations on the coexistence of *Homo sapiens* with the avian species. I shall do this, emphasising cases strongly linked to the satisfaction of human nutritional needs. Subsequently, I shall take into account human predatory activities against wild bird populations and some of their culinary consequences. I shall conclude with observations on the effects of food aspirations in the processes of coevolution between the poultry populations and the societies that breed and eat them.

Birds and humans together in their ecosystems

No location exists where human communities did not have to cohabit with some bird species, at least for a period while they established their settlements. Quaternary ecosystems in which birds are naturally absent are extremely rare and most are located in extreme latitudes, since birds have been recorded above 87° S and 89° N (Eklund 1956; Vuillemier 1996). Yet, *Homo sapiens* never became a part of such biocoenoses. In even the highest mountain areas the fauna, at least up to the summer snowline, generally include bird species; that is more than enough for birds to be part of the everyday framework of the dweller communities (Figure 1). In 1849, the botanist, Hooker, noted: 'birds flock to grass about Momay [around 4600 m]; larks, finches, warblers, abundance of sparrows, feeding on the yak-droppings, with occasionally the hoopoe' (1855, 131-132).

Figure 1: Greater Yellow-Finch (*Sicalis auriventris*). 3,200 m above sea level, Argentinean Andes

Photograph © Frédéric Duhart

An inventory of bird species that breed in the world's arid habitats totals 2046, excluding the numerous birds that only frequent the limited wetlands. Around 10% of these species can breed in areas where the mean annual precipitation is below 250 mm. (Dean 2004). As the overwhelming majority of early human communities were settled in desert regions, even in the driest ones, they became a component of ecosystems in which birds were not non-existent. Whereas in the mid-nineteenth century, birds could be so scarce and discreet in certain parts of the central plateau of the Sahara that a French explorer could go a week without seeing one, the Tuareg people who used to travel across this area were not unfamiliar with birds. They killed ostriches (*Struthio camelus camelus*) for their skins and lammergeyers (*Gypaetus barbatus barbatus*) to prepare medicines with their fat and meat. They had even a special cultural relationship with avian species such that their meat was taboo for the nobles (Duveyrier 1864).

Birds are also naturally present in the deep-sea ecosystems. Long-range sailors were early aware that petrels and other pelagic wanderers existed way offshore, and so were not a reliable indicator of any nearby coast (Buffon 1780). Marine avian fauna present some diversity, as shown in the studies of bird aggregations at seamounts (Thompson 2007). The case of the wandering albatross (*Diomedea exulans*, Figure 2) reminds us that marine birds can become human food if they fly into the path of a vessel. In 1593, the first European crew known for having encountered albatrosses caught some of them with a hook. The curiosity of the captain about a new creature caused the capture of the first one. Its fellow victims followed it, because 'fishing' them appeared to be quite enjoyable for the sailors after a storm episode. Then, they cooked and ate these 'great fowles, as big as swannes'. In the words of their captain, 'their bodies were great but of little flesh and tender, in taste answerable to the food whereon they feed' (Hawkins [1622] 1847: 106). The facility of these men to consume an unknown seabird must be linked with the acceptance of a considerable number of avian species as edible in their culture; it was not a survival mode response.

Eating albatross meat remained in use on European ships until, at least, the second half of the nineteenth century. In January 1769, the officers of James Cook's vessel tasted the specimens killed by Mr.

Banks who went out in a small boat to shoot birds. They enjoyed them: 'The albatrosses we skinned, and having soaked them in salt water till the morning, we parboiled them, then throwing away the liquor, stewed them in a very little fresh water till they were tender, and had them served up with savoury sauce; thus dressed, the dish was universally commended, and we eat of it very heartily even when there was fresh pork upon the table.' (Hawkesworth 1773: 67). Around hundred years later, the crew of French sailing vessels still caught albatrosses with hooks. They considered that the main benefit of this pastime was obtaining raw materials for small-scale craft objects (using the bones, skin, etc.). However, they still ate with pleasure the albatross meat, once marinated in vinegar and cooked with wine, onions and spices (Dujarric 1898).

Figure 2: Wandering Albatross (*Diomedea exulans*)

Photograph © Frédéric Duhart

The coexistence of human societies with wild bird populations is multiform. There is not necessarily a direct interaction between them, even if they are strongly linked together because they act in the same ecosystem. In the mid-twentieth century a couple of Brazilian barn owls (*Tyto alba tuidara*) that took shelter on the roof of a building

located on the campus of the *Centro Universitário do Triângulo* (Uberlândia, Mina Gerais) almost never met students; but the content of their regurgitated pellets shows they possibly avoided the cases of Hantavirus Cardio-Pulmonary Syndrome inside the university community, which killed a notable number of specimens of *Necromys lasiurus*, the main reservoir of hantavirus in the region (Magrini and Facure 2008). Some birds are very 'discreet' neighbours. In the Okinawa Island, 1200 km^2 with a current human population of 1.3 million, the Daitō bush warbler (*Cettia diphone restricta*) was identified in 2002, (sixty years after its presumed extinction), because it was generally confused with other subspecies of the great singer *Cettia diphone* (Kajita, Mano and Sato 2001-2002). In all cases, logically, any cohabitation relationship only stops if the human community or the bird species population disappears from the ecosystem in question.

Even if *The Birds* by Alfred Hitchcock is still a fabulous cinematographic nightmare, we can identify situations in which it is *Homo sapiens* who disappears. In 1974, for instance, humans left the industrial city they had built on Hashima Island. For the local populations of seabirds, it was the end of 85 years of cohabitation with permanent human inhabitants. More frequently, mankind does not withdraw from an ecosystem: instead one human community replaces another, after the collapse of the preceding one (ethnocide, natural phenomenon) or because the culture of the majority of its members was undergoing so profound a transformation (by creolization, acculturation, innovation, etc.) that it became another community. In the Caribe islands, for instance, the birds did not stop cohabiting with human beings during the sixteenth century. However, their rich relationship with the Taíno societies was coming to an end, and the symbolic sense these native people gave to the stone figures of owls they had sculpted was lost. The techniques they developed to capture parrots or palmipeds and their recipes to cook rails or boobies were, at best, dissolved in the emerging creole culture, at worst, totally forgotten, etc. (Torres Etayo 2006).

There are numerous cases, in which the coexistence stopped because the bird population vanished. Such species extinction could be local. During recent decades, the green peafowl (*Pavo muticus*, Figure

3) became very scarce in its native range and disappeared from regions where it was common in the past. In Laos, where local traditions of adult peafowl-hunting and egg-collecting to obtain fattened peafowl chicks were important and seem to be significant factors in the rarefaction of the species, this change also meant the disappearance of a doubly appreciated food source in many villages, because each green peafowl specimen had provided a large quantity of tasty meat (Evans and Timmins 1995).

Species loss could be definitive, when the last specimen in the world passed away. Certain birds were doubtless extinct because some human groups hunted them for food. In New Zealand, all the moa

Figure 3: Green Peafowl (*Pavo muticus*)

Photograph © Frédéric Duhart

species soon disappeared after the Polynesian settlement, around 1300 AD. It is possible that these native birds did not survive more than a century after the arrival of *Homo sapiens*. Of course, some degradation of their habitat by human beings could also have played a role in their decline, but their exploitation as a food source was essential in their disappearance process (Holdaway and Jacomb 2000; Allentoft et al.

2014). Doubts exist about the details of moa hunting and of treatment of their meat after butchery, but the common fate of nine species shows an interesting, even if not sustainable, adaptation by the Polynesian settlers to the existence of unknown birds, including ones that necessarily reached sizes that had never been seen before: a North Island Giant Moa female probably weighed between 76 kg and 242 kg and stood 1.2-1.9 m. high to the middle of their backs (Anderson 2003; Hume and Walters 2012)[1]. In other insular ecosystems where there were few predators, the coming of people who had a strong hunting culture could also eliminate species that they regarded as interesting food sources. In Uvea, for instance, the regular hunting for supplying meat by the first human inhabitants of the island seems to be the sole cause of the extinction of an endemic pigeon, *Ducula david* (Hume and Walters 2012).

In the cases of other species, the fact that humans intensively hunted them for food was only a partially important factor in the extinction process. In Mauritius, the Dodo (*Raphus cucullatus*) was killed for the pot from the takeover of the island by the Dutch East India Company in 1598 to its extinction, no later than 1693. Among the ship crews and the island garrison members, its meat was apparently considered as a rather poor food, even if some pieces were more popular. In the first description of this bird, written just after the admiral Van Neck came back to the Netherlands in 1599: 'they were tough in eating, how long time soever they sod; yet the crop and breast were very good meat' (Parish 2013: 137). Nevertheless, we cannot have any exact answer to the question of the cultural views of the dodo flavour by the Dutch sailors and soldiers: the first name they gave to the species was quite ambiguous, and it was subject to divergent interpretations even back in the seventeenth century. Was the Dodo named '*Waghvogel*', 'Nauseous bird', because its meat was bad or because it was so rich that people ate its meat until feeling they could

[1] The taxonomy of moas is complex, but the existence of 9 species is generally admitted: North Island Giant Moa (*Dinornis novaezealandiae*), South Island Giant Moa (*D. robustus*), Little Bush Moa (*Anomalopteryx didiformis*), Broad-billed Moa (*Euryapteryx curtus*), Stout-legged Moa (*Pachyornis geranoides*), Crested Moa (*P. australis*), Heavy-footed Moa (*P. elephantopus*), Eastern Moa (*Emeus crassus*) and Upland Moa (*Megalapteryx didinus*). Only the smallest of these species presented maximum weights that specimens of Southern Cassowary (*Casuarius casuarius*) can also reach. A cassowary female generally reaches weights between 60-70 kg; 86 kg have been recorded for a quite large specimen (Romer 1997).

not eat more? Whatever the answer to this question is, the archaeological investigation invites one to consider that the Dutchmen hunted the dodos in reasonable quantity, but without frenzy. Nevertheless, the escaped slaves, the other group of human beings who lived on Mauritius during this time, were notably interested in dodo hunting. Consequently, there was a significant impact on the dodo population through human hunger. But, the black rat (*Rattus rattus*), the pig (*Sus scrofa*) and other species that arrived on Mauritius with *Homo sapiens* certainly also played key roles in the extinction of the dodos (Parish 2013).

In the case of the passenger pigeon (*Ectopistes migratorius*, Figure 4), the destruction of the northeastern American deciduous forests that were central to its life cycle was determinant in the process of their extinction. Massive hunting for food or for other purposes was much less significant in this phenomenon, even if the killing methods used at the time when the species disappeared could have achieved it quickly (Planhol 2004).

Figure 4: Passenger Pigeon (*Ectopistes migratorius*)
Photograph © Frédéric Duhart

The vanishing of enormous flocks of passenger pigeons meant the end of a food with a long history. During centuries, these birds were consumed by the Native American tribes who coexisted with them. In the Southeastern United States, for example, there are quite early evidences of passenger pigeon eating even if their remains are much more numerous in sites dated to 700-1000 AD: a bone of a specimen of this species has been identified from the faunal assemblage of Dust Cave, Alabama, 16,500-13,500 BP (Greenberg 2014). The ways of using pigeons could have differed according to the Indian nation or to the region. In the nineteenth century, the Winnebago people, who lived in a nesting area, ate 'broiled or steeped' squabs within the framework of a chief feast. These young birds were poked out of their nests with long poles or gathered on the ground after the storms (Radin 1915-1916). In the places where the pigeons did not breed, only adult specimens were logically consumed. In the early eighteenth century, the native inhabitants of Carolina ate such pigeon meat fresh, but carefully preserved their fat, 'using it with pulses, or bread, as we do butter' (Lawson 1709: 44-45).

In the European settlements, the meat of the passenger pigeon was soon appreciated. In 1737, for instance, John Brickell wrote that 'its flesh is very nutritive and excellent food'. The passenger pigeon quickly took on an important role in lower class diets, in which other fresh meat was scarce. In Pennsylvania and in other States where it nested, its comeback was perceived as an excellent nutritional announcement: 'Men in lumber camps and families living in the mountains, whose principal diet during the winter was salted, smoked or pickled meats, regarded the coming of the wild pigeons as a godsend, for then they would have a supply of fresh meat' (French 1919: 206). When the birds arrived in spring time, the rural lower classes knew that they could eat tender pigeon meat during several months. Of course, even if it was a product valued by those who consumed it when they wanted to, eating pigeon of necessity could get boring: 'When the young birds left their nests they were extremely fat, and their flesh delicious, only, as every one ate pigeons all day, and every day, they palled upon the taste, and campers soon began to look upon squabs as rather coarse and common fare. However, everybody was ready to eat squabs again when the birds returned.' (French 1919: 48).

In the towns of the eastern United States, the markets were abundantly supplied with quite affordable passenger pigeons. At the end of the eighteenth century, the passenger pigeons could be sold on certain days at 'fifty for one shilling' in New York (De Voe 1867: 175). Consequently, these birds took on a role in the diet of the urban lower classes. At the same time, they could be served on bountiful tables, because they were a tasty food. In the 1870s, squabs appeared on the menu of fashionable restaurants as 'a delicious tid-bit at fancy prices' (Roney 1907: 81). The passenger pigeon and a lot of other birds that were once considered good to eat are now only good to think about. When a bird used as food by human beings vanishes, it is not only an avian species that disappears, it is also a chapter of the history of our species that irredeemably ends.

Humans, the predator: eggs and meat for food

The actions that allow human beings to obtain food from wild birds are mostly predatory ones. The opportunistic collection of specimens found severely injured or even freshly dead constitutes a quite marginal phenomenon, but this must not be forgotten, even when considering modern Western Europe. Remembering her youth, for instance, a woman born on 1865 in the Casteljaloux region (Lot-et-Garonne, France) confessed that her family members used to pick up the shot common wood-pigeons (*Columba palumbus*, Figure 5) they found in the woods and enjoyed eating them (Bourras, 1998). To avoid a misreading of their delight, I should mention that this migratory bird, locally '*paloume*' or '*palombe*', was greatly appreciated for a long time in southwest France, as it continues to be today.

Gathering eggs for food appeared early in the history of humanity. Despite the problem of the long-term conservation of eggshells and the difficult interpretation of such archaeological remains, strong evidence of human consumption of eggs was found in certain prehistoric sites. In Hauterive-Champréveyres (Switzerland), fragments of two or three Anatidae eggs, probably swan's eggs, were identified in an open-air camp, dated around 13,000 BP (Laroulandie 2009). Logically, this predatory practice would have happened more or less regularly, and more or less intensively for numerous bird populations throughout the world.

Even if it is necessary not to exaggerate the possible incidence of such consumption in the extinction of these famous species, it is notable that the first human inhabitants of Madagascar certainly ate some eggs of the elephant birds (*Aepyornis spp.* and *Mullerornis spp.*), known to be the largest eggs laid during the Quaternary period (Goodman and Jungers 1992). Because of the annual reproductive cycle of a lot of species, wild bird eggs were frequently a seasonal food possibility.

Figure 5: *Palombe* (*Columba palumbus)* and *Salmis de palombe*
Photographs © Frédéric Duhart

Let us consider a few examples from the beginning of the twentieth century. May was the month in which fried and boiled seagull eggs (*Larus spp*.) contributed to the diet of the families settled on the Great Blasket Island, Republic of Ireland (Lysaght 2000). In December, boiled flamingo eggs were sold in a notable quantity in North Chilean cities like San Pedro de Atacama or San Francisco de Chiu-Chiu, brought by native people who exploited mixed colonies of *Phoenicoparrus jamesi, Phoenicoparrus andinus* and *Phoenicopterus chilensis* (Bittman 1988, Figure 6).

For their part, during the spring the inhabitants of the Falkland Islands used to collect eggs laid by various bird species. Those from the kelp gull (*Larus dominicanus*) were 'considered rather better' than those of the three penguin species of which the eggs were massively collected, the rockhopper penguin (*Eudyptes chrysocome*), the gentoo penguin (*Pygoscelis papua*, Figure 7) and the Magellanic penguin (*Spheniscus magellanicus*).

Islanders also consumed eggs from some Anatidae: the Patagonian crested duck (*Lophonetta specularioides specularioides*), the yellow-billed teal (*Anas flavirostris flavirostris*), the Falkland steamer duck (*Tachyeres brachypterus*), etc. (International Business Publications 2014). In this territory where the food on offer was restricted, some of the penguin eggs were pickled and preserved to extend by several months the period in which they could be eaten (Beck 1917).

Figure 6: Chilean Flamingo (*Phoenicopterus chilensis*) on its nest
Photograph © Frédéric Duhart

Another notable case of massive consumption of a wild avian species in a European colonial settlement can be found in South Africa. There, the egg provider was the African penguin (*Spheniscus demersus*). Early on, its eggs, hard-boiled, became a local delicacy. For instance, Mrs Duckitt in her *Hilda's Diary of a Cape Housekeeper* invited to prepare a 'very nice' savoury (1902:196). Until the ban of its gathering and, by consequence, its official exclusion from the food possibilities, this product, which had 'a strong seafood taste and smell', was a perfect example of a local resource appreciated by local consumers (Davidson 1999: 712).

Figure 7: Gentoo Penguin (*Pygoscelis papua*) and its eggs
Photographs © Frédéric Duhart

The case of the undoubtedly most specialised food that birds can provide for humans is quite different: edible bird's nests have long been appreciated mostly in certain parts of continental China and yet mainly harvested in the Southeast Asian regions where local traditions of their consumption are almost non-existent (Simoons 1991, Figure 8)[2].

Humanity has used a considerable number of 'acquisition techniques' to catch birds (Leroi-Gourhan 1945). They can be classified in two categories that make sense from an elementary food science perspective. In the first one, a well-managed hunting action must kill the animal; in the second one, the hunting action is aimed at catching the bird alive. Among the first category of practices we can find death-traps. In Spain, for instance, several versions of the widespread stone crush trap were traditionally used to stun, according to locations, red-legged partridges (*Alectoris rufa)*, Eurasian jays (*Garrulus glandarius*), common blackbirds (*Turdus merula*), calandra

[2] Four swiftlet species construct edible nests: those from *Aerodramus fuciphagus* and *A. germani* are 'white nests' only made with saliva; those from *A. maximus* are 'black nests' that include feathers; those from *A. unicolor* are made with saliva, feathers and vegetal elements (Lau and Melville 1994).

larks (*Melanocorypha calandra*) or other small and medium size birds (Domínguez Boza 2004).

Figure 8: Edible bird's nests in a Macao's pharmacy

Photograph © Frédéric Duhart

The hunting methods which are based on throwing projectiles or on the use of a firearm also fall into this category. In the context of the French nocturnal hut-shooting, for instance, the rapid death of the birds hit by pellets is a necessary condition for a successful hunt, because a palmiped with minor injuries easily hides itself and then it is lost (Rocher 1977, Figure 9).

Gastronomically speaking, the technological, nutritional and sensory qualities of the meats, that these acquisition techniques provide, can only be modified because some effects of the putrefaction process or of the application of a culinary technique. Of course, such methods of modification of the meat could be used. In Western Europe, as the French word '*faisandage*' suggests, the pheasant (*Phasianus colchicus*) and other game birds were classically hung, fully feathered, to be submitted to a more or less long ageing process (Figure 10). In 1570, for instance, Bartolomeo Scappi recommended a period of six days before cooking a pheasant in winter and of one day and a half in summer; a wild goose (*Anser anser*) had to stay hung for at least four

days. In most countries, long *faisandage* fell into disuse during the twentieth century, species after species.

Figure 9: Hunting hut (Tarnos, New Aquitaine, France)

Photograph © Frédéric Duhart

Figure 10: Pheasants (*Phasianus colchicus*)

Photograph © Frédéric Duhart

In France, one of the last game birds frequently hung for ageing is the Eurasian woodcock (*Scolopax rusticola*, Figure 11). In 2007, an expert on such hunting still advises eight days or more during which one should wait for a shot specimen of this species for the right moment for it to be roasted (Denuc). Nevertheless, for a long time, some extreme *faisandage* practices concerning the woodcock had been condemned by the highest gastronomical authorities.

Figure 11: Eurasian woodcock (*Scolopax rusticola*)
Photographs © Frédéric Duhart

In *Larousse Gastronomique*, for instance, Prosper Montagné had harsh words for the 'so-called woodcock lovers who only appreciate it when it is badly decomposed': an extreme *faisandage* is a 'gastronomical error, frequently imposed by snobbism' (1938: 460). Defending the idea that a bird, hung for a very long time, was tasty was a snob attitude because it claimed, without distinction, to be according to the first gastronomical writers, such as Brillat-Savarin or Grimod de la Reynière at a time when recent hygienic obsessions and fears had radically changed the criteria that made a wild meat tasty or disgusting.

When Daniel Boulud prefers bathing the specimens of Red Grouse (*Lagopus lagopus scotica*) in 'a milk marinade infused with juniper, orange peel and herbs' instead of using the traditional method of hanging the bird 'to accent their flavour' and, if necessary, to make them more tender, he favours the technological way of modifying *post-mortem* the intrinsic qualities of a wild bird meat (2013). Such recipes have existed for a long time in the French culinary practice: Simin Palay advised one to soak the hazel grouse (*Tetrastes bonasia*) in milk before roasting it (1951).

For their part, the Inuit communities developed several ways of processing bird meat. In the 1980s, those of Northern Quebec used the cold temperatures to transform pieces of fresh killed common eider (*Somateria mollissima*) in '*quartaq*' – frozen fresh meat (Roué 1996). In Greenland, dovekies (*Alle alle*) were traditionally used to prepare *Kiviaq*, a fermented product obtained by storing a seal skin full of hundreds of whole birds during several months in a stone cache (Johansen 2013).

With the second category of hunting techniques, those that allow the capture of living birds, there are more opportunities to modify the intrinsic qualities of the bird meat before eating it, as the case of the ortolan bunting (*Emberiza hortulana*) perfectly demonstrates. Captured using a cage-trap such as the Gascon '*matole*', this bird, which weighs around 24 grams on average, when it is caught, it can be fattened for several weeks fed mainly with foxtail millet (*Setaria italica*) and turned into a fat ball that weighs around 35 or 40 grams! (Duhart 2002, Figure 12).

Fattening up wild birds caught using a non-lethal method is a practice that appeared early in some human civilizations. Ancient Egyptian iconography shows hunters who carry living ducks, flocks of cranes, caged palmipeds, etc. At least some of these examples probably reveal that birds could be captured and fattened before their slaughtering. In *De re rustica*, Varro described in detail the aviaries where thrushes (*Turdus spp.*) and another species are kept to be fattened. His text describes another advantage of catching living birds. If proper precautions are taken, the captivity can be an economical and practical way to store them for a long time ([1st century] 1864).

Figure 12: Ortolan Bunting (*Emberiza hortulana*) and fattening cage
Photographs © Frédéric Duhart

The category of acquisition techniques that I just mentioned offers more opportunities than some others, but the human groups that employ them have to decide if they are interested or not, while taking the hunted species' behaviour or other criteria into consideration. For instance, birds caught alive in a net can be immediately killed, as generally occurs with the Eurasian skylarks (*Alauda arvensis*) captured by the '*cassayres d'alaoudes*' ('Skylark hunters') on the Gascon littoral (Geny-Mothe 2000, Figure 13).

Figure 13: Skylark hunting with nets (Tarnos, New Aquitaine, France)
Photograph © Frédéric Duhart

Human societies and domesticated birds: forms of coevolution

Human groups can develop special relationships with a few species by domesticating some of their populations. Such a phenomenon occurs in a rapprochement between specimens and persons who try to control

their reproduction, growth and frequently some behavioural traits in ways that they want. As shown in the previous chapter by Wulf Schiefenhövel (this volume) in his reference to the hen (*Gallus gallus*), the first objective of certain bird domestication processes was not necessarily food production. The Muscovy duck (*Cairina moschata*) was probably first bred as a pest-control bird in some of its places of domestication (Angulo 1998).

Nowadays, the results of centuries of coevolution with humanity are impressive when we consider almost all the domestic bird stocks. There are over than 350 recognised breeds in the current population of domestic pigeons. All are offspring of the rock pigeon (*Columba livia*) (Shapiro and Domyan 2013). Not all the breeds were selected for meat production, but when they were, the statistics speak for themselves. While a wild rock pigeon weighs around 300 grams, a male '*Cauchois*' weighs around 800-850 grams and a '*Romain*' one is heavier than one kilogram (Richert 1980, Figure 14)!

Figure 14: '*Cauchois maillé rouge avec bavette*' Pigeon
Photograph © Frédéric Duhart

The intentions of goose breeders varied widely according to different areas of Europe. Consequently, the local populations of geese developed, under the human empirical work of selection for different qualities. In southwest France, the peasant women wanted to obtain

birds that were able to produce after their force-feeding an abundant quantity of fat and meat, to gain the heaviest liver possible. The geese that resulted from their patient efforts could be feathered giants. At the beginning of the twentieth century, geese and ganders, that respectively weighed around 8 and 10 kilograms before their force-feeding period started, were usual in Gascony. To compare statistics: a greylag goose (*Anser anser*), that weighs more than 3.6 kilograms, is a huge specimen.

The geese from southwest France also developed an aptitude for the production of foie-gras much higher than those of the numerous breeds selected to be roasted (Figure 15). In 1999, within the framework of an experiment, the fat livers obtained from Polish geese weighed 420 grams on average and those from 'Landaise' geese, 683 grams on average (Duhart, 2009).

Figure 15: '*Grise du Sud-Ouest*' Geese and goose foie gras
Photograph © Frédéric Duhart

The phenotypic diversity of the domestic hen is also amazing (Figures 17). The main ancestor of this bird, the red junglefowl (*Gallus gallus*) is a medium size bird[3]. The cock weighs between 670 and 1450

[3] Until 2008, the domestic hen was commonly regarded as the domestic form of the Red Junglefowl (*Gallus gallus*); but, after the publication of a study on the 'yellow skin gene' probably originated from the grey junglefowl (*Gallus sonneratii*), the debate on the origin of the domestic hen re-opened (Eriksson et alii 2008) (Figure 16).

grams, the hen 485-1050 grams. It lays around 10-15 eggs per year. We can compare these data with the performances of a heritage breed chicken today, e.g., the 'Raça Prat' from Catalunya. Its speciments weigh 2.5 - 3.5 kilograms (for the cock) and 2 -2.5 kilograms (for the hen). Its egg production is about 160 per year.

Of course, we could find a lot of heavier or productive breeds. It is interesting to note that human beings also selected chicken breeds of which measurements are less than those of the junglefowls, because they were interested in having such little birds. In Catalunya we found, for example, the 'Enana flor d'Ametler' hen: its males weigh around 800-1000 grams and its females 700-900 grams (Fernández Rodríguez et al. 2009).

Figure 16: Left: Red Junglefowl (*Gallus gallus*),
Right: Grey Junglefowl (*Gallus sonneratii*)
Photographs © Frédéric Duhart

One bird exemplifies that coevolution can produce fewer effects on the genotype while more visibly on the phenotype of the birds: the Guinea fowl (*Numida meleagris*). Until well into the twentieth century, there were no real efforts of selection regarding this bird (Lamblard 2003 and 2014). Nowadays, its meat is still a delicacy or even an exotic food in numerous countries of the western world. However, in France, it is a common poultry, found in supermarkets throughout the year. This ordinary Guinea fowl offer is complemented by capons at Christmas time from the early 1990s (*Agreste Conjoncture* 2011, Figure 18).

Figure 17: Phenotypic diversity of *Gallus gallus domesticus*
Birds from Altos de Chiapas, Mexico
Photograph © Frédéric Duhart

Figure 18: Guinea fowl capon, PGI Landes
Photograph © Frédéric Duhart

The domestication of birds was never accompanied by the disappearance of the wild populations and, in the case of several species, animals that escaped out of human control could found prosperous feral stocks. Such phenomena produce situations of coexistence that could complicate the perception of a species by the human communities. In the Netherlands a collision between various representations of the goose occurred when the question arose of the management of a considerable resident stock of feral greylag geese

(Klok et alii 2010; Higgins 2015). The possibility of eating a domestic specimen or a wild one of a same avian species frequently led to dietetic and gourmet considerations (Figure 20). Indeed, it was difficult to accept they were 'similar', taking into account not only objective sensory data and nutritional considerations, but also symbolical representations of each one. In Western Europe, for instance, physicians and cooks had to form opinions early on about *Anas platyrhynchos*, at the same time as the wild northern mallard and the common domestic duck. In 1749, Menon regarded the wild specimens as tastier and healthier, because they breathed 'a purer air', ate 'healthier food, and were more active'. However, he mentioned the 'Rouen duckling' in several entries of his cookbook, giving clear evidence that this well-identified domestic product was appreciated by the gourmets.

Figure 20: Roasted wild duck served during a banquet, Oslo

Photograph © Frédéric Duhart

One hundred and fifty years later, Escoffier gave precedence to the domestic birds in his *Guide Culinaire*, presenting 24 recipes of (suffocated) 'Rouen duckling', 14 recipes of (bled) 'Nantes duckling' and just noting that the mallard could be roasted, served with orange juice sauce or prepared following a recipe he indicated for the suffocated domestic duck (1903). For those who desired enjoying the tenderness of civilised products and the tasty virtues of a waterfowl,

poultry breeders and gastronomes reached a compromise with the 'half wild duck' ('*canard demi-sauvage'*)!

Conclusion

Birds have contributed with their eggs and meat to human diets for millennia. In the modern world, billions of poultry are bred and millions of wild specimens are hunted each year to satisfy our hunger. Some of these nourish people with low incomes; others are served in the most expensive restaurants. Of course, some highly selected domestic chicken, turkey and palmiped populations provide most of the avian products consumed. Nevertheless, their predominance should not obscure the local roles of heritage and unimproved poultry populations. Worldwide, a considerable number of wild bird species are regarded as possible food suppliers. In Metropolitan France, for instance, 65 avian species can be legally hunted and a few others are known to be targets of poachers. The relationships between *Homo sapiens* and bird populations are meaningful. They teach us a lot about our ways of existing in the world not only as societies, but also as individuals. In Landes, for instance, there are gastronomes who think their own immediate satisfaction is more important than the necessity of saving the Ortolan bunting from extinction!

References

Agreste Conjoncture (2011) Production et consommation de pintade en repli depuis plus de dix ans, malgré des atouts, *Agreste Conjoncture*, **152**: 1-6.

Allentoft, M. E., Hellerd, R., Oskamb, C. L., Lorenzen, E. D., Halec, M. L., Gilbert, M. T. P., Jacomb, C., Holdaway, R. N. and Bunce, M. (2014) Extinct New Zealand megafauna were not in decline before human colonization, *PNAS*, **111(13):** 4922-4927.

Anderson, A. (2003) *Prodigious Birds Moas and Moa-Hunting in Prehistoric New Zealand*, Cambridge University Press, Cambridge.

Angulo, E. G. (1998) Interpretación biológica acerca de la domesticación del pato criollo (*Cairina moschata*), *Bulletin de l'Institut français des études andines*, **27(1)**: 31-35.

Beck, R. (1917) Bird Life in the Falklands, *The American Museum Journal*, **17:** 445-460.

Belon, P. (1555) *Histoire naturelle des oyseaux*, Gilles Corrozet, Paris.

Bittman, B. (1988) Recurso y supervivencia en el desierto de Atacama. In Masuda, S. (ed.) *Recursos naturales andinos*, Tokyo University, Tokyo, pp. 153-208.

Boulud, D. (2013) *Daniel. My French Cuisine*, Grand Central Life & Style, New York.

Bourras, J.-G. (1998) *Nous, gens de la lande I*, Atlantica, Biarritz.

Brickell, J. (1737) *The Natural History of North Carolina*, Carson, Dublin.

Bruyérin-Champier, J. (1560) *De re cibaria. Libri XXII*, Sébastien Honorat, Lyon.

Buffon, C. de (1780) *Histoire naturelle, générale et particulière*, *XXII*, Imprimerie Royale, Paris.

Davidson, A. (1999) *The Oxford Companion to Food*, Oxford University Press, Oxford.

Dean, W. R. J. (2004) *Nomadic Desert Birds*, Springer Verlag, Berlin.

Denuc, J.-P. (2007) *La chasse de la Bécasse*, Editions Artémis, Chamalières.

De Voe, T. F. (1867) *The Market Assistant*, Hurd and Houghton, New York.

Domínguez Boza, M. (2004) *El Trampeo y Demás Artes de Caza Tradicionales en la Peninsula Ibérica*, Hispano Europea Editorial, Barcelona.

Duckitt, H. J. (1902) *Hilda's Diary of a Cape Housekeeper*, Chapman and Hall, London.

Duhart, F. (2002) Un mets de légende : l'ortolan dans le Sud-Ouest de la France au XVIII^{e} siècle. In *Du bien manger et du bien vivre à travers les âges et les terroirs*, Maison des Sciences de l'Homme d'Aquitaine, Pessac, pp. 211-220.

Duhart, F. (2009) *De confits en foies gras. Une histoire des oies et des canards du Sud-Ouest*, Elkar, Bayonne & San Sebastian.

Dujarric, G. (1898) *Chasses marines*, Firmin Didot, Paris.

Duveyrier, H. (1864) *Les Touaregs du Nord*, Challamel, Paris.

Eklund, C. R. (1956) Antarctic fauna and some of its problems. In Crary, A. P., Gould, L. M., Hulburt, E. O, Odishaw, H. and Smith, W. E. (eds) *Antarctica in*

the International Geophysical Year, American Geophysical Union, Washington, pp. 117-123.

Eriksson, J., Larson, G., Gunnarsson, U., Bed'hom, B., Tixier-Boichard, M., Strömstedt, L., Wright, D., Jungerius, A., Vereijken, A., Randi, E., Jensen, P., and Andersson, L. (2008), Identification of the Yellow Skin Gene Reveals a Hybrid Origin of the Domestic Chicken, *PLOS Genetic*, **4(2)**: 10.1371/journal.pgen.1000010.

Escoffier, A. (1903) *Guide culinaire*, Flammarion, Paris.

Evans, T. D and Timmins, R. J. (1995) The status of the Green Peafowl *Pavo muticus* in Laos, *Forktail*, **11**: 11-32.

Fernández Rodríguez, M., Gómez Fernández, Delgado Bermejo, J. V., Adán Belmonte, S. and Jiménez Cabras, M. (2009), *Guía de campo de las razas autóctonas españolas*, Ministerio de Medio Ambiente, Madrid.

French, J. C. (1919) *The Passenger Pigeon in Pennsylvania*, Altoona Tribune Company, Altoona.

Geny-Mothe, M. (2000) *La chasse aux oiseaux migrateurs dans le Sud-Ouest. Le droit face aux traditions*, PyréGraph, Aspet.

Goodman, S. M. and Jungers, W. L. (1992) *Extinct Madagascar. Picturing the Island's Past*, Chicago University Press, Chicago.

Hawkesworth, J. (1773) *An Account of the Voyages Undertaken by the Order of His Present Majesty for Making Discoveries in the Southern Hemisphere*, Volume 2, Strahan and Cadell, London.

Hawkins, R. ([1622] 1847) *The Observations of Sir Richard Hawkins, Kent in his Voyage into the South Sea on the year 1593*, Hakluyt Society, London.

Higgins, A. (2015) 'Goose Exterminator of the Netherlands Enrages Animal Rights Activists', *New York Times*, https://www.nytimes.com.

Holdaway, R. N. and Jacomb, C. (2000) Rapid extinction of the moas (Aves: Dinornithiformes): model, test, and implications, *Science*, **287**:2250-2254.

Hooker, J. D. (1855) *Himalayan journals. Volume II*, John Murray, London.

Hume, J. P. and Walters, M. (2012) *Extinct Birds*, Bloomsbury Publishing, London.

International Business Publications (2014) *Falkland Islands. Business Law Handbook*, Washington, International Business Publications.

Johansen, T. B. (2013) Foraging Efficiency and Small Game: The Importance of Dovekie (*Alle alle*) in Inughuit Subsistence, *Anthropozoologica*, **48**: 75-88.

Kajita, M., Mano, T. and Sato, F. (2001-2002) Two Forms of Bush Warbler *Cettia diphone* Occur on Okinawajima Island, *Journal of the Yamashina Institute for Ornithology*, **33**:148-167.

Klok, C., Turnhout, C. van, Willems, F., Voslamber, B., Ebbinge, B. and Schekkerman, H. (2010) Analysis of population development and effectiveness of management in resident greylag geese *Anser anser* in the Netherlands, *Animal Biology*, **60(4)**: 373-393.

Lamblard, J.-M. (2003) *L'oiseau nègre. L'aventure des pintades dionysiaques*, Imago, Paris.

Lamblard, J.-M. (2014) Plumage de pintade, sa coloration, ses fonctions, ses usages, *Ethnozootechnie*, **96**: 9-18.

Laroulandie, V. (2009) De la plume à l'œuf : exploitation des ressources aviaires au Magdalénien dans le sud de la France. In Fontana, L., Chauvière, F.-X. and Bridault, A. (eds) *In search of Total Animal Exploitation. Case Studies in Upper Paleolithic and Mesolithic*, J. & E. Hedges, Oxford, pp. 71-89.

Lau, A. S. M. and Melville, D. S. (1994) *International Trade in Swiftlet Nests*, Traffic International, Cambridge.

Lawson, J. (1709) *A new voyage to Carolina*, no publisher, London.

Leroi-Gourhan, A. (1945) *Milieu et technique*, Albin Michel, Paris.

Lysaght, P. (2000) Food-Provision Strategies on the Great Blasket Island: Sea-bird Fowling. In Lysaght, P. (ed.) *Food from Nature. Attitudes, Strategies and Culinary Practices*, Royal Gustavus Adolphus Academy, Uppsala, pp. 333-363.

Magné de Marolles, G. F. (1788) *La chasse au fusil*, Barrois, Paris.

Magrini, L. and Facure, KG (2008) Barn owl (*Tyto alba*) predation on small mammals and its role in the control of hantavirus natural reservoirs in a periurban area in southeastern Brazil, *Brazilian Journal of Biology*, **68(4)**: 733-740.

Menon (1749), *La cuisinière bourgeoise*, Paulus du Mesnil, Paris.

Montagné, P. (1938) *Larousse gastronomique*, Larousse, Paris.

Oberthur, J. (1971) *Gibiers de montagne*, Librairie des Champs Elysées, Paris.

Palay, S. (1951) *La cuisine du Pays*, Marrimpouey, Pau.

Parish, J. C. (2013) *The Dodo and the Solitaire. A Natural History*, Indiana University Press, Bloomington.

Planhol, X. de (2004) *Le paysage animal*, Fayard, Paris.

Radin, Paul (1915-1916) The Winnebago Tribe, *Annual report of the Bureau of American ethnology*, **37**: 35-506.

Richert, A. (1980) *Réussir la basse-cour*, Dargaud, Paris.

Rocher, C. (1977) *La chasse des canards*, Les éditions de l'Orée, Bordeaux.

Romer, L. (1997) *Cassowary Husbandry Manual*, Currumbin Sanctary Conservation Unit, Currumbin.

Roney, H. B. (1907) Efforts to check the slaughter. In: Mershon, W. B. (ed.), *The Passenger Pigeon*, Outing Publishing Company, New York, pp. 77-92.

Roué, M. (1996) La viande dans tous ses états: cuisine crue chez les Inuits. In Bataille-Benguigui, M.-C. and Cousin, F. (eds) *Cuisines. Reflets des sociétés*, Editions Sépia, Paris, pp. 171-186.

Scappi, B. (1570), *Opera dell'arte del cucinare*, A. Vecchi, Venice.

Shapiro, M. D. and Domyan, E. T. (2013) Quick Guide: Domestic Pigeons, *Current Biology*, 23, pp. 302-303.

Simoons, F. J. (1991) *Food in China: A Cultural and Historical Inquiry*, CRC Press, Boca Raton.

Thomson, D. R. (2007) Air-Breathing Visitors to Seamounts: Importance of Seamounts to Seabirds. In Pitcher, T. J., Morato, T., Hart, P. J. B., Clark, M. R., Haggan, N. and Santos, R. S. (eds), *Seamounts: ecology, fisheries & conservation*, John Wiley and Sons, Hoboken, pp. 245-251.

Torres Etayo, D. (2006) *Taínos: Mitos y realidades de un pueblo sin rostro*, Editorial Asesor Pedagógico, México.

Varro, M. T. ([1st century] 1864), *De re rustica*. In Nisard, D. (ed.), *Les agronomes latins*, Firmin Didot, Paris.

Vuillemier, F. (1996) Birds Observed in the Arctic Ocean to the North Pole, *Arctic and Alpine Research*, 28, pp. 118-122.

CHAPTER 3
EDIBLE OR DISGUSTING? NOTES ON THE CULTURAL VALUE OF BIRDS AMONG STUDENTS IN PARIS (FRANCE, 2011)

by Eric Garine, Katia Buissereth, Jonathan Chambon, Mohamed Essouci, Gaële Guillouet, Isaura Mancilla, Jean Wencélius and the *Ethnoscience class (Nanterre 2001)*

Introduction

The biological folk taxon 'birds' (French '*oiseaux*') does not seem to be perceived as a significant source of food by the students of a French university west of Paris, even though they frequently eat poultry or products made from poultry.

To investigate this paradox, the current study[1] aimed to:

1) Establish the content of the semantic category 'birds' in the ethnozoological knowledge system of the community studied. To examine the best known and most salient taxa of the bird category, and to investigate the features of this folk classification system.
2) To establish, among the best-known birds, which species are reckoned to be inedible, which considered as edible and which are eaten in practice.
3) To investigate the criteria underlying the non-edibility of some species of birds.

We can think of various reasons to account for the rarity of edible species in the students' folk encyclopaedia of birds.

- A first hypothesis involves the structure of the classification of birds. A special-purpose category does exist in both English and French which includes most of the edible species: 'poultry' (F. '*volaille*'). All the domesticated and edible items known as belonging to the 'poultry' 'intermediate category', in Berlin's terms (1992) might not be the most representative of the 'bird' category as a whole.

[1] All the investigations were made by undergraduate students following the 'ethnoscience' class at the University of Paris Ouest Nanterre. We wish to thank all the student-investigators for the quality of the data, the design of the interview protocols they have implemented and their insights regarding the preliminary interpretations of the results.

- Secondly, the interpretation should also account for the specificities of the ecology of the students in an urban post-industrial society where knowledge about living species is acquired through many other channels than direct experience.
- Thirdly, culinary skills and know-how implicated in the processing of dead animals are largely disconnected from knowledge about the biology and ecology of the species to be eaten.

Step 1: 'Birds' and 'birdy birds' in the ethnozoology of Nanterre's students

In almost all languages there exists a word with a semantic content similar to 'bird' (Brown 1979). In French the word '*oiseau*' is equivalent to English 'bird' and it is considered a taxon of the 'life-form' rank *sensu* Berlin (1992). It has been demonstrated that the definition of the current English 'bird' taxon is less ambiguous than any other 'life-form' taxon (Wierzbicka 1992); we consider that the same can be assumed for the French word '*oiseau*'[2]. However, the first task of the study was to uncover the semantic contents and boundaries of the bird category among the student community, and to assess which taxa were the most salient. To achieve this, we chose to use 'freelisting' interviews, an easy to use field method which has become a touchstone of the ethnographer's tool kit (Weller and Romney 1988, Bernard 1994, Borgatti 1999).

Methods

From 2009 to 2011, 198 French speaking students (120 women, 78 men) participated in the freelisting task. They had to write down the answers to the following question: 'Indicate, in the order they come to your mind, all the names of birds you know'[3]. Respondents were given three minutes to write down all known items. Freelists were collected in class, on the university campus and in various places frequently visited by Parisian students. Lists were collected through the same protocol by each student attending the 'Ethnoscience' course in the

[2] It might have been different if we had investigated a Spanish-speaking community using two different words '*ave*' and '*pajaro*' (Tarlowskia 2011).

[3] F. "*Indiquez, dans l'ordre dans lequel ils vous viennent à l'esprit, tous les noms d'oiseaux que vous connaissez*."

Anthropology Department of the University of Paris Ouest, Nanterre. Data were processed using FLAME software (Pennec et al. 2012).

Results of freelist analyses

After correcting spelling and controlling for synonymy we established a lexicon of 172 words for birds in the studied community. Frequency distribution of bird names' citation shows a classical structure with a few words cited by a majority of speakers and many items cited by a few individuals, sometimes only one (Borgatti 1999).

Examining this list in detail revealed some unexpected items. A few 'errors' ('*palourde*' English 'clam'), winged mythical animals ('*griffon*' E. 'griffin'; '*phénix*' E. 'phoenix') or disappeared life forms ('*ptérodactyle*' E. 'pterodactyl'). Some idiosyncratic formulations indicate the cultural value of birds, for instance 'Parisian mutant pigeon' (F. '*pigeon mutant parisien'*). The influence of popular mass media culture on ethnozoological knowledge is shown by the statement of cartoon characters ('*Titi*' E. 'Tweety', '*Bip-bip'* E. 'Roadrunner'), or the '*galinette cendrée'*, an imaginary species of game invented in a popular entertainment show broadcast on French television in the 1990s, *Les Inconnus.*

All these paradoxical terms were mentioned by very few subjects. As our endeavour is to explore the semantic content of the bird category as a collective and shared domain, the analysis deals exclusively with the terms cited by more than 10% of the student sample, which shortens the bird lexicon to 41 items (Table 1; Fig. 1), most of them being 'generic taxa' *sensu* Berlin (1992).

Discussion of Step 1

A striking result of our study is the strong similarity between the results found in the Nanterre student community in 2011 and those revealed by similar surveys in the 1980s (Dubois 1983, Dubois and Poitou 2002 and by the comparative and diachronic study carried out by Bueno and Megherbi (2009a and 2009b). Table 2 shows the results of a correlation analysis on the frequency of mention of bird names in the present study and in five other similar datasets. Starting from our own list of the 41 top-cited folk generics, we found a significant and positive correlation across studies on the relative frequency of mention of these items.

Table 1. Free listed Bird names cited by more than 10 % (N=198)

French Name	English translation	Frequency	Average rank	Sutrop Index*
pigeon	Pigeon	88.4%	4.7	0.186
aigle	Eagle	72.7%	7.2	0.100
corbeau	Raven	65.2%	7.0	0.093
rouge_gorge	Robin	63.1%	6.6	0.095
moineau	Sparrow	62.6%	6.1	0.103
perroquet	Parrot	57.6%	9.6	0.060
pie	Magpie	57.1%	7.2	0.079
mouette	Seagull	52.0%	8.4	0.062
hibou	Owl	40.4%	10.5	0.038
poule	Hen	37.9%	10.6	0.036
canard	Duck	37.9%	11.2	0.034
hirondelle	Swallow	36.9%	8.0	0.046
colombe	Dove	34.3%	9.6	0.036
faucon	Hawk	33.8%	8.7	0.039
chouette	owl 2	33.8%	11.7	0.029
vautour	Vulture	33.3%	10.8	0.031
pivert	green woodpecker	32.3%	8.9	0.036
colibri	hummingbird	31.8%	8.0	0.040
goeland	Gull	30.3%	10.3	0.030
merle	Blackbird	29.8%	6.9	0.043
flamant_rose	Flamingo	28.3%	12.3	0.023
pelican	Pelican	25.8%	12.7	0.020
cigogne	Stork	25.3%	10.2	0.025
autruche	Ostrich	25.3%	12.1	0.021
perruche	budgerigar	23.7%	10.1	0.023
cygne	Swan	22.7%	12.8	0.018
mesange	Tit	22.2%	7.6	0.029
albatros	Albatross	21.7%	9.4	0.023
tourterelle	turtle dove	21.2%	10.8	0.020
paon	Peacock	20.7%	9.8	0.021
rossignol	nightingale	19.7%	6.7	0.029
oie	Goose	18.7%	13.4	0.014
perdrix	Partridge	15.7%	9.1	0.017
canari	Canary	15.2%	9.1	0.017
dinde	Turkey	15.2%	13.8	0.011
buse	Buzzard	14.1%	11.5	0.012
heron	Heron	13.6%	12.1	0.011
toucan	Toucan	12.6%	13.4	0.009
faisan	Pheasant	12.1%	14.1	0.009
martin_pecheur	Kingfisher	11.6%	9.3	0.013
condor	Condor	11.1%	14.7	0.008
*Cultural saliency index, Sutrop 2001				

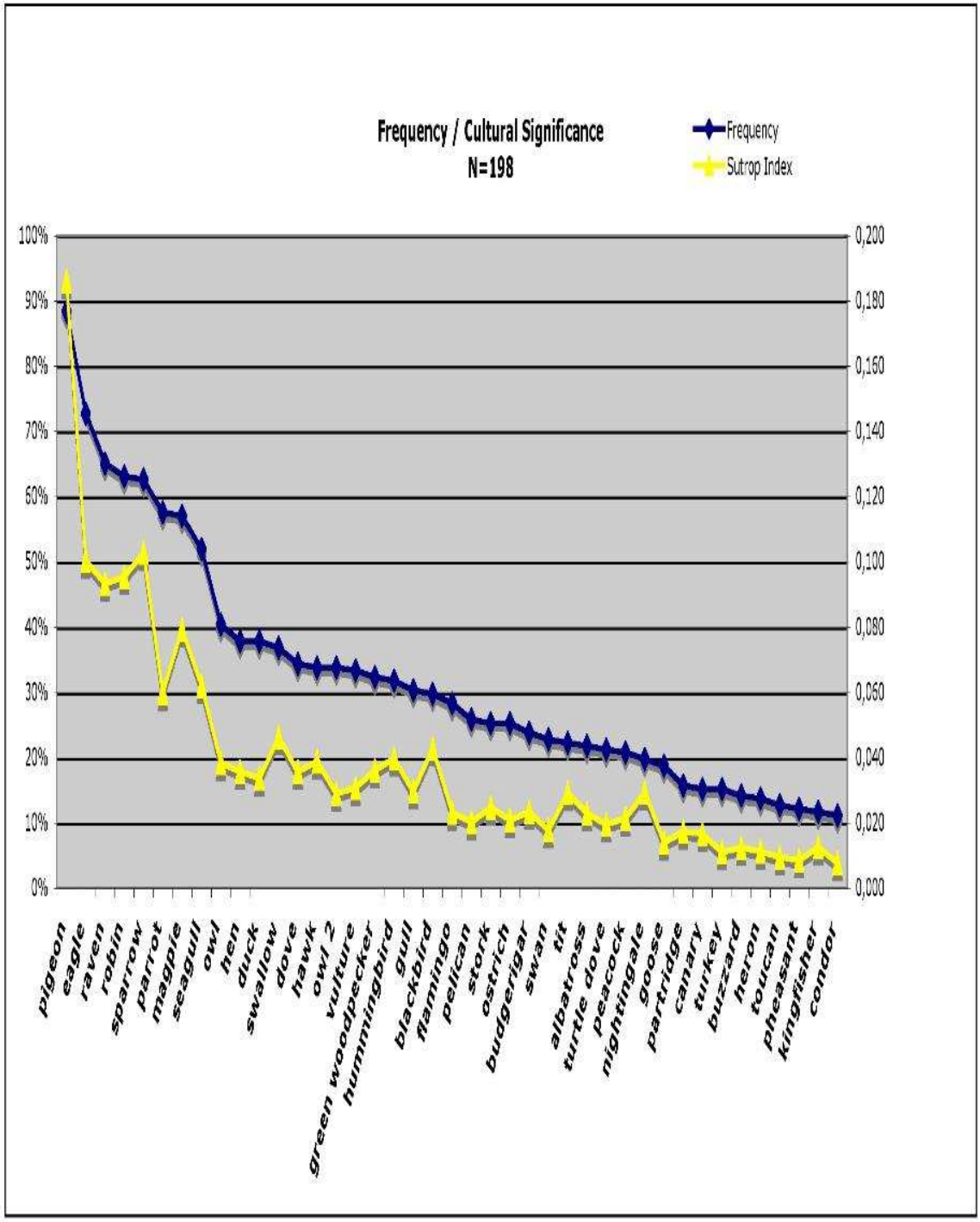

Figure 1: Frequency of mention of bird names and cultural value (Sutrop Index)

The list of typical birds elicited by our study does not show any peculiarities as compared to these surveys and the bird lexicon appears to be fairly stable across time.

Table 2: correlations of frequency citation of bird's names between datasets of 41 most cited birds' names

Pearson correlation α = 0.005

	Present Study	Dubois & Poitou	Bueno and Megherbi	Marchal & Nicolas's study	Léger et al.'s study	Van Overschelde et al.'s study
Present Study	1.00					
Dubois and Poitou	0.753***	1.00				
Bueno and Megherbi	0.889***	0.785***	1.00			
Marchal and Nicolas's study(2003)	0.840***	0.821***	0.935***	1.00		
Léger et al.'s study(2008)	**0.931*** **	0.766***	0.920***	0.873***	1.00	
Van Overschelde et al.'s study (i) (2004)	0.645***	0.485**	0.559**	0.507**	0.624***	1.00

*** < 0.0001
** <0.001

(i) English speakers

So few edible species…

A common-sense based examination of the elicited list of birds indicates that most of the taxa are not known to be edible and that most of the species are not common in urban dwellings where the students actually live. Among the 41 most popular species of birds, six are *a priori* known to be regularly eaten in the contemporary French food system: pigeon (F. '*pigeon*'), chicken (F. '*poule*'), duck (F. '*canard*'), ostrich (F. '*autruche*') and turkey (F. '*dinde*'). All these birds are domesticated and their meat can be found in most food shops and supermarkets. Four species are considered as game of different value: partridge (F. '*perdrix*'), pheasant (F. '*faisa*n'), duck (F. '*canard*')[4] and blackbird (F. '*merle*'). Swan (F. '*cygne*') and peacock (F. '*paon*') belong to the stereotype of mediaeval diet but they are hardly consumed nowadays. It is difficult to comment on the edibility of turtle doves (F.

[4] As this information was collected through freelisting it is not possible to assess firmly whether birds' names refer to domesticated or wild forms.

'*tourterelle*') and doves (F. '*colombe*'), and of a few other species. Even if some exemplars of these species are eaten by members of the studied community we assume this consumption to be insignificant. However, it was necessary to investigate more precisely which taxa are known, or thought, to be edible by the French students as well as which species are actually eaten.

Step 2. Students' judgement on birds' edibility and their actual consumption.

Two complementary surveys were realised to establish which species of birds are considered to be edible.

- A second freelisting task, using the sentence 'Indicate, in the order they come to your mind, all the names of edible birds you know'[5] as stimulus for elicitation. Twenty people were questioned (Fig 2). After the elicitation was finished we asked, for each cited taxon, whether the subject had ever eaten it in his/her lifetime and, then, in the past month.

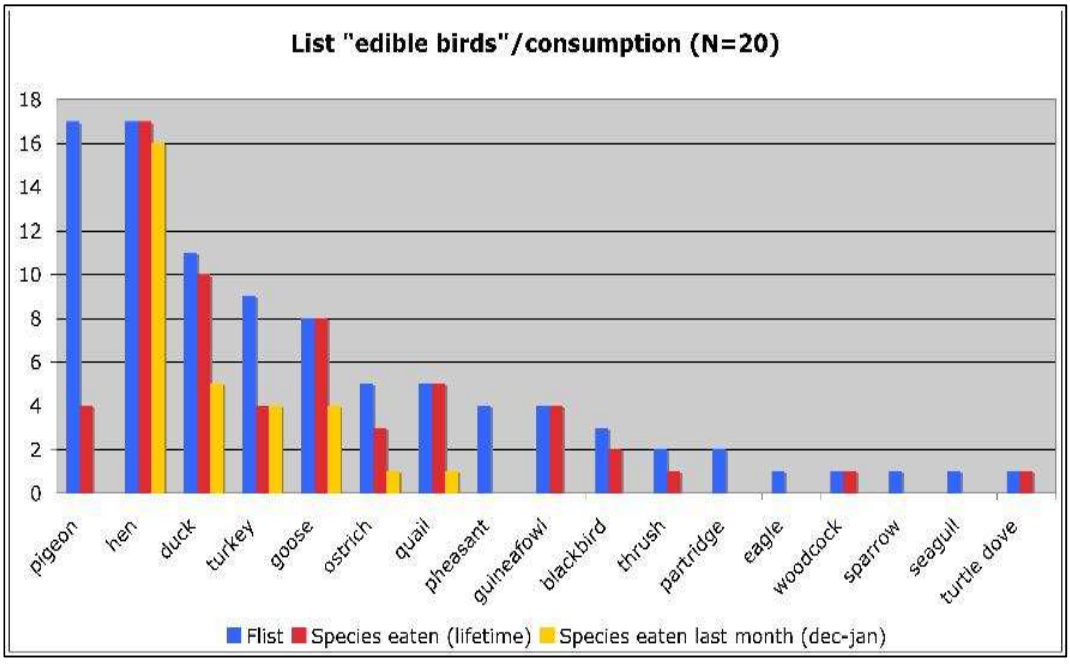

Figure 2. Freelisting of birds considered 'edible' by the students (N=20)

[5] F. '*Indiquez, dans l'ordre dans lequel ils vous viennent à l'esprit, tous les noms d'oiseaux comestibles que vous connaissez*'

The freelists were short (averaging 4.6 items) and only seventeen bird species were considered edible. Five are well known game species: pheasant (F. '*faisan*'), partridge (F. '*perdrix*'), thrush (F. '*grive*'), quail (F. '*caille*'), woodcock (F. '*bécasse*'). The last three were cited by very few subjects in the initial freelists of birds (2 to 4 %). Among these seventeen edible birds, twelve have been eaten once in a lifetime and only six species were consumed recently. Chicken is, as expected, the most common followed by turkey and goose[6]. Some of the cited items are intriguing: eagle (F. '*aigle*'), sparrow (F. '*moineau*') and seagull (F. '*mouette*') are said to be edible (by one subject) and these are not commonly eaten in France. This may reveal how ambiguous the notion of edibility may be or may result from the phrasing of the question (see below).

The case of pigeon is interesting. As the most prominent item of the bird category it is mentioned as an 'edible bird' as often as chicken is, but only 25% of the respondents have ever eaten some.

Another short survey was carried out to investigate the perceived edibility of birds. For each of the most cited taxa in the initial freelisting of 'birds' (see Table 1) 41 respondents were asked whether they thought each species was edible and if they had eaten some in the past month and in their lifetime. Results are in tune with the previous inquiry, but the diversity of answers given as to the edibility of so many species is intriguing (Fig. 3). One respondent indicated he had eaten jay (F. '*geai*') a low value game in some parts of France. Some answers about consumption of canary (F. '*canari*'), condor (F. '*condor*') or budgerigar (F. '*perruche*') are puzzling and probably due to inter-peer teasing between students during the interview interaction. Such answers however are quantitatively insignificant.

Eight types of birds were eaten at least once by more than 20 % of the sample. Two of which are prized game (pheasant and partridge) and all the others are the expected domesticated species (chicken, duck, turkey, goose, pigeon, ostrich), easily obtained in the Paris area (including ostrich). The weak consensus about the edibility of most of the remaining 40 species of birds we asked about is surprising. In fact,

[6] Many freelists were collected around Christmas time: geese and turkey are mostly eaten during this period of year.

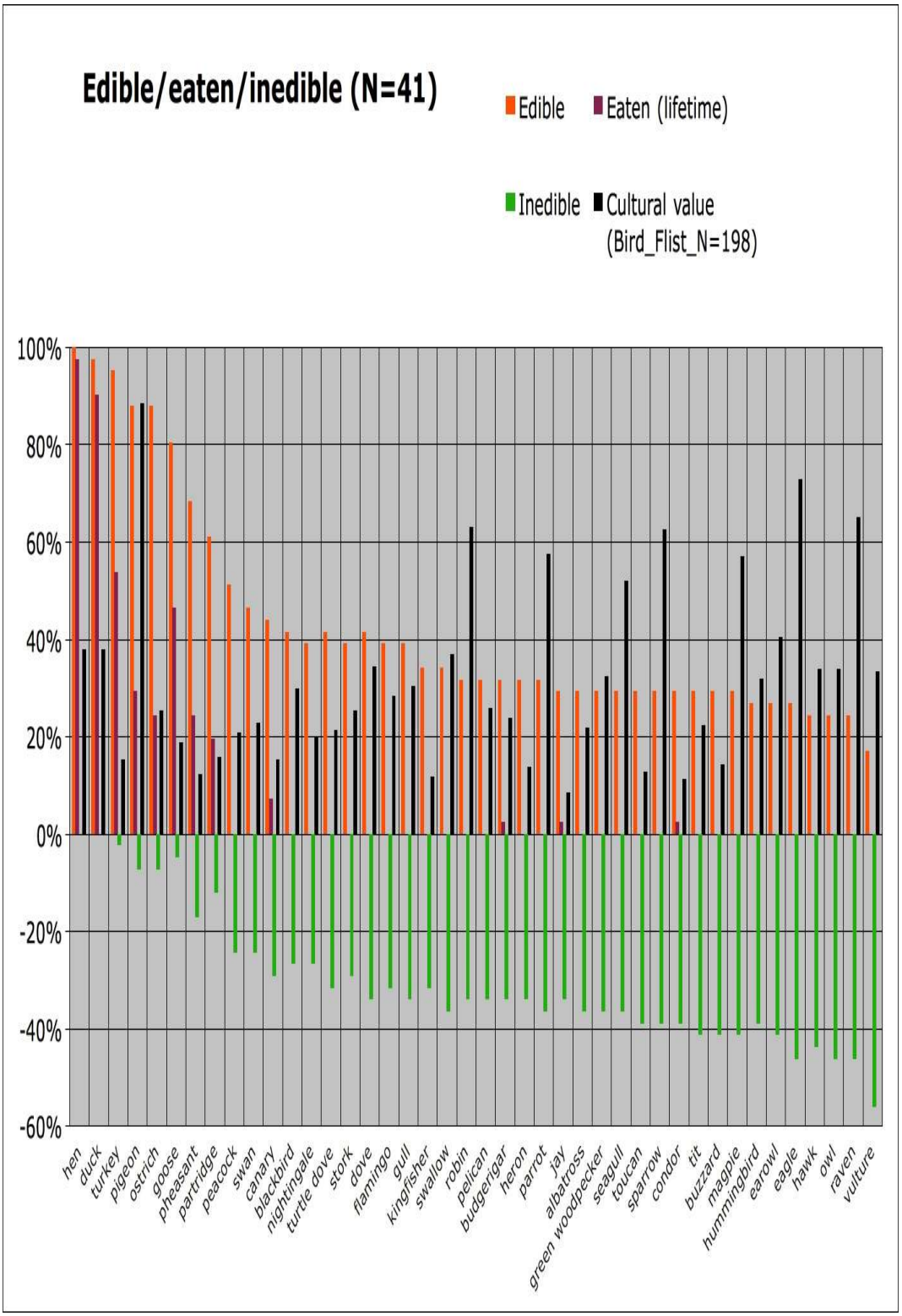

Figure 3: Frequency of responses regarding 'edible' and 'inedible', eaten at some point and considered of cultural value (N=41)

many species of birds were considered as edible by some students and inedible by others. This pattern may be the result of different factors:

i) methodological shortcomings (in depth interviews would almost certainly have given other results than the quick questionnaire we used);
ii) the ambiguity of the notion of 'edibility', or more precisely 'edible bird';
iii) the rather abstract knowledge contemporary urban dwellers have about natural species. Species like canary, kingfisher, buzzard, raven or even vulture can be thought of as edible, even though this was mentioned only by a small part of the sample. Many students answered that such and such species of bird is edible even if they personally wouldn't dare to consume it themselves. Many of these answers might mean that people don't think such species to be toxic and that they could be consumed in other societies or in periods of crisis such as war.

Step 3. Testing a 'you are what you eat' hypothesis to explain the edible/disgusting opposition in relation to the consumption of birds.

The fuzziness of the knowledge on birds' edibility is furthermore revealed by the data gathered from another survey which was designed to assess the knowledge students have about birds' ecology - mainly their feeding behaviours. It has long been shown that the principles of analogy and contamination – 'sympathetic magic' *sensu* Frazer (1981) – underpin cultural systems of food taboos (Meigs 1988) or the structure of disgust (Nemeroff and Rozin 1989, Rozin and Fallon 1987). Our aim was to assess whether birds known to eat disgusting things would be considered disgusting themselves and discarded from the 'edible bird' category.

Another quick questionnaire was set with the following questions (the name of the bird was written on a piece of paper)[7] :

1) Do you know this bird?

[7] F. "1/ *Est-ce que tu connais cette espèce ? 2/ D'après toi, que mange cette espèce d'oiseau* ? 3/ *D'après toi, est-ce que cette espèce est « mangeable » ou « immangeable » ? 4/ Est-ce que toi-même tu en as déjà mangé ? 5/ Si non, est-ce que tu refuserais d'en manger?"*

2) According to you, what does this bird eat?
3) According to you, is this bird 'edible/eatable' or 'inedible/not eatable'?
4) Did you ever eat this bird?
5) If not, why would you refuse to eat some?

Each person was asked these questions for 5 or 6 bird taxa. Each of the 41 most cited bird folk taxa was discussed with 10 different students. Seventy-eight subjects were interviewed on the university campus (fig. 4). As in the previous study, there appears to be little consensus concerning the edibility of birds.

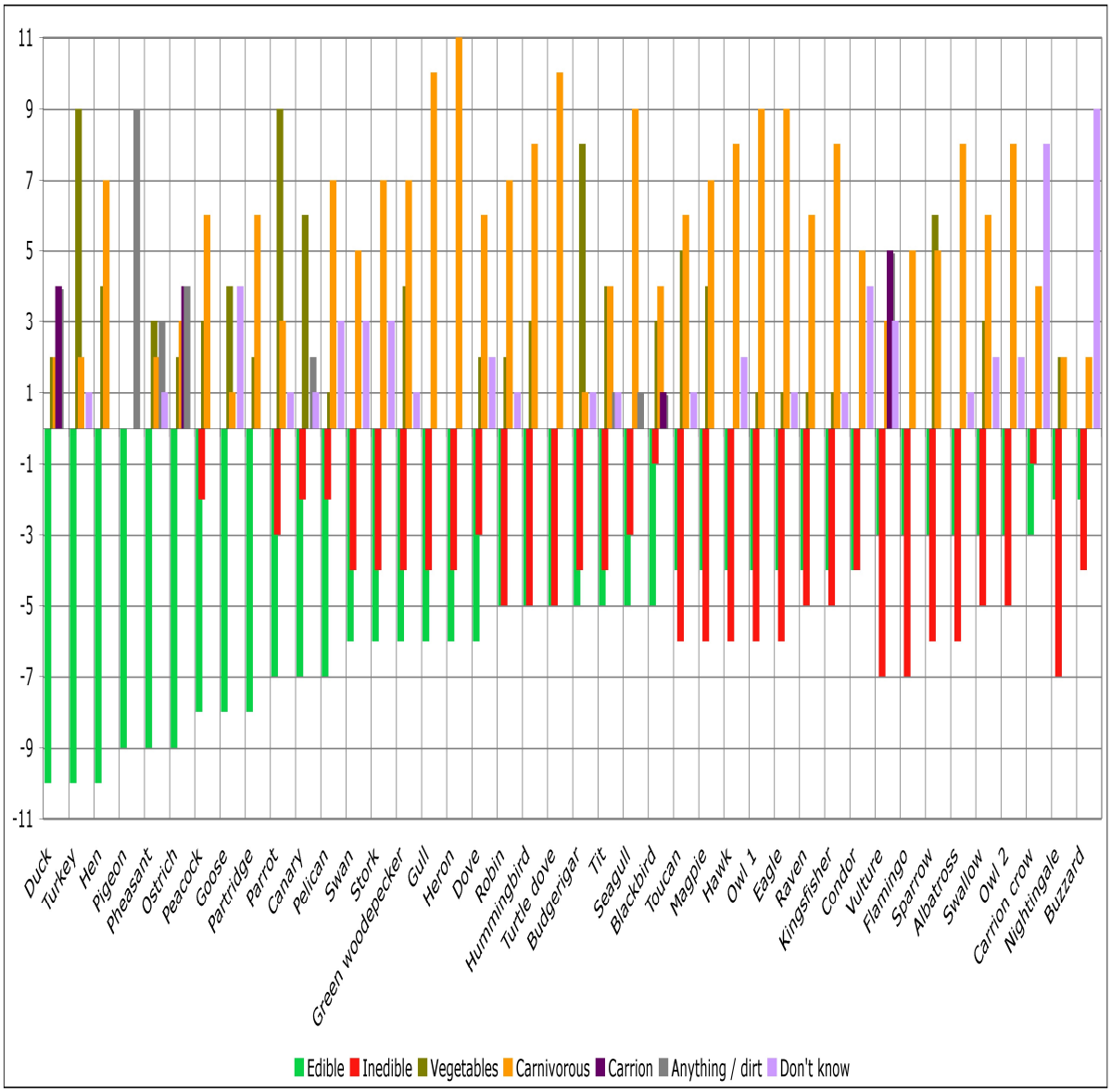

Figure 4: Graph showing frequencies of views of 'edible', 'inedible' in association with concepts of what the birds eat

Many species are thought to be potentially edible even if the subject would not eat it him/herself. A few marginal answers are unexpected (budgerigar or sparrow), but the bulk of answers depict a similar picture as the previous study: few citations of game species (blackbird, partridge and pheasant) and many of domesticated birds (chicken, duck, goose and turkey).

Knowledge of biology and ecology of birds is found sometimes to be contradictory and many views about their feeding behaviour have obviously not been acquired from scientific ornithology. For instance, the Columbidae (turtle dove, dove) are thought by many subjects to be mainly insectivorous. Pigeon is portrayed as a dirt-eater but it is reckoned as edible by most students. There is no straightforward correlation between their knowledge of birds' food habits and their perception of them as edible or not. Species thought to be carnivorous, insectivorous or carrion eaters can be claimed to be potentially edible.

Even though our sample is limited, it is stunning to realise how diverse and contradictory the criteria mentioned for the rejection of birds may be (Table 3). Some species are rejected for being too tiny or too difficult to catch, others are considered too beautiful or charming to be eaten. Moral values in relation to the conservation of biodiversity are assessed (even for species that are not under threat). Vegans, of course, discard all birds.

For the albatross (F. '*albatros*'), the vulture (F. '*vautour*') and the nightingale (F. '*rossignol*') one person says they 'should not be good to eat' (F. '*ne doivent pas être bons*'), without any other justification. Some cage birds, and commensal species which share the urban settings with human beings are said not to be edible because they are 'too close' to humans and this is the reason why they are rejected. This is in line with classical anthropological thinking about impurity (Leach 1964). The feeling of disgust is one of the various criteria for not eating some birds. For some students birds themselves are said to be '*dégueulasse*' (E. 'revolting'). Raven (F. '*corbeau*') is considered as such.

Table 3: Verbalisations for reasons of disgust (78 individual- abstracts)

Reasons for not to eating bird species	Student's phrasing	Folk taxa (examples)
Optimisation (small prey, difficult to catch)	because it's too small	nightingale, sparrow, swallow…
	because it's too difficult to catch	eagle, vulture, sparrow
Aesthetics	because it's so beautiful, so cute	Flamingo, swan, budgerigar, toucan, robin, pelican, owl, parrot…
Biodiversity conservation	We must protect biodiversity, it's a protected species	Flamingo, dove, condor, vulture, eagle, swan, nightingale, pelican,…
Religious reasons	Vegan	Any
Personification, symbolic value		Albatross, canary, raven
Proximity, pets	I can see it every day; It would be like eating my dog; We are living together in towns,	nightingale, parrot, magpie, budgerigar
Non specified "traditional" reason	It's not our habits to eat it, it's not game, I don't know it, it's not edible…	seagull, hawk, vulture, flamingo, buzzard, albatross, raven, swallow, sparrow…
Disgust (non specified)	It's revolting	raven, vulture, nightingale, eagle, pigeon
Disgust (based on biology of birds)	eats insects, eats carrion, eats dirt, eats plastic bags…	seagull, vulture, raven, swallow, woodpecker

It is only for a limited number of respondents and for a few birds that an explicit relation is established between a species' food habits and the feeling of disgust that species arouses. Vultures eat carrion, woodpeckers insects, sparrows worms and seagulls eat 'dirty things'. Such a quote, establishes a transitive link between the impurity of the food eaten by birds and the feeling of disgust they provoke when they are thought of as potential food. Through such a relationship of contamination, the impurity of dirt, insects or carrion is transmitted to

the essence of the bird itself. A 'you are what you eat' rule is at stake in this case, but such a construction is rare in our sample – both in individual responses and on number of birds concerned.

We thus may not conclude that there exists a constant relationship between birds' food habits and judgements about their edibility. Our methodology does not offer the opportunity for a definitive conclusion, but it shows the diversity, contradiction and fuzziness of knowledge concerning birds and the way to use them. This ambiguity of information and the lack of consensus among respondents is an interesting feature of the folk ethno-ornithological knowledge in the student population.

The ambiguous pigeon

The most typical folk taxon of the 'bird' category is the 'pigeon', both as cited by the largest number of people (88%) in the first freelisting task and as scoring by far the highest cultural significance value (Sutrop index[8]) (Table 1). With few exceptions, the pigeon is known to be edible and has been eaten at least once by 20 % of respondents (Fig 2, Fig 3), but the same species is thought to feed exclusively on dirty things (Fig 4) and is viewed as being disgusting both for this habit and because it is too close to people in the city (Table 3). Some expressions, such as 'Parisian mutant pigeon' or 'flying rat', unambiguously state the rejection of the pigeon as a proper food for humans. But pigeons are eaten from time to time by the same people and they are known as a delicacy of the French fine cuisine. The word 'pigeon' refers to two concepts of the same species with contrary ecological habits and uses. The 'city pigeon', of which every student has experience on a daily basis, is not considered a proper food. It is largely viewed as a nuisance, especially by the technical services of many French towns. It is considered 'too close' to human beings and it is thought to eat dirt (Fig. 4). Urban pigeons, then, are not classified as human food by most subjects. However, pigeon is also known to be a delicacy, but the

[8] The Sutrop index (2001) is a composite index combining items' frequency of mention across lists and rank of citation within lists.

ecology of this famed bird never appears in the discourse about its biology.

These paradoxes in the knowledge about the pigeon reveal some interesting features of ethnozoological and food systems of the student community. There appears to be a 'disconnection' between knowledge about the biology of natural species and culinary know-how. There also seems to be a gap between the understanding of the life-form category 'bird' as a whole and the special-purpose utilitarian category – 'poultry' – which embraces all domesticated birds.

Discussion

'Poultry' a special-purpose category, crosscutting zoological classification and food classification systems

If we are to consider the results of the two investigations about the birds that are eaten in practice, the complete list of edible species contains – aside from some rarely cited game species – mostly and massively domesticated birds. It is highly dubious that turkeys, pigeons, ducks, geese and guinea fowl, that were said to be eaten, would have ever been hunted by the students we interviewed. Ostriches consumed in France are also farmed (a recent production) (see also Aguilar and Medina this volume and Deraga this volume). All these species belong to an intermediate special-purpose category: 'poultry' (F. '*volaille*').[9]

The word '*volaille*' belongs to the semantic domain of agriculture and cooking and it mainly denotes living kinds which are zoologically considered as birds. It was interesting to analyse the initial corpus of 198 freelists for 'birds' and try to uncover the classificatory schemes within the birds' domain and search for intermediate categories such as 'poultry'. Such a methodology (analysing freelisting samples in order to uncover classification-like structures) has already been used for similar goals (Winkler-Rhoades et al. 2010). It is generally admitted that the elicitation process drives subjects to cite items which are thought to be 'similar' in clusters. The examination of such clusters in our data may reveal some interesting features about the internal

[9] The French contemporary legal definition of 'volaille' includes all species of farmed birds for their meat, eggs and any other products. Until then, and since modern times, the category included all animals raised in the "*basse-cour*", including rabbits.

structure of the cognitive domain of birds as it has been shown in other studies (Bousfield 1953, Henley 1969, Romney and Brewer 1993). The closer to each other two items are cited in a same list the more 'similar' they may be considered. Henley (1969) suggests that averaging the difference of rank for each pair of items across lists in which both terms are cited offers a good indicator of the semantic proximity of any two pairs of items. Using Henley's technique we created an item-by-item proximity matrix of the 41 most cited birds and projected it according to a Multidimensional Scaling transformation.

The graph (fig. 5), reveals some interpretable clusters:

- gulls (two words in common French '*mouette*' et '*goéland*') and the albatross (F. '*albatros*') belong to the 'sea birds' category (F. '*oiseaux de mer'*);
- owls (two words in common French '*hibou*' and '*chouette*') are 'night birds' (F. '*oiseaux de nuit'*);
- eagle, falcon, buzzard, vulture (F. '*aigle', 'faucon', 'buse', 'vautour'*) are 'birds of prey' (F. '*oiseau de proie'* ou '*rapace*');
- turkey, duck, goose and chicken are 'poultry' (F. '*volaille*') [10].

This last cluster shows the perceived similarity between all these species belonging to the 'poultry' special-purpose category. It includes most species that have been eaten by the interviewed students. No clear-cut cluster appears for game birds ('*gibier à plume*'). The pigeon shows no proximity to the 'poultry' cluster. Our interpretation favours the idea that the pigeon is more salient as a city dweller… which is not very appetising. Species belonging to the poultry category are indeed 'birds', but they are not the most typical exemplars of the zoological lifeform category as a whole. It would be interesting to compare our results with ethno-ornithological classification systems from other agropastoral or industrial societies[11]: Does the existence of a 'farmed birds' category hinder the possibility of conceiving other types of (wild) birds as edible?

[10] The swan (F. '*cygne*') is not currently eaten but it appears in the same cluster because of its morphological proximity to goose and duck. Pheasant is nowadays often a farmed bird.
[11] A similar classificatory pattern is described in Guatemala (Kockelman 2011).

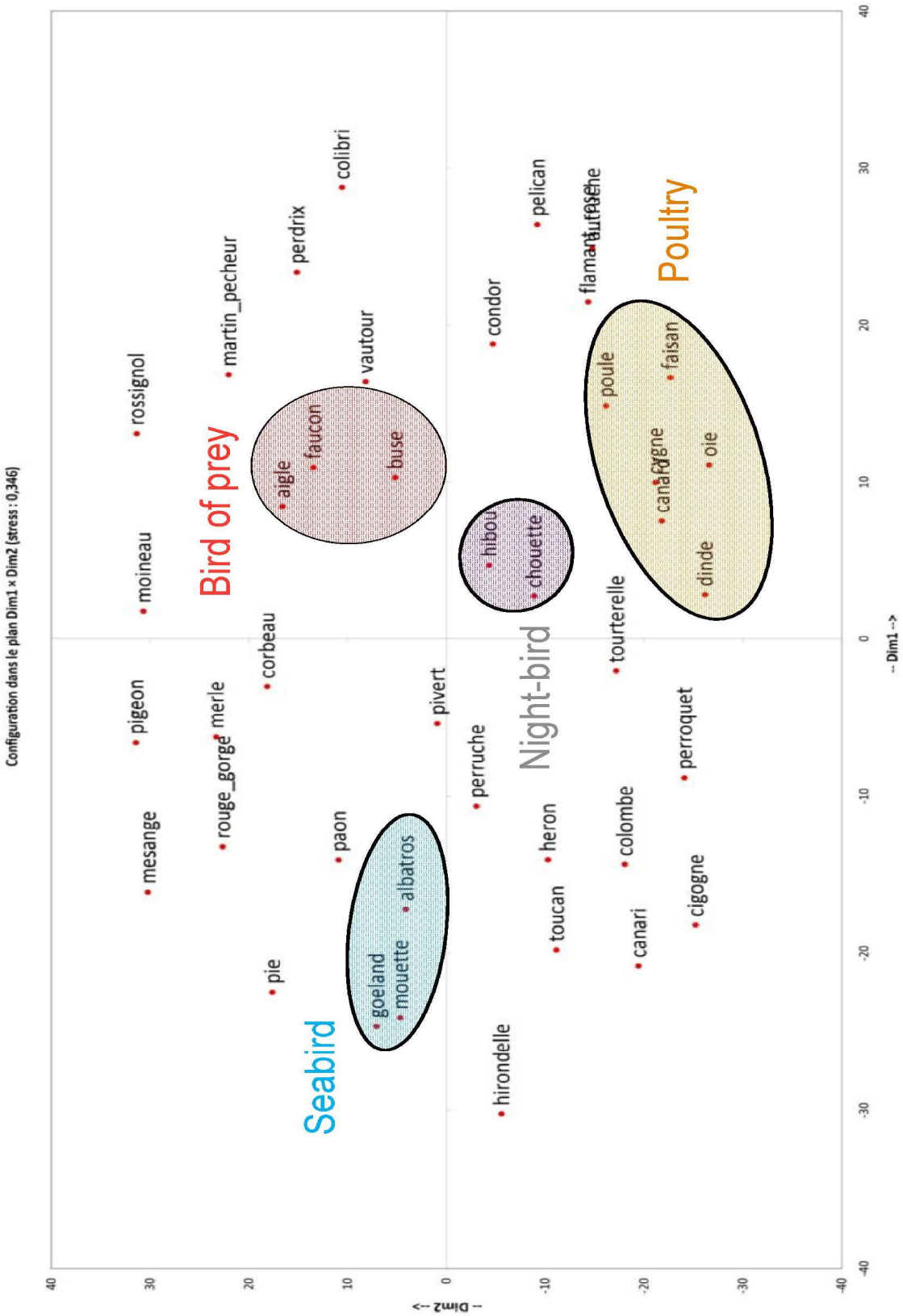

Figure 5: MDS proximity of birds in Freelisting (N=198; 41 taxa)

Pieces of unidentified birds in hardly-identified ready-made foods

The rough methodology we have used in this study offers a view into 'diet-as-perceived-by-students' but does not allow a precise evaluation of the actual consumption, frequency and quantities of birds consumed. Students' statements about their diet are similar to the general pattern of consumption of poultry in French society, in descending order: chicken, turkey, duck. Eggs are never cited by students, although they are most probably a frequent food. Another aspect is not well documented in the study: the consumption of poultry by-products in ready-made industrial foods. France remains with Spain one of the European countries where the purchasing of whole poultry is high (Spiess 2005). However, the consumption of ready-made parts, or in prepared frozen dishes, of farmed birds is growing fast (Office de l'Elevage 2008, Bova 2010).[12] These kind of products, once called 'unindentified edible objects' by C. Fischler (1993: 209), are clearly becoming more and more important especially in social contexts similar to that of the student community, where reliance on out-of-home food is important. It is doubtful whether consumers have 'birds' on their minds when they are eating some kind of frozen dish, even if it is, somehow, made from birds' parts.

Conclusion

A group of students from the University of Paris Ouest, Nanterre, can, together, list a large inventory of bird names known to them. Among these birds, only a few of them are considered edible under normal conditions and even fewer are eaten in practice. We can think of three factors which might explain how such an insignificant part of the whole ethnozoological knowledge contributes to diet-related purposes.

A first factor, of a cognitive kind, derives from the long-term adaptation of the agropastoral society to which the student subculture belongs. Semantic categories for birds are historically enduring and it seems also true for the folk classification system, which is organised around ecological and special-purpose intermediate categories. This

[12] In 2006 the repartition in consumed volume (Vo) and value (Va) was structured according to the following pattern: whole birds (Vo 29,7 % / Va 23,7 %), cut pieces (Vo 48,9 % / Va 51,3 %), cooked poultry (Vo 21,4 % / Va 25 %).

is particularly true of 'poultry', the category in which all farmed birds are comprised. Birds belonging to this class are, by far, the most frequently considered as edible and actually consumed on a frequent basis. However, these highly edible members of avifauna are very poor representatives of the zoological life-form category 'birds' as a whole: because they are domesticated, they are often larger in size than more prototypical birds and because some of the most prominent poultry species are poor flyers (chicken, turkey), while the ability to fly is a key-defining feature of the bird category. So, the best exemplars of 'edible birds' are not the best exemplars of 'birds'.

A second characteristic of the studied community influences the content of its ethno-ornithological knowledge: interviewed subjects are mostly urban dwellers and their knowledge of the biology of birds is only partly derived from their direct experience. Most of their knowledge of birds has been acquired through their formal education and their exposure to mass media culture. The few species of birds they live with in Paris are not prized food in their eyes. This urban lifestyle also has an influence on their knowledge of poultry species production which remains, in most cases, very vague.

Lastly, the contemporary food system favours consumption of ready-made industrial foods and many consumers poorly understand the origin and processing of the products they eat. It is highly probable that students had eaten pieces of (domestic) birds in frozen dishes or fast-food restaurant menus without even considering that they were eating birds; such consumptions would thus not be reflected in their answers to our surveys.

All these features contribute to explaining why so few life forms classified as 'birds' are thought of as food resources in this population. This trait is probably common to most urban post-industrial societies where people have little experience of other living species and where knowledge about foods is partly disconnected from knowledge about the animal and plant species that the foods contain. This might well be the case for most 'WEIRD societies'[13] commonly studied in cognitive anthropology (Heinrich et al. 2010).

However, we should probably not rush to conclude that, in contrast, the ethno-ornithological knowledge systems in subsistence

[13] "Western, Educated, Industrialised, Rich, and Democratic" see also Heinrich et al. 2010.

societies contribute to their adaptation by offering a fine bulk of information about the diversity of edible bird species. Knowledge of birds in such societies is not always driven by nutritional materialism. A few studies indicate the nutritional value of birds and eggs, notably of marine species on the northwestern coast of America (Hunn et al. 2003, Moss 2007). It is suspected that exploitation of birds for food even led to the extinction of species, as suggested by Steadman and Kirch in relation to an ancient Polynesian example (1990).

However, other literature about ethno-ornithology indicates that birds are also known, used and valued for many other features than for their protein value. They are prized for highly-valued body ornaments in New Guinea and Amazonia. They can also be sought for as pets and valued for the quality of their songs, and some species have been traded for this last reason for a long time (Healey 1994, Nóbrega Alves et al. 2010). Some studies show that in various cultures a symbolic relation is drawn between human speech and music and birds' singing skills (Feld 1982, Roulon-Doko 1987, Revel 1990). Birds' songs constitute an important identification criterion in many ethnozoological systems, including scientific ornithology.

Anthropological inquiries also show how the observation of birds is important in some societies for studying the invisible part of the ecosystem, as in augury systems in Indonesia (Dove 1993, Forth 1998). In the Congo Basin also, Ichikawa describes the sophisticated knowledge the Mbuti of Ituri have about forest fauna they survive upon, but he also assumes that: 'While the birds occupy almost a negligible position in the diet and subsistence activities of the Mbuti, they have important meanings in the rituals, folk belief and other aspects of the Mbuti spiritual life' (1998: 105). The narrowness of the inventory of edible birds among contemporary students is not only a product of their urban lifestyle. Knowledge systems certainly contribute to ecological adaptation, but adaptation may also be considered more broadly and not only as energy or protein driven. Birds are often seasonal markers or symbolic signs of fertility which indirectly contribute to subsistence… on a western university campus in Paris as well as in many other types of human communities.

References:

Berlin, B. (1992) *Ethnobiological classification. Principles of categorization of plants and animals in traditional societies*, Princeton University Press, Princeton.

Bernard, H.R. (1994) *Research methods in anthropology: qualitative and quantitative approaches*, Sage Publications, Thousand Oaks, CA.

Borgatti, S.P. (1999), Elicitation techniques for Cultural Domain Analysis. *The Ethnographer's Toolkit*, Vol. 3. J. Schensul and M. LeCompte. Walnut Creek, CA, AltaMira Press, pp.1-26. Retrieved September 03, 2013 from http://www.analytictech.com/borgatti/etk2.htm.

Bourdon, D., Campan, B. and Légitimus, P. Les Inconnus (1991), *Les chasseurs*, La télé des inconnus. Broadcast 28/10/1991, Antenne 2. https://www.youtube.com/watch?v=QuGcoOJKXT8&feature=youtu.be (viewed 18/07/2017)

Bousfield, W. A. (1953) The occurrence of clustering in the recall of randomly arranged associates, *Journal of General Psychology,* **49**: 229-240.

Bova, F. (2010) *La consommation des produits carnés en 2009 / édition 2010 /.* Les études de FranceAgriMer. FranceAgriMer, Montreuil-sous-Bois cedex. Retrieved November 04, 2013 from: www.franceagrimer.fr.

Brown, C.H. (1979) Folk Zoological Life-Forms: Their Universality and Growth. *American Anthropologist*, New Series, **81(4)**: 791-817.

Bueno, S., and Megherbi, H. (2009a) French categorization norms for 70 semantic categories and comparison with Van Overschelde et al.'s (2004) English norms, *Behavior Research Methods*, **41**: 1018-1028.

Bueno, S., and Megherbi, H. (2009b) *Bueno-BRM-2009.zip*. Retrieved March 10, 2013 from http://link.springer.com/article/10.3758/BRM.41.4.1018.

Dove, M. (1993) Uncertainty, humility and adaptation in the tropical forest: the agricultural augury of the Kamu, *Ethnology*, **32(2)**: 145-167.

Dubois, D. (1983) Analyse de 22 catégories sémantiques du français : Organisation catégorielle, lexique et représentation. *L'Année Psychologique,* **83(2)**: 465-489.

Dubois D. and Poitou, J. (2002) 'Normes catégorielles' (listes de termes) pour vingt-deux catégories sémantiques en français et dix catégories en allemand. *Cahiers du LCPE*, **5**: 31-104. Retrieved March 10, 2013 from www.lam.jussieu.fr/Publications/CahiersLCPE/cahier5.pdf

Feld, S. (1982) *Sound and Sentiment. Birds, Weeping, Poetics and Song in Kaluli Expression*, University of Pennsylvania Press, Philadelphia.

Fischler C. (1993) *L'Homnivore. Le goût, la cuisine, le corps*, Odile Jacob, Paris.

Forth, G. (1998) Things that Go Po in the Night: the Classification of Birds, Sounds, and Spirits among the Nage of Eastern Indonesia, *Journal of Ethnobiology*, **18(2):**189-209.

Frazer, J. (1981-1984) (1° ed 1890). *Le Rameau d'or*, 4th volume, Robert Laffont, Paris.

Healey C. (1994) Tribes, States, and the Exploitation of Birds: Some Comparisons of Borneo and New Guinea, *Journal of Ethnobiology*, **14(1):** 59-73.

Heinrich, J., Heine, S.J. and Norenzayan, A. (2010) The weirdest people in the world? *Behavioral and Brain Sciences*, **33(2-3)**: 61-83.

Henley, N. M. (1969) A psychological study of the Semantics of Animal Terms, *Journal of Verbal Learning and Verbal Behavior* **8**: 176-184.

Hunn, E.S., Johnson, D.R., Russell, P.N., and Thornton, T.F. (2003) Huna Tlingit traditional environmental knowledge, conservation, and the management of a 'wilderness' park, *Current Anthropology*, **44** (Supplement): S79-S103.

Ichikawa, M. (1998) The Birds as Indicators of the Invisible World: Ethno-Ornithology of Mbuti Hunter-Gatherers, *African Study Monographs*, **25** (Supplement): 105-121.

Kockelman, P. (2011) A Mayan ontology of poultry: Selfhood, affect, animals, and ethnography, *Language in Society*, **40**: 427–454.

Leach, E. (1964) Anthropological aspects of language: Animal categories and verbal abuse. In E. H. Lenneberg (ed.) *New Directions in the Study of Language*, MIT Press, Massachusetts, pp.23-63.

Léger, L., Boumlak, H., and Tijus, C. (2008) BASETY: Extension et typicalité des exemplaires pour 21 catégories d'objets [BASETY: Ex- tension and typicality of the specimens for 21 categories of objects], *Canadian Journal of Experimental Psychology*, **62**: 223-232. Cited in Bueno et al. 2009.

Marchal, A., and Nicolas, S. (2003) Normes de production catégorielle pour 38 catégories sémantiques: Etude sur des sujets jeunes et âgés [Category generation norms for 38 semantic categories in young and older subjects], *L'Année Psychologique*, **103**: 313-366. Cited in Bueno et al. 2009.

Meigs, A. (1988) Food as a Cultural Construction, *Food and Foodways*, **2(4)**: 341-357.

Moss, M.I (2007) Haida and Tlingit Use of Seabirds from the Forrester Islands, Southern Alaska, *Journal of Ethnobiology*, 27(1): 28–45.

Nemeroff, C. and Rozin, P. (1989) "You are what you eat". Applying the Demand-Free "Impressions" Technique to an Unacknowledged Belief, *Ethos. The journal of Psychological Anthropology*, **17**: 50-69.

Nóbrega Alves, R.R. da, Nogueira, E.E.G., Araujo, H.F.P. and Brooks, S.E. (2010) Bird-keeping in the Caatinga, N.E.Brazil, *Human Ecology*, **38**: 147–156.

Office de l'élevage (2008) *Le marché des produits carnés, avicoles et laitiers. Chiffres clés 2007. France – Union Européenne – Monde*. Office de l'élevage. Paris. Retrieved November 04, 2013 from http://www.gds38.asso.fr/web/gds.nsf/vueactualites/110854CDB0690875C12574BC006466E1?OpenDocument.

Pennec, F., Wencélius, J., Garine, E., Raimond, C. and Bohbot, H. (2012) FLAME 1.0, Free-List Analysis under Microsoft Excel®. In Pennec, F. and Wencélius J. (eds) *Guide d'utilisateur*, CNRS, Paris. Logiciel déposé le 21 / 09 / 2011. http://www.mae.u-paris10.fr/lesc/spip.php?rubrique75

Roulon-Doko, P. (1987) Entre la vie et la mort : la parole des oiseaux (Gbaya, République centrafricaine), *Journal des africanistes*, **57(1)**: 175-206.

Revel, N. (1990) *Fleurs de paroles. Histoire naturelle des Palawan*, 3 volumes, Ed. Peeters SELAF, Paris.

Romney, A. and Brewer, D. (1993) Predicting Clustering from Semantic Structure, *Psychological Science* **4(1):** 28-34.

Rozin, P. and Fallon, A.E. (1987) A perspective on disgust, *Psychological Review*, **94**: 23-41.

Spiess, M.P. (2005) Evolution de la segmentation des principaux marchés européens de la volaille. Sixièmes Journées de la Recherche Avicole, St. Malo, 30 et 31 mars 2005. Retrieved September 22, 2013 from www.journees-de-la-recherche-avicole.org/JRA/.../6.../ES-SPIESS.pdf.

Steadman, D.W. and Kirch, P.V. (1990) Prehistoric extinction of birds on Mangaia, Cook Islands, Polynesia, *Proceedings of the National Association of Sciences of the United States of America,* **87**: 9605-9609.

Sutrop, U. (2001) List task and a cognitive salience index, *Field Methods*, **13**: 263-276.

Tarlowskia, A. (2011) Naming Patterns and Inductive Inference: The Case of Birds, *Journal of Cognition and Culture*, **11(1-2)**: 189-216.

Van Overschelde, J. P., Rawson, K. A., and Dunlosky, J. (2004) Category norms: An updated and expanded version of the Battig and Montague (1969) norms, *Journal of Memory and Language*, **50**: 289-335. Cited in Bueno et al. 2009.

Weller, S.C. and Romney, A.K. (1988) *Systematic data collection*, Sage Publications, Newbury Park, Ca.

Wierzbicka, A. (1992) What Is a Life Form? Conceptual Issues in Ethnobiology, *Journal of Linguistic Anthropology*, **2(1)**: 3-29.

Winkler-Rhoades, N., Medin, D., Waxman, S.S., Woodring, S.S., Ross,N.O. (2010) Naming the Animals that Come to Mind : Effects of Culture and Experience in Category Fluency, *Journal of Cognition and Culture*, **10**: 205-220.

Section Two

BREEDING, PREPARING AND EATING POULTRY

Utrerana chick (*Gallus gallus domesticus)*, **Ronda, Spain**.
Photograph © Frédéric Duhart

CHAPTER 4
FRYING FOWL IN EARLY AND MODERN AMERICA: Cultural and Home Economy Aspects of Chickens as Working People's Food in Southern USA Prior to Global Commodification

by Richard D. Ralston

Making use of historical recipes and a close study of early narratives by cooks and consumers alike, this chapter shows how consumption of selected birds developed as a food source among pre-industrial, agrarian populations in the southern United States and went on to furnish the unacknowledged culinary launch pad for a world-wide food industry. The focus is the early American kitchen's contribution to the development of domesticated fowl as an all-purpose, iconic food choice for working people prior to its global commodification by such commercial American suppliers as Perdue Farms and Tyson Foods and international distributors such as the franchise restaurant giant Kentucky Fried Chicken (Figure 1).

Figure 1: a Kentucky Fried Chicken franchise in Madison, Wisconsin
Photograph © Richard Ralston

Among the wild game birds and those available by hunting or capture in the North American fields and forests were wild turkeys and geese, younger varieties of 'squabs' (pigeons or doves), quail,

partridges, ducks, plovers (the short-billed wading bird found near water or in the hills and grasslands of the US South), miniature hens brought from Cornwall, England by Cornish migrants and of course domesticated roosters, hens, and pullets of the chicken family. In the American South, it was the chicken (*Gallus gallus*) (Figure 2) that over time came to dominate the diets, palates, and folkways of America's working poor and elite alike.

Figure 2: Chickens 'Leghorn' and 'Rhode Island Red' (*Gallus gallus domesticus)*

Photograph © Richard Ralston

Why and how did the chicken acquire such centrality? In the family of game birds indigenous to the South, chicken was evidently the cheapest and most available domestic bird. Additionally, American slaves, sharecroppers and hired agrarian workers in the South became adept at transforming these small birds and their parts into such economical ensemble dishes as stews, gumbos, hash, hoe cakes, meat pies, the popular chicken with dumplings and making stock for soups and flavouring. Some popular legends muse (falsely) that revolutionist Thomas Jefferson concocted the original dish fittingly, but ironically, named chicken *a la* king, a royal preparation for the common man using this common bird. Thus, the chicken became bird of choice because of its cooking flexibility and satisfactory results. Whether baked, boiled, fried or grilled, it was suitable at grand suppers among the rich or for

modest meals among the poor, and apposite whether in a worksite lunch pail or an itinerant's travelling bag (Rutledge 1973:35). Preparation, consumption, and socio-linguistic traditions relating to the chicken were passed on trans-generationally by both direct and indirect means. In combination, they fastened the bird to the region as a creature of habit, both aspirational and graspable. Evidence of this story will be looked for among multiple conveyances, some of them socio-structural, some person-to-person, many others informal and barely noticeable in the slipstream of dominant society activity:

I. culinary literature in the form of published recipes found in household management manuals and old 'cookery' books;
II. formal apprenticeships or mentoring by cooks, organised classes, and outreach demonstrations by outreach instructors like the ex-slave George Washington Carver;
III. informal guardians and legacy conveyors of cooking technique and taste comprising a largely female, peasant and domestic worker network of food preparers for both *haute cuisine* and common fare, whose expertise evolved from the resource-challenged days of slavery forward;
IV. beginning in the Depression era, modern post-industrial commodity suppliers and purveyors, such as the chicken farm combines of Perdue and Tyson, franchised outlets of Kentucky Fried Chicken and others, and national retail distributors of frozen, pre-cooked options such as Banquet Foods and the legacy companies; and
V. socio-linguistic and popular culture manifestations.

These will be discussed in turn.

Culinary Literature: Old 'Cookery Books' and Recipes

Household do-it-yourself manuals and cookery or recipe books offered prescriptive advice about birds as food, although they occupied an uncertain (or contradictory) place on the shelves, in the kitchens and upon the taste buds of early American popular culture[1]. In the first published American cookbook, Amelia Simmons' *American Cookery*

[1] See especially Jack Goody, Cooking, *Cuisine and Class: A Study in Comparative Sociology* (Cambridge: Cambridge University Press, 1982), for an excellent comparative overview of the technology of food preparation, the rise of industrial cooking, and the elaboration of high status cuisine via formal cookbooks for the literate, dominant classes.

(1796:8), offered detailed insights for raising domesticated fowl for food.

> *The female [bird] in almost every instance is preferable to the male … Chickens, of either [sex] are good, and the yellow leg'd the best, and their taste is sweetest. Capons, if young are good, [they] are known by their spurs and smooth legs. All birds are known, whether fresh killed or stale… their smell denotes their goodness; speckled rough legs denote age, while smooth legs and combs prove them young...*

One of the nineteenth century's most influential how-to books on the 'science' of domestic work was *The American Woman's Home* (1869), by Catharine Beecher and her sister the abolitionist Harriet Beecher Stowe. The Beechers wrote in useful detail about the health care of baby chicks, showing incidentally how stock-raising required a cook's wisdom and practised hand:

> *Early hatched chickens must be kept in a warm, dry, sunny room, with plenty of gravel… It is well to grease the body of the hens and the heads of the ducks with lard, in order to prevent their becoming lousy [lice-infected]… Cold or damp weather is bad for young fowls, and when they have been chilled, pepper-corns are a good remedy….* (1869:294)[2]

With multiple entries on the subject, *American Cookery* advised the eighteenth-century reader to initiate their preparation of the bird for the table by stuffing the birds' body cavity with all but the kitchen sink (bread, suet, cooked eggs, spices and 'a gill of wine'). Readers were alerted to the importance of a continual tinkering with flavour adjustments that continued tableside, such as adding boiled onions, cranberries, pickles and the like. Anticipating that the free-range birds and/or rough cooking equipment (e.g. wood-burning stoves) could produce surprising results, readers of *American Cookery* were put on notice: 'if your oven be poor, parboil' the bird (Simmons 1796:23). In the meantime, Mary Randolph, of a high status political family in Virginia, published what was touted as 'one of the most influential

[2] Full title *The American Woman's Home or*, *Principles of Domestic Science Being A Guide to the Formation and Maintenance of Economical, Healthful, Beautiful, and Christian Homes* (NY: J. B. Ford, 1869:294).

cookbooks' ever published in America.[3] The book, *The Virginia Housewife or Methodical Cook* went through 19 editions between first publication and the outbreak of the Civil War. Like other early American cookery literature, *Virginia Housewife* placed high culinary value on 'herbs, spices and flavorings.' As contemporaries told household workers, flavourings were a means to manage uneven food quality of the game or domestic stock. Therefore, for Randolph a good cook kept a large and imaginative larder of spices. Beyond the basic seasoning, Randolph prescribed such particularly pungent flavourings as anchovies, sour capers, horseradish, pickles, radishes, and vinegars as enhancers (1824:15). Typically, even these spices would be augmented at table by ingenious homespun concoctions as needed, such as sauces or gravies to ladle over the cooked bird, which often constituted virtual side dishes to the birds.

For the preparation of the bird for searing (i.e. frying), Randolph's advice was equally clear and specific. After carving the chicken into nearly a dozen economical portions (legs, thighs, wings, breast, but also backs, necks, gizzards and livers), preparers should: 'dredge them well with flour, sprinkle them with salt, … put [the pieces] into a good quantity of boiling lard, and fry them a light brown …' being sure to add such spices as pepper, salt, and chopped parsley (Randolph 1824: 75-76). Note again the recurring caveats, all cook-centred, to make comprehensive use of all parts of the bird, liberal use of fresh herbs and spices, timely application of high heat and implicitly a watchfulness for well-doneness.

The Beecher sisters critiqued abuses and misperceptions of preparation of the bird for table by frying. 'From such preparations', the Beechers observed, 'has arisen the very current medical opinion that fried meats are indigestible.' However, 'French cooks have taught us that a thing has no more need to be greasy because of emerging from grease than Venus had to be salt because she rose from the sea.' As the sisters opined '[t]here are two ways of frying employed by the French cook. One is, to immerse the article to be cooked in boiling fat… so immediately to crisp every pore, at the first moment or two of

[3] Called the 'first truly American' cookbook, *The Virginia Housewife* (Philadelphia: E. H. Butler and Co., 1860) was first published in WDC in 1824; it was surely the first such regionally focused book.

immersion, as effectually to seal the interior against the intrusions of greasy particles; it can then remain as long as may be necessary thoroughly to cook it, without imbibing any more of the boiling fluid than if it were inclosed in an egg-shell…' (Beecher and Stowe 1869: 139). Moreover, French cooks, professing a philosophical understanding of the application of heat, plainly enamoured the Beecher sisters. This rapid application of heat without burning the bird or causing kitchen calamity seemed implicitly to rely upon the wisdom and skill of the cook.

A generation after the Beechers, a sketch artist and collector of colonial recipes, health remedies and beauty aids, named Margaret Hooker, authored *Early American Cookery or Ye Gentlewoman's Housewifery*. Based in Rochester, NY, but influenced by the Stowe family in Florida, Hooker richly illustrated her tome with sketchings of contemporary kitchen equipment and utensils. Although much of her focus fell on larger and often game birds – how to cook a goose, stuff or stew a wild turkey, and the like – the historical moment captured by Hooker's little booklet was the obvious preference by lower economic classes for smaller birds. For example, 'To Stew Pullets' [the very young, tender chickens, usually less than a year old], the secret was boiling them until very tender. A chapter called 'How to jug Pigeons' described a process of cooking the bird with 'half a pound of butter' in a bottle stoppered with 'a cloth [so that] no steam can get out,' she seemed to capture the future (Hooker 1896: 22)[4]. Jug-cooking, a pressurised steaming technique, arguably presaged more high-tech pressurised cooking pots of the 1930s.

By the twentieth century, preparation of these small birds for the table by frying had become a near cliché in the lore of cookbooks. Two books authored by African American cooks illustrate this developing consensus: buttermilk or other acidic liquid for marinating, vigorous seasoning with salt, pepper, and local spices, bread crumbs or flour for breading, lard (i.e. pig fat) for frying and a heavy skillet with a

[4] Hooker, *Early American Cookery* (NY: Dodd Mead, and Co., 1896), p. 22. The book carried the verbose but useful subtitle: *Scarce, Curious, and Valuable Receipts for making really all Sorts of Viands. A repository of Useful Knowledge Adapted to meet the Wants of Good Wives and Tender Mothers. Also Sundry Salutory Remedies of Sovereign and Approved Efficacy and Choice Secrets on the Improvement of Female Beauty. Compiled from Old and Reliable Sources*; see p. 22.

removable lid. The words of one echoes the others. For example, an Alabama recipe for 'Tasty Fried chicken' called for a large cast-iron

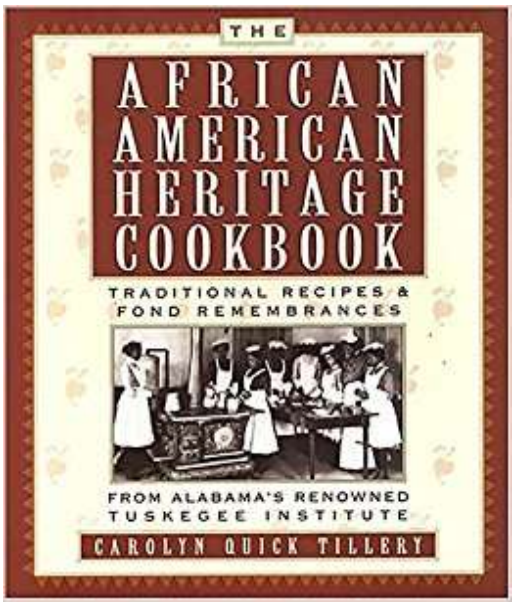

Figure 3: ***African American Heritage Cookbook***

skillet, melted bacon drippings heated until hot, insert chicken parts breaded with flour, sear until brown, cover skillet, reduce heat, and continue to [re]fry until chicken is 'tender and its juices run clear when pierced with a fork'. Additional seasonings can be added to the pan for gravy and taste (Tillery 1996: 83, Figure 3).

Antecedents for the Southeastern US traditions of cooking 'twice' may be easily found within the broadband of West African oral traditions. For example, a traditional West African preparation, *Yassa au poulet* (Figure 4), although different in many details, is recognizable as ancestrally linked to the preparation methods and recipes for domesticated fowl in the post-Atlantic Slave Trade Diaspora. Typically, Senegambian cooks cut a frying chicken into serving portions, marinated in peanut oil and vinegar, with chopped pimento, liberally salted and peppered. Oil is heated in a heavy frying pan where the chicken pieces are sautéed until brown, following which the chicken is removed and set aside. Three large onions are sliced and sautéed in the fat to which is then added the marinade, then the chicken. With half a cup of water, the chicken pieces are then covered and slowly *steamed* until tender (Bailey *Cookbook* 1971: 27).

Figure 4: Yassa au poulet

Photograph © Frédéric Duhart

Formal Apprenticeships and Informal Mentoring: Organised Classes and Outreach Demonstrations

The food scientist, George Washington Carver, was hired at Tuskegee Institute (Alabama) in 1896 for what Booker T. Washington called his 'great ability in showing what can be done in the use of foods and the preservation of foods' (Washington 1904). Thus, a brief examination of Carver's work and a sampling of other less visible bearers of bird lore (such as peripatetic food preparers for hire and food *griots*) should help us grasp how most rural residents of the region would have talked and thought about domesticated or wild fowl usages as animal stock in terms of iconography, preparation as food, and household economy.

Born into slavery, Carver developed a comprehensive and influential plan to make meals practical, tasty and nourishing while using cheap, local and available resources. By use of his *Tuskegee Institute Bulletins* and the spectacularly successful school-on-wheels, called the Jessup Wagon (Figure 5), 'professional' expertise was projected into the homes of farmers, domestic workers and church groups all over the region. Indeed, Carver's School on Wheels became the cornerstone of Tuskegee's extension or outreach services to the rural folk who wanted to know how to grow and prepare for the table foods available to them within reach in southeast Alabama and southwest Georgia.

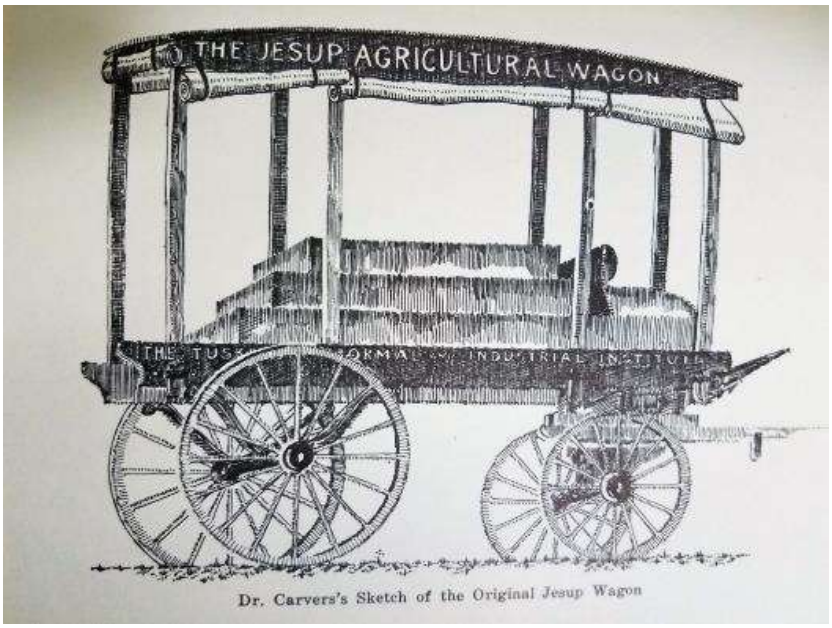

Figure 5. Dr. Carver's sketch of the original Jessup Wagon
Source: The Movable School Goes to the Negro Farmer (Campbell 1936: 89)

Carver propounded the concept of 'farmer-student' for the local farmers and their wives who came to annual farmers' conferences at Tuskegee to share successes and failures in the previous growing year and to get practical advice from Carver. Farmers told compelling stories about an outreach visit: 'When I went home I tried to do the first thing…. Suggested: that was to make preparation for a year-round garden … I built a hen house, made some coops, and my wife began to raise chickens and soon able to sell some…' Other testimonials were equally direct; e.g., 'Wherever it visits, the Movable School seeks to … build a new poultry house or repair the old one; leave hot beds and cold frames in the garden; leave the orchard pruned, wormed and sprayed; leave shuck mats and rag rugs on the floor …' (Campbell 1936: 89, 154).

The periodic publication of bulletins (Figure 5) further extended and reinforced Carver's impact. Such bulletins as *Poultry Raising in Macon County, Alabama* (July 1912) show the adroit role Carver played in the care, feeding, preparation and consumption of the region's iconic bird. Indeed, when poultry was unavailable, he ingeniously concocted a recipe for 'Mock Chicken.'

> *Blanch and grind a sufficient number of peanuts until they are quite oily; stir in one well-beaten egg; if too thin, thicken with rolled bread crumbs or cracker dust; stir in a little salt.*

Boil some sweet potatoes until done; peel and cut in thin slices; spread generously with the peanut mixture; dip in white of egg; fry to a chicken brown; serve hot (How to Grow the Peanut and 105 Ways of Preparing it for Human Consumption (June 1925: 16).

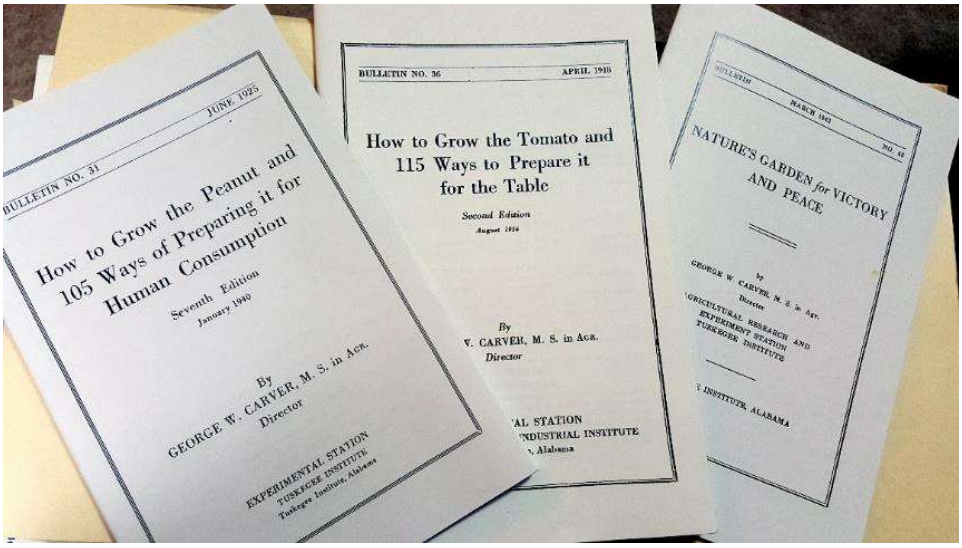

Figure 5: Reprints of some of Carver's bulletins

Photograph © Richard Ralston

Carver's own repertory of recipes which were records of what he himself was actively teaching at Tuskegee and cooking in his extramural demonstration kitchens for these farmers and home makers, shows by inference what many other rural residents of the region were actually consuming. Carver alone provides a template for resourceful local and regional management, preparation, and consumption of domestic food stocks including birds. His influence was both indirect as author of do-it-yourself pamphlets and producer of cooking knowledge, and direct as classroom teacher and as an outreach or extension instructor among populations of small farmers in Alabama and Georgia (Allen and Wilson 2013: 210-211).[5] While Carver's work with the peanut made him famous as a food magician in the eyes of educators, all of his work was meant to '…fill the poor man's empty dinner pail'. He took different opportunities to extend his teaching to students who would never see his classroom.

[5] Himself a former KFC executive, Will Allen illustrates modern uses of the Carver idea in his start-up organisation, Growing Power, meant to empower local residents and promote urban farming.

Informal Guardians and Legacy Conveyors of Cooking Technique and Taste by a Network of Female Working Class Food Preparers

While the culinary literature tells us much about birds and offers an ideal picture of ingredients at southern tables over time, cookbooks may or may not be dispositive that the culinary literature reflected actual preparation and consumption behaviours. In short, more basic than a recipe of required ingredients has been a basic requirement of actual cooks dealing with what is available or procurable by cultivation, capture or improvisation.[6] The audience for the published cookery books was surely not the food preparers who cooked the birds every day in farm houses and fields of the US south. A variation of the published traditions yet closer to actual preparers was a fried chicken recipe found in a church booklet in the upper Mississippi Valley. The booklet 'respectfully dedicated' to 'all housewives who are aiming at greater perfection in the art of cooking' began with a homily to cooks:

> *'We may live without poetry, music and art;*
> *we may live without conscience, and live without heart;*
> *we may live without friends, we may live without books,*
> *but civilized man cannot live without cooks…'*[7]

For our purposes, one must consult the cooks and consumers themselves.

The actual preparers of birds as food in the eighteenth and nineteenth century plantation South were typically enslaved workers from Africa or black domestic workers in the post-bellum period. Their experience is not easily reconstructed. Food historian, Phoebe Bailey, recalls:

> *[s]ome of my fondest memories of my mother surround her ability to create a meal out of anything. Having to prepare supper for 15 children every evening required a lot of creativity and patience… She could make a simple meal a gourmet experience. I thank God [she] had the ability to plan and prepare meals as she wanted to for us children. Our ancestors who lived on plantations, however, did not have this luxury. Many mothers were in the fields working from sun-*

[6] See Genovese (1972), *Roll, Jordan, Roll,* p. 599 In a chapter about theft on the plantation, Genovese wickedly critiques realities of food availability for both masters and slaves with a traditional quote 'Roast Pig is a Wonderful Delicacy, Especially When Stolen.'

[7] See *Household Helps and Directory* (Monroe,W.I, Methodist Evangelical Church, n.d.), p.1.

up to sun-down, planting and preparing the fields for harvest (Bailey 2002:5).

For the black agricultural food handlers, American slave owners dictated the quantity, quality and variety of food choices. Once a week the owners issued a measure of provisions (corn, salt pork) which was supplemented by slaves themselves with trapped game (e.g. raccoons, opossums) and sometimes field stock (e.g. chickens) stolen from slaveholders (Yetman 1970).

During the Great Depression, the narratives of some 2,000 or so survivors from nineteenth century American slavery - the ex-slave agricultural workers and household workers - were collected at the US Library of Congress. These generated first-hand accounts, found in no other place, of food fare among the black poor. The slaves whenever possible raised chickens themselves, just as they maintained small vegetable gardens in small 'provision grounds' available to them.

Although they may seem to be basic and natural building blocks for reconstructing folk foodways regarding bird cookery, cookbooks did not and could not serve as conveyor belts to the masses, because they required literacy, modern, reliable cooking gear, control of one's time and predictable food stock. Thus, they capture but small servings of a story powered by ingenuity, toughness, patience and individual creativity. What role, then, did individual cooks play? In 2004, an elderly African American homemaker, living in rural north central Georgia, was still using her near century-long culinary expertise directly to feed and mentor three generations of family members, white employers and community members. When her own mother died in the late 1920s, Edith Harvey's father and siblings instantly reposed in her at age 14 the guardianship of the family's food security. That she did, she recalled, and 'I been cookin' every since.' Harvey's story replicated that of other African American women and girls who took on – by necessity more than aspiration – the reins of family care-giver, cook, mentor and food historian.

Culinary artisans such as Harvey, Carver and other peripatetic food preparers for hire were the bearers of the traditions of bird cookery across racial lines and across an entire region. As a domestic worker, Harvey alone conducted general and specific food preparations for the families of whites who hired her, in addition to her own. She cooked

full meals in her modest Gwinnett County farmhouse for her father, siblings, eleven children, half-dozen stepchildren, 42 grandchildren and 50 great-grandchildren. Additionally, she was chief meal preparer for her church congregation and preparer of special diets and meals for patients at county hospitals and area nursing homes. Moreover, for the stressed quarter century from the late 1920s to the 1950s, Edith Harvey helped prepare tens of thousands of lunches and suppers for older residents in the county via a Meals on Wheels programme and, three days a week, at the county's senior citizen centre, where she worked in the kitchen for half a day. Thereupon she returned home to prepare meals for her own family. Harvey continued this regimen until well into her nineties. While contemporaries recall that she experimented with 'making unusual foods and following new recipes,' she largely stuck to the 'beloved tried-and-true' preparations: 'She'll stir up familiar foods – sweet potato pie, collards, rice, potato salad and chicken; 'I got to have me a little chicken', declared Harvey herself (McCarthy 2004: F17).

Rise of The Big Chicken: Small Farmer Raised Chickens and Home-Fried Chicken Meals become Commercially Farmed and Franchise Supplied Monopolies

Modern post-industrial commodity purveyors played a huge role in appropriating bird cookery traditions and driving the regional American consumption of the traditional working people's fried bird cuisine. The entrepreneurial work of three entities in particular were drivers of the chicken revolution. What became a multinational company and the second biggest processer and marketer of chicken and other meats was Tyson Foods, founded in 1931 in Arkansas. Tyson took advantage of the Depression-era scarcities and the War-imposed rationing on meats other than chicken to build a robust supply chain of the region's iconic bird from egg embryo to table, beginning with sales to larger markets in the US Midwest. Similarly, Perdue Farms, a Maryland-based company founded in the 1920s on the sale of eggs for the table, seized on a new business model: contracting with small farmers to raise the birds for meat, which was then supplied to wholesale markets all over the country.

Meantime, roadside restaurateur Harland David 'Colonel'

Sanders, in 1939, pioneered the Kentucky Fried Chicken (KFC), a chain of pre-cooked chicken restaurant franchises. Over the next decade he introduced his vaunted 'secret recipe'[8] for 'southern fried chicken' (Figure 6). Sanders made use of a recently invented piece of

Figure 6: pieces of KFC 'southern fried chicken'

Photograph © Richard Ralston

kitchen technology (the pressure cooker) and married it to an ensemble of fixings widely known in the oral traditions used by African American domestic workers and cooks for generations, drawing a shroud of secrecy around what was in plain view among working people and small growers. The new pressure cooker allowed the traditional pan-frying to be done much faster and more predictably. More importantly, Sanders astutely capitalised upon the frying methodology and ingredients that captured the essence of what African-American cooks in the region had learned over generations: multiple applications of high heat sandwiched around a time of smothered simmering.

When Sanders prepared his chicken as working-class cooks did, he prepared the chicken in an iron skillet, and then presumably followed the course already etched into the lore of the region. The traditional recipes and cooks had aimed for slow cookery and family

[8] In 1983, for his book *Big Secrets*, William Poundstone hired a laboratory to analyze the KFC spice mixture. Failing to find eleven herbs and spices as claimed by the company, the analysis revealed four and only four ingredients, all commonplace: all purpose flour, salt, pepper and MSG, a flavor enhancer. Evidently the 'secret sauce' notion was more clever marketing than true cooking 'secret.'

gatherings, not a commercial, fast food environment. Sanders' motivation for adopting the pressure cooker and co-opting traditional cooking practices was to reduce cooking time for frying his chicken. Thus, Sanders astutely married the new technology to table preparations well-known in the popular culture, which he immodestly proclaimed as 'original' but 'secret' for the region's iconic bird. Researchers deduced Sanders' recipe to be a verbatim similarity with folk methods and approaches in use by cooks for years: cooking oil poured into the pressure cooker and heated to 400 degrees, with chicken pieces laced liberally with salt, pepper, and monosodium glutamate or additional salt, dipped in milk then in flour for breading, placed in the hot oil and then locking the lid in place. After a prescribed amount of time the pressure is released and the chicken is removed. Sanders' goal was both to standardise and streamline a well-tested tradition, thus to promote the local bird into the iconic and commercially successful food for millions.

In 1955 President Eisenhower's expansion of the American roadways into a national highway system centred on the construction of many east-west and north-south expressways alongside traditional, surface level State roadways. It was precisely such a new north-south highway (I-75), extending from Florida to Michigan, that caused Sander's roadside Kentucky café to be bypassed. As with the pressure cooker, Sanders made an astute marketing use of necessity. He seized upon the idea of distributing his chicken meals by enlisting a series of franchised restaurants that would be operated by others and sited elsewhere in the region and ultimately around the globe.

While not as original as Sanders claimed, proclaiming a patented secret blend of traditional 'herbs and spices,' and applying the latest technology, which reliably standardised what skilled household cooks had done previously in ill-equipped, low-tech. kitchens, plus his overall marketing strategy – of a daisy-chain of fast food franchises for consumers on the move – made him a multimillionaire.

One of the highest dollar volume KFC franchises, was the Big Chicken in Metropolitan Atlanta. Like Sanders's original KFC, the Big Chicken was similarly bypassed by the construction of the I-75 expressway built parallel to the locally serviceable State roadway (US HWY 41) as it diverted current and prospective customer traffic away

from the restaurant (*Cobb Times* 2001: 10).

Sanders sold his empire in 1964 for nearly 15 million dollars. According to its corporate website, KFC markets its 'secret' fried chicken dish globally. With hundreds of outlets in North America, key markets in Western and Central Europe, e.g., Great Britain (figure 7) and Czechoslovakia, in South and East Asia, e.g., India and China (figure 8), plus markets in Africa, the total was in the tens of thousands

Figure 7: the interior of a KFC franchise in UK

Photograph © Helen Macbeth

Figure 8: Kentucky Fried Chicken franchise in Shanghai

Photograph © P.Ropp, reproduced with permission

worldwide. Yet, they stood on the unattributed shoulders of what was originally southern fried chicken, a simple peasants' food in the US South.

Socio-linguistic and Popular Culture Manifestations

Finally, as a measure of the pervasiveness and depth of the North American adoption of the chicken for meat and egg production, there emerged a culture-wide poultry-based vernacular of words and expressions that turned poultry into daily food for thought. Indeed, the American national folklore came to be replete with metaphorical references to chickens. For example, prematurely basking in expected rewards before expending requisite effort was expressed as a cautionary warning in Chickenese as 'counting one's chickens before they are hatched' (Farmer and Henley 1970: 90-1). To castigate someone for a lack of courage or character, a cook's knowledge of a disjointed bird allowed the castigator knowledgeably to apply the term 'chicken' or to use the more explicit 'chicken-hearted,' 'chicken livered,' 'chicken necked' with brutal precision. Or as a quality control comment: 'she's no spring chicken' is a less than polite early twentieth century reference to a woman no longer young. As early as 1738, Jonathan Swift wrote satirically: 'I swear she's no chicken; she's on the wrong side of thirty if she's a day' (Flexner 1982:142-3).

Similarly, this sentiment seems a metaphor for the barnyard-learned wisdom that the pullet was the preferred tender choice compared to the older, tougher 'biddy' hen. And no man would want to be thought of as 'hen-pecked,' or under the thumb of the cook. In the urban South and among southern migrants resident in the northeast during the Jazz age, in colloquial conversation and in song a nubile young woman was routinely referred to with casual rudeness as a 'chick.' At the onset of the Great Depression a chicken dinner was emblematic of prosperity, such that the term 'a chicken for every pot' was attributed to Herbert Hoover in campaign flyers during the 1928 presidential campaign as a way to whet voter appetites for continued prosperity preceding the Stock Market Crash (Flexner 1982:143).

In the popular culture, chicken as modifier and metaphor was king as cotton once was. It could symbolise beauty as well as ugliness, poverty as well as the food of the upper classes. Thus, chicken every Sunday was part of America's good life, as well as the title of a popular

wartime song, popularised by country singer, Dolly Parton. Clearly chicken achieved the rank of the top meal for the top day of the week for rich and poor alike.

Moreover, chicken was used cross-culturally as an accolade and as a lament about food. Charlie Parker, the Kansas-born saxophonist and composer touted as the world's greatest jazzman, was known as 'Yard Bird', (i.e. chicken). Parker's honorific derived from the iconic free-ranging bird of the Depression-era rural south and Midwest in praise of his dominant, strutting performances on stage and the dominant position of chicken as food for the masses. Among Parker's best-known compositions were ones called, self-referentially, *Yardbird Suite, Ornithology* and *Bird of Paradise.* In 1949, a popular New York City nightclub was named Birdland in his honour.

Meantime, African American bluesman, Jimmy Witherspoon's, 1949 cover of an old blues lyric from the 1920s, called '*Ain't Nobody's Business',* was not simply the requiem of a broken-hearted lover, when he sang '*one day I have chicken and dumplings; next day I don't have nothing'.* As he made clear in another stanza, the chicken reference nicely expressed the food insecurity that these small birds, when available, could rectify for the poor.

During the great post-slavery and post-Reconstruction migrations, African American migrant workers recruited for seasonal agricultural labour on northern farms nicknamed the rail line of the New York-bound Gulf Coast Special train (via Florida, Georgia, and the Carolinas) as '*the Chicken Bone Special'*. Riders recalled:

> *lunches packed by anxious mothers for sons and daughters who could not afford the prices charged on railroad dining cars. Invariably, those lunches contained at least one piece of fried chicken … a fact …verified by an inspection of one of the coaches after it has disgorged its passengers at New York's Penn Station.* (Walls 1971: 82-3)

In December 1963, the great Muslim leader Malcolm Shabazz infelicitously characterised the assassination of President Kennedy as a sign of 'chickens coming home to roost.' Widely taken to mean that violence cultivated by the dominant society was now being reaped, Malcolm's prediction unleashed a torrent of public criticism after the death of the popular President.

Afterthoughts

The focus here has fixed on the existence of a rich culinary literature, the workings of a labour market underclass and the commercial superstructure by wholesale suppliers of chickens as livestock and as individual meals. All this verifies the unique story of chickens as an important regional food on the tables and within the imaginations of the US, a perch that paved the way for its marketing as a global commodity.

However, tracking the actual underlying preparation and consumption practices via extant oral accounts of nineteenth century domestic workers and mentors and the testimony of early twentieth century African American cooks, stands as the surprising but essential part of the story. While brilliant and enterprising as the work of globalising chicken farms and franchised restaurants was, there is in fact a vindication here of the participation by unsung folk actors in this story: how chicken became the regional mainstay of both survival and celebratory diets, both in slave quarters and at the Big House, for community suppers during good times and bad, as a tasty staple for the affluent as well as a status marker for the poor and for resident as well as migratory consumers.

The preparation of domesticated fowl for home consumption in the early US South by traditional techniques was carried out by what was considered an unskilled (and certainly unappreciated) mostly black, female labour corps (Benston 1969). What should be acknowledged is the contribution made by black field hands and household workers to the development and elaboration of successful preparation techniques for the south-eastern bird, which grew from actual domestic worker experience, despite advancements in refrigeration and cooking technology, highly capitalised specialty chicken farms, marketing juggernauts and 'original recipes' with 'secret herbs and spices.' The African-American kitchen and domestic workers in affluent homes, aided by an oral tradition, practical instruction and mentoring, were the birthplace of seared bird flesh, although the reputational status has been shifted to large chicken farms and a Big Chicken. Before the assumption of commercial primacy of these preparations by KFC and others, arguably no one produced a

commodity as important for a stressed population nor one so valuable commercially for a region dominated by others than the family preparers of home fried chicken from small game and domesticated bird stock. That the black working-class cuisine was a powerful and unique contributor to the preparation of a regional bird for food, to chicken lore generally and ultimately to set the table for the projecting of birds as an essential important taste preference worldwide is undeniable on both the documentary and oral evidence.

The adoption of birds as food in the fried chicken economy story reverses the paradigm described by food anthropologists who argue a link between the advent of the cookbook and the expansion of cooking repertoire, which presumably becomes a predictor of social mobility. These 'advancements' in preparing domesticated birds as human food globalised a standard, local way of preparing young pullets (birds of certain age but uncertain quality, where nothing was discarded) for the table.

Moreover, the interesting historical results flowing from the original serendipitous partnership of domesticated fowl and rural and domestic workers was never toward an *haute cuisine* or 'bird under glass' outcome. Rather it was 'a chicken in every skillet' phenomenon, an elastic 'everyday-people's' cuisine that appealed to all classes, cultures, and occasions. It was neither male-chef centred, as high-status cooking became elsewhere, nor reliant upon cookbooks (which required storage space, leisure time and of course literacy), nor by formal, skilled instruction (e.g. cookery schools), nor by post-industrial cooking venues with refrigeration equipment and the newly invented pressure fryers. Rather, it was skilled, improvisational cookery overcoming less than high quality wild caught or domesticated game birds via simple, unprocessed local herbs and spices, monitoring and emphasis on a continual adjustment of cooking environment and time (especially how and when to apply intense heat), including pre-cooking approaches such as soaking or brining, marinating, pounding, par boiling, 'jugging' or smothered cooking, as well as such notable success in cooking ingenuity performed by unsung open-hearth or top of the stove Jazz-like magicians of the nineteenth and early twentieth centuries.

References

Allen, W. and Wilson, C. (2013) *The Good Food Revolution*, Gotham Books, NY.
Bailey, P. (2002) *An African American Cookbook,* Good Books, Intercourse, PA.

Beecher, M. and Stowe, H. B. (1869). *The American Woman's Home,* J. B. Ford, NY.

Benston, M. (September 1969) 'The Political Economy of Women's Liberation,' *Monthly Review Archives*, **21(4**.

Campbell, T.M. (1936) *The Movable School Goes to the Negro Farmer,* Tuskegee Institue Press, Tuskegee, AL. [also reprinted (1969) by Arno Press/New York Times, New York, NY.]

Carver, G. W. (June 1925) How to Grow the Peanut and 105 Ways of Preparing it for Human Consumption*, Bulletin No. 31*, Tuskegee Institute, AL.

Carver, G. W. (July 1912) Poultry Raising in Macon County, Alabama*, Bulletin* No. 23*,* Tuskegee Institute, AL.

Cobb Times, The (Early Fall, 2011), Cobb County, GA.

Farmer, J.S. and Henley, W.F. (1970) *Slang and Its Analogues.* Arno Press, NY.

Flexner, S.B. (1982) *Listening to America*. Arno Press, NY.

Genovese, E. D. (1972) *Roll, Jordan, Roll: The World the Slaves Made*, Pantheon, NY.

Goody, J. (1982) *Cuisine and Class: A Study in Comparative Sociology*, Cambridge University Press, Cambridge, UK.

Hooker, M.H. (1896) *Early American Cookery*, Dodd Mead, and Co., NY.

McCarthy, R. (2004) Cooking Has Been Her Life, *Atlanta Journal Constitution*, 11/24 2004: F17.

Monroe, W.I. (n.d.) *Household Helps and Directory,* Methodist Evangelical Church, p.21

Poundstone, W. (1983) *Big Secrets*. Harper Collins, NY.

Randolph, M. (1824) *The Virginia Housewife or Methodical Coook,* Davis and Force, Washington, DC.
Rutledge, M. (1973) *Singing in the Kitchen Cook Book*, Vergara Printing Co., Santa Fe, NM.

Simmons, A. (1796) *American Cookery,* Hudson and Goodwin, Hartford, CT.

Taylor, R. (1943) *Chicken Every Sunday: My Life with Mother's Boarders,* McGraw-Hill, New York.

Tillery, C.Q. (1996) *African American Heritage Cookbook: Traditional Recipes and Fond Remembrances from Alabama's Renowned Tuskegee Institute,* Citadel Press, New York.

Walls, D. (1971). *The Chickenbone Special*. Harcourt, Brace, and Jovanovich, NY.

Washington, B. T. (1904) *Working with the Hands,* Doubleday, NY.

Yetman, N. R. (1970) *Life Under the 'Peculiar Institution:' Selections from the Slave Narrative Collection,* Holt, Rinehart and Winston, Inc., NY.

CHAPTER 5
HUAXOLOTL, *GUAJOLOTE*, *HUILO* OR *COCONO*: A MESOAMERICAN RESIDENT OF RURAL AND POPULAR CLASS

by Gabriel J. Saucedo Arteaga and José C. Jiménez López

Introduction

The *huaxolotl* is a bird whose natural habitat is and has been the mountain ranges of the western and eastern Sierra Madre, which cover a large part of Mexican territory. Mesoamerica is an area with a cultural significance in which evidence of the *huaxolotl*[1] has been related to early human settlements, the origin of maize and of all fundamental Mesoamerican cultures. From very early times, human groups incorporated the *huaxolotl* into their different lifestyles, modes of production and use, exploitation and trade. This bird extended its territory showing great adaptability, acceptance and domesticability, which has allowed it to continue to exist in yards, farms, backyards – both urban and rural - living with other animals or in the wild, in their own ecosystems as well as in other new and very different situations. Why has the *huaxolotl* survived and what place does it occupy in Mexican culture?

Background

The *huaxolotl* has been hunted since humans developed strategies for doing so, weapons and traps. Around the year 7,000 BP at the origins of agriculture in the Americas, these birds soon became accustomed to the nascent but rich crops and human middens. In the following period, flock hunting, capture, husbandry and slaughter of the *huaxolotl* began within the agricultural crops, but always with the possibility of some birds escaping and returning to the wild (Camacho, 2011a, Valadez 1996). The incipient domestication occurred around 4,000 BP and there is archaeological evidence that poults were raised within human settlements in the area known as Mesoamerica; its probable origin is located in Tehuacan, Puebla and Oaxaca (Valadez 1999; 2003). Over

[1] (or *guajolote*) derived from a word in the Nahuatl language. In English these may be referred to as 'Mexican turkeys'. While they exist in the wild, more are domesticated locally; their species name is *Meleagris gallopavo gallopavo* same as our domesticated turkeys.

the last 2000 years, a geographic spread of the *huaxolotl* has taken place with systematic domestication, while it continued to reproduce wild in its natural habitat. Thus, it has exploited different ecosystems and following humans reached the Yucatan peninsula (Thornton *et al.* 2012). Throughout this process, the *huaxolotl* has outlived its main predators and has been witness to human sociocultural processes within this important multicultural area of great ecological and topographic diversity.

Archaeology and ethnohistory

Findings of *huaxolotl*-like fossils belonging to an extinct species or subspecies, were discovered in the southern United States and northern Mexico and can be traced back more than 12,000 BP. Two different species and six subspecies were domesticated by Mesoamerican cultures, but currently the species *Meleagris gallopavo,* which was domesticated in the Mexican Altiplano (highlands) (Camacho *et al.* 2011a), remains in its wild and domesticated form[2] (Figure 1).

Figure 1: Wild *Meleagris gallopavo*
Left: (huaxolotl**) *Meleagris g. gallopavo.*** *Photograph © Frédéric Duhart*
Right: *Meleagris g. silvestris* *Photograph © Helen Macbeth*

Archaeological evidence of the domesticated *huaxolotl* in central Mexico, dating back to 3,000 BP, has been found portrayed in the bas-reliefs of Mitla, Oaxaca (Navarijo 2002), and on the Mixtec ceremonial

[2] Two genera were classically identified in the Meleagridea family: *Agriocharis* and *Meleagris*. But contemporary scientists prefer to consider the existence of a unique genus, *Meleagris*, with two species: *M. ocellata* (syn *Agriocharis ocellata*) and *M. gallopavo*. The species *M. gallopavo* in turn has six subspecies: *M. g. mexicana*, *M. g. silvestris, M. g. osceola*, *M. g. merriani, M. g. gallopavo* and *M. g. intermedia*) (Figure 1).

vessels (Pohl 2005). There are many representations of these birds in ceramics, codices and chronicles, thus giving rise to some hypotheses, at least for Mesoamerica and a large portion of the current Mexican territory (Figures 2 and 3). These hypotheses are:

(a) that their natural territory is located in the mountain ranges that run throughout Mexico,

(b) that the *huaxolotl* is possibly the first domesticated animal in America and, almost certainly, in Mesoamerica,

(c) that it's the bird to which the Mesoamerican population had greatest access, and

(d) that, with the exception of fish for people living in coastal areas, it is the best source of animal protein, because of its wide geographical distribution.

Figure 2: *Huaxolotl*, Classic Veracruz Culture (600-900 AD)
Photograph © Frédéric Duhart

Constantly highlighted in the first chronicles and descriptions of New Spain are the markets and consumption of a variety of plants as well as wild and domestic animals. Out of more than 130 terrestrial and water birds listed, the *huaxolotl* is the largest. During the emergence and development of Mesoamerican civilizations, then at the time of the Spanish conquest and also thereafter in colonial times,

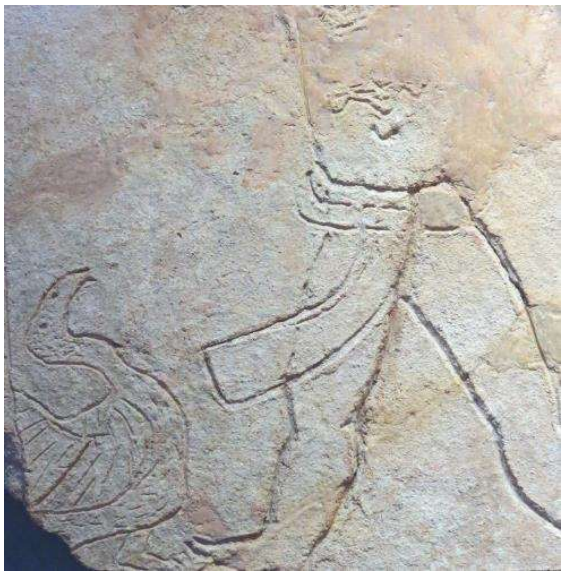

Figure 3: *Huaxolotl* and man, Comalcalco, Late Classic (600-900 AD)
Photograph © Frédéric Duhart

there is evidence that the *huaxolotl* was used as food as well as for barter or for paying tribute to the rulers. In the rites and festivities, consumption of the *huaxolotl*'s meat has been described as relevant to the dishes of the elite American Indians, the new Spanish rulers, the chiefs, the *encomenderos* (holders of an encomienda) and the religious groups (Valadez *et al.* 2001; Barcelo 2002). From the above, one can assume that their consumption was:

(a) part of the dietary practices of privileged groups and

(b) a product to exchange between grassroots groups, such as those who hunt, raise, exchange or sell *huaxolotl*.

The *huaxolotl* was consumed roasted over the fire or boiled in water. It could be eaten on its own or be part of a *tamale*, *mixiote* or *taco*; it could also be prepared in stews and thick soups known as *moles*; it could be prepared with various chillies, etc. (Lopez de Gomara 1554).

Very possibly from colonial times, consumption and displacement of the *huaxolotl* started to reduce, except for among indigenous groups and those in isolated settlements, due to the introduction of other domestic animal species, such as pigs, cattle, goats, sheep and various poultry. Furthermore, representatives of this species had meanwhile 'conquered' other continents and especially Europe, from which in due course modified descendants of the

huaxolotl returned to Mexico. In general, it can be said that among the Mesoamerican people and then in colonial times, *huaxolotl* domestication was already a common practice and was part of the barnyard animals that supplied the towns and cities with meat (Barceló 2002).

The urban and rural *huaxolotl*

Once Mexico became independent, *huaxolotl* consumption began to decline, at least in urban areas. People's diet became increasingly based on grains, seeds, domestic and commercially produced animals. The Mexican population already had an indigenous, African and European mixed ancestry and turned to a diet that also syncretised some practices and customs of the Mexican indigenous people and the mestizo populations, both rural and urban.

In the mid-twentieth century, Mexico then faced a demographic and nutritional transition as most people started to migrate to the cities. The countryside was inhabited by small farmers, landholders, landless labourers and indigenous groups (Rubio 2001). For Mexicans today, the main sources of protein are beans, eggs and chicken. The diet has been changing as a result of migration to cities and the new modes of production and trade (Ortiz e*t al.* 2006).

Results of our contemporary observations and interviews

In the city, the *huaxolotl* is raised on a limited basis on rooftops and small urban yards, and its consumption among the working class is exclusively for parties, with an element of identity and longing for the countryside. Moreover, in the cities, among the middle class, its consumption comes from exotic indigenous Mexican dishes, restaurant sales, with a rural and rancher atmosphere. During the last decades of the twentieth century and the beginning of the twenty-first century, there have been major changes in consumption practices and eating habits, which correspond to a transition strongly conditioned by the modes of production and a global market system. *Huaxolotl* raising and consumption is now mainly limited to rural people.

Huaxolotl consumption began with its temporary, cyclical or occasional hunting in its natural environment. Its early domestication, coupled with the establishment of settlements and the development of

more complex social systems, lead also to the use of the *huaxolotl* as a product for exchange or for paying tribute. A first conclusion seems to indicate that its consumption has never been part of the staple diet, but situational and occasional. One possible reason is that this animal has too much meat for just one family, especially when such groups practise a simple diet, as was the case in ancient Mexico and as it still is among today's Mexican peasants.

Currently, wild *huaxolotl* populations are scattered around the country, but there are well documented populations of wild birds in regions such as Yucatan, San Luis Potosi, Chihuahua, among others. It can live in the wild at sea level or up to an altitude of 1500 meters above sea level. As a backyard bird, it can be found in Mexico City, more than 2000 meters above sea level. Raising flocks for consumption is today, however, mainly intended for sale, as a gift, decoration or pet, and for ritual uses. *Huaxolotl* production has no market logic, but they are kept for when required, and can be considered as organic meat. It's very likely that the mestizo and indigenous populations raise the main reservoir of native varieties of domestic *huaxolotl* today (Camacho-Escobar et al. 2009, Serrano2011, Camacho *et al.* 2011b; figures 4 and 5). Possibly, no edible animal is more present in the Mexican collective

Figure 4: *Huaxolotl* (Cuyoaco, Puebla)

Photograph © Frédéric Duhart

imaginary than the *huaxolotl*, even as a symbol of Mesoamerican identity. Although this bird plays a marginal role in current urban life, people haven't forgotten how important it once was and it could be again someday.

Figure 5: Huaxolotl (Salto de Agua, Chiapas)
Photograph © Frédéric Duhart

The turkey and the *huaxolotl*

Readers will have noted that the Latin species name for *huaxolotl*, *Meleagris gallopavo,* is the same as for the now globally consumed domestic 'turkey'. In this chapter, it has been appropriate to use the local word, '*huaxolotl*', rather than the frequently used term 'turkey' to avoid confusion. This allows the word 'turkey' to be used to refer to the descendant now consumed all over the world, of which there are now different breeds and stocks, (see Beljak this volume, Macbeth this volume).

Given the intensive and extensive breeding of the turkey in many societies globally, aimed at feast days and holidays, the *huaxolotl* has also been replaced by the turkey for many occasions in Mexico. Although confusion often arises when the question is asked: is the *huaxolotl* the same as the turkey?

Once one begins to systematise the information, important differences are found. The turkey generally found in supermarket freezers around the world is bigger, especially the legs and breasts, the meat on the breast is white or pink, farming may be intensive or extensive and the birds' diet is now usually scientifically balanced. Due to their diet, according to our key informant, such turkeys grow faster and are killed around four or five months old to be sold frozen. Those roasted for special occasions, generally have stuffings in the cavity, and may be served sliced with bread, fruit salads and wine (Figure 6). Other even heavier turkeys are not slaughtered for seven, eight or nine months and the meat is used to make sausages or other industrialised turkey dishes.

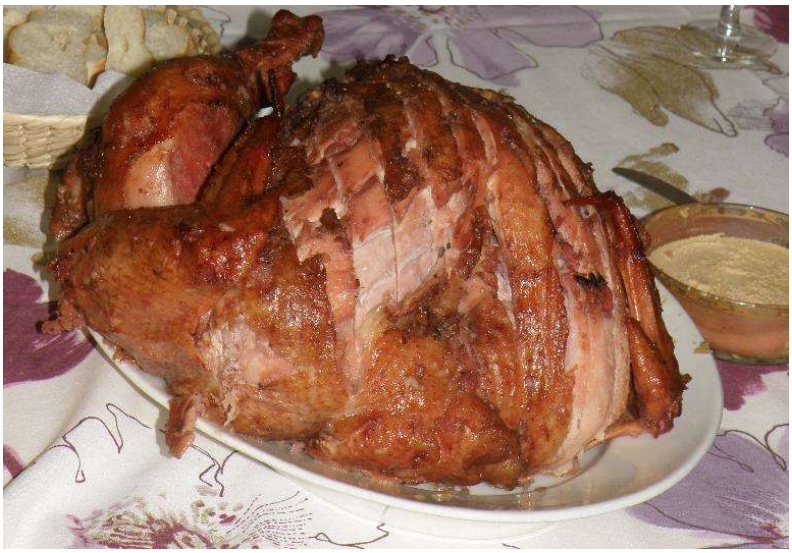

Figure 6: *Pavo ahumado relleno* (Stuffed smoked turkey)
Photograph © Frédéric Duhart

The *huaxolotl*, on the other hand, is either a wild bird or a yard or backyard bird, which coexists with other animals, especially chickens, ducks and pigeons (Figure 7). Its meat is darker, especially on the thigh and leg. This animal grows more naturally, in rural areas often free ranging when around large landholdings, especially after the agricultural harvest (personal communications interviewing a veterinarian and a breeder of turkeys). It is not uncommon for neighbours to let an owner know of any flocks which venture beyond the family pen - in search of insects, shoots, seeds, fruits and various household waste, whereas the diet they are fed is basically of cracked

corn, nixtamal, crushed and soaked tortilla pieces (Figure 8). In households, families usually keep a few males and many females, in order to have an adequate number for breeding.

Figure 7: Cohabitation in the backyard (Cuyoaco, Puebla)
Photograph © Frédéric Duhart

Figure 8: Looking for insects (Jalpa de Mendez, Tabasco)
Photograph © Frédéric Duhart

Some people say that when the *huaxolotl* has its bearded male chest (Figures 1 right and 9), which is a secondary sexual character and

means maturity, is when it can be slaughtered, which may occur between nine and twelve months. They tend to be sold live and are consumed fresh, after being boiled in water; they can be served with *mole*, red or black, with rice, beans and tortillas, and are offered in social, religious and other such occasions.

Figure 9: *Huaxolotl* with bearded chest (San Cristóbal de las Casas)
Photograph © Frédéric Duhart

Table 1: Nutrients: *huaxolotl vs* chicken

Nutritional facts compared in 50 grams				
	Eggs		**Meat**	
Nutrients	Chicken	*Huaxolotl*	Chicken	*Huaxolotl*
Energy (KCAL)	63 Kcal	73Kcal (+)	74 Kcal	57 Kcal (-)
Protein	5.5 gr	6.0 gr (+)	7.2 gr	7.3 gr
Lipids	4.4 gr	5.1 gr (+)	4.8 gr	2.8 gr (-)
Carbohydrates	0.3gr	0.5 gr (+)	0.0 gr	0.0 gr
Cholesterol	186.1 mg	405 mg (+)	32.9 mg	26.0 mg (-)
Vitamin A	61.6 mEq	72 mEq (+)	14.3 mEq	0.7 mEq (-)
Calcium	23.3 mg	42.8 mg (+)	4.0 mg	5.3 mg (-)
Iron	0.8 mg	1.75 mg (+)	0.4 mg	0.5 mg
Sodium	61.6 mg	65 mg (+)	31.3 mg	23.1 mg (-)

[*Source by authors based on Pérez 2008*]

Table 1 shows that *huaxolotl* eggs contain more (+) calories, protein, carbohydrates, cholesterol, Vitamin A, calcium, iron and sodium than chicken eggs. The meat contains less (-) calories, lipids, cholesterol, protein, calcium, iron and sodium. 79% of the *huaxolotl* and 68% of the chicken is edible (Pérez 2008).

Popular, rural, traditional, celebratory and ritual consumption

As an economic resource, the *huaxolotl* can be considered as a form of savings or an investment that 'costs little' and pays handsomely. Mexican farmers traditionally raised poultry in order to have access to food - meat and/or eggs -, or to have a product to sell or exchange that could help them cover other necessities. As a product, the *huaxolotl* is given to people who have agreed to be sponsors of school children after completion of elementary school level. The sponsor receives a live *huaxolotl* along with a basket with the bird already prepared in *mole* sauce; also, during the party, the best parts of the meat are used to entertain the sponsors.

The main form of preparation and consumption of a *huaxolotl* is in red *mole* sauce, or, to a lesser extent, in green *mole* sauce. Sometimes, since *huaxolotl* accumulates little fat, its preparation requires a process that mixes sesame seeds, pumpkin seeds and chillies, fruits such as walnuts, peanuts, raisins or bananas, and bread or tortilla, and some highly fragrant ingredients with soft, strong, sweet and spicy flavours. Altogether it is a harmony of a thick, semi-liquid, mushy texture and dark colour, with a variety of scents and flavours, which can be prepared in different ways by different ethnic groups in different regions of Mexico (Figure 10).

Figure 10: *Mole con guajolote* (Tlatlauquitepec, Puebla)

Photograph © Frédéric Duhart

In rural Mexico, the *huaxolotl* is mainly consumed at family parties, anniversaries and political and social events, among others. The most socially prestigious parts of the bird are the legs, thighs and breast. The flesh is white on the breast and dark in the thighs and legs. Traditional and celebratory consumption of *huaxolotl* is more common among young people and adults. Small children are not served *huaxolotl mole* because the pieces tend to be very large, the dish is spicy containing many different spices, which can cause discomfort to children. However, it is common for adults to offer children small pieces of meat in a tortilla.

As a celebratory food in rural Mexico, *huaxolotl* meat is variously exploited, corresponding to a range of different preferences that people have, for example, maybe for the neck or wings, because these have a different flavour and are considered tastier. In the kitchen the women who prepare food, eat the meat off the neck or the carcass, or make tacos of the liver and it's common to see some children with a *huaxolotl* wing. Other diners boast their good taste or audacity by asking for the caruncle or the head. The blood and intestines are also consumed, the blood in a stew, the intestines fried as a snack.

Blood is the element most frequently mentioned as a remedy for dealing with certain ailments. Some people especially ask for the *huaxolotl*'s blood to feed patients undergoing chemotherapy. People argue that, if their sick relatives don't eat blood right after therapy, their recovery will be slower. The gall bladder is also sought after for people with diabetes. The *huaxolotl*'s snood has been said to be an aphrodisiac food, but this concept comes from pre-hispanic times and does not seem to be supported today.

The consumption of these birds has different connotations. It's a traditional food for special celebratory occasions, especially in rural populations. In urban environments, the *huaxolotl* is eaten as a traditional Mexican food, a bit exotic and occasional, among the middle classes who keep its memory as a representation of Mexican tradition and they pay for it and the restaurant services. The range of such presentations and sauces is increased with broths, quesadillas, offal, in an environment where the client can request a dish in some detail. For example, some connoisseurs prefer birds of a particular age, male or

female, probably young, which have not laid eggs, or birds which have traditionally been fed mainly on maize.

Huaxolotl eggs are a precious product (Figure 11). This bird can lay eggs in different places but readily accepts sitting on its eggs. People say that not all the eggs are hatched, but almost no one claims that they eat the eggs. The *huaxolotl* does not have to protect its eggs, because people protect them as a very good investment.

Figure 11: *Huaxolotl* eggs (Morelia, Michoacán)
Photograph © Frédéric Duhart

The *huaxolotl mole*, a woman's job

Breeding, caring for, feeding, selling, trading and preparing the *huaxolotl* are woman's jobs. Men, on the other hand, play a minor role and may be the assistant in some activities. In small rural or urban towns, it is the women who have specialised in this work. Even more important is the women's experience at different stages of the preparation of the *mole*.

The traditional *huaxolotl* in red *mole* sauce is a dish that requires cooking the pieces in water with salt, onion and garlic. *Mole* ingredients may vary but normally the methods and ingredients are:

- roasted: with chilli seeds and chilli veins, sesame seeds, walnuts, cloves, or
- fried: with peanuts, raisins, almonds, cinnamon, banana, bread and tortilla, or
- boiled: with chilli guajillo, pasilla chilli.

Cooked *huaxolotl* pieces must be kept separate and not mixed until they are placed on the plate (Figure 12). In ranches it is very likely that the cooks leave the pieces of meat boiling in the *mole* sauce. When the *huaxolotl* is already on the plate, a few tablespoons of *mole* are poured over the cooked pieces, and sesame seeds are sprinkled over the lot. Traditionally, the *mole* is served with red rice. In urban areas, the *huaxolotl* is prepared with green pumpkin seed sauce, roasted in the oven, with tamarind, lemon, stuffing and other forms that might result from experimentation, which is common as with any other food.

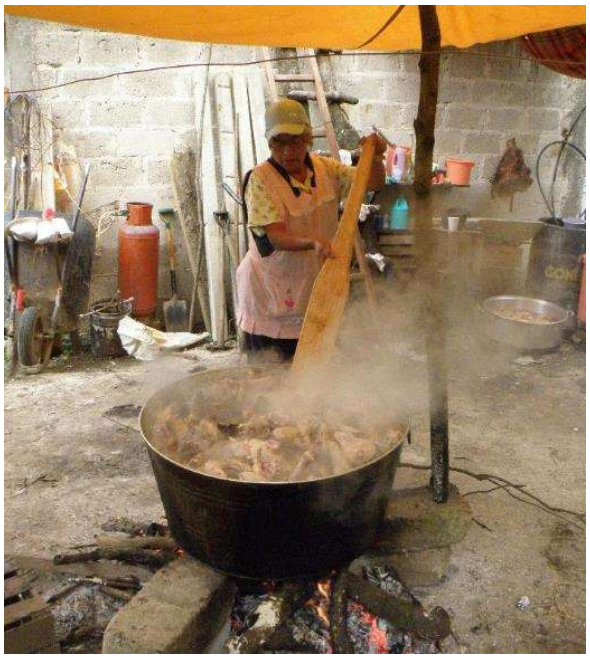

Figure 12: Cooking *Huaxolotl* on a religious holiday (Ilita, Puebla)
Photograph © Frédéric Duhart

Other dishes:

a) As *huaxolotl* broth has very little fat, people think that it has little flavour. You can add chopped onion and chilli peppers as well as rice to this soup.

b) Tortilla filled with meat: it's common to remove the tiny strands of meat stuck to the bone off popular *huaxolotl* parts such as the carcass and the neck. These meat threads are reheated in the pan and served in tortillas, prepared with salsa, cheese, etc.

c) Viscera and blood: in some restaurants, a dish is prepared with blood and viscera – intestines, heart, liver, gizzard -, all of which fried with chilli, mint and onion. The dish is served as an appetizer or side dish, in order for the diners to whet their appetites.

d) Male or female: among *huaxolotl* consumers, there are some who, allegedly, can distinguish between male or female *huaxolotl* meat. Also some people request that their dish is prepared with the meat of a young *huaxolotl* hen that has never laid eggs. The pieces can be large or small, depending on the age of the *huaxolotl*, but connoisseurs might request a small or middle-sized bird because the taste is different.

Poultry slaughter.

The traditional way of killing these birds involves tying its legs, jamming or clamping their wings, hanging them by the feet, holding their head and cutting above the back of it (Figure 13). Other forms include cutting the entire head off with an axe or a machete, or slashing the neck with a knife from side to side. Some people just twist the neck

Figure 13: *Huaxolotl* Slaughter (Cuyoaco, Puebla)

Photograph © Frédéric Duhart

of the bird and then pull it quickly and strongly to kill it. These days, the slaughter of the birds in this way is considered cruel.

It is said not to be advisable to kill and eat a broody *huaxolotl* hen, i.e. sitting on its eggs, because its meat is 'hot' and can cause diarrhoea.

Also, when the bird is broody, it loses a lot of weight and its appearance is not very pleasing as it loses breast feathers by rubbing it against the eggs or because the *huaxolotl* hen itself plucks them out. It can take up to four months for it to regain its weight and be ready for slaughter. Some experts suggest that it is best not to feed the birds selected for slaughter shortly before killing them. They explained that the birds may vomit when the head is cut off and, when butchering them, their excrement can contaminate the parts which have already been cut. Also note that, if you give them water, they will bleed more profusely; on the other hand, it's recommended to give them a drink of alcohol, *pulque* (a fermented local drink) or wine, since they will be more relaxed and less stressed when slaughtered, which may improve the taste of the meat or at least avoid getting an unpleasant one.

A popular method

The traditional way of slaughtering birds is by making a large cut along the neck and holding them until they bleed out and completely stop convulsing. Then you grab the bird by its legs and immerse it for a few seconds in a pot of boiling water to loosen the feathers to make these easier to pluck with your hands, nails and, sometimes, teeth. The whole body is washed with soap and should not be left in the sun because the meat could go bad.

To butcher the *huaxolotl*, you must start by cutting off the talons. The legs and rump are cut off the carcass with two different cuts. The viscera are extracted and separated with one hand, being very careful not to contaminate it with excrement, liquid and bile. The gizzard is cut open with a knife and the stones are removed. Another cut opens the trunk to extract the swollen crop, which is discarded altogether as well as the tail, beak, digestive tract, lungs and gallbladder.

Social classification of the *huaxolotl* parts: its consumers and their reasons

At first one might have the impression that any part of the *huaxolotl* can be eaten; in practice, however, some important distinctions and differences are made depending on the tastes of the guests. This is a classification based on the observations for this research, but there may be other and very different classifications depending on the social

group being considered. Tables 2 and 3 provide information on practices and preferences of consumers observed and interviewed in a restaurant of traditional dishes made with *huaxolotl*.

Table 2: Social classification of the parts

Classification	
First class	Legs, thigh / Breast
Second class	Wings, gizzard, / liver
Third class	neck, oysters, pygostyle /legs
Disgusting	Head, comb, wattles, snood, caruncle, intestine / blood
Not edible	Beak, crop, trachea, lungs, gallbladder, toes, feet, feathers
Remedies / treatment	Blood, gall bladder.

(Source: observations and interviews by the author)

Table 3: The parts and diversity of tastes.

***Huaxolotl* piece**	**Consumers groups**	**Explanation**
Legs, thigh	Guests / principals	Prestige / flavour
Breast	Guests / principals	Prestige / quantity
Wings, legs in clear soup	Children	Flavour, small / product
Neck, oysters	Female cook	Low prestige, small piece, but delicacy
Gizzard, neck, liver, heart.	Children / women / old people	Good for health / small
Blood, intestine	Adults of either sex / sick person	Energetic / exotic
Head, comb, snood, wattles, caruncle.	Men, head of the house or an expert	Vigorous, exotic, audacious / delicacy
Male *Huaxolotl* Hen Hen –young-	Men Men / women Men	Big piece Small piece Special flavour

(Source: observations and interviews by the author)

Some of these birds' parts are considered taboo and, therefore, are consumed only by some people, who are admired because of this. Men and women can express their preference for the neck, but the caruncle (the red, spotty skin around the head and neck) is only eaten by men (Figure 14); meat off the carcass, rump and neck are consumed by women cooks. The children can have a wing or a leg. Everyone recognises that first-class parts have more meat (Figure 15), but people prefer those with more flavour, albeit less flesh; it's likely that those parts people say taste better are also those with more fat (the neck, the caruncle, the wings and the carcass).

Figure 14: *Huaxolotl* head and caruncle cooked by M. Villegas Leal, Tlatlauquitepec, Puebla

Photograph © Frédéric Duhart

Figure 15: *Huaxolotl* leg, a first class piece. Plate for a baptism godmother (La Unión, Puebla)

Photograph © Frédéric Duhart

Rituals: the *huaxolotl* dance

The *huaxolotl* dance is part of the traditional wedding celebration of some indigenous, mestizo and Afro-Mexican groups in central Mexico, especially in the states of Hidalgo, Puebla, Guerrero, Oaxaca and Veracruz. The marriage festivities include the traditional *huaxolotl* dance in which the groom's parents dance while holding a big *huaxolotl*. The bird then passes from hand to hand until it gets to the bride and groom. In some cases, the groom's brothers, parents and groomsmen walk around the streets, each one carrying a *huaxolotl* and dancing to the music until they get to the bride's house. In fact, during the formal request for the bride's hand in marriage, such an event is accompanied by some gifts, including a beautiful *huaxolotl*. Some people point out that such a request may require several attempts, and may last for months, and each time the suitor and his parents will give a *huaxolotl* and some wood as presents for the bridal party. The wedding ritual ends with the *huaxolotl* dance: a big circle dance in which the bride and groom, the groomsmen and the relatives dance and carry on their shoulders the cooking utensils to prepare *mole*. The sponsors receive a present that includes a live *huaxolotl* and another one already cooked in *mole* sauce, tortillas and rice. Many videos and comments can be seen on YouTube just by typing '*huaxolotl* dance'.

Conclusions

The term, Mesoamerica, involves a widely accepted concept in history and archaeology as it allows people to define a cultural area, which is characterised, among other things, by the cultivation and consumption of food. The *huaxolotl* should be considered one of the main natural resources culturally and socially accepted by all Mesoamerican cultures: the first domesticated animal and the highest source of animal protein. This bird has also been used as a product, of great importance for exchange, payment or as a trade product - even in the twenty-first century.

The *huaxolotl* has always been mainly consumed at celebratory occasions and, apparently, has never been part of families' general daily diet, even among elite families. This may be evidence that, for pre-Columbian people, folk in colonial times and today's rural families, food has always been simple and limited. For social recognition, it is

a product which can be sold, given away, exchanged and used in traditional rituals. Consumers and producers are popular groups in rural and urban areas, both indigenous and mestizo.

The *huaxolotl* lies at the heart of the collective imaginary and is a well-known historical symbol of identity and food culture, as well as part of the Mexican countryside.

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References

Barceló, R. (2002). El guajolote: rey de las mesas. *Cuadernos de Nutrición*. México, **25(6):** 269-277.

Camacho-Escobar MA, Ramírez-Cancino L, Lira-Torres II, and Hernández-Sánchez V. (2009) Phenotypic characterization of the guajolote (*Meleagris gallopavo gallopavo*) in Mexico. *Animal Genetic Resources Information*, **43**: 59-66.

Camacho, E. M., Jiménez, H.E., Arroyo, J., Sánchez, B. E. and Pérez L E. (2011a). Historia natural, domesticación y distribución del guajolote (*Meleagris gallopavo)* en México, *Universidad y Ciencia*. **27(3):** 351-360.

Camacho, E. M., Rodríguez de la Torre, M., García, L. J-C., Arroyo, L. J. and Sánchez, B. E. (2011b). Historia del guajolote (*Meleagris gallopavo*) a la mexicana. *Memorias de la XXXVI Convención Anual de la Asociación Nacional de Especialistas en Ciencias Avícolas*. [In CD]. Ixtapa, Zihuatanejo, Guerrero, pp.70-79.

Lopez de Gomara, F. (1554) *Historia de México.* Cited in: Barceló R. (2002).

Navarijo, O.L. (2002) Los diseños de aves en los dinteles del patio A del grupo de la Iglesia, Mitla, Oaxaca, *La pintura mural prehispánica en México* **VII(17):** 29-33

Ortiz-Hernandez, L., Delgado-Sanchez, G. and Hernández Briones A. (2006) Cambios en factores relacionados con la transición alimentaria y nutricional en México. *Gaceta Médica de México* [online]. **142 (3):** 81-193.

Pérez, L. A-B. (2008*) Sistema mexicano de alimentos equivalentes* (3rd Edition) Fomento de Nutrición y Salud A.C., México.

Pohl, J.M.D. (2005) The Griffin fragment: A mixtec drinking vessel portraying the place sign for Hill of the turke**y,** *Record of the Art Museum, Princeton University*, **64:** 80-90.

Rubio, B. (2001) *Explotados y excluidos: los campesinos lationoamericanos en la fase agroexportadora neolibral*, Universidad Autónoma de Chapingo, Plaza y Valdés, México.

Serrano, C. F. (2011) Avicultura indígena mexicana: sabiduría milenaria en extinción, *Actas Iberoamericanas de Conservación Animal* **1**: 375-379.

Thornton, E.K., Emery, K.F., Steadman, D.W., Speller, C., Matheny, R. and Yang, D. (2012) Earliest Mexican Turkeys (*Meleagris gallopavo*) in the Maya Region: Implications for Pre-Hispanic Animal Trade and the Timing of Turkey Domestication, *PLoS ONE* **7(8**): e42630. doi:10.1371/journal.pone.0042630.

Valadez R. (1996) *La domesticación animal*, Plaza y Valdéz / Universidad Nacional Autónoma de México, México.

Valadez, A.R. (1999) Los animales domésticos, *Aqueología Mexicana*, México, **VI(35):** 23-39.

Valadez, R., García, R., Rodríguez, B. and Gamboa, L. (2001) Los guajolotes en la alimentación prehispánica, *Ciencia y desarrollo*, **XXVII(157):** 54-63.

Valadez, A.R. (2003) Domesticación y zootecnia en el México antiguo, *Imagen Veterinaria*, **3(4):** 32-45.

CHAPTER 6
TURKEYS ON THE TABLE: A STORY OF MANY CHANGES AND SOME MISCONCEPTIONS

by Helen Macbeth

Introduction

This chapter will explore the changes in the social significance, production, retailing and price of turkeys (Figure 1) and their meat during the second half of the twentieth century, and, associated with these, some significant changes in attitudes towards turkey meat in Britain up to the present. Complementing chapters by Saucedo and Jiménez and by Beljak (this volume), the chapter will outline some aspects of the history of its consumption in Britain and North America, and will include interestingly common Anglophone misconceptions about that history.

Figure 1: Norfolk Black stag

Photograph © Ian Waterman (Heritage Turkeys)

Turkey at Christmas in England in the 1940s

I remember as a child in England, just after the Second World War, the importance of ordering from the butcher a large turkey well in advance

of Christmas. That butcher referred to my mother by name and probably would have personally known the farmer who raised the turkey. Even though we lived in Oxford City, butchers were still mostly small family-run businesses. We always had a very large turkey because, not only am I one of five children and other relatives joined us, but also my father would invite others, usually singles or couples, who were far from their own homes at Christmas and maybe on duty in some job over the festive period. The evening was thus frequently international and my father and my brothers would wear their kilts; while we other children always wore something special; I remember one year I had a genuine Norwegian skirt and blouse, another year something that was more or less Dutch and some wooden clogs.

The main part of the meal was the Turkey! Preparing, stuffing and timing the roasting of the turkey were all done by my father for as long as I can remember, while the rest of the meal was prepared by my mother. In those days, my father did not usually cook and I think that my father's attention to the turkey added to the concept that it was something special and delicious. After some kind of cold first course, such as smoked salmon, the turkey was brought in from the kitchen on a huge plate, which had been inherited from some great aunt in Edinburgh and, as far as I recall, was only used once a year. There were bits of crispy bacon across the breast meat and pork sausages (Figure 2) displayed around the turkey on the same large plate. There were two stuffings, one usually made of bread, onion, herbs and maybe other ingredients in the main cavity of the bird, and another stuffing, based on pork sausage meat and the turkey's giblets, was inserted into the pouch at the neck end of the turkey (Figure 3). The stuffed turkey was then roasted in a slow oven for hours … and, in those days, we had an oven big enough for a large turkey – something which few of us have these days!

My father made quite a show of the carving of the turkey, as he was very proud of his carving skills of all meats. He would ask each person, youngest first and then the guests, whether they preferred white or dark meat and if they wanted a sausage and some of each of the stuffings. He would not have thought of it as ceremonial, but I see it that way now.

Figure 2: Roast turkey with sausages at Christmas in UK

Photograph © Helen Macbeth

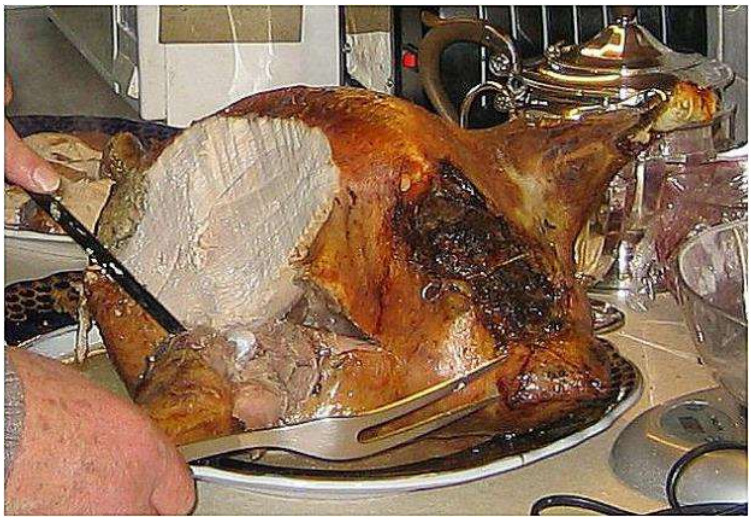


Figure 3: Carving the Christmas turkey with two stuffings

Photograph © Helen Macbeth

Celebratory turkey meals in USA in the 1940s

Until January 1945, I had spent the Second World War years in Connecticut, USA, as an evacuee child with my elder sister and brother, fostered for three years by a childless American couple. Being so young, one could say that I was brought up 'American' until I returned to UK in January 1945. In the United States, there are two celebratory occasions when we dined on turkey:

- Thanksgiving Dinner in late November, and
- Christmas Dinner on 25th December.

At both these events, three generations of my American foster family gathered together for a dinner centred on roast turkey. I have no recollection of either the purchase or the cooking of these turkeys, as the (foster) grandparents hosted these events, and anyway I was very young, but I do remember that the turkey was huge and something special. Aged six for my final U.S. Christmas, my clear memory of eating turkey at these meals confirms that it was of great importance. Thanksgiving dinner in the USA is a festivity considered to be a continuation of a celebration of thanks at harvest time of 'The Pilgrim Fathers', those early settlers from Northern European countries to North America. It is common to assume that all the 'pilgrim fathers' were 'the Puritans' (which is not the case), but I recall a Thanksgiving festivity association with the austere clothing of the sixteenth and seventeenth century Puritans. Indeed, there is a bit of film of my brother in a tall, black 'Pilgrim Father' hat.

A common anglophone misconception

There is a wild subspecies of turkey in New England, USA, the *Meleagris gallopavo,* subspecies *silvestris* (Figure 4). I do not know

Figure 4: Eastern wild turkey (*Meleagris gallopavo silvestris*)

Photograph © Frédéric Duhart

when I first got the idea that celebrating the Thanksgiving dinner with eating turkey was to do with the early immigrants finding and hunting this local wild North American species of turkey, but I now learn that this is a misconception. However, in 2011 with a little random interviewing I discovered that it is a common misconception among New Englanders today to believe that eating turkey at Thanksgiving was indeed initiated by the 'Pilgrim Fathers', and that the turkey was the local wild turkey, either shot wild or that some birds of this wild north-east American species had been domesticated for food. Intrigued, in 2011, I went on to find that this was a common assumption held by nearly all of those I subsequently interviewed in New England and in Britain. The one exception was the noted food anthropologist, Ellen Messer.

Yet, this whole idea is wrong in several respects, but so commonly believed that it's repeated on some websites (e.g., www. inaturalist.org, www.projectnoah.org referring to Farner and King 1971), while from other internet sites a more correct historic version is revealed. In line with this basic misconception I had thought that this northeast American wild turkey, once domesticated, had then been brought *to* Britain by sixteenth century *returning* migrants or traders from New England to old England, who thereby introduced the subspecies from which the domestic turkey we eat today was descended - again a commonly held anglophone misconception, logically derived from the first misconception, but incorrect in nearly all respects.

Origin of the turkey as meat in Britain

In summary, it is an incorrect belief that our domestic turkey today is descended from the North American wild turkey, *Meleagris gallopavo silvestris,* or brought to northern Europe by returning 'Pilgrim Fathers'. Yet, it is the frequency that this incorrect version is thought to be true in both New England and England that itself becomes interesting. Is this idea simply Anglo-American ethnocentrism? Instead, the ancestry of the domesticated turkeys, eaten today all over the world, lies in Mexico. Crawford (1992) suggests that the turkey of the genus *Meleagris,* species *gallopavo*, but subspecies *gallopavo,* was domesticated between the years 200BC and 700AD in preliterate, pre-Columbian antiquity in Mexico. As reflected in the chapter by Saucedo

and Jiménez (this volume), its meat and eggs (Figure 5) were significant sources of protein in antiquity as now. In line with this, frequently mentioned (e.g. Valadez Azua 1996) is that the turkey

Figure 5: Eggs of a Mexican 'wild' *Mealeagris gallopavo gallopavo*
Photograph © Helen Macbeth

played a role in Aztec beliefs. It is of the same genus and species as the New England wild species, but was one of the six, possibly more, subspecies of wild turkey in the Americas before colonisation by Europeans.

The particular, already domesticated, subspecies brought to Spain around the year 1500, i.e. very shortly after Columbus's 'discovery' of America in 1492, was a native of the Mexican States of Jalisco, Guerrero and Veracruz, *Meleagris gallopavo gallopavo* (Hogan 2008). At the time, those in Spain still thought that Columbus had reached India, and the bird was called a chicken of India. So, when it spread across Europe, several versions of these words arose in different languages; for example, from this comes the word for a turkey in French, *Dinde* (a contraction of the words, *poulet d'Inde*) and the related *Dindon*. Several theories exist (e.g. Kennamer et al. 1992) on why the bird is called a turkey in English, most of which say it derives probably from another error about its origin which wrongly associated it with the guinea fowls that Ottoman Empire sea traders brought from Africa and were thus sometimes called 'turkey-fowls' (*The Economist* 2014).

After its arrival in Spain, consumption of the turkey spread swiftly across Europe. It reached England early in the sixteenth century, most probably from Europe, although it is also commonly claimed that the navigator, William Strickland, first introduced the turkey to England in 1526 having traded for some with American Indians. Because of subspecies difference, it seems more likely that the subspecies *Meleagris gallopavo gallopavo* arrived in Britain as part of its spread across Europe from Spain, and this is especially likely as Stickland probably traded with eastern seaboard North American Indians.

Feltwell (1963) suggests that once the turkey reached Britain in the sixteenth century, it spread rapidly and was relatively commonplace across the country by the seventeenth century. Harland (1858) comments 'In 1573, Tusser notices these birds among the farmer's fare at Christmas', whereas apparently Archbishop Cranmer ordered that 'of cranes, swans and turkey-cocks, there should be at festivals only one dish' (Harland 1858: 1059). [Further discussion of turkeys at Christmas in England is explored below.] Whether Henry VIII did or did not have turkey is debated, but given his dates it is likely. Beljak (this volume) gives an account of turkey reaching Croatia, and according to data published in *The Historical Thesaurus of the Transylvanian Hungarian Language,* (Erdélyi Magyar Szótörténeti Tár 2000), turkey is first documented in (the then Hungarian) Transylvania in 1633. Both the meat and the eggs of turkeys were consumed widely in Transylvania not only by aristocrats, but also by ordinary folk.

There is evidence of the turkey even further East in India in the early seventeenth century. The fourth Mughal emperor Jahangir, a collector of rare species, records a turkey at his court in 1612. At first, thinking of overland routes, I was amazed at such a destination so far east so soon, but the route was by sea and far more understandable, via the Portuguese settlements in Goa and Cambay (Fraser 2017). A painting of such a turkey, signed by Mansur, the famous artist at Jahangir's court, is in the Victoria and Albert Museum in London. Dated a bit later is a painting of a turkey associated with the court of the fifth Mughal emperor, Shah Jahan, which is in the Fitzwilliam Museum of Cambridge University (Figure 6: For further information see Fraser 2017: 48).

Figure 6: 'A Turkey Cock'
Mughal, North India, c1630

Then, in complete reversal of the Anglophone misconceptions mentioned above, the domesticated turkey (of Mexican ancestry) was taken *to* North America by North European migrants, including the English. Less than 100 years after Columbus first landed in America, a 1584 list of supplies to be sent *to* future North American colonies *from* England includes domesticated turkeys, and turkeys are recorded as sent *to* Jamestown, Virginia, *from* England in 1608 (Kennamer et al. 1992).

Recent mitochondrial DNA analyses of archaeological turkey material (Speller et al. 2010) suggest that different subspecies of wild turkeys in the Americas had been domesticated by quite separate groups of Amerindians in different regions in antiquity and yet the analyses suggest that there was some crossbreeding. Stangel et al. (1992) had carried out an earlier study to consider whether genes of modern domestic turkeys had moved into any of the wild species recently, but their work was limited to their contemporary opportunities for genetic research, and their research should be considered inconclusive. More interesting for understanding the diversity in modern breeds of turkey is the genetic contribution from the eastern American wild turkey, *Meleagris gallopavo silvestris* into the domesticated descendants of the Mexican *Meleagris gallopavo gallopavo*, which, having reached Europe, developed there and were taken back across the Atlantic in the early seventeenth century, if not earlier.

What is possible, even probable, is that historically and unrecorded the wild northeastern American subspecies might have crossbred with some domesticated turkeys descended from the Mexican subspecies that had come to Europe and returned to North America. However, we do know of more recent deliberate crossbreeding with this wild subspecies, for example in the ancestry of the Narragansett turkeys (Figure 7). So, in recorded and possibly many unrecorded situations, genetic admixture from *Meleagris gallopavo silvestris* will have entered some modern domestic turkey breeds. As there is no record of which subspecies William Strickland brought back to Britain, there is no way to be sure of subspecies admixture due to his turkeys.

The so-called 'bronze' colour of the American Bronze turkey (Figure 8) and of other 'bronze' breeds, such as the Heritage Bronze (Figure 9) is also related to deliberate crossbreeding with *M. g. silvestris*. Therefore, although the main line of ancestry of domestic turkey breeds around the world today was from *Meleagris gallopavo gallopavo*, there has been diverse crossbreeding involved in the development of the different modern domestic turkey breeds and different desirable qualities claimed for each breed.

Figure 7: A group of Narragansett domestic turkeys

Photograph © Ian Waterman (Heritage Turkeys)

Figure 8: American Bronze turkey

Photograph © Frédéric Duhart

Figure 9: Heritage Bronze turkey

Photograph © Ian Waterman (Heritage Turkeys)

It should be remembered that there has been so much managed development of different 'breeds' of the domestic turkey (e.g., figures 10 and 11) that any genetics study of different breeds comparing them with contemporary living wild subspecies or even with occasional archaeological specimens involves clarity about which modern breed

Figure 10. a male and female Bourbon Red

Photograph © Ian Waterman (Heritage Turkeys)

Figure 11: Beltsville Small White turkey

Photograph © Frédéric Duhart

has been used in any such study. Such care is taken in the genetic study by Aslam et al. (2012), which includes both the Narrangansett (Figure

7) and the Beltsville White (Figure 11) breeds. Today wild turkeys survive in Mexico and in several US states, but they are lighter, with far less breast meat than most domesticated breeds of turkey now found globally. Any deliberate crossbreeding with these subspecies would have been to seek and select for other characteristics thought to be desirable, whether for hybrid vigour, behavioural characteristics or other qualities.

Another misconception relates to the turkey at Thanksgiving

To correlate either the domesticated *gallopavo* subspecies or the wild *silvestris* subspecies of turkey with the autumn thanksgiving celebrated by the so-called 'Pilgrim Fathers' is itself generally incorrect. According to notes in William Bradford's journals (1630-1651), there was a thanksgiving celebratory feast at which all sorts of game, wild fowl and vegetables were served (Bradford 1630-1651), but I was intrigued to learn (Davis 2001) that eating turkey at any such autumnal harvest festival dinners was generally uncommon up to the year 1800. Yet, by 1857, Davis suggests, it had become recognised as part of the 'Thanksgiving dinner'. Thus, the 'tradition' of eating turkey at U.S. Thanksgiving dinners, as celebrated today, will have far later origins than early colonial or the 'Pilgrim fathers'.

Furthermore, as argued by Parris (1978), before the twentieth century, pork would have been the most common meat for such autumnal festivals, because pigs were slaughtered in November, while the domesticated turkeys could be maintained during the winter and the wild, native turkeys could be hunted all year around, and anyway would have been considered commonplace, not festive, food. At that time, before refrigeration technologies, fresh pork was available only after the November slaughter and for a while during the freezing cold northern winter months. Of course, with or without any record of it, isolated settlers without domesticated animals may well have celebrated some autumnal festival with a northeast American wild turkey or with any other wild fowl.

Reconsidering Turkey at Christmas in England

After learning of the Anglocentric misconceptions about how the ancestor of the modern turkey reached UK, I also decided to check on

the common assumption that the tradition of roast turkey for Christmas was of several centuries' antiquity, as is suggested by the Etymology Dictionary (www.etymonline.com/index.php?item=turkey). Again, it seems that this tradition is generally not so old, although there are a few examples of it. Historically in Britain, as for other feasts of the very wealthy, many meats, possibly including turkey from the mid-sixteenth century onwards, would have been served during the many courses of the Christmas feast.

However, this would not have been the case for most people. While historical reports tend to be about what happened in royal and important households, in England, Christmas has long been a celebration for all and efforts would have been made to secure some meat in nearly all families, even if only rabbit. It is possible that turkey was one of the options if bred locally on the farm and, as mentioned above, Harland (1858) referred to Thomas Tusser's 1573 note that turkey was eaten at Christmas on the farm. Nevertheless, beef seems to have been more traditional in some regions of Britain and goose in others. The strong association of turkey with Christmas during the last century seems to have begun among the wealthy in the nineteenth century at some point during the reign of Queen Victoria.

Even in mid-nineteenth-century England, in the book, *Christmas Carol*, by Charles Dickens, the Cratchit family were shown by one of Scrooge's ghost visions as having for their Christmas dinner a goose, much extended with stuffings, apple sauce and potatoes (Dickens 1842). This was a festive meal in the family of a clerk who would not have considered himself as one of the really poor in Victorian London. Yet, when wealthy Scrooge woke up reformed, it was a huge turkey that he bought to donate to the Cratchits. This shows that goose was a more modest, but still festive, purchase for the Christmas meal for a family of seven, whereas the turkey was available at greater expense for a Christmas dinner in some wealthy household.

From some point in the nineteenth century, then, a turkey, if it could be afforded, starts to become the sought-after meat for Christmas dinner in Britain, and then it became 'traditional'. Once traditional, the custom spread around the countries that were at that time part of the British Empire. Even in mid-summer southern hemisphere

Christmases of Anglophone countries a turkey dinner is traditional, whether cold (Figure 12) or hot.

Figure 12: Cold roast turkey at Christmas in Australia

Photograph © Helen Macbeth

The more recent uptake of roast turkey at Christmas unevenly around continental Europe I had assumed owed more to Hollywood than to Britain, and it is intriguing to read Beljak's information about turkey in Croatia (Beljak, this volume), which also suggests the spread of the turkey across Europe in the sixteenth century, in this case eastward, and even its consumption at Christmas along with the common, but also imported, 'tradition' of Croatian *sarma*.

Meanwhile, as discussed below, turkey meat is no longer an expensive luxury and, even in England, there is an increasing tendency to serve something more 'special' at the centre of the Christmas dinner, which may be a fresh, slow-reared, free-range farm turkey or it may be some other expensive meat. Thus, ironically, I know of families today celebrating with roast goose or roast beef, which had been the cheaper option in Victorian England, but each is now far more expensive than a frozen turkey from a supermarket. A few years ago, at a large family gathering of several generations for Christmas, my nephew and wife served us each a roast partridge, while all the vegetables, sauces and dessert were what our family would consider as traditional for Christmas.

Big changes in the price of turkey meat and attitudes towards this
This chapter started with personal memories of domestic turkey meals at Christmas in the 1940s and 1950s, and that everything which contributed to these was something very special. From soon after the Second World War, perhaps stimulated by wartime conditions, changes in production methods of the turkey started to occur in many countries, such as more intensive farming of poultry and refrigeration which allowed transport of carcasses. Relative prices gradually began to fall, but in England there was still one main season for sales of turkey – Christmas – and this caused a seasonal effect on the breeding and raising of turkeys.

Further technological changes followed for production and processing; then freezing allowed a new freedom from seasonality of slaughter. While there is still considerable seasonality for consumption at Christmas, all-year consumption of turkey has gradually increased. In fact, with the increased consumption of turkey a diversification of producers has occurred with some farms specialising in producing eggs, others in incubation and hatching of chicks, at which point chicks were sexed and sold on as poults to further farms for growth to maturity, increasingly in huge barns of thousands of birds separated by sex.

Not only are there today some traditional locality breeds such as, for example, the *Zigorski puran* discussed by Beljak (this volume), but also new breeds of turkey were developed for different retail purposes. For example, white feathered breeds became preferred for whole birds (www.britishturkey.co.uk) as plucking the white feathers left a cleaner-looking skin afterwards. Other turkey breeds were developed for different meat products marketed for sale throughout the year, for example, those products (figures 13, 14 and 15) to be found in the freezer or the refrigerator compartments of large supermarkets, or otherwise sold as parts, or used in prepared meals. Depending on season, some of the cheapest packs of meat found in a supermarket can be of diced turkey and turkey mince.

However, some people are concerned about how this low cost has been achieved. In Britain in 2011, one of the famous TV chefs had used the media to expose conditions within mass-production poultry farms, for example by filming what went into the contents of some

Figures 13 and 14: packets of turkey meat available at local supermarket

Figure 15: turkey mince used in a Jubilee party dish

Photographs © Helen Macbeth

farms, for example by filming what went into the contents of some children's turkey favourites, such as 'turkey twizzlers'. These TV documentaries seem deliberately angled to disgust the kind of supermarket consumer, who prefers to think of meat in packets rather than from animals on their feet. Furthermore, at about the same time, in 2007 an outbreak of the H1N5 virus ('avian influenza') was found in the biggest UK producer of turkey meat. It was found that that case of infection could be traced to turkeys imported alive from that firm's own farms in Hungary. Again, the media highlighted conditions of the importation and mass-production of turkeys. In 2011 in preparation for this paper, I had tried to visit that turkey producer, genuinely to learn more about large-scale production, but under the above circumstances and probably due to nervousness about the media, it is, perhaps, not surprising that my correspondence was never even answered.

Following the lack of cooperation from that mass producer of turkeys, I sought information from a well-known British food retailer with famously high standards of food quality, hygiene and farmer care, Marks and Spencer. This resulted in a very helpful conversation with a member of their 'Technology Department'. He informed me of the changes, especially in the technology of breeding, production methods and marketing of turkeys; for example, that traditional selection methods for breeding had been focussed on increasing the proportion of the popular white breast meat to brown meat and on the faster growth of the turkeys. I learned about the different growing times of the male and female birds, about the developments and changes in feedstuffs and

about new refrigeration methods. All these factors contributed to the drop in the price of turkey meat to the consumer.

The seasonal skew in retailing for sales leading up to Christmas has caused costs in production, but for those who do not require the turkey to be fresh, freezing has been a solution. In 2010 European Union legislation made it illegal to sell previously frozen meat defrosted as 'chilled' meat, as though it were fresh and chilled, but until this legislation turkeys could be frozen whenever and wherever they were slaughtered, and then defrosted to be sold as 'chilled' (i.e. claiming to be fresh) in preparation for Christmas. This too contributed to price reduction, but, when the legislation came in, it had an important effect on seasonality, and several turkey-producing farms went out of business, whereas some turned to producing turkeys for Christmas while producing chickens for the rest of the year.

My information from this Marks and Spencer technologist also included new methods of super-chilling, with high CO_2 levels, which is not freezing, but preserves the meat, so that once again, he explained, the carcasses could legally come from a distance (in time or space) and still be sold as 'chilled'. I also learned that the so-called 'turkey crowns' (a large, easy to carve, joint made of the breast meat on the carcass but with all limbs removed) had become very popular for sale at Christmas.

In summary, the technologists have worked hard to speed the growth, to reduce the costs of feed, to improve the conservation methods within EU rules and to develop new retail products for the consumers that are attractive both in all seasons and for busy, especially urban, workers, and affordable by most consumers. Advertisers then portray these as appropriate. Meanwhile people complain that these supermarket turkeys are not as tasty 'as they used to be'…. and yet, around England, Scotland, Australia and USA many people still have a turkey for their Christmas dinner, but those who find taste important seek out the farms where they can find a slowly-reared, free-range, preferably heritage, turkey (Figure 16), or find a butcher who buys from such farms.

Figure 16: Heritage turkey ready prepared
(a Bourbon Red, 8 to 9 months old and weighing 17lbs 3 oz.)
Photograph © Ian Waterman (Heritage Turkeys)

Conclusion

Roast turkeys are strongly associated with important feasts in the calendars of the English-speaking nations. In most of these countries, turkey is considered the traditional meat for Christmas dinner, whereas in the United States of America, it is also traditional for Thanksgiving dinner in November. In choosing to study the turkey, I learned of many popular Anglophone misconceptions (my own included) about the origin of such traditions, and even about the origin and ancestry of the domesticated turkey now found in supermarkets around the world. Starting with a review of these misconceptions about origins and traditions, this chapter went on to discuss how changes in the technologies of breeding and conservation have changed turkey meat from an exceptional, expensive and special roast at annual festivals to an inexpensive meat protein sold at all times of year in polystyrene and plastic packets of different cuts from carcasses of turkeys bred in crowded, industrial conditions.

References

Aslam, M.L., Bastiaansen, J.W.M., Elferink, M.G., Megens, H-J., Crooijmans, R.P.M.A., Blomber, L.A., Fleischer, R.C, Van Tassell, C.R., Sonstegard, T.S., Schroeder, S.G., Hroenen, M.A.M. and Long, J.A. (2012) Whole genome SNP discovery and analysis of genetic diversity in Turkey (*Meleagris gallopavo*), *BioMed Central Genomics,* **13,** as available on www.ncbi.nlm.nih.gov/pmc/articles/PMS3496629).
Bradford, W. (1630-1651) *Plimouth Plantation,* journals, as available on www.gutenberg.org/ebooks.

Camacho-Escobar, M.A., Jiménez-Hidalgo, E., Arroyo-Ledezma, J., Sánchez-Bernal, E.I. and Pérez-Lara, E. (2011) Historia Natural, Domesticación y Distribución del Guajolote (*Meleagris gallopavo)* en Mexico, *Universidad y Ciencia,* **27(3):** 351-360.

Crawford R.D. (1992) Introduction to Europe and the diffusion of domesticated turkeys from the Americas, *Archivos de Zootecnica*, 41: 307–314.

Davis, K. (2001) *More than a meal: the turkey in history, myth, ritual, and reality*, Lantern Books, Herndon, VA.

Dickens, C. (1842) *A Christmas Carol*, Chapman and Hall, London.

Erdélyi Magyar Szótörténeti Tár (2000) Vol. **10**, pp. 1- 1092. [Data collected by Szabó T. Attila. Edited by Vámszer, Daly, A.P., Dombi, E., Fazakas, E.B., Gergely, P., Kósa, F., Kürti, M.Z., Maksay, M., Nagy, J.T., Szabó, C., Szabó, G. and Zsemlyei, J. Published by: Erdélyi Múzeum-Egyesület –Kolozsvár & Akadémiai Kiadó, Budapest. Information sent to author by Attila Szabo].

Farner, D.S. and King, J.R. (1971) *Avian biology*, Academic Press, Boston.

Feltwell, R. (1963) *Turkey Farming,* Faber & Faber, London.

Fraser, M. (2017) *From Kabul to Kolkata: Highlights of Indian Painting in the Fitzwilliam Museum,* The Fitzwilliam Museum, Cambridge.

Harland, J. (1858) *The house and farm accounts of the Shuttleworths of Gawthorpe Hall in the county of Lancaster at Smithills and Gawthorpe: from September 1582 to October 1621*, Chesham Society, Chesham.

Hogan, C.M. (2008), *Wild Turkey: Meleagris gallopavo,* as accessed on http://www.globaltwitcher.com/artspec information.asp?thingid=2199.

Kennamer, J.E., Kennamer, M. and Brenneman, R. (1992) History. In Dickson, J.G. (ed.) *The Wild Turkey: biology and management,* Stackpole Books, Mechanicsburg, Pennsylvania, pp. 6-17.

Parris. J. (1978) *Mountain Cooking,* Asheville Citizen Times, Asheville, North Carolina.

Speller, C.F., Kemp, B.M., Wyatt, S.D., Monroe, C., Lipe, W.D., Arndt, U.M. and Yanga, D.Y. (2010) Ancient mitochondrial DNA analysis reveals complexity of indigenous North American turkey domestication, *Proceedings of the National Academy of Sciences*, **107(5),** 2807-2812.

Stangel, P.W., Leberg, P.L. and Smith, J.I. (1992) Systematics and population genetics. In: Dickson. J.G. (ed.), *The Wild Turkey: Biology and Management,* Stackpole, Harrisburg, Pennsylvania: 18-28.

The Economist (2014) The flight of the turkey, 20th December, 2014.

Valadez Azúa, R. (1996) *La Domesticación Animal,* Plaza y Valdes, Mexico City, Mexico.

www.britishturkey.co.uk/facts-and-figures/turkey-history-and-other-facts.html, as accessed on 15/11/16.

www.etymonline.com/index.php?term=turkey, as accessed on 10/09/16.

www.heritageturkeys.co.uk, as accessed on 15/11/16.

www.inaturalist.org, as accessed on 10/09/16.

www.projectnoah.org, as accessed on 10/09/16.

www.wildturkeyzone.com, as accessed on 10/09/16.

CHAPTER 7
TURKEYS IN THE ZAGORJE REGION OF CROATIA: A CASE STUDY FROM A CULT BIRD TO A FROZEN BIRD

by Bruno Beljak

Introduction

A case study today does not necessarily belong only within the sphere of one academic discipline, since scientific research often requires involvement which stretches across disciplinary and professional boundaries. This chapter should serve as a guide for a historical journey about the edible turkey in Croatia (Figure 1) and to determine when and in which way it became a landmark food among other 'older' species of poultry there, such as the goose, duck and chicken. The chapter will consider what lies behind the status of the Croatian breed of turkey as a regional pride, the qualities of its meat today, its place in sustainable development and finally the prospects for this cross-cultural, domesticated bird.

Figure 1: The author with one of the farm owners in Konjščina area and a Zagorje turkey (*Meleagris gallopavo*)

Photograph © Darija Ogrizovic

No one knows for sure the origin of the cultural factors that caused the iconic place of the Croatian turkey today. Speculations about it, although interesting, do not figure in the list of priorities of today's social scientists. The attention of our social sciences today

tends to show how a culture was formed as a continuous process of taking and giving. We cannot explain why only the turkey from the Zagorje region became *the* famous turkey within and beyond the borders of Croatia.

The Zagorje region – the birthplace of the *Zagorski puran* (the Zagorje turkey)

Hrvatsko Zagorje is in the north-western part of Croatia. This is a place where history and geography combined so that a special breed of turkey would be honoured, developed and cultivated. The breed of turkey is called the *Zagorski puran* (the Zagorje turkey, Figure 1). This region, to the north of Zagreb, the capital of Croatia, is usually referred to as 'Zagorje' by Croatian people. The word '*Zagorje*' means hinterland, or literally 'beyond the mountain'. The whole area spreads out to the north of the Medvednica mountain up to the Slovenian border and to the regions of Međimurje and Podravina.

Figure 2. Aerial view of typical Zagorje landscape

Photograph © Silvija Šincek Humek

The region is a candidate for being the most idyllic county in Croatia. There are beautiful hills, and rivers, creeks and lakes pass through the valleys and form the typical Zagorje scenery (Figure 2). The area has many villages and small towns scattered across the hillsides and the land is perfect for agriculture, especially vineyards. The Zagorje region was previously part of the Austro-Hungarian Empire and was always a favourite site for castles and other country houses of the Croatian and the Hungarian rulers. Furthermore, in the

area several of the castles are mediaeval. The climate is continental; in a geographical sense, it forms a wavelike blend of hills and valleys and is rich with forest vegetation. On the meadows, after the grass has been mown, the *Zagorski puran* finds plenty of grasshoppers and earthworms that serve as an additional source of protein. The geological and climatic conditions of the Zagorje region present an ideal habitat for turkeys and provide for their quantitative and qualitative development.

For centuries now, the *Zagorski puran* (Figure 3) is what first comes to mind when you ask Croatians to describe the Zagorje region (Valicon 2010: 3)[1]. Statistical data support the fact that the turkey from the Zagorje region became the landmark food of the region, which means that this turkey was accepted in the broader context of the symbolic level.

Figure 3: a Zagorje Puran displaying

Photograph © Silvija Šincek Humek

[1] The link between the geographical landscape of the Zagorje region and the meat of Zagorje turkey is emphasised by results of a research questionare. The frequency of associating the identity of the name *Zagorje turkey* is very high, 100% in northern Croatia (where the Zagorje region is also located) 99% in middle Croatia, 97% in Zagreb (the capital) and 96% in Slavonia (eastern Croatia).The first reference to turkeys in Croatia relates to Zagorje (40%) (Valicon 2010).

In the over-populated region of Zagorje, which accepted fugitives from the East during the Ottoman expansion, hunger was common. Chickens or older hens would be slaughtered only when there was a sick man or a pregnant woman in the house, so that fresh soup could be brewed. Feudal lords (although today we do not perceive them in that way) took it upon themselves to take care of their peasants, because without labour there were no profits. While on the 'gentleman's table' there was quail, snipe and wild goose, hunting other than for small animals was forbidden for the peasants.

Figure 4: Zagorje puran showing tail feathers

Photograph © Silvija Šincek Humek

However, a turkey (Figure 4) is more than a chicken and it resembles the gentlemen's quail but was acceptable for all members of society. The introduction of turkey to the peasants' menus in the Zagorje region was similar to that of introducing potato or corn, foods that saved people from starving. Peasants from Zagorje did not own a lot of land, and even today there is a problem with consolidation of small land plots of land into larger ones. Yet, historically, small plots were what contributed to turkey breeding. For centuries, a picturesque turkey sat at the throne, the throne of 'elite' food, in peasant society. From consumption on holidays and at weddings this speciality evolved into a once-a-week meal. In fact, over its history, the *Zagorski puran* is often mentioned in writings, themed in paintings by local artists. Figure 5 shows a painting by Ana Verić (naïve artist, born 1928), and

used in everyday life phrases, for instance 'You're as heavy as a *Zagorski puran*'.[2]

Figure 5: Turkeys and Walnuts (*Purani i orasi)*
(Painting by and © Ana Verić, Croatian naïve artist, reproduced with her permission)

Historical notes

The Mexican ancestry of the modern domestic turkey (*Meleagris gallopavo*) and its subsequent journey to Europe is covered in other chapters in this volume (Saucedo and Jiménez, Macbeth). According to one record [3], the turkey came to the Zagorje region around 1523, as a gift from the bishop Geraldini. Kodinetz (1940) suggests that the first roast turkey in the Zagorje region was consumed at the table of the Pauline monks (The Order of Saint Paul the First Hermit) in the city of Lepoglava for the feast of the Nativity of the Virgin Mary in 1561. The turkey has been bred at that locality from then to this day. Who knows whether the Pauline monks may have taken the recipe of Bartolomeo Scappi, the then well-known private chef of at least four popes, but Scappi's *Opera* (1570) did write in favour of the quality of turkey meat;

[2] "Težak si kao Zagorski puran" (You're as heavy as a turkey from Zagorje region)- old Croatian phrase

[3]Gift from the Bishop of Santo Domingo, Geraldini in 1523; Alessandro Geraldini; Amelia, Italy 1455 – Santo Domingo 1525), (according to the written record of the Magistrate of Venice).

he had presented a true gastronomic bibliographic study of this relatively rare recent import to Europe (Sculli 2008). In 1669, at the Feast of Corpus Christi, we find a reference to turkey as valuable poultry; it was worth two geese, and peasants paid their annual tribute to their landlords in turkeys. Juraj Habdelić, the Croatian Jesuit writer, born near Zagreb in 1609, briskly criticised excessive gluttonous culinary feasts, listing among the meals, tastefully prepared roasts of turkey or goose (Nadvornik 2011).

During the sixteenth and seventeenth centuries in Europe, turkey meat would have been found on the tables of nobles and royal families, especially for festive occasions. This can be presumed to be due to its most savoury meat and extraordinary taste, unlike the meat of any other bird, a proof of it being a premium product of an exceptionally high quality at the time.

The exact term '*Zagorski puran*' was first mentioned in literature in 1929 (Oberhofer 1929). Then, after the Second World War, the Communist government in Yugoslavia limited the right to private ownership of land bigger than 10 acres. That restriction had some beneficial consequences ecologically (Figure 6). Small farmers could not go into hyper production, but they could provide food for and breed a small flock of turkeys.

Figure 6: Zagorje landscape

Photograph © Silvija Šincek Humek

Today the raising of the *Zagorski puran* is stimulated by regional and government subventions. Farmers will say that you need at least 100 turkeys to cover your costs, and, when you have 300 or more, then you can have a good income. However, in Croatia there is still inconsistency in the institutional and political stimuli for small farmers. So, according to the farmers, one can expect some 'unfulfilled promises' from the State ministries. There are dealers who sell other fast growing breeds of turkey, such as the Californian or Canadian turkey, under the brand name of *Zagorski puran,* having stuffed them with food for two months. Farmers say that the meat of those birds 'tastes like baloney' and has nothing to do with the meat quality of the true *Zagorski puran* (Interview B.Beljak with farmer, Ivan Zelina, 2012). While the prices of *Zagorski puran* vary quite a bit, the farmers' *Zagorski puran* are considerably more expensive than the regular supermarket turkey.[4] Some local dealers, resellers (*prekupci*), come to the farmers at the beginning of December and offer them lower prices but guarantee to pay instantly in cash; others come and immediately offer good money but choose only a few of the best quality; others just come to test prices and market value.

Transportation

Traditionally some farmers carried their turkeys with tied legs in a *logožar* - a backpack-cage - to a nearby market in cities such as Varaždin or Zagreb. Peasants also drove their turkeys over the mountain, Medvednica (1035m.), on foot to the nearby bigger city of Zagreb, a distance of around 30km (Novotni 1905). So, it was a common sight to see hundreds of turkeys in the hill forests between the Zagorje region and Zagreb where they would achieve higher prices.[5]

The boom in the production of *Zagorski puran* and its meat is closely associated with the export of turkeys or their meat, which began in the late nineteenth century. The largest export figures were recorded

[4] A price of *Zagorje* turkey is around 100 kn for a cock and 150 kn. for a hen per kg (kn.is Croatian currency) (manufacturer: Puran Zagorskih brega). Price of a regular turkey in markets are around 39.99 kn. ("Konzum" - store chain). Frozen turkey is suitable from the points of view of transport and storage, but its price is lower then the fresh one.

[5] On St. Thomas' Day, December 22nd, peasants chased their turkey flocks over Medvednica hill and brought them to the fair in Zagreb, directing them with long sticks (Muraj, 2013).

in the1930s.[6] Exports went mainly to England and Switzerland, but also, to a lesser extent, to Germany, Italy and Austria. Exporting turkey was conducted from November until mid-December, when the demand was the greatest. This facilitated transportation, as the weather at that time was more predictable since winters become harsher nearer Christmas. In those days Zagorje turkeys were collected in villages in different ways and then were transported to the train station of Zlatar in the Zagorje region. Turkeys were mainly exported already slaughtered. In some cases, the inner part of the slaughtered turkey was filled with charcoal, probably to absorb liquid. The slaughtering method was different for different countries. For example, for the English market turkeys were killed the 'hunter's way', by ringing their necks, so that the blood was left in the body with the giblets. Then they were stored in boxes and placed in special wagons with ice. Transport to London lasted 4-5 days (Figure 7).

Figure 7: Picture of Croatian turkeys displayed in London for Christmas and guarded by police (*Dom i sviet* 1904) [7]

[6] Only the company E. Vajda from Čakovec exported annually between 53 750 and 72 000 pieces of turkey between 1930 and 1935. Large-scale exporters were also J. Reinhard from Ptuj and Ovex Company from Zagreb.

[7] *Dom i sviet,* was a Croatian magazine for households.

The taste of this turkey meat was worth the trouble of the transportation, as E. Mayerhofer mentioned in his '*Leksikon Prehrane*' (Lexicon of Nutrition) (1944) as a 'sevenfold kind of meat', that is to say, 'turkey meat tastes like beef, veal and pork, the meat on the legs is dark and firm, on the breast the meat is white and tender, while on the side and neck it is very fat.'

Social contexts

Humans, it seems, generally do not develop an emotional social relationship with feathered flocks similar to the bonds created with other domesticated animals, especially the working animals, horses and dog. So, there are no mutual bonds with turkeys. Nevertheless, owners of birds in flocks know their birds well and they will tell you if a certain turkey is sensitive, rough or jealous. Usually owners and breeders of turkeys consider the turkey to be a dumb animal: there are sayings such as: 'to be as surprised by something as the turkey is by its crap' or just plain simply 'dumb as a turkey'[8].

Nevertheless, these turkeys figure in a different social context as significant in the concepts of this locality. By the time of its placement in the Western European markets, the turkey was already part of the cultural heritage of *Zagorje*, in fact, a part of the identity of the *Zagorje* region. Identity is an expression of man's position in the world and is chosen by the population of a given region. Skilful traders used the well-known story of the *Zagorski puran* and quickly transported turkeys to a place where they could safely sell their merchandise. All partners in the chain of sale were satisfied: peasants got their money, traders and transporters got theirs and consumers enjoyed the product. Everybody was satisfied, except the turkeys, of course. The reputation of this turkey within Croatia nowadays is reinforced by the marketing fact that the first president of the new Yugoslavia, Josip Broz (Tito), was born in a village in *Zagorje*, just like the first president of today's Croatia, Franjo Tuđman. Both presidents enjoyed roast turkey and turkey meat.

Clearly the turkey has achieved a special social role in Croatia. Two hundred years of domestication on this side of the Atlantic were

[8] "Čudiš se ko' pura dreku" (be surprised by something as turkey by its crap), "Glupa ko tuka"(dumb as a turkey).

enough for *Meleagris gallopavo* to enter European folklore generally, and eventually but relatively recently to be associated with the Christmas menu in many countries (see Macbeth, this volume). An interesting reflection of this later date exists in a piece of Croatian oral history:-

> '*The custom of giving a kind of reception to the first visitor on Christmas morning was long preserved. He had to be a young, healthy man who would have sat on a prepared seat like a hen sitting on eggs, sprinkled over with corn, offered food, which he had to eat greedily. He would have stirred the fire so that many sparks flew out, and all that was accompanied with obligatory wishing of abundant fertility.'* (Gavazzi 1988:209-210).

The wisher would then utter some magical words: 'May God give you hens, geese, ducks, chickens, calves and piglets…' The goal of these greetings is clear – it was to cause fertility with the magic of analogy. Magic words are like prayers; they do not change in case this might weaken their power. The point is that in the list in that magical wording, which is still not abandoned in some parts of Croatia today, there is no mention of turkey, which indicates the old age of this traditional practice before the introduction of the turkey to the region.

However, we do find turkey as a valuable gift in a Croatian Christmas poem, recorded in the twentieth century in Zagreb and its surroundings. The poem is in a local dialect of the *Zagorje* region and asks for the shepherd, *Miškec*, to go to Bethlehem and take the gifts of flax and turkey for the little baby Jesus (Muraj 2013).[9] There is also a newer toast to roast turkey on the Christmas table in the same dialect (Bošković-Stuli 1984).

In rural areas today, when preparing the Christmas turkey with dumplings, the juices from roasting are regularly ladled over the bird. On the other hand, *haute cuisine* has also imported different kinds of dressings and stuffings for the meat. The first Croatian printed cookbook, *Nova z-skup szlozena zagrebecha szokachka kniga (*Birling 1813), has only one recipe for preparing roast turkey, No.465, *Turkey in Gravy*. Probably, this recipe was translated from the German language, whereas judging by the number of recipes (Birling 1813) the capon was still popular. In due course the turkey won its permanent

[9] Muraj, A. Zagebačka blagdanska ozračja (Zagreb festive atmosphere), AGM, Zagreb 2013, p. 206. Here, turkey is marked as great value alongside flax. That is how we see turkey in villages today. Farmers give turkey as a gift to priests, teachers, doctors and lawyers.

place on the Croatian Christmas table. Everyone in Croatia will confirm that there is no Christmas without *sarma* (stuffed cabbage rolls) and turkeys. *Sarma* is also a domesticated food from abroad, that came from the East in the times of the Ottoman invasions of the Balkans. Yet, Croatian Catholics did not want to fall behind the tradition of the Christmas roast that was enjoyed all over Europe. From these examples, we can see that while traditions do change they change only slowly.

A locality food

The *Zagorski puran* is different from other kinds of turkey in the Croatian market and has been recognised as a special breed of turkey (National regulations legislative NN136/11, 28.11.2011)[10]. It is characterised and distinguished from other breeds of turkey by its traditional breeding in small flocks. Such breeding implies raising animals in open air conditions, on meadows, in fact on the gentle hills of picturesque Zagorje or in other habitats with rich vegetation, allowing the birds to move around freely. The free range of this bird influenced morphological and physiological features and formed the quality of the meat, making it less fat. Only when the weather is unfavourable or during the night, is a shelter, a poultry house, provided for the turkeys (Figure 8).

Figure 8: Free range breeding

Photograph © Bruno Beljak

[10] National regulations legislative NN136/11, 28.11.2011: *meso zagorskog purana' oznaka zemljopisnog podrijetla.*

The continental climate particular to the region in which this turkey is bred involves foggy clouds forming in the valleys of the small hills for 15 percent of the year[11]. These conditions for raising and feeding the animals have created exceptionally tasty meat which has made it famous throughout Europe. Furthermore, there has been 'negative' selection, in which turkeys of smaller size were retained for breeding which had the practical result that the size of the turkeys was suitable for smaller ovens and casserole dishes.

Yet, Christmas and holiday menus are not a good measure for studying everyday food intake, because according to the Catholic phrase 'food as it was at Christmas…' that is that at Christmas nobody should be hungry. Well-tested, traditional recipes suggest that turkey is the most common Christmas roast, that it is rich and was stuffed so that it would be even richer. The *Zagorski puran* is traditionally served with *mlinci* as a side dish (*mlinci* being a thin dried flatbread, served as a local kind of pasta).

Protection

Without going into protection and preservation protocols, I shall only mention designations that the *Zagorski puran* has 'won' at the moment. They can be reduced to three levels:

- regional protection,
- protection of the European Union and
- protection as a cultural intangible heritage food.

The topic of origin of the meat entails some issues: if animals are not born, bred and fed on the exact fields and slaughtered at the exact locality then the origin of the meat is questionable.

The story of the *Zagorski puran* is a successful story partly by chance. The Slow Food global movement became popular in the late 1990s in Croatia. Agronomical and veterinary professionals, the government and especially the local community in the Zagorje region recognised the importance of the *Zagorski puran*. It was proclaimed the Croatian indigenous breed of turkey in 1998 and it entered the Food and Agriculture Organization World Watch list for domestic animal diversity in 2000. Furthermore, the meat of the *Zagorski puran* is on

[11] Products with historical debth involving specific climate and other conditions in defining french term Terroir. (Téchoueyres 2005)

the UNESCO list of intangible heritage. The *Zagorski puran* is protected both by designation of origin (PDO) and by geographical indication (PGI). Both these protections and signs of quality add value to local tradition in a given region. Farmers' collectives advocate a chain of authenticity with regard to the origin of raw food.

The number of reproductive turkeys in the Zagorje region in 1935 amounted to 28,000 birds, and in 1999 there were only 800 of them. After these projects for protection, conservation and cultivation of the *Zagorski puran* had been started in1997, their number rose to 2,196 in 2009. In order to keep the traditional technology of production and high quality of the meat of the *Zagorski puran*, specifications were set for cultivating the *Zagorski puran* as free range, with a minimum range of 25 square metres of green field per turkey. On one hectare of green fields it is, therefore, possible to breed a maximum number of 400 turkeys. Regulations also now require that slaughtering must be only in local slaughter houses that are within the limited geographical area defined in the specifications.

Farming, raising, cultivating, developing

Today, the farming of these turkeys consists of three farming cooperatives, each association having more than 210 breeders (HPA 2009), who produce young flocks, breed and distribute the *Zagorje* turkey with a certificate. The farming cooperatives serve as a governing body for all entrepreneurs that are involved in the *Zagorski puran* breeding business. The Zagorje turkey hens and turkey cocks are ready for market in 28 weeks, that is to say, after some seven months, which is a longer period than other farm or barn turkeys ready for market in just two months. The life cycle of the *Zagorski puran* is longer because it is allowed to grow slowly in accordance with the more normal rhythm of nature. The average weight of the live Zagorje turkey cock is, at the age of 28 weeks, 6 – 8 kg., whereas turkey-hens weigh around 3-5 kg. at the same age. Eviscerated and prepared for roasting a turkey hen weighs 2.5 – 3.5 kg and a turkey cock 3 -5 kg, which are the commonly desired weights and size for a turkey for roasting. With measurements not being changed for almost 80 years now, we can suspect that this is the cause of this 'negative' selection (i.e. birds of smaller size being kept for breeding). This size is also ideal for the size

of ovens. What Kodinetz (1940) published in his 1940 paper about the values of body measurements of the *Zagorski puran*, remain almost identical to those reported by Muzic et al. (1999), for 28-week-old birds. Even the conclusions, published by Jaap et al. (1939), were much the same, and stated that the development of bones in domestic turkey males ceases at the age of 24-26 weeks and in females at 22 weeks. Body length and width, breast bone length and breast depth of the remaining population did not change even slightly in the period between 1937 and 1999 (Muzic et al. 1999).

Quality of meat

Turkey meat is among the healthiest kinds of poultry meat on account of its high nutritional, biological and low-calories value. The *Zagorski puran* with its tradition of free range slow production adds value to make it an even healthier product. According to the survey taken in 2010 (Valicon 2010), (n=1000), 53% of subjects preferred the meat of the *Zagorski puran*, 25% said that there is no difference in taste between the meat of the *Zagorski puran* and the meat of other turkeys, 19% did not know the answer and only 3% said it tastes worse compared to other turkey meat in the market.

There are four *Zagorski puran* breeds: gray, brown, black and light coloured (Figure 9). They differentiate only by feather colour while the meat tastes the same.

Figure 9: Zagorje turkeys of different colours

Photograph © Bruno Beljak

Turkeys from the Zagorje region had previously included some blood lines of other European breeds of turkey, particularly the French Sologne breed. However, over the last 100+ years this breed has been developed without mixing with other breeds.

Figure 10: Zagorje puran cock with hens

Photograph © Silvija Šincek Humek

As for the differences between the Zagorje turkey hen and the turkey cock (Figure 10), the Zagorje turkey hen is considerably smaller than the turkey cock, and their feathers are not shiny. Turkey hens tend to be tamer and quieter, compared to turkey cocks, which tend to be aggressive and cannot stand competition.

Conclusion

Whereas the densely populated regions in Europe and in other developed economies are abandoning many forms of food production that are not considered profitable by the current generation, 'traditional food' has become a successful formula for retail businesses, and it has become a well-packaged 'retro' product, presenting both a souvenir to take home as well as an attraction on the tables of local restaurants. In contemporary society, *Zagorski puran* plays a successful role in this phenomenon of traditional food. 'Tradition' takes time and the turkeys in the Zagorje region continue to be popular because they are raised in accordance with the economy and ecology of nature. Pragmatic farmers have skilfully adapted its value. Although methods of raising

the *Zagorski puran* have changed in a few ways, for example, the turkeys do not run so much through forest and woodland and farmers themselves may now stuff them and freeze them, etc., these turkeys have not been crossbred with other breeds and the gene code remains much the same today as it has been.

In this case study, I have restricted my report to the turkey in the Zagorje region and its journey to become a 'traditional value' food of a broader region. This example could show how fragmented values can be observed through their 'life in general' context. The Zagorje turkey case study shows that even tradition is subject to some change. The question of tradition and its dynamics preoccupies a large number of cultural anthropologists in Europe and it is the same in Croatia, although perhaps one could suggest that dealing with rational thinking and unclear images of tradition 'is maybe one big nothing' (Prica 2001: 242). For now, though, I shall not pursue here the discourse about tradition as an interesting and valuable ethnological topic.

References

Birling, I.K. (1813) *Nova z-skup szlozena zagrebecha szokachka kniga,* Stai Puntijar reprint, Zagreb.

Bošković-Stuli, M. (1984) *Usmeno pjesništvo u obzorju knjiţevnosti*, Nakl. Zavod MH, Zagreb.

Gavazzi, M. (1988) Godina dana hrvatskih narodnih običaja (Croatian Calendar customs), *Hrvatski sabor kulture*, Zagreb.

HPA (Croatian Agricultural Agency) (2009) Year Report, *Ovčarstvo, kozarstvo i male životinje*.

Jaap, R.G., Thompson, R.B.and Milby, T.T. (1939): Heritable body shape of the domestic turkey, *Proceedings VII World's Poultry Congress*: 68-70.

Kodinetz, G. (1940): Beitrag zur Kenntnis der Rasse und der Entwicklung des Zagorianer Truthuhnes (Meleagris gallopavo). *Zeitschrift fur Tierzuchtung and Zuchtungsbiologie,* **47(2)**:140-165.

Mayerhofer, E. (1944) *Leksikon prehrane, Hrvatski izdavalački bibliografski zavod,* Zagreb.

Muraj, A. (2013) Zagebačka blagdanska ozračja (Zagreb festive atmosphere), AGM, Zagreb, p. 199.

Muzic, S., Janjecic, Z., Bikic, M. and Sinkovic, K. (1999): Current situation of the Zagorje turkey in Croatia. *Acta Agraria Kaposvariensis*, **3(2)**: 213-218.

Nadvornik, Z. (2011) *Hrvatska tradicionalna jela i pila i zimnica s nostalgičnim okusom baka i nona* (Handwritten) The Institute of Ethnology and Folklore resarch, Zagreb.

Novotni, V. (1905) *Vodič za goru zagrebačku* (Guide for Zagreb's mountain), Hrvatsko planinarsko društvo, Zagreb.

Oberhofer, E. (1929), Peradarstvo, self-published.

Prica, I. (2001) *Mala europska etnologija*, Golden Marketing, Zagreb.

Scappi, B (1570) *Opera di M. Bartolomeo Scappie, Cuoco Secreto di Papa Pio V.,* Folio, Appresso Michele Tramezzino, Venetia.

Scully, T. (2008) *The Opera of Bartolomeo Scappi*: *L'arte et prudenza d'un Maestro Cuoco* (The Art and Craft of a Master Cook), Lorenzo Da Ponte Italian Library, University of Toronto Press, Toronto.

Téchoueyres, I (2005) Local Food between Nature and Culture: From a Neighbour's Farm to *Terroir*'. Interview with Laurence Bérard, *Anthropology of Food* 4, May 2005. Local Foods.

Valicon (2010) *Zagorski puran, poznavanje i image, rezultati anketnog istraživanja,* (survey research), Agrarno savjetovanje.d.o.o.

CHAPTER 8
CONFIT, FOIE GRAS AND MAGRET: A SHORT HISTORY OF THE MULE DUCK IN SOUTHWEST FRANCE

by Frédéric Duhart

Introduction

In the early twenty-first century, the mule duck (*Cairina moschata* x *Anas platyrhynchos*) can only be qualified as a unique duck because it does not quack. Of course, it is not bred in the same proportions as the hen (*Gallus gallus*) or the turkey (*Meleagris gallopavo*); just a few tens of millions of mule ducks are produced every year. But, it currently occupies a special niche in the world of poultry: mule duck is the foie gras supplier *par excellence*. In 2014, for instance, livers obtained from specimens of this avian hybrid constituted more than 90% of the 26,630 tons of foie gras produced worldwide. The contribution to this tonnage of domestic geese (*Anser anser*) was quite secondary and the foie gras obtained from Muscovy ducks (*Cairina moschata*) was statistically non-existent.

The mule duck is an excellent topic for this volume. Its fundamental role in the foie gras industry chain gives it a notable economic importance, especially in France – the major producing country with more than 70% of the global tonnage of raw foie gras in a normal year. There, in 2014, around 130,000 jobs were linked to the production/transformation of force-fed mule duck livers, an industry that achieved a turnover of about €2 billion[1].

Foie gras and other emblematic products of the force-fed mule duck are strong markers of an 'art of good living' that is still appreciated, despite an increasing number of voices against their consumption. As an extreme proof, foie gras was served for free when local laws banned its sale in Chicago, between August 22nd, 2006, and May 14th, 2008, and in California, between July 1st, 2012, and January 7th, 2015 (Caro 2009)[2]. In their traditional markets as well as in

[1] Statistical data sources : CIFOG, ITAVI and Euro Foie Gras, 2015.

[2] R. Parsons and D. Pierson, "Foie gras ban is overturned.", *Los Angeles Times*, 07/01/2015. Chef Ken Frank (La Toque, Napa Valley) confessed: "I haven't been without foie gras a single day since the ban went into effect, but tonight is the first time I've been able to charge for it."

Southeast Asia, force-fed mule duck products are much more than classical delicacies. They are also first-class ingredients for the most innovative and fusion cuisines: *Charlotte of foie gras, lychees and rose perfume* (André Bonnaure: Bonnaure 2006), *Spring rolls with foie gras, cod and sesame seeds* (Herman Lai: Rougié 2006), *Duck 'pastillas' with sweet spices and caramelised turnip* (Alain Senderens and Jérôme Banctel: Boé and Rastoin 2011), *Southwest France duck foie gras dim sum with coriander beef broth* (Aurélien Crosato: AFAMÉS 2014), etc.

As a 'golden bird' for an agro-industrial sector and source of luxury foods, mule duck also constitutes a palmiped with an increasing symbolic value. Thanks to French militants, it occupies a better place than before in the pro-animal and anti-meat propaganda – and, consequently, in the timid responses of those who do not share their ideological reading of the relationships between human and other animals. A few years ago, when the Anglo-Saxon campaigns against palmiped force-feeding referred to ducks, photos or drawings of *Anas platyrhynchos*, a species that is not able to produce a real foie gras, were frequently used as illustrative material. Today, the iconographic selection is generally better. On January 19th, 2016, for instance, the actress Pamela Anderson showed pictures of badly treated mule ducks during a press conference organised at the French National Assembly by a member of parliament hostile to foie gras production.

To conclude, nowadays, the phrases, 'mule duck' and 'foie gras duck', easily go together in the countryside, in the market, in the kitchen or on Speakers' Corner. In this chapter, I shall come back to the origins of this mule duck's productive orientation; this was a human choice among various alternatives as notably taught by Igor de Garine ([1987] 2014). In others words, I shall consider the history of mule ducks in Southwest France, the part of the world where duck foie gras was born in the eighteenth century and which maintained its monopoly on products from force-fed mule ducks until well into the twentieth century. The area of the Protected Geographical Indication '*Canard à foie gras du Sud-Ouest*' (which covers the ex-regions, Aquitaine and

Midi-Pyrénées, as well as parts of the ex-regions, Limousin and Languedoc Roussillon) fits in quite well with this historical birthplace[3].

After a confrontation with the complexity of the relationships established between local human groups and the mule duck from the late sixteenth century, I shall consider notable steps in the history of the use of this bird as food.

Mule duck, genetic heritage and cultural choices

Alphonse Toussenel was right when he wrote that the mule duck was 'a human creation' (1853): it is the offspring of the cross between two species that did not naturally cohabit during their breeding period until humans modified their native ranges. More precisely, a mule duckling results from the insemination of a mallard/common duck (*Anas platyrhynchos*), (Figures 1 and 2) by a Muscovy drake (*Cairina moschata*) (Figures 3 and 4).

Figure 1: Mallard duck (*Anas platyrhynchos platyrhynchos*), female
Photograph © Frédéric Duhart

[3] The French regional mapping changed on January 2016. Aquitaine, Poitou-Charentes and Limousin were grouped to form a new region (Nouvelle Aquitaine), as well as Midi-Pyrénées and Languedoc-Roussillon (Occitanie).

Figure 2: Common duck (*Anas platyrhynchos domesticus*), female

Photograph © Frédéric Duhart

Figure 3: Wild Muscovy duck (*Cairina moschata*)

Photograph © Frédéric Duhart

Figure 4: Domestic Muscovy duck (*Cairina moschata*)
Photograph © Frédéric Duhart

The indigenous mallard duck and its domestic forms were well known birds in the sixteenth century in Southwest France. There, the determinant factor for the hatching of the first hybrid ducklings was the introduction of the Muscovy duck into the farmyards. As in the rest of France, this phenomenon occurred quite early: it was well established by the middle of the sixteenth century (Belon 1555). The quick adaptation of *Cairina moschata* to this new environment was facilitated by the fact that the specimens that arrived from America to Europe came from domestic populations (Donkin 1989). An old eating tradition of all kinds of waterfowl certainly explains why this newcomer achieved such rapid culinary acceptance in France. Before the beginning of the seventeenth century, *Cairina moschata* was a normal domestic bird in Southwest France and the production of mule ducks started (Serres [1600] 1996).

The infertility of this palmiped did not allow the development of classical co-evolutionary relationships between this avian hybrid and the human groups who bred it. As mule ducklings are necessarily the immediate outcome of the insemination of *Anas platyrhynchos* by *Cairina moschata*, and are themselves infertile, there is no possibility that any genetic material will be durably fixed nor that it will be modified from generation to generation. New types of Mule duck could only appear because of any genetic diversification of its two genitors due to decisions taken by the hatchery operators. In Southwest France, breeder preferences drastically changed over time.

Until the second half of the nineteenth century, only one type of Mule duck was known in this region, the one that is obtained crossing the traditionally selected Muscovy drake and the European Common duck. It is a bird with dark plumage, which was appropriately named '*Anas purpureo-viridis*' by the Swiss zoologist Heinrich Rudolph Schinz (1837; Figure 5). This type of Mule duck was perfectly adapted to the free-range breeding system, which was the general rule for all kinds of poultry at the time. Because of its light bones and powerful muscles, it is even able to fly! As the first development of the force-fed duck industry was based on breeding this bird, it is unnecessary to suggest that once properly fattened, it provides an appreciable quantity of meat, plenty of fat and a good size liver (Parmentier 1803). During the last decades of the nineteenth century, the introduction of improved breeds from Northern France and a better selection among local duck stock led to the emergence of a heavier *Anas purpureo-viridis* that retained the qualities of its lighter predecessor. Nowadays, the commercial hatchery of this original type of Mule duck is a relict practice. In Bidache, for instance, the Lataillade family is still producing hybrid ducklings using a local common duck breed: '*Kriaxera*' or '*Criaxera*' (Figures 6 and 7).

Figure 5: ***Anas purpureo-viridis***
19th Century (after 1837)

Figure 6: Common duck '*Criaxera*' (*Anas platyrhynchos*), female

Photograph © Frédéric Duhart

Figure 7: Mule duck (x 'Criaxera')

Photograph © Frédéric Duhart

From the end of the 1970s, the overwhelming majority of the Mule ducks bred in Southwest France are obtained using an Asiatic breed of common duck as the maternal line. This kind of hybrid bird first appeared in the region during the first decades of the twentieth

century, and then soon began to compete with the oldest local forms of *Anas purpureo-viridis*. With the production of hybrid ducklings from *Pekin* duck (Figure 8), Mule ducks gained further precocity in its physical development… and a whiter plumage: piebald birds became common.

Figure 8: Common duck '*Pekin*' (*Anas platyrhynchos*), female
Photograph © Frédéric Duhart

Generally, the muscle mass of the *Pekin* hybrid is inferior to the best original type. However, using heavy strains of Muscovy duck as the paternal line, hatchery operators were able to continue providing animals with a good meat production potential for the farmers who were interested. Over a period of time, their number was substantially reduced. Working with the heaviest birds makes sense in the traditional method of exploitation in order to obtain plenty of meat and fat in addition to the liver. Nowadays, only small producers are still interested in breeding this type of robust ducks; for instance, those who breed *Canard fermier des Landes* (Figure 9).

The contemporary Mule duck *par excellence* is a type that outperformed all the other ones during the 1990s. It was designed with a vision of the needs of the modern large scale *foie gras* industry. That duck's genitors are highly selected around the idea of improving the final force-fed duck performance in a production framework where the fattened liver is more important than the meat and the technological quality of the liver is more important than its weight. A quite

remarkable effort on the selection of the maternal line was carried out to obtain the cross between a white Muscovy drake and a *Pekin* duck to produce an immaculate Mule duck – that means a bird of which the skin does not present unwelcome dark pin feathers. A detail which shows that this animal was perfectly adapted to a massive breeding system is that a small patch at the top of its head, coloured black for the males and chocolate for the females, allows an early sexing of the ducklings (Figure 10).

Figure 9: Mule duck, contemporary heavy type ('*Canard fermier des Landes*')

Photograph © Frédéric Duhart

Figure 10: Mule duck, contemporary white type, showing dark patches on top of their heads

Photograph © Frédéric Duhart

If the Muscovy duck's genetic ability to produce *foie gras* precociously became an essential component of the relationship between the societies of Southwest France and this bird, we should not forget that that was because of cultural choice: other forms of cohabitation with this hybrid were possible. In Taiwan, for instance, Mule ducks are carefully produced and have been bred for at least three hundred years. But, they are traditionally used to obtain pieces of meat to roast (Rouvier 1987; Figure 11).

Figure 11: Taiwanese Mule duck (x 'Brown Tsaiya')

Photograph © Frédéric Duhart

The culture of *gras*

In Southwest France, the term '*gras*' is used to mean all the force-fed palmiped products. Of course, they were never the only kind of fatty food from animals in this region where a remarkable pig-eating culture also exists. However, the *gras* was given a special value within the framework of local identity construction. For instance, being the location of a large seasonal market for plucked force-fed palmipeds and their livers classically fostered the local pride. Even if this form of trade has mostly lost its importance because of the integration of the foie-gras sector, Samatan (Gers, Occitanie) proudly perpetuates its nickname of 'the mecca of gras'!

When the breeding of Mule duck started in Southwest France, the finality of the goose fattening process was the constitution of fat and salted meat stocks (Serres [1600] 1996). Producing a well fattened

palmiped involved such an important investment that the immediate consumption of such a bird was unthinkable. As the grain provided to the birds was taken from a reserve that would also contribute directly to human nutrition, this incongruous action would have been a double waste. To no one's surprise, the fattened hybrid duck was treated in the same way. Traditionally, almost all the parts of the bird were cooked in its own fat to be preserved as *confit* (Figure 12). If '*aile*' (half of breast with the wing) and '*cuisse*' (whole thigh) early became the most prestigious cuts, other pieces were also appreciated in contexts where the access to meat products was reduced: gizzards, necks… or heads (Figure 13). According to the principles of a well thought out domestic economy, even the residues of the cooking of *confit* ('*Graisserons*', '*Chichouns*') were carefully collected in the cauldron to be preserved in small jars.

Figure 12: *Confit* jar ('*Toupin*')
Photograph © Frédéric Duhart

Figure 13: Preserved duck head (Duro family, Bidache)
Photograph © Frédéric Duhart

The gras strongly diversified in the second half of the twentieth century. In 1959, André Daguin, a young chef trained at the Paris Hotel School, started offering '*magret*' on the menu of the Hôtel de France at Auch. This proposal to eat rare force-fed palmiped breast was revolutionary, totally opposed to the main principle of the classical culture of gras I just described: a force-fed goose or duck was too precious to be eaten when fresh; its meat had to be preserved. During the 1960s and the 1970s, other chefs interested in a renewal of the regional cuisine were also appropriating this 'duck red meat' (Guérard 1977). Roasted in the kitchens of the best restaurants, the magret was a fashion food in the middle of the 1980s. In this context, popular rural classes started to familiarise themselves with this original 'duck steak' through wedding banquets and other social activities that brought them to the restaurant (Bonnain 1987).

The publication, on February 18th, 1986, of the decree that presents the legal definition of 'magret' reminds us that the sale of fresh force-fed palmiped breast had already reached a significant volume at this time. With the intensification and deseasonalisation of the duck foie gras production, the magret became a meat available year-round in the supermarkets (Figure 14). Logically, consumers were increasingly familiar with this meat. Nevertheless, it never entered into a real banalisation process because its price, outside discount periods, stayed

relatively high. After the triumph of the magret, the ancient scruple relative to the consumption of fresh force-fed palmiped was completely forgotten and duck meat could be used cooked in an infinity of dishes: carpaccio, bolognese sauce, chili con carne, tajine, etc.

Figure 14: Roasted magret (Thierry Pralong, Perigueux)
Photograph © Frédéric Duhart

Duck foie gras, a tradition of innovation

When duck foie gras appeared in the eighteenth century, French elites enjoyed fat and tender animal products. Therefore, it was immediately regarded as a delicacy or, from a modest peasant point of view, as a food better to sell than to eat. The making of pies and terrines precociously became the most prestigious way to prepare duck foie gras, especially in the Garonne valley. On December 22nd 1790, for instance, a cook wrote in *Les Affiches de Toulouse* that, on request, he was able to elaborate all sizes of duck liver *pâtés*. A part of this production was exported to the gourmets as far as was allowed by the relative resistance to putrefaction of the processed foie gras in winter

conditions. Pâtés frequently reached Paris without spoiling much (Mercier 1788).

Logically, the method of food preservation developed by Nicolas Appert early captured the attention of craftsmen involved in the foie gras processing (1810). In the 1830s, for instance, its canning was used in factories located in Perigord. For those who adopted this technological innovation, immediate results could be a considerable extension of the dissemination area of their products and the deseasonalisation of theirs sales: small quantities of *Pâté de foie gras de Périgord* were regularly brought to Calcutta by ships from Bordeaux (Jacquemont 1836)! Canning not only revolutionised the trade of *pâté*s; it also gave a remarkable commercial importance to the liver cooked in its own fat. With this '*foie gras au naturel*', it became possible to have force-fed palmiped liver and not *pâté* where or when it was impossible to obtain fresh foie gras. Far away from Southwest France, that meant an opportunity for cooks to develop their own cuisine of duck foie gras. It is interesting to note that the fresh duck foie gras was unknown in Paris before the development of rail transport. Then, it was able to compete in this strategic gastronomic market with the Alsatian goose liver. Immediately, the force-fed duck liver did not appear as a poor cousin of this ingredient which was highly valued by the local chefs. In 1869, for instance, Louis-François Dronne wrote it was more delicate than the goose liver and it had an exquisite hazelnut flavour.

In 1954, La Comtesse du Barry (Gimont, Gers) added a new product to its range of force-fed palmiped livers: the '*bloc de foie gras*'. Homogeneous and tasty, it was an emulsion of foie gras and water. Of course, it was different from the classical '*foie gras entier'*, but it was an unmixed and authentic foie gras quite different from the purees or creams prepared until that time. Various firms soon understood that the block was a profitable innovation with a strong commercial potential. In 1957, it was already produced in many factories of Landes, Haute-Garonne (Duhart 2011), etc. This integration of the block making into the ordinary practices of the regional foie gras industry corresponded to the entry into a new phase of its history, characterised by a notable intensification of its activity and a relative democratisation of foie gras consumption.

During the last decades of the twentieth century and the early 2000s, the foie gras industry did not give up its long tradition of innovation. In a technological context where it was easy to maintain the cold chain, a range of semi-preserved foie gras was developed (Figure 15) and the art of freezing the delicate duck liver was considerably improved.

Figure 15: *Mi-cuit* whole duck foie gras (Jean-Michel Berho, Domezain)

Photograph © Frédéric Duhart

Discussion

The history of the mule duck in Southwest France can be interpreted as a remarkable example of the complex dynamics of the 'food revolution' (Garrido Aranda 1999) linked with the change of scales of the European 'world economy' (Braudel 1979) that occurred after the discovery of America.

The fact that the mule duck is a hybrid immediately underlines the point that the basis of this phenomenon was the establishment of new connections between the biocoenoses of the Old and New Worlds. Its domesticity reminds us that the creolisation of a local biological population could not affect human food consumption practices without a certain degree of cultural acceptance for the new species. We must not forget that numerous food plants introduced from America to Europe in the sixteenth and seventeenth centuries were not identified as such by local societies and, consequently, lost their edibility (Lora González 2001). Mule ducks were hatched in Southwest France

because Muscovy ducks had been accepted in this region of the world. It was regarded as a normal duck, which positively differed from the most common one: by being bigger, quieter, etc. As time went on, peasant women constructed a precise knowledge of the *Cairina moschata*, and yet the bird had been admitted into productive farmyards at first because it did not look as different from *Anas platyrhynchos* as it really was.

Here, the genealogy of the mule duck invites us to think about the agronomical innovation processes in the early modern period. The installation of Muscovy ducks into the farmyards of Southwest France was a major change in the local poultry breeding system. It did not correspond with the simple introduction of an 'American duck'. It was the integration at the local livestock level of a new species, sole representative of a separate genus[4], for which some behaviour, needs, genetics and physiological aptitudes could be quite different from those of the common duck – as confirmed by experience after experience in contemporary biological sciences (Guy *et al.* 2012, Baéza *et al.* 2013). If necessary, the place occupied by force-fed duck products in the regional economy and food culture during the following centuries immediately proves the importance of this innovation. The fact remains that the Muscovy duck quickly became well established in Southwest France because the local peasantry first considered it to be a palmiped like those they were used to breeding. On the surface, an acceptable small step for the community it was unconsciously, a huge leap for the agronomy!

In the same vein, the replacement of millet (*Setaria italica* and *Panicum miliaceum*) by maize in feeding practices was an authentic nutritional revolution. After a necessary time of appropriation, local societies built empirical knowledge about the nutritive qualities of this new grain and voluntarily used it in some fattening processes. However, a key element in the initial acceptance of *Zea mays* was that it was easy to regard as a kind of robust millet that produced large grains (Carraretto 2005).

[4] John Fleming only placed the "Musk Duck" (*Anas moschata* in Linnean terminology) in the genus *Cairina* when it was distinguished from the genus *Anas* (1822). Later, the white-winged duck could also be regarded as a member of the genus *Cairina*, but it is currently identified as *Asarcornis scutulata*.

Recognising the complexity of the construction of their relationships with the agronomical novelties obviously does not imply a disdain for the 'ethno-knowledge' produced by the rural communities of Southwest France during the sixteenth, seventeenth and eighteenth centuries, or later. Quite the reverse, it is a way of emphasising the originality of a quite pragmatic worldliness. A short reference to the invention and the improvement of the modern method for force-feeding ducks and geese would be enough to remind people of its respectability. Generally, the early modern rural villages of Southwest France were not blocked by a paralysing routine or suddenly transformed by an agricultural revolution (Desplat 1999). As the relationships they established with Muscovy duck, mule duck or maize perfectly show, the relevant peasant population moved only with pragmatic and small steps in changing their ecosystems.

Nowadays, if we try to define a food identity, characteristic of Southwest France, the *gras* stands out as its global unifying marker. The importance of the force-fed palmiped products on this region's food cultures classically leads one to think about the dynamics of the 'food landscapes' that human communities construct and visit daily (Duhart 2007). Because it was born there, the modern foie gras is unquestionably a traditional local food, *un produit du terroir*, in Southwest France. However, nobody could deny that it is also as a consequence of the far-off introduction of maize (for goose liver) or of maize and Muscovy duck (for duck liver).

Conclusion

The story of the links between mule ducks and human societies established in Southwest France started more than four hundred years ago. It does not show signs of stopping. In 2015, this region was still the world's largest producer of force-fed duck livers and a notable place for '*gras*' consumption. Nevertheless, our relationships with food are underpinned by complex biocultural dynamics. Nobody knows if mule ducks will still be bred for food; if they will still be force-fed; if the societies of Southwest France will still regard duck meat as edible in a few years, decades or centuries. Since the beginning of the twenty-first century, the increased visibility of the pro-animal, anti-meat and stop-force-feeding activists reminds us that food choices and

preferences could drastically change, if the dominant ideology should change (Duhart 2009; Dubreuil 2013).

In January 2016, after the identification of sixty-nine areas affected by avian influenza, the French government decided that commercial palmiped breeding should be totally suspended for a time in Southwest France to allow the eradication of the virus and this led the local foie gras industry to the worst crisis in its history. Now, as I write, we cannot know what the genetic, economic, psychological or cultural consequences of this political decision will be in the short, medium and long terms. For humanity, as well as for the birds, the future is full of possibilities.

References

AFAMÉS (2014) *Foie gras Sud-Ouest. 36 Recettes inouïes de chefs*, Ed. Sud-Ouest, Bordeaux.

Appert, N. (1810), *Le livre de tous les ménages ou l'art de conserver pendant plusieurs années*, Patris, Paris.

Baéza, E., Marie-Etancelin, C., Davail, S. and Diot, C. (2013) La stéatose hépatique chez les palmipèdes, *Productions animales*, **26 (5) :** 403-414.

Belon, P. (1555) *L'histoire de la nature des oyseaux*, Gilles Corrozt, Paris.

Boé, P. and Rastoin, P-E. (2011) *Canard exquis. Recettes insolites du canard à foie gras du Sud-Ouest*, Menu fretin, Chartres.

Bonnain, R. (1987) Du confit. Hier et aujourd'hui, *Ethnozootechnie*, **39 :** 73-84.

Bonnaure, A. (2006) *Foie gras*, Montagud Editores, Barcelona.

Braudel, F. (1979) *Civilisation matérielle, économie et capitalisme XV^e^-XVIII^e^ siècles: 3. Le temps du monde*, Armand Colin, Paris.

Caro, M. (2009) *The Foie Gras Wars*, Simon and Schuster, New York.

Carraretto, M. (2005) *Histoires de maïs. D'une divinité amérindienne à ses avatars transgéniques*, La Comité des Travaux Historiques et Scientifiques, Paris.

Desplat, C. (1999) Economie et sociétés rurales en Aquitaine aux XVII[e]-XVIII[e] siècles, *Histoire, Economie et Société*, **18 (1) :**133-155.

Donkin, R. A. (1989) *The Muscovy duck, Cairina moschata domestica. Origins, Dispersal and Associated Aspects of the Geography of Domestication*, Balkema, Rotterdam.

Dronne, L. F. (1869) *Charcuterie ancienne et moderne*, Lacroix, Paris.

Dubreuil, C.-M. (2013) *Libération animale et végétarisation du monde*, La Comité des Travaux Historiques et Scientifiques, Paris.

Duhart, F. (2007). *Du monde à l'assiette. Mythologies alimentaires*, Dilecta, Paris.

Duhart, F. (2009) *De confits en foies gras. Une histoire des oies et des canards du Sud-Ouest*, Elkar, Bayonne and San Sebastian.

Duhart, F. (2011) The First Phases of Foie Gras Industry in South-West France (c. 1780-1955). A Contribution to the History of Food Innovation, *Studium. Revista de Humanidades*, **17:** 161-174.

Fleming, J. (1822) *The Philosophy of Zoology*, A. Constable, Edinburgh.

Garine, I. de ([1987] 2014) Alimentación, cultura y sociedad. In Garine, I. de and Ávila, R. (eds.), *Antropología de la alimentación. Textos escogidos de Igor de Garine*, Universidad de Guadalajara, Guadalajara, pp. 131-137.

Garrido Aranda, A. (1999) La revolución alimentaria del siglo XVI en América y Europa. In Garrido Aranda, A. (ed.), *Los sabores de España y América*, La Val de Onsera, Huesca, pp. 197-212.

Guérard, M. (1977) *La cuisine gourmande*, Robert Laffont, Paris.

Guy, G., Pingel, H. and Baéza, E. (2012) *Production de canards*, Quae, Paris.

Jacquemont, V. (1836) *Correspondance avec sa famille et plusieurs de ses amis pendant son voyage en Inde*, Dumont, Bruxelles.

Lora González, A. (2001) Plantas americanas en Europa: la historia de una perdida de identidad. In Garrido Aranda, A. (ed.) *Comer cultura. Estudios de Cultura Alimentaria*, Universidad de Cordoba, Cordoba, pp. 111-128.

Mercier, L. S. (1788), *Le tableau de Paris*, Amsterdam.

Parmentier, A. A. (1803), Canard, In *Nouveau dictionnaire d'histoire naturelle*. *Tome 4*, Deterville, Paris, pp. 296-298.

Rougié (2006) *Le foie gras revisité par des chefs asiatiques*, Rougié, Sarlat-la-Canéda.

Rouvier, R. (1987), La race de cane Tsaiya (*Anas platyrhynchos*) de Taiwan, *Ethnozootechnie*, **39 :** 85-92.

Schinz, H. R. (1837) *Verzeichniss der in der Schweiz vorkommenden Wirbelthiere… Fauna helvetica*, Petitpierre, Neuchâtel.

Serres, O. de ([1600] 1996) *Le théâtre de l'Agriculture*, Actes Sud, Arles.

Toussenel, A. (1853) *Le monde des oiseaux. Ornithologie passionnelle*, Librairie phalanstérienne, Paris.

CHAPTER 9
OSTRICH MEAT BETWEEN EXOTICISM AND REGULAR CONSUMPTION

by Alicia Aguilar and *F.Xavier Medina*

Introduction

At present, the increase in chronic diseases related to eating habits deemed unsuitable in public health circles, including an excessive intake of animal products, fats and processed foods, has led different international institutions and bodies to advocate eating more food originating from plants and prioritising the consumption of protein sources low in saturated fat, such as pulses, fish, poultry and eggs (WHO 2000, Bender 1992, Kushi et al. 2006, Bach-Faig *et al.* 2011). This is because eating too much meat, particularly red meat, has been linked with certain health problems, such as cardiovascular diseases (Norat et al. 2002, Butler et al. 2003, Alexander et al. 2010) and cancer (Babio et al. 2010, Micha et al. 2010).

However, historically, red meat has been especially important in times of plenty (Medina 2005). It should not be forgotten that it has also had great symbolic significance in times of scarcity, when circumstances have prevented its consumption by the majority for one reason or another.

The changes affecting meat consumption in our societies are decidedly complex, and are closely related to consumer perceptions and values that have been slowly developing over recent decades (Contreras 2002). Meat remains extremely popular, despite advice by public health authorities on moderating its consumption. As Briz and De Felipe (2000: 22) noted in relation to data from a survey carried out in 1990, '(…) most consumers feel that (red) meat is not readily replaceable, being an essential part of good nutrition'.

It therefore comes as no surprise that, despite not being one of the cheapest or 'healthiest' kinds of food, meat is as present and popular as ever in shopping baskets. Data on consumption and statistics on expenditure on both food and drink show that meat is one of the most in-demand products by individuals (Martín Cerdeño 2010). In the

European Union (EU), the average level of meat, dairy product and fish consumption has risen markedly over the last 50 years, and has come to double the worldwide average (PBL Netherlands Environmental Assessment Agency 2011). The level of consumption of meat products in EU countries has remained at more than 60 kg per person per annum over the last 20 years, and could rise to 69 kg in 2018 (Organization for Economic Co-operation and Development – Food and Agriculture Organization 2009).

Beef consumption has remained fairly stable[1], while consumption of chicken and pork has risen substantially. Production-related technological changes, that have made inexpensive meat products more widely available, are undoubtedly a fundamental factor in that rise. Nonetheless, there are also other, increasingly important factors, such as consumers' demands where fat content is concerned (*Alimentación en España* 2011).

In the light of this complex situation, attempts have been made over the last decade to seek healthier sources of animal protein so as to reconcile the need to adapt to new nutrition recommendations with the eating habits of Europeans, who are accustomed to a high level of meat consumption. It is in that context that ostrich, which first appeared on the Spanish market (and in Europe in general) at the beginning of 2000, during the BSE (bovine spongiform encephalopathy) or 'mad cow disease' crisis (Medina 2003, 2010 and see Department of Agriculture Forestry and Fisheries of the Republic of South Africa 2011: 4), may be able to create for itself a niche and become part of some citizens' regular diet (despite it having suffered a serious international crisis between 2003 and 2004 due to the avian influenza epidemic).

Studies carried out to date on the nutritional composition of ostrich meat (*Struthio camelus*, Figures 1 and 2): describe it as a product of high value in nutritional and dietary terms (Polawska et al. 2011). Will it succeed in establishing itself in our culinary culture? Does it have a consolidated market? These and other questions have yet to be answered in the face of the evident change taking place.

1 Except for a critical decline at the height of media coverage of 'mad cow disease' or bovine spongiform encephalopathy (BSE) (cf. Medina, 2001, 2011, *A Profile*…, 2011).

Figure 1: African Ostrich (*Struthio camelus*), male

Photograph © Frédéric Duhart

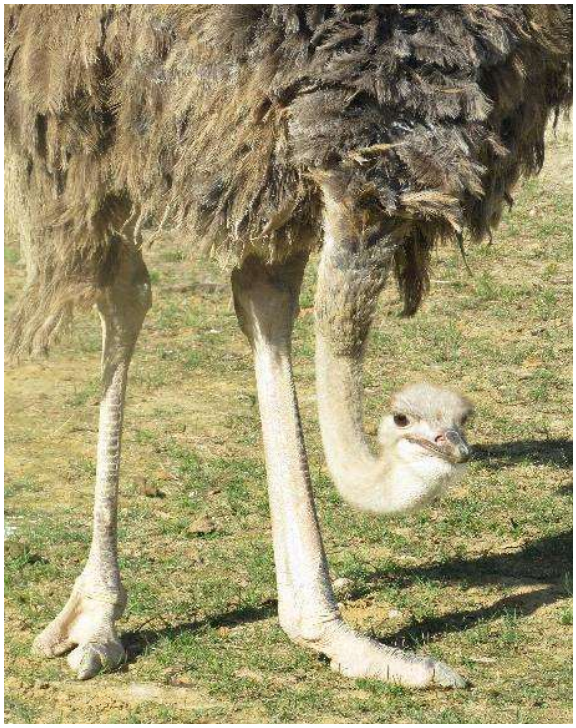


Figure 2: African Ostrich (*Struthio camelus*), female

Photograph © Frédéric Duhart

Ostrich meat's physical characteristics, nutritional composition and possible health benefits

Despite its avian nature, ostrich meat is reddish in colour (similar to beef) due to a high concentration of pigment (22-30 μg Fe/g) and myoglobin levels closer to those found in the muscles of mammals than in poultry (Naude et al. 1979, Sales 1996). Its flavour is not unlike that of beef, although it has a slightly fishy aroma, and it is more tender and easier to digest due to its lower levels of intramuscular fat and collagen (Polawska et al. 2011).

While knowledge of ostrich meat's nutritional composition is still limited, Majewska's recent studies (Majewska et al. 2009) on 10 different types of muscle give the values set out below (Table 1).

Table 1. Chemical composition (g/100 g of edible material) of ostrich meat (variation depends on the muscle analysed and the bird's age)

Component	Ostrich meat
Dry material	23.3-25.5
Protein	20.6-21.7
Fat	0.9-1.34
Ash	1.07-1.17

Source: Majewska et al. (2009).

Ostrich meat's percentage of protein (20.6-21.7%) and its amino acid composition are rather similar to those of meats such as beef and chicken, although with a lower proportion of histidine and serine (Sales 2002).

In contrast, as shown in Table 2, ostrich meat's fat levels (0.9-1.34%) are much lower than those of meats such as lamb (8.79%), beef (4.6%) and chicken (4.3%), and similar to those of poultry meat with a low fat content, such as turkey (1.19%) (Karakök et al. 2010). While preliminary studies suggested a very low level of cholesterol, more recent research indicates that ostrich meat's cholesterol content is similar to that of beef and chicken, and varies depending on the cut

Table 2. Average chemical composition (mg/100 g of edible material) of different types of meat

Component	Ostrich[1]	Lamb[2]	Beef[2]	Chicken[2]	Turkey[2]
Fat (g/100 g)	1.12	8.79	4.6	4.3	1.19
Cholesterol	49.5-74.33	78	59-65	69-110	45-61
MUFA+PUFA/SFA[3]	2.16	0.86	1.25	2.3	1.33
Fe	2.75	1.8	2.2	0.9	0.65
Zn	3	2.89	3.9	0.85	1.45
Na	38.7	59.5	63	77	48.5
Vit. B6	0.225	0.22	0.125	0.35	0.5
Vit. B12 (µg/100 g)	1.25	1	1.5	-	1.5
Vit. E	>0.1	0.075	0.1	0.1	-

[1] *Source: produced by the authors, drawing on Moreiras et al. (2008) and Polawska et al. (2011).*
[2]*MUFA: monounsaturated fatty acids; PUFA: polyunsaturated fatty acids; SFA: saturated fatty acids.*

of meat, being higher in fat from a bird's back (74.33 mg/100 g) than in fat from its breast (49.50 mg/100 g) (Horbanczuk et al. 2004, Figure 3). Nonetheless, it is worth noting that ostrich meat has a more beneficial fatty acid profile than turkey, lamb or beef. Saturated fatty acids (SFA) make up 29.88-33.31% of its total fatty acid content, monounsaturated fatty acids (MUFA) 35.52-39.05% and polyunsaturated fatty acids (PUFA) 27.64-34.60%. More than 8% of ostrich meat's PUFA are omega-3 (ω3) fatty acids.

Figure 3: Ostrich, a red meat
Photograph © Frédéric Duhart

Besides being an important source of protein in the human diet, meat is a good provider of minerals, particularly iron and zinc. General analysis of ostrich meat's mineral content indicates a profile more like that of beef than of chicken, and notable levels of iron and zinc. Its iron content stands at around 2.75 mg/100 g, superior to beef's 2.2 mg/100 g and chicken's 0.9 mg/100 g. Its concentration of zinc, meanwhile, at around 3 mg/100 g, is superior to that of any other poultry meat, although lower than that of beef sirloin (4.09 mg/100 g) and of lamb (Polawska et al. 2011, Karakök et al. 2010). The sodium levels in ostrich meat, on the other hand, are far lower than in meats such as beef and chicken. The ostrich muscles with the highest concentration of sodium contain no more than 38.7 mg/100 g, in comparison to 63 mg/100 g in the case of beef and 77 mg/100 g where chicken is concerned.

Although information on ostrich meat's vitamin content is still limited, the studies undertaken to date have detected B-group vitamin levels similar to those of beef, but with higher levels of vitamins B6 (0.225 mg/100 g, compared to beef's 0.125 mg/100 g), B12 (1.25 µg/100 g compared to 1 µg/100 g) and E (Karklina and Kivite 2007).

Possible health benefits of eating ostrich meat

Given ostrich meat's aforementioned characteristics and nutritional composition, its inclusion among the regular sources of animal protein in our diet is a possibility, as it not only combines some of the benefits of poultry and red meat but also boasts a number of added values. Eating ostrich meat might be advisable in cases of obesity or cardiovascular disease, due to its low-fat content and its fatty acid profile. It has a high level of Omega 3 fatty acids, and more than twice the quantity of unsaturated fatty acids as of saturated fatty acids (MUFA + PUFA / SFA). Both those factors have been linked with positive effects on cardiovascular mortality and disease as a result of the combination of various protective mechanisms, including reducing serum triglyceride levels and an anti-thrombotic, anti-inflammatory, anti-arrhythmic and anti-atherogenic effect (Gómez et al. 2010). Another positive aspect where the cardiovascular system is concerned is ostrich meat's low concentration of sodium. This would give it a protective effect in cases of hypertension, as a high salt intake is

associated with a high prevalence of the condition in question, as well as with increased morbidity and mortality from cerebrovascular disease (WHO 2000).

Ostrich meat contains greater quantities of vitamin E and Zinc than other types of meat (red and poultry alike). The proven relationship between those micronutrients and antioxidant effects and functions could give ostrich meat potential benefits with regard to cancer, the cardiovascular system and the prevention of ageing (Anderson et al. 2001, Ye and Song 2008, Llacuna and Mach 2012). Finally, ostrich meat's high iron and vitamin B12 content could also make it particularly recommendable in physiological situations in which a greater iron intake is required, such as pregnancy or adolescence, or in cases of anaemia (Hernández et al. 2010).

In addition, the current increase in ostrich farming activity could lead to another ostrich product, specifically eggs, being used for food purposes, not only in terms of direct consumption but also for industrial purposes in the food sector (yolk lecithins or carotenoids, egg whites in cakes and pastries, etc.). Chemically and nutritionally, ostrich eggs are fairly similar to chicken eggs, but with a lower level of cholesterol in their yolks (around 2mg less) and a greater proportion of unsaturated fatty acids in relation to saturated fatty acids (Di Meo et al. 2003). Nonetheless, as also applies to the bird's meat, where its diet makes a difference, it would be necessary to assess the potential effects of an increase in the production of ostrich eggs, as there are studies that have found that the ratio of Omega 6 to Omega 3 fatty acids is up to 10 times higher in the eggs of captive birds than in those of birds that lay them in the wild (Surai and Speake 2008). It would also be necessary to consider matters as apparently straightforward as what the recommended level of consumption would be or the number of servings a single egg should represent, bearing in mind that each ostrich egg is roughly equivalent to 24 chicken eggs.

Ostrich meat consumption: a new, exotic African meat in old Europe

Domesticated ostriches have been farmed for commercial purposes in South Africa from as long ago as the eighteenth century (Carbajo 2005), but it was not until the third quarter of the nineteenth century that the

practice became more developed, closely linked to feather production. The First World War saw a drastic fall in the number of birds, and it was only after the Second World War that the ostrich feather industry re-emerged. At that point people began to take an interest in ostrich leather, while ostrich meat only slowly came to receive more attention; it was little appreciated at the outset.

Although, for virtually the entire twentieth century, South Africa almost completely monopolised ostrich farming internationally, substantial numbers of farms began to appear elsewhere in the early 1990s. Previously, South Africa was the only country in the world to have slaughtered ostriches on a commercial basis. Since then, countries such as Zimbabwe, Namibia and Israel also began producing and even exporting ostrich meat and its by-products (feathers, leather, eggs, etc.) (Benson & Holle 2003: 1). There has been moderate growth in ostrich meat production and exports in the last two decades. The worldwide production level stands at around 12,000 to 15,000 tons per annum. South Africa still accounts for some 60% of that production and has a 75% share of the global ostrich market. The number of birds slaughtered worldwide is estimated at approximately 200,000 for 2012/13, of which 138,000 were slaughtered in South Africa (Department of Agriculture, Forestry and Fisheries of the Republic of South Africa 2011: 4, 2014: 63). It should be noted, however, that the value of a slaughtered ostrich in South Africa today breaks down as 45% skin (leather), 45% meat and 10% feathers. In contrast, the corresponding breakdown in Europe is 75% meat and 25% skin, probably due to the ostrich's current popularity as a food which is regarded as 'healthy', as mentioned above.

South Africa is a major ostrich meat exporter, with 90% of all such meat produced in the country being sold abroad. The main importers of South African ostrich meat are the countries of Europe, predominantly EU member states. In 2010, the vast majority (close to 98%) of South Africa's ostrich meat exports were sent to Europe (26% to France, 25% to Belgium and 17% to Holland, for example), with the rest mainly heading for places as varied as southeast Asia, the Democratic Republic of the Congo, Zimbabwe, Mozambique and the United Arab Emirates (Department of Agriculture, Forestry and Fisheries of the Republic of South Africa 2011: 33-34, 2014: 63ff.).

South Africa aside, global production is highly fragmented, as table 3 shows, and the list of countries involved seems to be growing steadily (see also Deraga this volume). Europe's ostrich meat market is still incipient, and has largely been based on imports from elsewhere (chiefly South Africa, as mentioned previously). Today, the main European producers are Belgium, France, Italy, Portugal and Spain.

Table 3. Ostrich meat producing countries (by area and production status)

Group	Region
Group 1: firmly established	South Africa (world leader) Australia, Israel, Namibia, Zimbabwe
Group 2: pioneers	USA, Botswana, Canada, Germany, Scandinavia, New Zealand, Tanzania, Egypt, China, South Korea
Group 3: at advanced stage of consolidation	Spain, Portugal, Italy, Mexico, Turkey, Greece, Brazil, Chile, Mexico, India, Philippines
Group 4: consolidation underway	Middle East, Poland, Croatia, Russia
Group 5: production slowing or falling	UK, Denmark

Source: produced by the authors, drawing on Benson and Holle, 2003, Carbajo, 2002, 2005, World Ostrich Association 2007, and Department of Agriculture, Forestry and Fisheries of the Republic of South Africa 2011).

Meanwhile, production is developing apace in other countries, such as Poland, Croatia and, to a lesser degree, in other nations in the east of the continent. It is worth noting the low level of ostrich production at present in countries such as the UK and Denmark, where there had been a significant level of such activity some years ago (Carbajo 2005).

Ostrich meat consumption in Europe: the case of Spain

In Spain, the most widely eaten meats are chicken, beef and pork, as well as lamb, kid and even rabbit, which are Spanish consumers'

preferred meats. It has never been the norm for Spaniards to consume any other kind of meat, and that remains the case today (Table 4).

Table 4. Consumption of and expenditure on ostrich meat, beef, pork and chicken in Spain in 2015

Meat	Consumption		Expenditure	
	Total (x 1000 Kg)		Total (x 1000 €)	Per kg (€)
Ostrich	138.160		960	6,95
Beef	253.915		2.336.982	9,20
Pork	485.767		2.924.501	6,02
Chicken	614.014		2.521.285	4,10

Source: Ministerio de Agricultura, Alimentación y Medio Ambiente 2015.

Nonetheless, Spain has established itself, in relatively few years, as one of the main ostrich meat producing countries in Europe and the world. Spain's first ostrich farm was set up near Madrid in 1993 (Carbajo 2002, 2005). Over the next few years, such businesses got by, experiencing ups and downs to a greater or lesser degree. In the year 2000, however, and as mentioned earlier, the ostrich meat industry was able to take advantage of the socioeconomic fluctuation stemming from 'mad cow disease' or bovine spongiform encephalopathy (BSE) to present its new product to a market which required alternatives to beef, by some distance the country's most widely preferred meat.

There was a sudden rise in the consumption of ostrich meat in Spain when the country's first case of BSE was discovered. Some newspapers reported on the phenomenon, running headlines as significant as 'Increased presence of horse and ostrich meat in Spanish diet' and 'Success for ostrich meat'. In doing so, they reflected a concrete reality. In April 2001, five months after Spain's first case of BSE came to light, ostrich meat consumption had increased by no less than 618%[2]. The level of consumption involved was actually low and did not constitute a major volume in absolute terms, but the rise in question represented a swift introduction to the market for what had previously been very much a minority product.

[2] *La alimentación en España 2000* (unpublished advance).

Beef consumption recovered almost completely within little more than a year of the detection of Spain's first case of BSE. As a result, the consumption of ostrich meat subsequently dropped back again. Nonetheless, ostrich meat had made an important achievement, in that it was no longer 'unknown' to consumers and had gained a foothold in the market.

A few years later though, another food crisis, the outbreak of avian influenza of 2003-2004, had a negative impact on ostrich meat's market share. It affected poultry meat consumption internationally and, in the case of the Spanish market, undid much of the progress made some years earlier. It was against that backdrop that South Africa slaughtered around 15,000 ostriches in 2004, due to a highly contagious outbreak of avian influenza. The situation had a major impact on the international market, and explains the drop in production, exports and consumption in the same period. More recently, in the first half of 2011 (April-May), a new outbreak of avian influenza in South Africa led to the slaughter of approximately 10,000 ostriches and seriously affected exports to the EU. In the light of the above, combined with the comparatively high price of ostrich meat[3] and the fact that many of those in the sector are involved purely for investment purposes (in other words, they have no tradition, specific knowledge or experience of ostrich farming), the outlook is not necessarily promising for ostrich production.

However, despite the ups and downs it has experienced, and, as mentioned earlier, ostrich meat has made an important achievement in that it is no longer completely unknown in Europe, having gained a foothold, albeit a very precarious one, in the food markets of a number of countries, including Spain. While over 80% of the Spanish population admit to never having tried ostrich meat, the factors identified previously seem, in combination, to present it with significant opportunities in the market of today, and maybe even more so in the future.

Currently, most of Spain's ostrich farms are found in the east and south of the country's mainland, from Catalonia to Andalusia, and even in the Canary Islands, locations which offer the best climatic conditions for rearing the bird. The number of farms in the centre and north of the

[3] The meat, which is chiefly eaten in restaurants, is priced at between 18 and 20 euros per kg.

mainland (Madrid, Castile-León, etc.) has fallen substantially. Spain produces approximately 1,000 tons of ostrich meat per year. Following the initial boom and subsequent fall in its consumption, the meat has a small but stable, consolidated customer base, revolving much more around restaurants than households (Castelló 2005, Martín Cerdeño 2010) (Figure 4). The product's potential in terms of exports has even extended as far as South Africa (see Department of Agriculture, Forestry and Fisheries of the Republic of South Africa 2011: 35), which has imported Spanish ostrich meat when diversifying its supplier countries in recent years.

Figure 4: Restaurant publicity showing *Solomillo de Avestruz* (Ostrich tenderloin), Madrid (2006)

Photograph © Frédéric Duhart

Conclusions

Today, nutritionally speaking, ostrich meat could be presented as a healthier alternative to beef, due to the former's lower fat and sodium content, heart-healthy lipid profile, high concentration of iron and vitamin B12, and superior levels of zinc and vitamin E. Nonetheless,

a great deal of research on the general effects that habitually eating such meat has on the body still needs to be carried out.

At the moment, studies of lipid metabolism in rats have not revealed significant differences in terms of serum lipoprotein levels and liver transaminases between animals fed with ostrich meat and others fed on beef (Carvalho-Filho et al. 2011). Many of the factors referred to here combine to present ostrich meat with significant opportunities in the market, both at present and in the future. Ostrich meat could secure a share of the red meat market, thus offering consumers greater variety. The effect that an increase in demand for ostrich meat could have on production (e.g. environmental impact), on farming practices (e.g. local legislation on the birds' stabling or on farming them in semi-wild conditions), on the type of feed used and on systems for the meat's production and conservation ought to be studied, as should the way in which all those considerations might affect the product's organoleptic and nutritional characteristics (Sales 1997, Bingol and Ergun 2011). The economic impact, where consumers are concerned, should also be studied, given that, as some authors indicate, the high cost of ostrich meat may have prevented the corresponding market from expanding as might have been expected (Castelló 2005).

Another important aspect to bear in mind is that for a new food to be incorporated into a population's everyday diet, it must find its place in the household culinary system, in day-to-day cuisine. If it fails to do so, it will never be part of a society's eating habits, no matter how highly nutritionists recommend it or how much is spent on advertising it (González Turmo 1999: 145). Ostrich meat still faces a significant social obstacle in that regard. Despite having made tentative inroads into the market, it is mainly consumed in restaurants rather than homes. This means that, at least for the time being and in the case of Spain, it is unlikely to become part of people's regular diet.

References

Agencia Española de Seguridad Alimentaria y Nutrición (AESAN) (2011) *Evaluación nutricional de la población adulta española 2009-2010. Sobre datos de la Encuesta Nacional de Ingesta Dietética* (ENIDE), Madrid. http://www.aesan.msc.es/AESAN/docs/docs/evaluacion_riesgos/estudios_evaluacion_nutricional/valoracion_nutricional_enide_macronutrientes.pdf.

Alexander, D.D., Mink, P.J., Colleen A.C. and Sceurman, B. (2010) A review and meta-analysis of prospective studies of red and processed meat intake and prostate cancer, *Nutrition Journal,* **9**:50.

Alimentación en España 2011. Informe sobre Producción, Industria, Distribución y Consumo de Alimentación en España (2011) Mercasa. Madrid http://www.munimerca.es/mercasa/alimentacion_2011/pdfs/pag_247-282_Carne.pdf (accessed online in July 2012).

Anderson, R.A., Roussel, A.M., Zouari, N., Mahjoub, S., Matheau, J.M. and Kerkeni A. (2001) Potential antioxidant effects of zinc and chromium supplementation in people with type 2 diabetes mellitus, *The Journal of the American College of Nutrition,* **22(3):** 212–218.

Babio, N., Sorlí M., Bulló, M., Basora, J, Ibarrola-Jurado, N., Fernández-Ballart, J., Martínez-González, M.A., Serra-Majem, L., González-Pérez, R. and Salas-Salvadó. J. (2012). Association between red meat consumption and metabolic syndrome in a Mediterranean population at high cardiovascular risk: Cross-sectional and 1-year follow-up assessment,. *Nutrition, Metabolism and Cardiovascular Diseases*, **22(3):** 200-207.

Bach-Faig, A, Berry, E.M., Lairon, D., Reguant, J., Trichopoulou, A., Dernini, S., Medina, F.X., Battino, M., Belahsen, R., Miranda, G. and Serra-Majem, L. (2011) Mediterranean diet pyramid today. Science and cultural updates, *Public Health Nutrition*, **14(12A):** 2274–2284.

Bender, A. (1992) Meat and meat products in human nutrition in developing countries, *Food and Nutritiona Paper,* **53**, FAO, Rome. Accessed online on 17 December 2011. http://www.fao.org/docrep/T0562E/T0562E00.htm.

Benson, F. and Holle, D. (2003) The World Ostrich Industry Today, *Blue Mountain Ostrich Nutrition E-Bulletin*, **93**, 23 November.

Bingol, E.B. and Ergun, O. (2011) Effects of modified atmosphere packaging (MAP) on the microbiological quality and shelf life of ostrich meat, *Meat Science*, **88(4):**774-785.

Briz, J. and De Felipe, I. (2000), Análisis de la actitud y el comportamiento del consumidor español de carne fresca, *Cuadernos del CEAGRO*, **2**: 21-23.

Butler L.M., Sinha, R., Millikan, R.C., Martin, C.F., Newman, B., Gammon, M.D., Ammerman, A.S. and Sandler, R.S. (2003) Heterocyclic amines, meat

intake, and association with colon cancer in a population-based study, *American Journal of Epidemiology*, **157(5):** 434-45.

Carbajo, E. (2002) El avestruz en España. In Buxadé, C. (ed.) *Producción del Avestruz: Aspectos Clave,* Mundiprensa, Madrid.

Carbajo, E. (2005) Producción de avestruces, *3er Symposium Internacional Aves Corredoras*, Madrid, (unpublished report).

Carvalho-Filho, E.V., Costa, M.J., Bion, F.M. and Silva, J.A. (2011) Effect of the daily consumption of ostrich and bovine meat on the lipid metabolism in rats, *Ciência e Tecnologia Alimentar*, **1(1):** 72-77.

Castelló, A. (2005) Exotic birds, *Jornadas profesionales de avicultura de carne*, Valladolid (unpublished report).

Contreras, J. (2002) "Los aspectos culturales en el consumo de carne". In Gracia, M. (ed.) *Somos lo que comemos : estudios de alimentación y cultura en España*, Barcelona, Ariel, pp. 221-248.

Department of Agriculture, Forestry and Fisheries of the Republic of South Africa (2011) A Profile of the South African Ostrich Market Value Chain Pretoria, *Directorate of Marketing, Department of Agriculture, Forestry and Fisheries of the Republic of South Africa, Pretoria*, pp. 4, 33-35

Department of Agriculture, Forestry and Fisheries, Republic of South Africa (2014) *Trends in the Agricultural Sector 2013*. Department of Agriculture, Forestry and Fisheries, Republic of South Africa, Pretoria, pp.6ff.

Di Meo, C., Stanco, G., Cutrignelli, M.I.,, Castaldo, S. and Nizza, A. (2003) Physical and chemical quality of ostrich eggs during the laying season, *British Poultry Science,* **44(3):** 386–390.

Gómez Candela, C.V., Loria Kohen, L.M., Bermejo López, F. and Palma Milla, S. (2010) Evidencia científica en el consumo de omega-3 en la salud cardiovascular. Importancia de la relación omega 6/omega 3. *Alimentación, Nutrición y Salud,* **17(2):** 33-40.

González Turmo I., (1999), Alimentación y patrimonio: ayer y hoy. In Fernández de Paz, E. and Agudo, J. (eds) *Patrimonio cultural y museología*. Federación de Asociaciones de Antropología del Estado Español/Asociación Galega de Antropoloxía, Santiago de Compostela, pp. 141-150.

Hernández Ruiz de Eguíluz, M., Panizo, C., Navas-Carretero, S. and Martínez J.A. (2010) Anemia ferropénica: estrategias dietéticas para su prevención, *Actividad Dietética*, **14(2):** 67-71.

Horbañczuk, J.O., Malecki, I., Cooper, R.G., Jóźwik, A., Klewiec, J., Krzyżewski, J., Khalifa, H., Chyliński, W., Wójcik, A. and Kawka, M. (2004) Cholesterol content and fatty acid composition of two fat depots from slaughter ostriches (*Struthio camelus*) aged 14 months, *Animal Science Papers and Reports*, **22:** 247-251.

Karakök, S.G., Ozogul, Y., Saler, M. and Ozogul, F. (2010) Proximate analysis. Fatty acid profiles and mineral contents of meats: A comparative study, *Journal of Muscle Foods*, **21:** 210-223.

Karklina D. and Kivite J. (2007) The nutritional value of ostrich meat produced in Latvia, *Proceedings of the XIV World Ostrich Congress*, Riga, Latvia, 19-20 October, pp. 83-85.

Kushi, L.H., Byers, T., Doyle, C., Bandera, E.V., McCullough, M., Gansler, T., Andrews, K.S. and Thun, M.J. (2006) American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention: Reducing the Risk of Cancer With Healthy Food Choices and Physical Activity, *CA: A Cancer Journal for Clinicians*, **56:** 254–281.

Llacuna, L. and Mach, N. (2012) Papel de los antioxidantes en la prevención del cáncer, *Revista Española de Nutrición Humana y Dietética*, **16:** 16-24.

Majewska, D., Jakubowska, M., Ligocki, M., Tarasewicz, Z., Szczerbinska, D., Karamucki, T. and Sales J. (2009) Physicochemical characteristics, proximate analysis and mineral composition of ostrich meat as influenced by muscle, *Food Chemistry*, **100:** 1639-1648.

Martín Cerdeño, V.J. (2010) Consumo de carne y productos cárnicos: Evolución y tendencias más recientes, *Distribución y Consumo*, 9, Mercasa, Madrid, http://www.mercasa.es/files/multimedios/pag_005-023_martin_cerdeno.pdf (Accessed June 20th, 2012).

Medina, F. X. (2001) Consumo de carne y crisis alimentarias en España, *Cuadernos del CEAgro*, **4:** 101-109.

Medina, F.X. (2005) Cows, Pigs, and... Witches! On Meat, Diet and Food in the Mediterranean Area, *Estudios del Hombre*, **19:** 155-164.

Medina, F.X. (2010) Alimentació i pors alimentàries. La crisi de les *vaques boges* (EEB) des d'una perspectiva local. In Medina F. X. (ed.) *Reflexions sobre les alimentacions contemporànies. De les biotecnologies als productes ecològics,* Editorial Universitat Oberta de Catalunya, Barcelona, pp. 47-71.

Micha R., Wallace S. K. and Mozaffarian, D. (2010) Red and processed meat consumption and risk of incident coronary heart disease, stroke, and diabetes: A systematic review and meta-analysis, *Circulation*, **121(21):** 2271-2283.

Moreiras, O., Carbajal, A., Cabrera, L. and Cuadrado, A. (2008) *Tablas de composición de alimentos*, Piramide, Madrid.

Naude R.T., Van Ragensburg, A.J., Smit, M.C., Stiemie, S., Dreyer, J.H. and Rossouw, E.J. (1979) Muscle and Meat. Characteristics of Ostrich Carcass, *Animal and Dairy Research Institute Irene*, South Africa (unpublished paper).

Norat, T., Lukanova, A., Ferrari, P. and Riboli, E. (2002) Meat consumption and colorectal cancer risk: Dose-response meta-analysis of epidemiological studies, *International Journal of Cancer*, **98(2):** 241–56.

PBL Netherlands Environmental Assessment Agency (2011) *The Protein Puzzle. The consumption and production of meat, dairy and fish in the European Union*, Bilthoven, The Hague. http://www.pbl.nl/en/publications/2011/meat-dairy-and-fish-options-for-changes-in-production-and-consumption.

Organization for Economic Co-operation and Development – Food and Agriculture Organization (2009) *Perspectivas agrícolas 2009-2018* (2009). OECD-FAO, Paris-Rome.

Polawska, J., Marchewka, J., Cooper, R.G., Sartowksa, K., Pomianowski, J., Józwik A., Strzalkowska, N. and Horbanczuk, J.O. (2011) The ostrich meat – an updated review, *Animal Science Papers and Reports*, **29(1-2):** 5-18.

Sales, J. (1996) Histological, biophysical and chemical characteristics of different ostrich muscles, *Journal of Science of Food and Agriculture*, **70 (1):** 109-114.

Sales, J. (2002) Ostrich meat research: an update, *Proceedings of World Ostrich Congress*, Warsaw, Poland, September 26-29, pp. 148-160.

Surai, P.F. and Speake, B.K. (2008) The Natural Fatty Acid Compositions of Eggs of Wild Birds and the Consequences of Domestication. In Meester F. and

Watson R.R. (eds) *Wild-Type Food in Health Promotion and Disease Prevention, II*, Humana Press, New York, pp. 121-137.

WHO Europe (2000) *CINDI dietary guide*. Geneva, World Health Organization (Accessed online on 4 July 2011).

World Ostrich Association (2007), *Newsletter No.47 – February 2007* http://www.world-ostrich.org/pastnewsletters/news47.htm (Accessed online on 4 July 2011).

Ye, Z. and Song, H. (2008) Antioxidant vitamins intake and the risk of coronary heart disease: meta-analysis of cohort studies, *European Journal of Cardiovascular Prevention and Rehabilitation,* **15:** 26–34.

CHAPTER 10
OSTRICH AS FOOD IN MEXICO: FROM LIVESTOCK PRODUCTION TO CONSUMER PREFERENCES

by Daria Deraga

Introduction

The inclusion of Ostrich (*Struthio camelus*) as food into the Mexican culture has not been very noticeable in the various types of markets selling meat products. Ostriches are known for lower fat, thus making them a healthy option for people with high cholesterol problems, and a need to modify their diet (see Aguilar and Medina this volume). This marketing statement does not seem to affect the consumer's selection and preferences on meat consumption, which is mainly for chicken, beef and pork, but consumers also choose fish, when available, especially in coastal zones of the country. Ostrich meat has just been left out.

This study attempts to show how a new area of livestock production in Mexico, farming ostriches (Figure 1), has survived market-wise, focusing on consumers' acceptance into their diet of an exotic bird with a different taste. Another very important reason to research ostrich production is the problem of food production in the future, in order to be able to meet the needs of an increasing population and the viability of ostrich as one of the possible solutions to securing animal protein in people's diet. The advantages and disadvantages, such as costs versus benefit, distribution, acceptability of the final product, plus production variables including animal health and communicable avian diseases will be discussed. The research is based on direct observation at ostrich farms, interviews with producers and consumers, and consultation of official agricultural reports.

Mexico is a long way from South Africa where these very large flightless birds originated and still exist in the wild. They are well known among the populations living in that area of the world, and have been hunted in the wild, raised on farms, and commercialised for meat, hide, and feathers for a long time.

Figure 1: Ostrich at Rancho la Herradura

Photograph © Daria Deraga

According to Jefferey:

Commercial ostrich farming began in South Africa more than 150 years ago and is now practised in Israel and the United Sates as well. Currently there are 40,000 to 60,000 birds in the U.S. Some breeders project that in order to penetrate the existing meat and hide markets, 250,000 breeding pairs would be required, and that a slaughterhouse would have to handle 200,000 ostriches annually to operate economically (Jefferey, 2012:1).

Jefferey was referring to the situation in the U.S, but it is another story in Mexico even though Mexico is a neighbouring country and shares many food products and eating habits with the U.S. In Mexico, the bird is basically unknown to the majority of the people, whether in a natural or a farm environment. Most will say they only have seen them in photographs, books, and the cinema. Some urban and rural people have no idea what these birds are. So, when the ostrich was initially introduced as food, people were extremely hesitant about consuming it. This differs, for example, from the situation in Argentina where the Greater Rhea (*Rhea Americana*), a relative of the ostrich and native to the pampas of Argentina and Brazil, exists in the wild. The Rhea, a flightless bird, has been exploited for consumption and commercial use of its hide and feathers to the extent that now the wild population of this bird is diminishing and hunting of it is discouraged.

Therefore, what appears to be one of the reasons for acceptance or not of these big flightless birds as food is whether or not they, or their relative birds, are native to the area in question. South Africa, Australia, and Argentina, are regions where variants of these birds exist in the wild, and consequently they have long been exploited for food.

The problem of their acceptance as food in zones where these birds do not exist naturally is that they are just too strange or exotic for the general public. Most people stick to the well-known and culturally linked foods of their environment. How many of us would eat by choice a penguin or a flamingo? Of course, there are always exceptions, and if there was no other option of food, we would most probably eat them. But for most of us penguins and flamingos just seem beyond our range of what should be considered as food. When I asked my husband about eating penguins, he immediately thought of a sweet chocolate cream filled cupcake product sold commonly in Mexico called *Pingüinos* (‘*Penguins*’).

Consumers’ opinions

I conducted interviews among a varied group of people in the State of Jalisco in West Mexico. They ranged from 30 young adults, mainly university students, to 20 more mature urban consumers. The interviews were carried out using a conversational method, thus giving people a chance to expand and discuss their views, contrary to a controlled set of questions. Some informants I have talked with state that the diet that they imagine the bird eats would affect the taste; flamingos would taste fishy and awful, for example, because of what they eat in their natural habitat in marsh areas of the Yucatan peninsula of Mexico. Among young adults in West Mexico, students of anthropology, when asked about consuming ostrich meat or not, some said they would try ostrich, but most had no idea of the bird, and said they would not eat something that strange. Most of the middle-aged people said that they have no desire to even try it. Some actually made a very negative face expression, and uttered a “yuck” sound. But there was a small group of people who stated that they do consume ostrich meat. According to them, near the city of Guadalajara, there is a restaurant serving ostrich meat on the highway, where people can stop on their way to the coast or for Sunday outings. They also stated that

there is a more select supermarket where packaged cuts of ostrich meat are offered.

A producer told me, that soon these Ostrich meat products will be sold at a more common supermarket in Guadalajara. But, meanwhile, the problem still exists that the product is only offered in very special restaurants and markets, or at the ostrich farms, and currently one still never sees ostrich meat in the typical local meat markets. So again, people are not exposed to the product, and therefore never really become familiar enough with it to go to the trouble of procuring this meat at the specialised locations. Hopefully people will become more aware of the possibilities of at least tasting Ostrich meat, and then making their own decisions and opinions.

Health and food production

There is an aspect about the Ostrich bird that has not been mentioned so far, and that is its place in the biodiversity of avian livestock. In the state of Jalisco and the nearby State of Guanajuato, between 2012 and 2013, there was a critical highly infectious avian influenza epidemic causing the loss of over 33 million layer chickens. This in turn provoked a food crisis due to loss of production of eggs, a major economical dietary element in the diet of consumers in Mexico. In cases such as these, Ostrich could eventually become a substitute, if the production costs and consumer acceptance were viable. Since this epidemic affected broiler chickens also, Ostrich meat could be a valuable alternative. Local lay theory among Ostrich farmers is that this bird does not get the avian virus. Unfortunately, this is not exactly the case, they also can be infected, but they might have a higher resistance which could be a very valuable genetic resource in the overall biodiversity of the avian population. Until now they have been in areas more isolated from the highly intense and densely populated chicken farms of the highlands of West Mexico. This has been a positive factor of preventing contamination of this particular virus. The highlands, approximately 2000 meters above sea level, of West Mexico are known as the main egg producing zone for the entire country.

I hope eventually that ostriches (Figure 2) will find their place in the Mexican market. Unfortunately, all the publicity of the health

benefits of low cholesterol and high protein that make this bird so attractive market-wise has not been promoted in Mexico. There is

Figure 2: Ostrich at Rancho la Herradura

Photograph © Daria Deraga

very little public information on the benefits of low cholesterol and high protein of ostrich meat, plus a large part of the population would not even be able to afford to buy it.

A big problem for the future market of ostrich meat in Mexico is the elevated cost of farm production, which causes a high selling price, setting the final product out of reach for many. I would like to mention that there are zones of poverty where meat protein is a very scarce part of the daily diet. There are some rural communities in south-east Mexico where people live on corn mainly in the form of tortillas, also chilli, and beans, occasionally eggs and chicken, and beef very rarely; milk is not consumed after children have stopped nursing from their mothers. This is based on my personal field experience from interviews in Oaxaca, while working for the National Institute of Anthropology and History of Mexico.

Rancho La Herradura, Tlacomulco, Jalisco, México

However, there are problems in raising ostriches in Mexico and to give an idea of the complexity, the following example is based on the main ranch I documented for my study.

This ranch carries out a complete production program which includes reproduction, where any female lays an egg10 days after

Figure 3. Ostrich chicks in separate pen

Photograph © Daria Deraga

fertilisation, incubation of eggs and hatching in special containers which takes around 40 days. A careful first two months of care follow this, with the chicks in separate pens (Figure 3) according to week of age, during which special feed for growth is given.

Young birds are then transferred to big pens until they reach maturity (Figure 4). Females reach full maturity at 3.5 years of age and males at 4 years. One mature male is then put with two females in a large pen. This is a typical way of keeping ostriches of reproductive age.

Figure 4: Young birds are transferred to big pens

Photograph © Daria Deraga

The handling of ostriches can be difficult (Figure 5), and injuries caused by an aggressive male kicking someone who enters his territory during the mating season and during the egg laying period can be very serious. The male along with the female takes care of the eggs; he also helps form the nest which is a depression on the ground. When the eggs are laid someone must collect them and take them to the hatchery. This is when workers must be careful about the aggressive males. The movement from one pen to another or loading in transportation vehicles is also risky. I personally helped on an ostrich ranch in Mexico, loading them during a transfer from pens to a truck; it was really an experience. So, I have a lot of respect for the handlers, and even more so for the ostrich with its powerful legs. Most of the men working on this ranch had bruises which they proudly showed me lifting up their shirt or trouser leg.

Figure 5: the handling of ostriches can be difficult

Photograph © Daria Deraga

Ostrich production (Figure 6) certainly is more complicated than raising chickens for meat or eggs, it is a more specialised work environment due to the bird being so large, more comparable to raising

cows for meat or maintaining a dairy for milk products where trained workers capable of handling large animals are necessary.

The birds that are not used for reproduction are, at the age of one year, kept in large corrals and programmed for slaughter. The slaughter house, which is government certified, is on the property. The meat is processed into sausage called *chorizo*, a thin marinated steak called *arrachera*, hamburger meat, and a regular steak cut. Their products are sold on location or delivered to specific establishments.

Figure 6: Ostrich production is complicated

Photograph © Daria Deraga

Among the other products obtained from the ostrich, leather is commercially the most successful, boots being the specialty. The boots usually are made in the western cowboy fashion in the famous shoe industry town of Leon, located in the state of Guanajuato, and have become market-wise successful, especially among people of a more rural origin.

According to a veterinarian in charge of production at the ranch I visited, ostrich feathers are now being purchased by people who practise certain types of traditional Indian dances where feathers are used as decoration; traditionally these feathers were from eagles, turkeys or similar birds. So, this is definitely a new use and a support for the ostrich producers. Whole eggs are sold for eating and intact shells are sold for decoration purposes. Oil from the ostrich is also taken advantage of by turning it into health products which are sold on e-bay.

Table 1 provides an example of prices of Rancho La Herradura ostrich meat sold as Cuemir Products in the Guadalajara area of Jalisco, Mexico. At these prices ostrich meat is a luxury product and not feasible for the majority of the lower income population.

Table 1: Market prices of ostrich meat[1]

Ostrich meat products	***Weight***	***Price in USD***
Marinated Arrachera	454 g	$4.65
Fajitas	454 g	$4.65
Filet Solomillo	454 g	$5.42
Filet Minion	454 g	$5.42
Hamburger patty	400 g	$3.10
Chorizo	500 g	$2.70
Ground meat	500 g	$3.87
Heart	1 kg	$3.48
Liver	1 kg	$3.48
Molleja	1 kg	$3.48

The market for these meat products at this time is among the economically stable population with a good income. But again, few people are regular consumers and this most probably will not change for a long time; people stick to their culturally known foods and are not easily convinced about change. One of the veterinarians who work at the ostrich farm I documented said he prefers beef, and does not eat ostrich meat. He claims ostrich eggs taste insipid compared to chicken eggs with more cholesterol. He also mentioned that ostrich meat can be dry if slightly overcooked due to its lack of fat; in his opinion fat is what makes beef tasty.

Table 2 is based on the production during the year of 2012 at La Herradura Ranch, Tlacomulco, Jalisco, Mexico[1].

[1] Produce and price information compiled by Adolfo Arias (2012), Chief Veterinarian of Rancho La Herradura, Tlacomulco, Jalisco, Mexico. Note: the price in US dollars is approximate due to exchange rate variation of the Mexican peso calculated at $12.89 MXN pesos to 1 US dollar on the 1st of January, 2013.

Table 2: Production at La Herradura Ranch in 2012

Parameter	Average
Productive life	40 years
Production of meat	47% live weight
Production of meat and bone	37% live weight
Production of hide	1.2 - 2 m squared
Production of feathers	1 - 3 kg yearly
Yearly egg production	40 average eggs laid
Conversion of feed	4 kg food per 1 kg of meat
Daily food ration	1.5 - 2 kg
Sexual maturity of males	2.5 - 3 years
Sexual maturity of females	2 - 2.5 years
Egg laying season	November - June
Incubation period	39 - 44 days
% of Fertility of egg	80%
% of hatching / fertile egg	80%
Relation female - male	2 females for 1 male
Age of slaughter	11 - 12 months
Weight at slaughter	90 - 110 kg.
Space/ Reproductive unit	500 m squared

Ostrich production information at the International level

As a comparison, here are some of the prices for Ostrich products in the United States using US parameters:

- rendered meat at 75 lbs. per bird at $10/lb;
- hide or leather at 14 sq. ft. per bird at $40/square foot;
- feathers at 4 lbs. per bird at $40/lb

(*College of Agriculture & Life Sciences* 2012: 1).

This gives an idea of the commercial value these products have in a well-established market. Ostrich hides and feathers have been a good commodity for some time in the United States, although meat products have been a newer addition to consumers' tastes, mainly due to the health benefits that are publicised, and a growing consciousness of the importance of consuming lower cholesterol.

Furthermore, in the United States there exists a much more varied cultural population, as far as food habits are concerned, where, compared to Mexico, there is a much better acceptance of ostrich meat among a wider population, especially among urban dwellers. This helps create a market for the meat, but, even there, ostrich is considered an exotic meat and not a habitual food. This can be compared to South Africa, Australia, and Argentina where there is a culturally wider acceptance of ostrich (or similar avian) meat products. One important factor is that in these latter countries this bird or its equivalent relatives can also be hunted in the wild, making it an inexpensive meal in the villages, and available among social groups that in other countries would not have access to such meat products. South African large-scale production, in some farms with birds numbering in the thousands, is also much more feasible due to access to large areas of land for farming, and with local farm workers at a lower cost, as compared, for example, to conditions in the United States. The hourly minimum wage in South Africa for farm laborers is under one US dollar. Although people working with ostrich care must have some sort of specialisation, except for the clean-up service, and other non-specialised work, these more trained individuals most probably earn a better salary.

Conclusions

The acceptance or not of ostrich meat as food is closely related to the existing cultural eating habits of the different geographical populations around the world. Where any of the ratite birds live naturally the meat of that bird or of ostrich is more likely to be accepted than where there

are none. People stick to the foods they have traditionally known for generations, and the introduction of new items is through widespread commercial marketing, diet and health fads, or availability of a new product when a scarcity occurs of an older local traditional one. In Mexico, ostrich is a very exotic bird, unknown to the majority, and to add to the situation they are also expensive to produce, making the final product economically out of reach for many. Ostrich at the present time does not fit easily into the local dietary culture; it will be some time before ostrich meat would possibly become a more common dish on the Mexican table. Fortunately, the birds' hides are popular for making a cowboy type boot, and this helps out economically for the producers. I even saw a western style saddle made out of ostrich hide, but the overall look with its bumpy texture due to the pre-existing feathers was a little strange.

References

Arias, A., Chief Veterinarian of Rancho La Herradura, Tlacomulco, Jalisco, México (2012), Personal communication.

College of Agriculture & Life Sciences: Cooperative Extension Services, North Carolina State University, (2012) pp. 11-12. http://www.ces.ncsu.edu/depts/poulsci/tech_manuals/ostrich.html

Jefferey, J.S. (2012) *Ostrich Production*, Texas Agricultural Extension Service, The Texas A&M University System, *Forum*, accessed at http://agrinet.tamu.edu/KB/Enciclopedias/ostriches.html.

Section Three

SOCIETIES AND BIRD CONSUMPTION

Khlong Toei Market, Bangkok

Photograph © Frédéric Duhart

Errata corrige
this copy contains the unilateral correction of 2 citations of <personal information> for which I had mistakenly transcribed the family name of my friend Stefano Costa, which is now <Costa S., personal information> (pag.220, 230) as correctly already appeared in Figure 2.
I apologize to Stefano and editors.
Mauro Ferri

CHAPTER 11
ANCIENT ARTIFICIAL NESTS TO ATTRACT SWIFTS, SPARROWS AND STARLINGS TO EXPLOIT THEM AS FOOD

by Mauro Ferri

Introduction

This chapter is about the artificial nests that in Europe, since antiquity, have been made to attract wild birds to nest and to reproduce in places where humans had access. The reasons for doing this have varied and, whereas, as relevant to this volume, the oldest and long-lasting reason has been to encourage the reproduction of birds for meat and eggs, other reasons have existed. Examples, more recently, are to encourage insectivorous species to multiply in farms or areas of managed woodland or, nowadays to support the protection of certain species of wild birds in gardens and backyards. Rediscovering such methods of support for protection purposes is beneficial as recent architectural details and designs tend to exclude the nesting sites and refuges that for many centuries linked birds (and bats) to buildings. In addition, modern attitudes and the laws of many European peoples no longer allow that many species of resident or migratory birds are considered as game to be hunted, trapped and used as food, as had previously happened with the species targeted by the ancient artificial nests represented in this chapter.

About artificial nests generally

Richards (1980), Soper (1983) and mainly Campbell and Lack (1985), suggest that in Britain the first use of artificial nests for birds started as a naturalist's pastime. Gilbert White's brother, for example, in 1782, successfully attracted house martins to nest in scallop shells nailed to the cornice of his home. It is also cited that later, in the early nineteenth century, the Yorkshire squire, Charles Waterton, adopted the use of artificial nests to attract wild birds, and that his suggestions were so widely followed that in Britain in 1897 Masefield listed 20 species benefitting from such nests throughout the country (Masefield 1897). The sources mentioned above indicate that in Germany Baron Hans von Berlepsch was so keen to use them on a large scale to protect

insectivorous birds in his forestry fields that in his life he laid down 2,300 nest boxes on his properties. However, all these authors suggest that the use of artificial nests is indeed more ancient (at least back to the late Middle Ages) and that it was primarily for food purposes, even reporting that specific terracotta pots were used in the Netherlands to attract Starlings (*Sturnus vulgaris*) and Sparrows (*Passer spp*.), so that the fledglings were captured and used as food, and that wooden flasks (*cistulae*) were used for starlings in Silesia, and that artificial nests were in use in Finland so that the eggs of common goldeneyes (*Bucephala clangula*) could be harvested easily.

Artificial nests for Starlings and Sparrows, in North Western Europe

In fact, the story of the use of artificial nests seems to be even more ancient and complex for obtaining birds as food. Using iconographic sources, evidence is available well before Frederik van Valkenborch's *Kirchmessfest* of 1597 (cited by Campbell and Lack 1985), since earlier Flemish artists included artificial nests in their pictures, such as in Hieronimus Bosch's famous St. Christopher picture of ca.1496, which highlights a large 'bird pot' hanging from a branch of a tree, and even earlier in France the Limbourg Brothers in 1412-16 portrayed a rich set of similar pots hanging from the façade of a farm house, in the miniature of the Canaanite in the *Très Riches Heures du Duc de Berry* (Limbourg Frères, 1412-16).

These mediaeval pots for starlings and sparrows were made of terracotta (Figure 1) and looked like calabashes or flasks; they were very varied in shape and size in each region, more or less slim or globular, and they were made to be hung on the trees or on the façades of houses or barns. The types to be hung on walls had a very wide base and often had an opening in the back in order to facilitate checking the nest and withdrawing the brood. The methods of attachment of these flasks to branches, or to nails or hooks on the walls varied from model to model and often the various types were made to be hoisted and dismantled with the aid of a perch.

The use of 'pots for birds' in the Netherlands at the end of the Middle Ages and of the flasks in Silesia was marginalised last century by ornithologists (Richards 1980; Soper 1983; Campbell and Lack

Figure 1: A modern terracotta bird pot, very similar to an ancient type used for Starlings in the seventeenth century in Amsterdam (NL).
[See also figure 5] *Photograph © Mauro Ferri*

1985), but fortunately we have the rich and handy manual of Max Labbé (2009) about the history of these amazing old and widely used devices. After detailed investigations in museums, art galleries, libraries and private collections, Labbé (2009) documented the variety and multiform practice, focusing on the Netherlands for starlings and Luxembourg, Belgium, France and Spain for sparrows. Moreover, he describes that the practice of these bird pots spread over a large area extending over much of western Europe, indicating a North-South flow, and he identified a trade of bird pots crossing the Channel, the Baltic, and even the Atlantic to the North American colonies. Here these items seem sometimes to have had a less utilitarian value but were more similar to the pumpkins set up by native Americans for the pure delight of accommodating in their villages the purple martins (*Progne subis*), their beloved messengers of the beautiful season.

In Holland too, the pots for starlings sometimes assumed a non-utilitarian meaning as shown by the famous terracotta sign of an inn

dated 1649 in Amsterdam advertising '*in de Sprevpot*' (In the Nest of the Starling), featuring a nice scene of a starling entering a bird pot to feed its brood, a visible reference to the comforts provided by the innkeeper for his customers. Furthermore, Labbé reports on the use of 'sparrow pots', which spread from Belgium to Luxembourg, France and Spain, where their use diversified in local shapes, became specialised and were often made right up to the First and Second World Wars.

In Italy, on the contrary, hanging bird pots were maybe uncommon, although the Flemish origin of the starling and sparrow pots and their main use were known also to G.P. Olina (1622a, 1622b) who reported them for the two species where he was born, in Novara, Piedmont, where in nearby Biella some vestiges are even found today (Figure 2) (S. Costa, personal information).

Figure 2: A cluster of bird pots on the wall of a dwelling (Biella, Italy)
Photograph © Stefano Costa

As mentioned above, most types of artificial terracotta bird pots were made to be hung on nails or hooks, but there are also areas where people liked the pots to be embedded more or less deeply into walls. Also, for Britain, from 1600 to early 1900, albeit in a limited area (London and the south east of England), the use of hanging sparrow

pots has been documented and supposed to have lasted until the 1930s (Labbé 2009; Cooper 2004). In all these areas the interest in having such bird pots waned and collapsed within a few decades of the first half of the twentieth century with two world wars, and most of the fragile pots were taken down and crushed. A remnant has remained as relics in old dwellings or have fortunately been preserved in museums and collections (Labbé 2009) inspiring recent similar handicrafts**.**

Swift towers and Sparrow towers, in Northern-Central Italy

The interest in the production of 'artificial colonies' of birds to be exploited for food purposes spread across a large part of Italy, but these were based on a different method and were especially for swifts and sparrows.

First of all, artificial nests in Italy generally are not based on the use of terracotta pots or flasks but were based generally on 'nesting cells' completely embedded in the walls (Figure 3), with access to

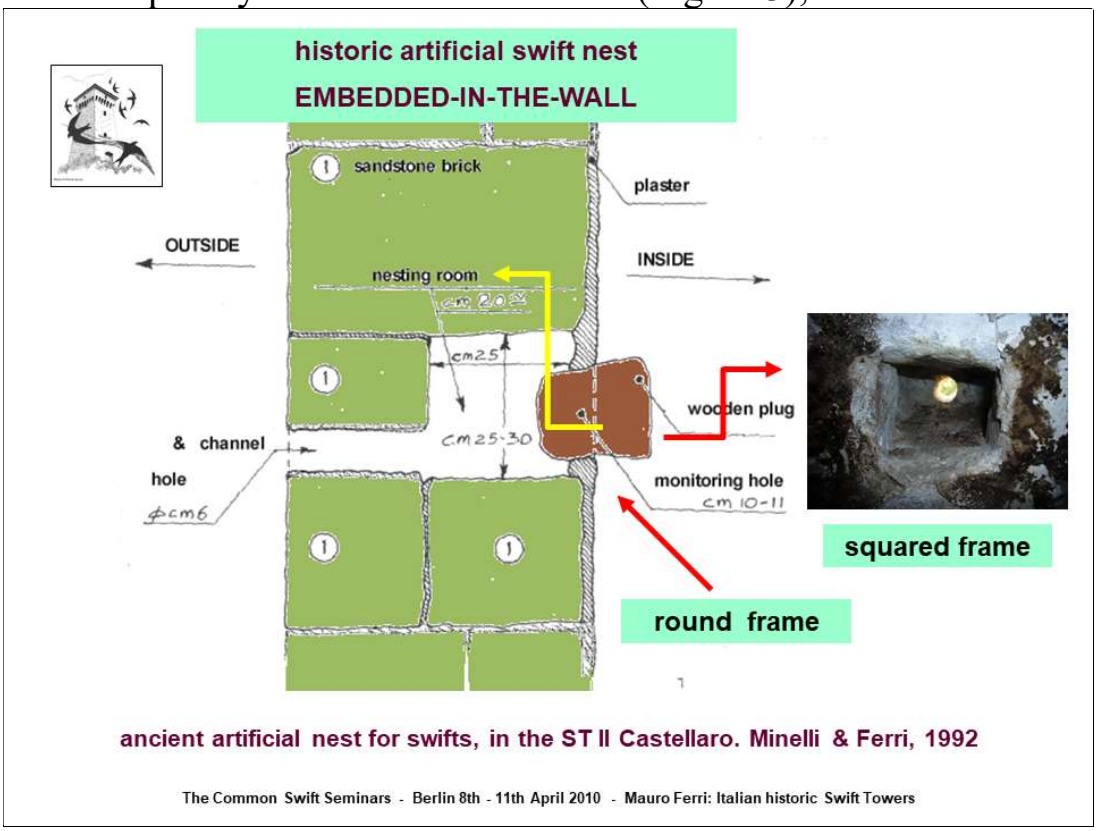


Figure 3: Longitudinal section of an ancient articial swift nest embedded in a circa sixteenth century wall.

Drawing © Mauro Ferri (Minelli & Ferri 1992)

nesting cells on the inside of the walls. The birds reach the nesting cells through holes on the outer surfaces of the walls (Figure 4) and through quadrangular or more often cylindrical little ducts connecting the holes to the cells. In order to monitor the broods, there was an opening at the

Figure 4:
Just under 300 holes in the four walls of the swift tower Il Castellaro, Regional Park of Sassi di Roccamalatina, Guiglia (MO, Italy), active in 2017 with a colony of 91 pairs of swifts

Photograph © Mauro Ferri

back of each the cell, covered by a wooden plug (Figure 5) or a brick or by a door, single or collective. This method, closely dependent on

Figure 5: Removing a wooden plug; this kind of nesting cell is available for inspection of the brood, seen here for a ringing session of broods of swifts (*Apus apus*) for research purposes *Photograph © Mauro Ferri*

the thickness of the wall and on the dimension of the stones and/or bricks, seems to have initially spread as structures built into the upper part of the '*casa torre*' (tower houses), mediaeval fortified rural buildings (Figure 6), well-known in almost all of northern and central Italy since the thirteenth Century (Bertacci et al. 1974, 1975). These

Figure 6: Tower house (*casa torre*), with little square windows for the dovecote and smaller holes for swifts, well renovated, Guiglia (MO, Italy).
Photograph © Mauro Ferri

frequently included a dovecote which also accommodated a number of artificial nests for swifts, easily identifiable because of one or more parallel lines of smaller holes, which were, especially in the older cases, in the upper part of the building. The role of the 'tower houses' in the development of the 'swift towers' perhaps is not well known, and it is possible that there were also 'sparrow towers' in thirteenth century Tuscany.

Later, this kind of artificial nest was also used in palaces, farm houses, barns and humble dwellings, even some churches and belfries. In an attempt to date the first period of use, there is in the Church of the Sorrows of Mornico al Serio (Bergamo province), an unusual fresco (Figure 7) painted in 1470 by Maffiolo da Cazzano as an *ex voto*, depicting a 'swift tower' similar to many ancient 'swift towers' (c.f. above Figure 6) surviving in regions of northern and central Italy and maybe in the Central Alps at the time of the first 'tower houses'; the above fresco confirms that in 1470 the practice was probably already very stable and therefore much older, and tied to these fortified houses.

Figure 7: Section in upper part of a mediaeval fresco of 1470 by Maffiolo da Cazzano featuring a tower house with dovecote and two lines of holes for swifts. Church of the Sorrows of Mornico al Serio (BG, Italy)
(Compare with Figure 6) *Photograph © Mauro Ferri*

To this pictographic testimony is to be added the evidence of terracotta nesting cells in the early sixteenth century as recorded by Antonini (2000), who led a middle-class school to document the construction of dwelling in a dovecote tower in the village of Bojon di Campolongo Maggiore (Venice province).

In Italy, historic artificial nests for swifts were usually in buildings known as 'swift towers' but within this term are included ward towers, tower houses, dovecotes, belvederes, etc…and, in not a few cases, clusters of artificial nests can also be found in belfries, apses, bell-towers, palaces, farm houses, etc. (Figure 8) from the fifteenth to

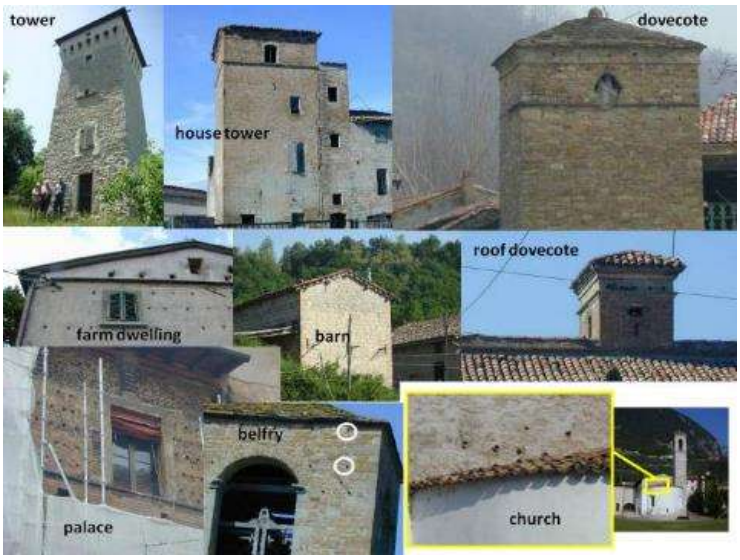


Figure 8:

***Many* kinds of buildings may host ancient artificial nests for swifts or sparrows.**

Photographs and layout © Mauro Ferri

the sixteenth centuries**.** Some hundreds of these are still observable in the north central Italian regions of Piedmont, Lombardy, Veneto, Trentino, Emilia Romagna, Tuscany, Umbria and Lazio but were also known elsewhere, e.g., the Marche region (Chigi della Rovere et al. 1933). They were so common that they are locally represented in up to 10% of the historical buildings registered in catalogues (Ferri 2014).

The oldest artificial nests for swifts seem to have been made by placing stones and/or bricks in a way that achieved a regular pattern of lines of holes on the outer surfaces of buildings, and cells within. With the emergence of walls of reduced thickness in the sixgeenth century, only the holes and the access ducts remained embedded in the walls, while the nesting cells were placed on internal ledges or in cabinets. Initially these were made as complements to dovecotes, i.e. dovecotes with swifts (*colombaje a rondoni*, Spallanzani 1797), whereas the 'swift towers' in some areas soon became autonomous and lost any relationship with dovecotes.

Then, up until the twentieth century, very small towers or modified belvederes were put on the roofs of the homes of bourgeoisie in towns and on rural dwellings and even on to religious buildings (e.g., the bell-towers or apses). It is interesting to note also that the use of terracotta bird pots often lasted for centuries, in most cases reduced to the necks for the holes but also sometimes keeping the flasks to host the nests (Figure 9). According to local practices the structures were

Figure 9: Swift pots partially embedded in the walls of a dwelling, Appennine of Romagna, Italy *Photograph © Mauro Ferri*

often characterised from aesthetic and functional points of view, obtaining artificial colonies ranging from tens to several hundred nests.

Sometimes, a large number of new cells was added as in the Castellaro Tower of Guglia, Modenese Apennine (Figure 4), where nests appear to have been added 100 at a time (Ferri 2014), and it was also the case for the Swift Tower of Borgo Vecchio of Carmagnola near Turin, (Figure 10) built at the end of nineteenth century, which expanded three times until the early 1900s to include up to 1,000 nests (Tagini Brandino 1998) at the height of its splendour. The upgrading of the colony's capacity intuitively depended on the success of the structure, i.e. on the increase in number of pairs that settled and, therefore, on the efficiency of its management.

Figure 10: The eclectic style of the swift tower of Borgo Vecchio (Carmagnola, TO, Italy) built from late nineteenth century in three phases of 300 nests at time

Photograph © Mauro Ferri

The dimensions of ducts and nesting cells were diverse, such as diameters of 4.5 to 6 cm. of the holes/ducts and 15-25 cm. of the cells, and the shapes, height, width and depth of these varied from site to site, maybe according to the local needs to attract not only the common swift (*Apus apus*) but also the bigger alpine swift (*Tachymarptis melba*), as happened at least in the Apennines of Modena (Spallanzani 1797).

In the plains of Lombardy and Piedmont regions, and maybe elsewhere, there were also specific artificial nests generally similar to those for the swifts, but for Italian house sparrows (*Passer italiae*) and

tree sparrows (*Passer montanus*), as the cells have smaller dimensions and from the outside are distinguished by a pattern of denser lines of holes (Figure 11). In these cases, the cells are never quite embedded in stone walls, but are inserted in diaphragms achieved through a pattern of vertical and horizontal bricks (Figures 12 and 13).

Figure 11: Sparrow tower, with more or less 600 cells in very little space
Photograph © Mauro Ferri

Figure 12: Patterned brickwork nesting cells for sparrows, seen from the inside *Photograph © Mauro Ferri*

Figure 13: A ruined Sparrows tower. The collapse makes it possible to understand how artificial nests were made, buffering an empty space between load bearing structures

Photograph © Giovanni Boano

These compounds for sparrows were also popular in the farms and rural villages (Mazzoleni 1999) of the Po valley, where there is intensive farming of grains and rice, and are known as 'sparrow towers' (*passerère, passeraie*). Sometimes, as happened for swifts, they were inserted also into dovecotes, dwellings and barns (Figure 14), and, as

Figure 14: A compound for sparrows in a dwelling, blocking a window

Photograph © Mauro Ferri

in Brescia province, where they became of artistic interest (Massetti *et al* 2000). Finally, there are examples of artificial nests for swifts and sparrows that coexist in the same building (Figure 15).

Figure 15: Two lines of cells for swifts in the upper part and windows blocked for the cells for sparrows

Photograph © Mauro Ferri

In the 1930s the use of swift and sparrow towers was still allowed for those licensed for hunting, and there was an authoritative, more or less forgotten proposal by reputed zoologists that these structures might become important complements of a 'modern agriculture' associated with modern bird-gardening to use nest boxes for many species of birds, but particularly important for those species which reared their offspring by subtracting large amounts of insects (Chigi et al 1933).

Relationship between the Flemish 'bird pots' and the Italian 'bird towers'

Thus, there seem historically to have been two distinct areas in Europe with regard to the artificial nests used to attract wild birds in artefacts and buildings for use as food: one is centred on the use of bird pots for starlings and sparrows in mediaeval Holland, Belgium and northern France; the second is centred on mediaeval Italy based on the use of cells embedded in walls for swifts and sparrows. There are, of course, rare exceptions to this general rule, such as the ancient Belgian bell tower of the Refugie van de Abdij van Sint-Truiden, Mechelen, with integral built-in nests (Figure 16) (L.P. Arnhem personal information)

Figure 16: Birds pots emebedded in the bellfry of Refugie van Sint-Truiden, Mechelen *Photograph © Louis-Philippe Arnhem*

and the presence in Piedmont of an area with bird pots (Figure 2), either hung as in ancient times in the farms of Novara (Olina 1622a) or semi-embedded in walls as still observable in Biella (S. Costa personal information). Surprisingly, the earliest testimonials seem to suggest that both European areas started by using these artificial nests for wild birds in the same mediaeval period, with their knowledge evolving along parallel but autonomous lines (bird pots to be hung or embedded cells). It is, however, undeniable that there may have also been an exchange of ideas and perhaps traded artefacts. This last is suggested by the only known testimonies (Olina 1622a,1622b) of terracotta pots in Italy for both starlings and sparrows, expressly inspired by Flemish patterns, even if the Italian method of internal cells on walls with or without pots appears to be older. After all, it is well known that since the twelfth century there had been strong commercial and financial ties between the rich bourgeoisie of Italian, French and Flemish lands.

Perhaps in one or both cases a mediaeval 'invention' took over and refined a practice of native populations, perhaps from Silesia or, who knows, perhaps even from the Middle East (see below). Perhaps the network of commercial and financial exchanges may have favoured a parallel evolution of a whole technology with strong analogies and hence broad possibilities for reciprocal engagement. Perhaps we might one day gain answers from a more careful study of miniature codes, letters, drawings and paintings, as well as from the work in Flemish and

French-speaking areas, such as by Labbé (2009), who investigated bird pots in museums, galleries and collections.

For what food uses were the birds collected in these artificial nests? Unfortunately, the sources for the use as food of the starlings, sparrows and swifts, captured in these ancient artificial nests are scarce, though the practices were very widespread. Many things are uncertain, but some aspects are precise. First of all, the objects of interest were mainly the chicks, because before leaving the nest these are of the same size as the adults but of greater weight and fat consistency. Based on the weights made by Spallanzani (1797), an adult swift was about 67% of the weight of a nearly ready-to-fly-away chick, and it is known that this important weight difference is attributable to fat reserves that the young have to put on in their early life in the nest, as they brusquely cease getting any feed from their parents once they leave. Indeed, for Spallanzani, the young swifts were '*small butter pancakes*', which means that they were considered a delicacy.

However, we do not find references to their culinary use in the famous large collections of recipes, but there may be more information in the so-called 'grey literature' or in private papers, including old family recipes, inventories, letters and so on. When, many years ago, interviewing a few elderly people who had continued the activity of 'swift keeper' until a few decades ago, I learned that often they were in charge of the maintenance of 'dovecotes for swifts', owned by wealthy families, who lived elsewhere. So, they had the use of the dovecote products, that is, the guano and the chicks (Latin: *pipiones:* the chicks of the doves), while the swifts were reserved for the owner under strict rules, such as that the adults were not to be harassed and always the pairs had to be left to raise one chick. The swift chicks that were taken were immediately prepared and cooked in pans, usually adding pork fat, and then were placed still hot in small terracotta jars with a large opening, filled with hot fat and then left to cool, or they were sometimes preserved in vinegar.

After that, the small vessels were sent to the owners of the tower, who kept them in their pantries, or underground cellars, which more recently were equipped with factory ice reserves and before that packed with pressed snow and ice in winter. During the Christmas period,

these preserves were mainly used for family lunches and dinners, but were also sent as valuable and expensive presents to friends and honoured acquaintances. Why would these delicacies have been so expensive? A compound for swifts had to be built, substantially modifying the walls of a whole room or gable; it had to be kept and managed carefully by a swift keeper and the eventual results were less than two chicks of each seasonal brood of 1-4 chicks per pair. This, therefore, did not provide much return financially, but was afforded for a tradition of gastronomic gifts of great value.

Small rural swift towers and those in humble dwellings were, on the other hand, managed directly by owners who preferred consuming the birds within the family, or selling them as expensive specialties; in such families the consumption was probably more flexible with recipes fitting individual tastes, and based on summer preparations soon after collection of the chick. It was claimed (Olina 1622b) that only the chicks of the sparrows were appreciated, especially the chicks of the tree sparrows (*Passer montanus*), but eggs were also collected to prepare (together with sparrow brains) an unlikely treatment for impotence. While adult meat was not recommended as food, we learn from interviews with elderly sparrow keepers and their families, that they were very happy to collect a large amount of chicks from hundreds of nests, sparing either the first or the last of their seasonal 3-4 broods. The chicks were then sold for their meat and were mainly intended to be cooked on a skewer over a fire or in a sauce served with the traditional hot porridge (*polenta*) of boiled cornmeal.

For Britain, the situation is well described by Cooper (2004), who first reminds us that from 1532 to the nineteenth century the sparrows were considered as pests and vermin, and rewards were paid for their collection by officers. This also affected the management of the pots for birds, used to collect indifferently adults, chicks and eggs to be submitted as heads and as eggs for the payment of the rewards which produced an income, to be added to any benefits derived from the rest of the bodies as food. That author also refers to the sale of live sparrows to the numerous falconers of the time, who needed to feed and train their popular sparrow hawks.

So, consistently until the First World War, in U.K. the birds were an appreciated protein integrated into the normal daily diet of the lower

classes, as well as a delicacy also for the gourmets of the upper classes. Both liked the popular sparrow pies and tarts flavoured in many (unspecified) ways and they liked them served with white sauce. Meanwhile, in the Netherlands the widespread use of pots to attract starlings and sparrows, to be used in the kitchen, does not seem to have left any indication of culinary use, except for some suggestions on the internet of their use in soups and pies (Flemish: *spreeuwensoep* and *spreeuwenpastei*).

Ottoman <Bird houses>

Finally, it is interesting to go elsewhere, to the Middle East, to find an interesting ancient practice of artificial nests, strictly intended only for devotional and compassionate purposes, spread throughout Ottoman influence in Anatolia and of course in Istanbul, where Ottoman-style mosques and dwellings (Figure 17) are frequently decorated with fantastic 'bird houses' (*Kuş Köşkleri, Kuşların Saraylari*). These buildings were built or renovated from the fifteenth and sixteenth

Figure 17:

A bird house in an old Ottoman dwelling: those in religious buildings are generally in excellently conserved condition (c.f. pictures in Aksoy 2015 and Akay and Yogurtcu 2017)

Photograph © Mauro Ferri

centuries onwards, although it seems that continuous refurbishments and embellishments have left only examples of more recent 'classical' styles. Possibly the continuous remakes could have erased the testimonies of a more ancient practice. Anyway, these 'Ottoman bird houses' (*Kuşlar için Osmanlı sarayları*) (Aksoy 2015, Akay and Yogurtcu 2017) are fantastic, often very stylised with far from a naturalistic approach, but sometimes their holes (often very similar to those for sparrows in a popular catalogue for modern bird-gardening, Anonymous 2017-18) seems to be suitable for sparrows and swifts, little passerines and even turtledoves (*Streptopelia decaocto*) or jackdaws (*Corvus monedula*), depending on the size of the artefacts.

What possible ancient contacts for bird nests were there between this Asian 'third pole' and the two European ones? Certainly, contacts between the Middle East, Anatolia and Europe had been steady and growing ever since the end of the Early Middle Ages and the merchant ships encouraged the exchange of goods, travellers and ideas along a network of routes. Also, since classical times, with the trades that had already spread from the Middle East, it is likely that the interest in dovecotes also spread as facilities designed to attract pigeons with artificial nests, to make them breed and protect them in order to exploit their droppings as fertilizer and the delicate meat of the young doves (Latin: *pipiones*, the chicks of the doves) as food. The doves would leave the colony free to mate and feed themselves by wandering out in the wild. In summary, there are close analogies in the know-how and management of a dovecote, a bird tower and bird pots, and in this perspective, as in others, Italy was at the centre of the routes.

Sustainability of the ancient practices of exploiting birds for food, using artificial nests

Therefore, the purpose of exploiting the meat of birds taken from the towers was often similar in the two European areas and the analogies relate to the objective of not harming the colonies but increasing them. In this respect a resource considered important was protected in a way which today would be called a 'sustainable approach'.

How was the 'sustainability' of the exploitation guaranteed for swifts, sparrows and starlings as food? The answer is easy: as in the case of doves, it was by wisely taking only some of the chicks and

sparing some of them. As regards the Netherlands and Silesia, Campbell and Lack (1985) reported that only the first starling and sparrow broods were taken, leaving their parents free for subsequent reproduction. Labbé (2009) also mentions similar points in favour of sparrows in the largest area where bird pots spread. In Italy, the situation was similar for the collection of both sparrows and swifts.

Interviewing some old farmers about sparrows provided information that the collection of chicks lasted till early July and then the accesses to the nests were closed, and the pairs were left in peace to grow a substitute brood till the young sparrows flew away. Or else, the first brood was spared and the following broods exploited (personal interviews). About the collection of swifts, according to Savi (1827) we know that in Tuscany in any single seasonal brood (of 1-4 eggs) one chick had to be spared so that the parents were not upset, and the same habit was reported in the Emilia Romagna region during personal interviews with old farmers who were still swift keepers until the 1960s. Notoriously, the difference between common *Apus apus* and pallid swifts (*Apus pallidus*) was not known by the time the tradition of the swift towers started to fade, nor are there precise references for the removal of alpine swifts (*Tachymarptis melba*). There were also areas where the collection of young swifts was indiscriminate (Bassi 2002, 2006, 2008), but where this happened the structures and consequently the colonies seem to be generally smaller in size than in areas with scrupulous management.

What is the future of bird pots and Italian bird towers?

Centuries of hanging bird pots or maintaining bird towers to collect starlings, sparrows and swifts for their meat faded in just a few decades during the twentieth century in parallel, just as they were started in parallel in Mediaeval times, both in north western Europe and in Italy, at first because the attitudes of contemporary people about trapping swifts changed. Then, the use of starlings and sparrows as food generally became rare and more or less disappeared, as little wild birds ceased to be considered as food. Only much later did laws reflect this change of attitude and establish prohibitions.

So, the bird pots disappeared from dwelling walls and were destroyed and erased from the collective memory, but fortunately

something of their legacy is still alive. Today, for naturalist purposes, some craftsmen in Europe and North America have started making old fashioned and new shaped terracotta pots and flasks (Figure 1) to be used as artificial nests, in addition to many other kinds of modern artificial bird nests, in order to help the reproduction of more and more species of wild birds in gardens, parks and buildings.

For the bird towers, the situation and the future, however, are much more complicated since the ancient ones are often large and expensive to maintain, repair, restore and manage. Consequently, most of them lie abandoned, sometimes in ruins or are transformed for other uses, with irreparable loss of knowledge, beauty and anthropological and historical aspects, that had developed over at least seven to eight centuries. How can one be happy when hundreds of these ancient and efficient *rondonare* (swift towers) or *passerère* (sparrow towers) are condemned to ruin (Scaglioni 1982) or, at best, disappear transformed into dwelling rooms, without any plan for conservation of at least those that could be available for public access? Moreover, these artefacts have defied the centuries by providing optimal conditions of comfort, thermal insulation and shelter from storms, humidity and predators to

Figure 18: A new generation of swifts, (*Apus apus*) over 40 days old, weighing approximately 60 grams, on the point of departure for Central, Eastern and Southern Africa and two years of permanent restless flight

Photograph © Mauro Ferri

hundreds of generations of huge colonies of swifts and sparrows, helping to keep them in our countryside, villages and cities, while modern design and maintenance of buildings are wiping out their existence. When I look at young swifts (Figure 18) inside ancient 200 to 500 year old artificial nests but still managed sufficiently to maintain a colony (Ferri 1992, Minelli and Ferri 1992; Minelli et al. 2014), I hope that many owners of the structures not yet damaged or transformed decide to restore them and reopen them for use, adding more interest (Ferri 2012) to modern beautiful swift towers raised in recent years in urban parks of half of Europe and to the use of nest boxes in gardens and dwellings too.

References

Anonymous (2017-18) Sparrow terrace 1SP, *Bird And Nature Conservation Products*, Schwegler Vogel- und Naturschutzprodukte GmbH, **75**:37, accessed at http://www.schwegler-natur.de/wp-content/uploads/2014/03/SCHWEGLER_Catalog_75_GBR.pdf.

Akay. F. and Yogurtcu, I. (2017) Bird houses in Turkey, TCF-Turkish Cultural Foundation, Architecture, accessed at http://www.turkishculture.org/architecture/bird-houses-104.htm.

Aksoy, N.B. (2015) Zarif İnsanlardan Kalan Bir Esinti: 14 Maddeyle Osmanlı Kuş Evleri, Listelit.com, 11 Jan. 2015, accessed at http://listelist.com/osmanli-kus-evleri.

Antonini L. (2000) Rondonaia del XVI Sec. a Bojon di Campolongo Maggiore, *Anto2ni.it*, accessed at www.Anto2ni.It/Ludovico/Rondonaia/Rondonaia.htm.

Bassi, S. (2002) Le torri dei rondoni, *Piemonte Parchi,* **115**:36-38.

Bassi, S. (2006) Le torri rondonaie: ingannevole, interessata <ospitalità> dell'uomo, *Vita in Campagna*, Verona, **8**:7-8.

Bassi, S. (2008) *La Trappola*,. *La Rivista de la Natura*, Edinar – Edizioni di Natura, **3**, Milano.

Bertacci, L., Degli Esposti, V., Foschi, M. and Venturi, S. (1974.) Cenni sull'architettura della montagna bolognese, In: Bertacci, L., Foschi M., Varignana F. and Venturi S. (eds) *Monzuno - Territorio e beni culturali idi un'area comunale dell'Appenino bolognese*. Comune di Monzuno, pp.149-191.

Bertacci, L., Degli Esposti, V., Foschi, M., Venturi S. and Vianello, G. (1975) *Architettura rurale della montagna Modenese,* Amministrazione Provinciale di Modena, Modena.

Campbell, B. and Lack, E. (eds) (1985) *A Dictionary of Birds*, T & AD Poyser Ltd, Calton.

Chigi della Rovere, F., De Beaux, O., Del Lungo, A., Meschini, C. and Urbani G. (1933) *Gli Uccelli amici dell'agricoltore,* Sindacato Nazionale Fascista Tecnici Agricoli, Roma.

Cooper D. (2004) Sparrow-pie, anyone? *London Archaeologist*, Summer 2004: 245-248.

Ferri, M. (1992) Il Parco e la Torre rondonara, *Natura modenese*, **2**: 30-32.

Ferri M. (2012) I nidi artificiali per i rondoni europei. *PICUS –Rivista di Ornitologia e Birdgardening*, **74**: 176-182.

Ferri, M. (2014) La tutela delle ultime rondonare e passerere artifciali storiche, tra eredità storico-architettoniche e suggerimenti gestionali per la conservazione e le attività di ricerca su rondoni *Apus* sp. e passeri sp. In Tinarelli. R., Andreotti, A., Baccetti, N., Melega, L., Roscelli, F., Serra, L. and Zenatello, M. (eds) *Atti XVI Convegno Italiano di Ornitologia. Cervia* (RA), 22-25 settembre 2011, *Scritti, Studi e Ricerche di Storia Naturale della Repubblica di San Marino,* Repubblica di San Marino*,* pp. 494-499.

Labbé, M. (2009) *Ces étonnants nichoirs traditionnnels*, Auvers sur Oise.

Limbourg Frères (1412-1416) Très riches heures du Duc de Berry, Musée Condé di Chantilly, Folio 164r.

Masefield. J.R.B (1897) *Flycatchers,* Society for the Protection of Birds, at the Knowledge Office, London.

Massetti, E., Andrico, G.M., Maffeis F. and Morstabilini, C. (2000) *Paserére. La compagnia della stampa,* Roccafranca, Brescia.

Mazzoleni, M. (1999) Le passerère della bassa, *Orobie – Mensile di Natura Cultura e Turismo*, Edizioni Oros, Bergamo, Maggio 1999.

Minelli, F., Ferri, M., Villani, M., Sirotti, S., Rossi, G. and Benassi, R. (2014) Attivita' di inanellamento in colonie di rondone comune *Apus apus*, in Rondonare artificiali storiche nell'area del Parco Regionale dei Sassi di Roccamalatina (Modena), 1991-2011. In: Tinarelli R., Andreotti A., Baccetti N., Melega L., Roscelli F., Serra L. and Zenatello M. (eds), *Atti XVI Convegno*

Italiano di Ornitologia. Cervia (RA), 22-25 settembre 2011, Scritti, Studi e Ricerche di Storia Naturale della Repubblica di San Marino*,* Repubblica di San Marino*,* pp. 360-361.

Minelli, F. and Ferri, M. (1992) Tre anni di studio su una colonia di Rondone *Apus apus* nidificante in torre rondonara nel Parco dei Sassi di Roccamalatina, *Natura modenese*, **2**: 17-24.

Olina G.P. (1622a) Dello Storno, *Uccelliera ovvero Discorso della natura e proprietà di diversi uccell*i, Appresso Andrea Fei, Roma.

Olina G.P. (1622b) Della passera nostrale, *Uccelliera ovvero Discorso della natura e proprietà di diversi uccelli*, Appresso Andrea Fei, Roma.

Richards, A.J. (1980) *The Birdwatcher's A-Z,* David and Charles, Newton Abbot.

Savi, P. (1827) *Ornitologia Toscana,* Tipografia Nistri, Pisa, Tomo **I**.

Scaglioni, A. (1982) Le torri rondonaie della collina Modenese, *Atti del Convegno "Uomo e agricoltura"*, Ed. Seminario di Scienze Antropologiche, Firenze, Suppl. **1**: 211-214.

Spallanzani, L. (1797) Rondone (Hirundo apus), *Viaggi alle due Sicilie e in alcune parti dell'Appennino*. Pavia, Stamperia Baldassarre Comini, Pavia, Tomo **VI**: 45-99.

Spallanzani, L. (1797) Gran Rondone (Hirundo melba), *Viaggi alle due Sicilie e in alcune parti dell'Appennino*, Pavia, Stamperia Baldassarre Comini, Pavia, **Tomo VI:**136-149.

Soper, T. (1983) *Discovering Birds: Practical Guide to Birdcraft,* BBC Books, London.

Tagini Brandino, M. (1998) *La rondonara del Borgo Vecchio, Almanacco carmagnolese,* Carmagnola, Torino.

CHAPTER 12
EATING PARROTS AND BEING BRAZILIAN WITH PLEASURE

by Almir Chaiban El-Kareh

Brazilians inherited the lifestyle of cohabiting with woodland animals from the first populations living in the South American continent. So, many of these animals were domesticated as pets by the indigenous populations. Such was the case with coatis, monkeys and parrots. Even today many Brazilians, including those living in large cities, enjoy raising birds for their beautiful plumage, their melodious songs, or their ability to imitate human speech.

In fact, one of the biggest contributions made by the South American natives was the habit of hunting and eating 'everything with life and substance' (Ewbank 1973: 134). Without a doubt, it is true that certain eating habits, such as the consumption of spiders and caterpillars, in vogue amongst those that lived in communities more or less isolated from 'whites', never caught on with Europeanised colonial society. Yet, it is no less true that since the beginning of Portuguese colonisation, at the start of the sixteenth century until the twentieth century, hunting was one of the most important, if not the main, source of protein for the predominantly rural Brazilian population, whether indigenous, African or European in ancestry. And if they did not eat caterpillars or spiders, they hunted and ate everything else, from insects in the form of some ants to certain species of lizards, snakes as well as turtles and their eggs.

The Portuguese enriched the eating habits of the natives by introducing bovine, ovine, caprine and porcine livestock and by raising fowl like doves, chickens, ducks, geese and turkey, as well as their eggs. Equine livestock was rarely used for consumption, with only the old or lame mares being used to produce jerky. However, the European foreigners arriving in Brazil at the beginning of the nineteenth century, although used to eating game animals, food that was usually reserved for the noble classes during the Old Regime, tended to belittle the colonial habit of eating woodland animals and, even worse, tended to consider it a savage habit, typical of primitive peoples. Although this

was the most common opinion, it must be pointed out that there were many nuances related to the different and distinct eating habits, influenced by the state of development of the traveller's country of origin and its culinary traditions, as well as by their social standings.

What interests us in this article, based mainly on the writings of foreigners and on cookbooks of nineteenth century Brazilian cuisine, is analysing how the intellectual elites of the newly created Brazilian state, in their eagerness to give the state an identity, reacted to the disparaging opinions of foreigners. They countered with praise for Brazil's splendorous natural resources, its exuberant flora and varied and numerous fauna (e.g. Figures 1-3: *Ardea cocoi*, *Guaruba guarouba* and *Penelope jacquacu*). In the words of an anonymous Brazilian author, Brazil should present itself 'to the eyes of the world, by occupying its rightful place, reserved by nature' (Anonymous 1882: 5).

Figure 1: A Cocoi Heron (*Ardea cocoi*), on shore of Niterói

Photograph © Almir Chaiban El-Kareh

Figure 2: Golden Parakeet (*Guaruba guarouba*)

Photograph © Frédéric Duhart

Figure 3: Spix's Guan *(Penelope jacquacu*)

Photograph © Frédéric Duhart

Cuisine and national identity

From the beginning, recognition of the Brazilian state and the affirmation of a distinct identity by its old parent nation and other countries became a problem. Brazilians were primarily descendants of the Portuguese, spoke the same language, practised the same religion, and their habits were very similar. However, there was a strong rivalry between those born in the old country and those born in the colony.

Despite the hospitality with which the former were received when they arrived in 1808, during a difficult moment in their lives, having had to abandon hurriedly their country and their fortunes, especially real estate, they behaved in a presumptuous and heavy handed, even hostile, manner towards their hosts, refusing to understand 'the color difference of the Brazilian generation, who they ironically treated as mulatto, with no distinction of origin' (Debret 1978: 162). It was evident that slavery had influenced the physical appearance of the Brazilian population, which saw in the 'more frequent mixture of the two bloods', theirs and the Europeans, and in the 'progress of education', the way to escape the current state of things. This last point 'corrects public opinion and induces it to respect real merit wherever it is found' (Debret 1978: 162).

And what did it mean to be Brazilian - this emblematic citizen of the South American empire, if not a logical synthesis of all the cultures, including the indigenous and African, that were subordinate to the Portuguese, that blended in homes (in the kitchen and the bedroom) and the streets, and whose triumphs and charms 'should constitute one more reason to, in the future, forget these ethnic lines of demarcation traced by self-centeredness, but that reason should one day erase'(Debret 1978: 162-163)?

Meanwhile, in the absence of a recognised cultural tradition that wasn't Portuguese, the answer found by the Brazilian elite since the colony's independence, was the praise of nature, in the hopes that the Brazilian '[…] will, in time, become as great as the natural environment in which he lives. Will then feel pride in being considered by European arrogance and the envy of its parent nation, a mixed people' (Schlichthorst n.d.). This premise made the approach of other nations and the incentives to European immigration doubly valuable; it attracted capital and free workers to modernise the economy and introduced new values and cultural lines, which would distinguish them from the Portuguese.

However, this wide open stance to foreigners, especially to Europeans, unleashed an avalanche of new values that were often embraced without critique. In 1878, Count Eugène de Robiano expressed this situation in the following thoughts:

> '*Of course, in their minds, Brazilians don't absolutely believe that they are backwards compared to Europe; and have begun in fact*

to spread their customs and fashions abroad, but in reality this just makes it a victim of itself […] It is regrettable, to watch as each country's individuality is lost, even the tiniest details, all in benefit to the absurd law of universal equality.'

(Robiano 1878: 19-20)

This, in effect, raised the problem of the disappearance of its identity before the very real threat of the smothering of traditional traces of Brazilian culture. Authors of cookbooks reacted to this unbridled Europeanisation and acted harmoniously with their understanding of their own political roles and that of food in the construction of a Brazilian identify and nation. As such this is the first line in the previously mentioned anonymous author's book; 'National Cook, this is the title we chose for this work; and great are the obligations it burdens us with!' (Anonymous 1882: 1).

Hunting as a source of nourishment amongst Brazilians

Travellers in the nineteenth century, through fascination, disgust or perhaps just curiosity, gave us access to plentiful information on Brazilian eating habits. They were delighted by the indigenous population's ability to attract birds with insects, 'such as, for example, the large larvae of the Hercules beetle', or 'by imitating their calls and consequently often catching them with lassos' (Rugendas 1853: 97), or by hunting them with bows and striking them during flight with their arrows, 'rarely failing' (Pfeiffer 1859: 86). Austrian traveller, Ida Pfeiffer, tells us admiringly after having enjoyed a hunt with the Puris while passing through Brazil in 1842:

'*My hosts prepared the monkey and the parrots; skewered them in wooden spits and roasted them. To make me feel even more welcome they placed upon the ashes some ears of corn and some tubers. They then brought some large, fresh tree leaves, shredded the monkey with their hands and placed a large part over the leaves, with a parrot, corn and tubers, and placed everything before me. I had an extraordinary appetite, having not had anything since morning. So I started with the roast monkey, and found it delicious; the parrot meat did not seem as delicate or flavorful.*'

(Pfeiffer 1859: 86-87)

The English merchant, Luccock, warned that in Brazil one could not find birds or animals of species that Europeans considered game, although almost all the fauna were worthy of being placed in that category. As such, everything that was alive, perhaps with the exception of some types of reptiles, was eaten in the interior of the country, 'and all the creatures seemed welcome by the lower classes of natives and negroes' (Luccock 1975: 32). Some species, such as iguanas, were in the process of being removed from the popular mind as being unworthy, and were sold in cities and eaten as stew.

In his travels throughout the Brazilian interior Luccock always took a rifle, solely for hunting, seeing as the trips were very safe and travellers had nothing to fear from the inhabitants. However, as there were no hospices or hotels where one could take lodging or eat, it was always necessary to count on the hospitality of the country's inhabitants and stay and eat in one of their houses, which was always a bit problematic. Although, by European standards Brazilians were amazingly hospitable, they were not always well off, and it was often necessary to count on luck to arrive at the host's house when one of the family members was returning with game, for example 'a large monkey that needed to be skinned and cooked for lunch' (Luccock 1975: 209) because often one could not find in the whole village 'a single duck, chicken, turkey, pig or any other little animal' to buy, and one had to make do with 'a few pigeons and sparrows' (Luccock 1975: 257) hunted with the rifle, and sleep dreaming of a larger meal the next day.

The same thing happened to the French painter and photographer Auguste Biard, who lived in Brazil, specifically in the province of Espírito Santo, from 1858 to 1860, and whose adventures reached extremes: 'I lived like a savage, almost always eating what I hunted – birds, mammals, snakes – with no obligations, no certain direction, but also without attachments. I counted only on myself' (Biard 2004:110). And so he worked daily, hunting at dawn before painting, able easily to choose the birds he preferred. He ate what he hunted and what was sold to him and painted, increasing his collection. 'How could I wish for anything better?' (Biard 2004: 102).

He also tells us of an excursion to the jungle, accompanied by a Zarari indian called João, to see how they hunted monkeys and birds using their curare tipped arrows:

> '*The boy carried a blowgun, about 12 feet long, and a light quiver that seemed lacquered. Inside the quiver there were half a dozen small pieces of wood, very hard, sharpened at one end and stuck with a ball of cotton on the other. […] The guides put their fingers to their lips and at that signal we left the trail and lay under a large tree […]. The young indian remained still, with his back to the tree and prepared his blowgun, resting it amongst the low hanging branches, seeing as the weapon, being so long, does not allow freedom of movement for the person using it if he has to hold its full weight. […] Another moment and I saw a small red monkey, that they call mico, jump from a nearby tree; the first was followed by another, and another, about seven in total.*' (Biard 2004: 218)

However, hunting, which had been used as a method of obtaining food quickly, became a way for European naturalists to obtain specimens that they would stuff and send back to their native countries, to place in their natural history museums, and as a source of entertainment for European and North American travellers and tourists that came to Brazil. German traveller Carl Seidler writes about a trip to the shores of the Jaguarão River in the province of Rio Grande do Sul in the 1830s after having served as a mercenary soldier for Emperor Dom Pedro I in Rio de Janeiro:

> '*Often the hunt did no promise success; we enjoyed ourselves galloping on our horses after the ostriches*[1] *that constantly wander in great herds here. We could have killed a great number of them; however, that would not have served us, that is the reason we limited ourselves to testing our horse's speed; however we often found their nests with eggs, that we enjoyed. The taste of ostrich egg is a little rough, but perfectly edible and it has the great advantage that a single egg will satisfy two men*'.
>
> (Seidler 1976:116)

Some forty years later, towards the end of the 1870s, the Belgian Count Eugène Robiano travelled to Niterói, a city situated across the

[1] This is most likely a Greater Rhea (*Rhea americana*).

Guanabara Bay from Rio de Janeiro, which served as a 'starting point for wonderful trips'. From there one could, in a few hours, arrive in enchanting places, isolated and wild lakes, some that had abundant aquatic wildlife and so attracted hunters in particular. There one hunted lying down at the bottom of canoe that was nothing but a hollowed out trunk, a practice that was 'enchanting and allowed all kinds of emotion' (Robiano 1878:35-36)

> '*One day we took a hunting trip to one of these small inlets formed by the whims of the bay waters around Niterói. It was dawn and we were four or five, lying down separately in our dugout canoes, having with us a negro that guided the boat while standing behind the hunter silent and almost unmoving. It is practical and pleasant: with the long oar that he handles with skill, the negro propels us along quickly and quietly along the rushes and the shores; a bird flies: we fire; if it falls the negro moves closer and with the backside of his oar, without stopping our movement, deposits it at your feet. I enjoyed myself immensely with a sport so new to me […].*'
>
> (Robiano 1878: 36-37)

The practice of eating game was so entrenched in the palate of Brazilians that since the colonial period, especially in the interior, slaves were taught and instructed so as to be designated hunters. They were

> '[...] *prepared since adolescence to accompany troops, or simply his master, on long and difficult trips, they would walk armed with a rifle, as much for personal safety as to obtain game during the indispensable stops within the virgin forests.*' (Debret 1928: 240)

Consumption and commerce of birds under the Brazilian monarchy

Apart from the general lack of domesticated birds in the country's interior at the beginning of the nineteenth century, eating habits also made it difficult for foreigners. Thankfully for travellers, as foreigners spread throughout Brazil and travelled throughout the country the number of hostels or stores that catered specifically for travellers near towns and plantations, increased and their menus became more varied, one was able to 'obtain chickens and pigs' (Luccock 1975:230), even though their preparation might take hours, as well as the ubiquitous dried meat and manioc flour. However, during 'holy days', it was

extremely difficult to obtain a chicken, and, if possible one had to 'pay at least twice what it was worth!' (Luccock 1975:282)

However, one could state that the habit of raising domestic fowl had been disseminated throughout the country, even to its furthest reaches. In fact, it became commonplace to find poultry in yards, and even inside homes, living with their owners. In this way the breeding of poultry introduced from Europe, even if some originated from other American nations, such as the turkey, expanded to the whole country and as a consequence prices began to drop as consumption increased.

The complaints of different foreign travellers that came to Brazil during the first half of the nineteenth century are constant in their opinion of the bad quality and exorbitant prices of poultry. 'The birds are mediocre and very expensive', announced the German traveller Schlichthorst who had similar experiences to his countryman Carl Seidler. Seidler was no longer able to count on the mercenary salaries provided by the Brazilian emperor, and could only look on in envy upon the tables of the rich English merchants living in Rio de Janeiro, able to afford to eat mutton and poultry, while he had to be content with eggs 'that are sold at relatively reasonable prices' (Seidler 1976: 72).

Because of the high price of a chicken, its consumption was restricted to the rich and the well-off infirm whose domestic slaves would head to the poultry markets in Rio to shop. There one was sure to find a large quantity of 'chickens, turkeys, parrots, monkeys and different species of animals', despite their high prices. In the words of French painter Jean-Baptiste Debret, who lived in Rio from 1816 to 1831:

> '*Perhaps the most important reason that forces the citizen to accept, without complaint the high price of this species of bird, is the use of chicken soup. Imported by the Portuguese and so common today in Rio de Janeiro that we can observe the daily presence of this food on the wealthy man's table, and even more frequently in the bedroom of the infirm, as a substantial diet, slightly refreshing, so repeatedly prescribed by a doctor that the Brazilian absolutely does not appreciate the very healthy veal. And so chicken soup, so indispensable, is always prepared since the morning in taverns and infirmaries, […]*' (Debret 1928: 225)

These high prices constantly stimulated the commerce of poultry, and the devastation caused by frequent epidemics made the trade even more lucrative. In this way, a lot of Brazilians practised the trade. In fact,

eating chickens, and their eggs, became as popular in the kitchens of wealthy families as Brazil's most popular dish. It was not unusual to find them on all tables, normally headless, accompanied by a tray of rice next to the *feijoada*.

However, with the enrichment of larger and larger layers of the population that wanted to copy the Europeans, as well as the immigrants themselves, their eating habits tended to conform to the foreign patterns. In fact, the number of French, Portuguese, Italian, German and English restaurants grew extraordinarily, as well as the quantity of cafes and taverns run by foreigners, introducing new dishes as well as new ways of partaking in them. Consequently, the urban consumption of game tended to disappear from a more Europeanised urban population. This tendency was well expressed by Seidler:

> '*The Brazilian will eat tapir, monkey and parrot, but the German could not bring himself to eat the last two species. The parrot's purple flesh is very tough and hard, and the monkey's inspired great repulsion due to its reddish color, sweet taste and human aspect. Only the tapir was deemed acceptable due to its similarity to cattle […].*'
>
> (Seidler 1976: 216)

Menus and recipe books

It seems Seidler was correct, because the only 'exotic' dish, the greatly appreciated turtle soup, disappears from advertisements in 1856, when it was last offered at the Águia de Ouro Hotel (*Correio Mercantil* 1856: 3).

Judging by menus from confectioners, bakeries, cafes, taverns, restaurants and hotels we can conclude that by the second half of the nineteenth century the business of food preparation in Rio was, in its great majority, controlled by foreigners and following European standards. Cookbooks, also heavily influenced by European tastes, also reflected this reality. Such is the case of the *Cozinheiro Imperial* (Imperial Cook) by R.C.M. (1843), whose first edition was printed in 1840 and was re-edited regularly until 1900, the year of its 11th edition. But, as the Portuguese were the most numerous traders, in both wholesale and retail, and the most numerous immigrant colony it was normal for them to influence more heavily the eating habits of the *carioca* (resident of Rio de Janeiro).

The different immigrant colonies, especially the French, Italian, English and German, not to mention the Portuguese, brought their habits of gathering together to eat in public areas, leading to the success and rapid spread of cafes and taverns, but also, on a smaller scale, of restaurants and confectioners. These areas of public consumption organised themselves not only according to the distinct cuisine of the immigrants and their customs, but also according to the purchasing power of their clients. It was well known that imported goods, always very expensive, were a privilege enjoyed only by those who had the means to purchase them. The less well-off had to make do with cheaper items, produced locally or regionally.

The *National Cook* and the construction of the Brazilian national identity

In June 1882, the *Jornal do Commercio* announced the publication of the first edition of the *Cozinheiro Nacional ou coleção das melhores receitas das cozinhas brasileira e europeias* ('National Cook or collection of the best recipes of Brazilian and European Cooks', Figure 4). Unfortunately, the author wanted to remain

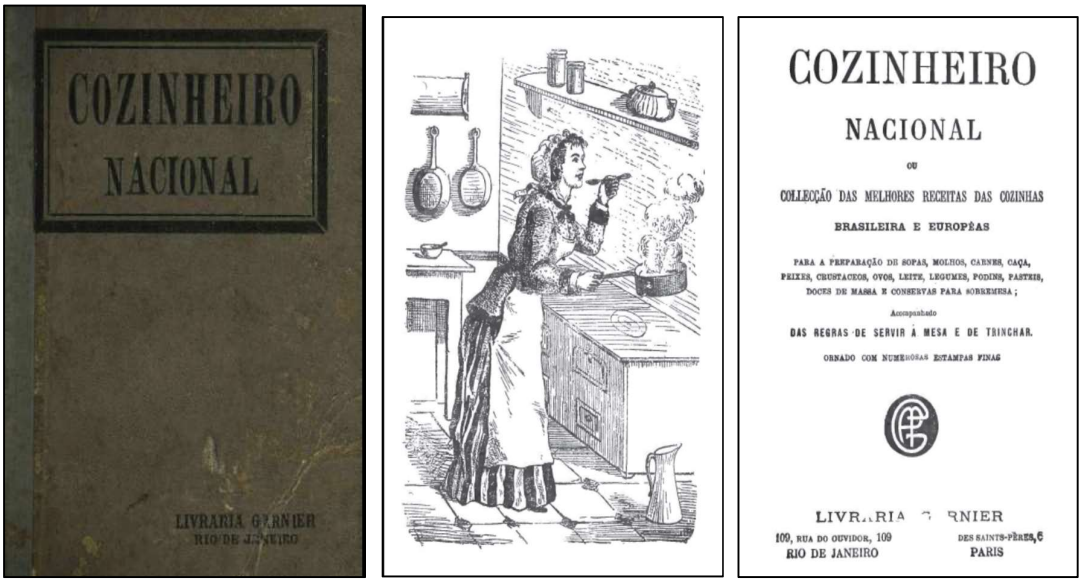


Figure 4: The book *Cozinheiro Nacional* (Anonymous 1882)

anonymous, even though he was an important voice, well aware of the many social layers engaged in the creation of a Brazilian identity and nationality, just at the moment when provincial and antimonarchic forces, represented by the republican party, were exhausted and the

concept had need of a new impetus. This attitude manifests itself in the first lines of his book: '[…] once we titled our work 'national' we place upon ourselves the solemn burden of presenting a cuisine that is, above all, Brazilian' (Anonymous 1882: 1)

> '[…] *throughout the country, the means of preparing the meat of the many mammals that live in its forests and run through its fields; the birds that inhabit the diverse climates; fish that swim its rivers and seas, reptiles, plants and roots that are completely different from those of Europe, in taste, look, form and virtues.* ***These require peculiar preparations, special condiments and delicacies that can only be found where those substances abound, claimed by nature and the customs and occupation of its inhabitants.***' (Emphasis of the author)
>
> (Anonymous 1882: 1-2)

To the *National Cook* the Brazilian national identity was implicitly tied to the clearly formulated concept of *'terroir'*. He had no doubt that the national foods were viscerally tied to a territory, its inhabitants and its history, and, therefore, the book should express this relationship between 'people and culinary preparations', and end once and for all 'this anachronism of accepting foreign books that teach the preparation of substances that cannot be found in the country; or can only be purchased through great cost' (Anonymous 1882: 2).

Consequently, without denying foreign contributions, the *National Cook* associated 'European substances' with native products aiming to make clear that 'all the game, fish, vegetables and fruits that are gathered in an article are not only prepared the same way, but can be substituted for one another'. By acknowledging explicitly that it copied or translated 'only preparations that dealt with meats or substances that are found in every country', the *National Cook* only claimed 'originality for the stews made from meats and vegetables particular to Brazil.' (Anonymous 1882: 3).

So, might this not be the recipe for the construction of a Brazilian identity: without denying foreign cultural contributions, adding and mixing in the typically Brazilian cultural traits, praising the world-famous characteristics of health, robustness and longevity?

Being Brazilian with pleasure

In the same way that today, an inhabitant of Rio de Janeiro would be shocked by the idea of eating these beautifully coloured macaws (e. g. Figures 5 and 6: *Ara chloropterus* and *Anodorhynchus hyacinthinus*), toucans (e. g. Figures 7 and 8: *Ramphastos toco* and *R. tucanus cuvieri*) and other birds seen only in documentaries and zoos and protected by Non-profit Organisations and by the Brazilian state, in the 1880s, a *carioca* heading to the city's bird market would be equally surprised by the idea that one could eat those not so innocent talking parrots, able to repeat with perfection insults and swear words, and many other birds of beautiful plumage or touching song that charmed children and drove foreigners wild as they went to admire or purchase them to take back to their countries.

Figure 5: Green-winged Macaw (*Ara chloropterus*)

Photograph © Frédéric Duhart

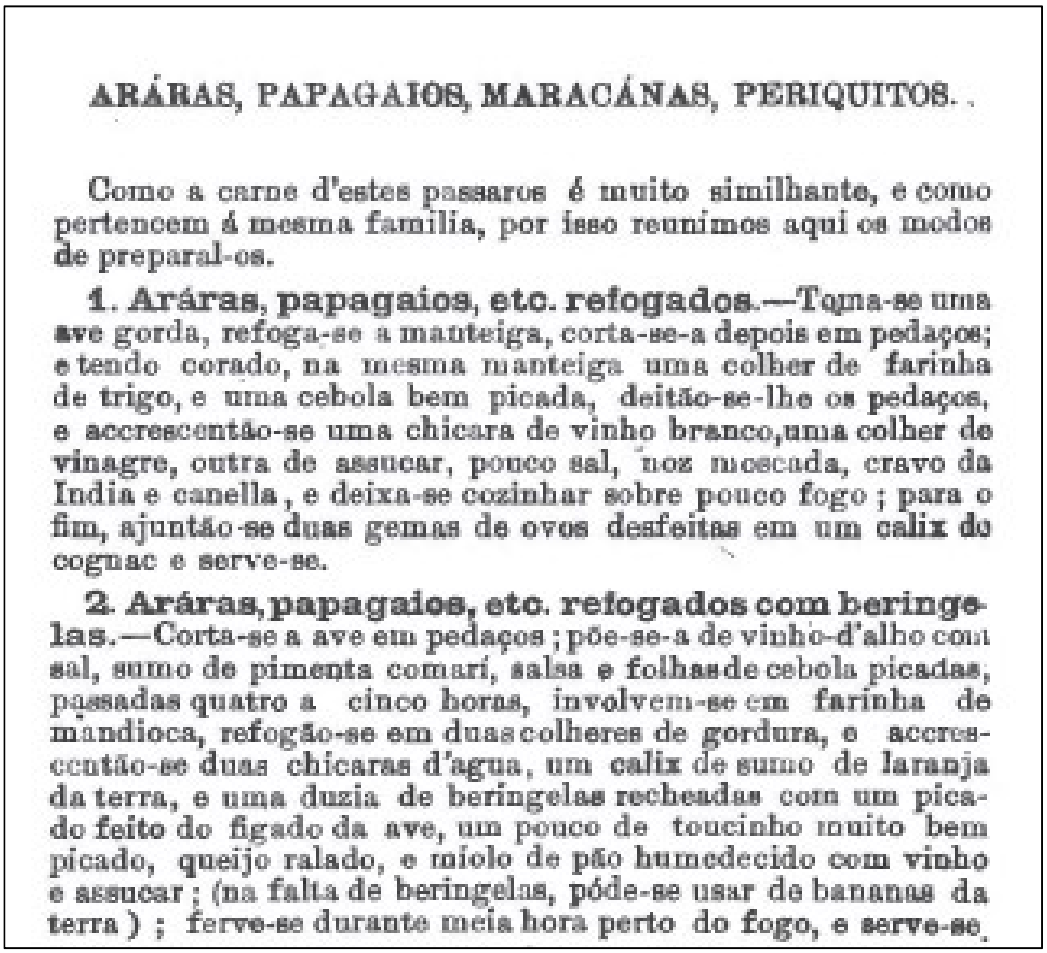
Figure 6: Hyacinth Macaw (*Anodorhynchus hyacinthinus*)
Photograph © Frédéric Duhart

Figure 7: A Toco Toucan (*Ramphastos toco*) on a Papaya tree
Photograph © Almir Chaiban El-Kareh

Figure 8: Cuvier's Toucan (*Ramphastos tucanus cuvieri*)
Photograph © Frédéric Duhart

To the *carioca*, that did not know the Brazilian Amazon or the remote interior it would be inconceivable that someone might eat wild animals, unless they were an Amerindian, or what they might consider as a savage. What then might his reaction be when he opened a copy of the *National Cook*? Would he not think that he was looking at a cookbook for Amerindians, with recipes on how to prepare jaguars, monkeys, parrots, toucans, lizards, turtles, ants, anteaters and fried or roasted snakes?! But, as it warns us in its prologue, at no point would European products be cast aside in its recipes.

One might say that the *National Cook* was a reflection of what was happening throughout a society whose identity was being built on foreign and domestic contributions. The recipes (Figure 9) for 'Macaws, Parrots, Toucans, Parakeets' (Anonymous 1882: 256) illustrate very well how the *National Cook* viewed Brazilian cuisine socially, as a synthesis of cultures wherein the Brazilianness should impose itself through the quality and variety of its natural products. These recipes illustrated the many distinct and varied Brazilian regional identities, more or less influenced by foreign immigrants, more or less integrated to European culture.



ARÁRAS, PAPAGAIOS, MARACÁNAS, PERIQUITOS.

Como a carne d'estes passaros é muito similhante, e como pertencem á mesma familia, por isso reunimos aqui os modos de preparal-os.

1. Aráras, papagaios, etc. refogados.—Toma-se uma ave gorda, refoga-se a manteiga, corta-se-a depois em pedaços; e tendo corado, na mesma manteiga uma colher de farinha de trigo, e uma cebola bem picada, deitão-se-lhe os pedaços, e accrescentão-se uma chicara de vinho branco, uma colher de vinagre, outra de assucar, pouco sal, noz moscada, cravo da India e canella, e deixa-se cozinhar sobre pouco fogo; para o fim, ajuntão-se duas gemas de ovos desfeitas em um calix do cognac e serve-se.

2. Aráras, papagaios, etc. refogados com beringelas.—Corta-se a ave em pedaços; põe-se-a de vinho-d'alho com sal, sumo de pimenta comari, salsa e folhas de cebola picadas, passadas quatro a cinco horas, involvem-se em farinha de mandioca, refogão-se em duas colheres de gordura, e accrescentão-se duas chicaras d'agua, um calix de sumo de laranja da terra, e uma duzia de beringelas recheadas com um picado feito do figado da ave, um pouco de toucinho muito bem picado, queijo ralado, e miolo de pão humedecido com vinho e assucar; (na falta de beringelas, póde-se usar de bananas da terra); ferve-se durante meia hora perto do fogo, e serve-se.

Figure 9: Recipes for Macaws, Parrots, Toucans and Parakeets

From the National Cook, Anonymous 1882: 256

In any case, despite the colourful uproar of its recipes for animals, native to the tropical forests and central elevated plateaus, its recipes for beef, sheep and pork, the meats of European origins, were characteristically urban and typical of the time's international cuisine. They practically never mention Brazilian products (except pepper). It invests heavily in the use of Brazilian birds, mammals and reptiles to compensate for this and to give the book a national character.

The recipes concerning animals, native to the Brazilian fauna are so numerous, well thought out and appetising, and the knowledge of the particularities of each type of meat so extensive, that one can see, with little difficulty, that these recipes originated from the culinary experience of families with origins in the interior, now established in urban centres or plantations, and it was these families that the book addressed in its chapter dedicated to hunting.

Furthermore, why include in the book recipes for ocelots, jaguars and anteaters if the author recognised that:

> '*The meat of ocelots, jaguars and anteaters is rarely eaten, because their meat is very tough and dry; however, in some cases their medicinal properties are very useful, here we present a few ways of preparing them, seeing* ***as it will be a greatly appreciated dish in the Brazilian woods.***' (Emphasis by author)
>
> (Anonymous 1882: 220)

Since it is evident that he did not write for the Brazilian 'savage', whose eating habits he clearly did not know about, these recipes acquire a heavy political character and a clearly ideological slant of exalting native Brazilian products.

In fact, the *National Cook's* political and ideological posture situates it very clearly in the historical and social context of its time. What lauds it is the political consciousness of 'having blazed a new trail' and given Brazil its spot in the sun:

> '*Because it is time for Brazil to shed its child's clothes, and having abandoned the habit of imitating other nations, present itself to the eyes of the world, occupying its rightful place, reserved by nature.*'
>
> (Anonymous 1882: 4-5)

References

Anonymous (1882) *Cozinheiro Nacional ou coleção das melhores receitas das cozinhas brasileira e europeias*, Livraria Garnier, Rio de Janeiro and Paris.

Biard, A.-F. (2004) *Dois anos no Brasil*, Senado Federal, Brasília.

Correio Mercantil. (1856) *Anúncios*: 3, Typographia. do Correio Mercantil, Rio de Janeiro.

Debret, J.-B. (1978) *Viagem pitoresca e histórica ao Brasil*, tradução e notas de Sergio Millet, t.1, v. 2, EDUSP: Livraria Itatiaia, São Paulo.

Ewbank, T. (1973) *A Vida no Brasil ou Diário de Uma Visita ao País do Cacau e das Palmeiras*, Ed. Conquista, Rio de Janeiro.

Luccock, J. (1975) *Notas sobre o Rio de Janeiro e partes meridionais do Brasil*. Ed. Itatiaia, Belo Horizonte; EDUSP, São Paulo.

Pfeiffer, I. (1859) *Voyage d'une femme autour du monde*. 2nd edition, Hachette, Paris.

R. C. M. (1843) *Cozinheiro Imperial ou Nova Arte do Cozinheiro e do Copeiro*, Eduardo e Henrique Laemmert, Rio de Janeiro.

Robiano, E. de (1878) *Dix-huit mois dans l'Amérique du Sud: le Brésil, l'Uruguay, la république Argentine, les Pampas et le voyage au Chili par les Andes*, E. Plon & Cie, Paris.

Rugendas, M. (1853) *Voyage Pittoresque dans le Brésil*, Engermann, Paris.

Schlichthorst, C. (n.d. – 19th century date of publication not identified)) *O Rio de Janeiro como é,1824-1826 (uma vez e nunca mais): contribuições de um diário para a história atual, os costumes e especialmente a situação da tropa estrangeira na capital do Brasil*, Ed. Getulio Costa, Rio de Janeiro.

Seidler, C. (1976) *Dez anos no Brasil*. 3 ed., Martins, São Paulo; INL, Brasília.

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CHAPTER 13
CHICKEN, GOOSE AND QUAIL: THE TRADITION OF EATING BIRDS IN RUSSIA

by Tatiana Voronina

Wild birds

From time immemorial, hunting played a great role in Old Russia. All the life of our ancestors was inseparably linked to hunting and to the many uses of its products. Hunting gave people the means of subsistence, banknotes, goods for home and foreign trade (Brockhaus and Efron 1991). Diaries and travel notes of foreigners, who visited Russia in the fifteenth to seventeenth centuries, showed that there was an incredible number of wild birds and animals, and that their catching had an economic meaning (see for instance Von Herberstein 2008). Game among other dishes was a favourite festive food. In the sixteenth to seventeenth centuries roast swans, ducks, geese, cranes and other birds were presented at every festivity of the Russian tsars (Kostomarov 1992: 183).

In accordance with the hunting classification, birds are considered to be feathered, contrary to wild animals that are four-footed. Feathered birds are divided in accordance with their place of residence, into:-

1. Forest birds or coniferous forest birds: Hazel Grouse (*Tetrastes bonasia*), Willow Grouse (*Lagopus lagopus*), Black Grouse (*Lyrurus tetrix*, Figure 1), Western Capercaillie (*Tetrao urogallus*), Common Pheasant (*Phasianus colchicus*), etc.
2. Field and steppe birds: Grey Partridge (*Perdix perdix*) and Daurian Partridge (*Perdix dauurica*), Common Quail (*Coturnix coturnix*), Little Bustard (*Tetrax tetrax*), Great Bustard (*Otis tarda*), Pallas's Sandgrouse (*Syrrhaptes paradoxus*), Common Crane (*Grus grus*, Figure 2), Siberian Crane (*Leucogeranus leucogeranus*), Red-Crowned Crane (*Grus japonensis*), etc.
3. Water fowl: Mallard Duck (*Anas platyrhynchos*), Eurasian Wigeon (*Anas penelope*), Greylag Goose (*Anser anser*), Bean

Goose (*Anser fabalis*), Whooper Swan (*Cygnus cygnus*, Figure 3), etc.

4. Wader birds: Purple Sandpiper (*Calidris maritima*), Dunlin (*Calidris alpina*), Eurasian Woodcock (*Scolopax rusticola*), Common Snipe (*Gallinago gallinago*, Figure 4), Great Snipe (*Gallinago media*), etc.
5. Mountain birds: Rock Ptarmigan (*Lagopus muta*, Figure 5) , Caucasian Grouse (*Lyrurus mlokosiewiczi*), Caucasian Snowcock (*Tetraogallus caucasicus)*, Caspian Snowcock (*Tetraogallus caspius*), Altai Snowcock (*Tetraogallus altaicus*), etc. (Beme and Flint 1994).

Figure 1: Black Grouse (*Lyrurus tetrix*)

Photograph © Frédéric Duhart

By the end of the nineteenth century hunting wild birds was one of the main sources for survival for 10 million people who earned about 300 million roubles annually (Prohorov 1972).

In the nineteenth century and until 1917 hunting was protected by Russian laws, for instance, laws adopted on the 3rd February 1892, and wild birds were allowed to be killed only in the appointed season for every kind of wild bird. It was forbidden to hunt or shoot out of season or to transport, distribute, sell and buy wild birds beyond 10 days after that season. There was also a set term for buying birds, and a set penalty

Figure 2: Common Crane (*Grus grus*)
Photograph © Frédéric Duhart

of 1-25 Russian roubles when not within that term, except for buying live birds to sell for breeding. In the cities, selling birds, shot in winter (until 1st March) was allowed at any time but only following special rules: people were allowed to transport live birds, but only for breeding and with the permission of the local police department (Prohorov 1972).

Bird-catching by snare, trap or with hunting birds was very popular in Russia, but snaring was the preferred method. Hunting birds with a gun was more common for the severe Russian North and Siberia, where aboriginal people did not have any better source of valuable protein. Such hunting was allowed all over the country, but Siberia was considered to be the richest place for hunting wild birds. The famous Russian writer, Anton P. Chekhov, in his story, *From Siberia,* in 1890, wrote that he had never seen so many wild birds as in Siberia on his journey from Tumen to Tomsk (Chekhov 1987: 7). In accordance with the data collected by the correspondents of the Russian Geographical Society in the 1840s, mallard ducks (*Anas platyrhynchos*), black grouse (*Lyrurus tetrix*) and greylag geese (*Anser anser*, Figure 6) were festival

foods for many peasants of the Kainsk district (Gromyko 1975: 270-272).

Figure 3: Whooper Swan (*Cygnus cygnus)*

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Many books and articles were published about the traditional hunting of wild birds in cold Siberia, but it is worth noting the distinguished work of etymologist V. Zenzinov. Being in exile in

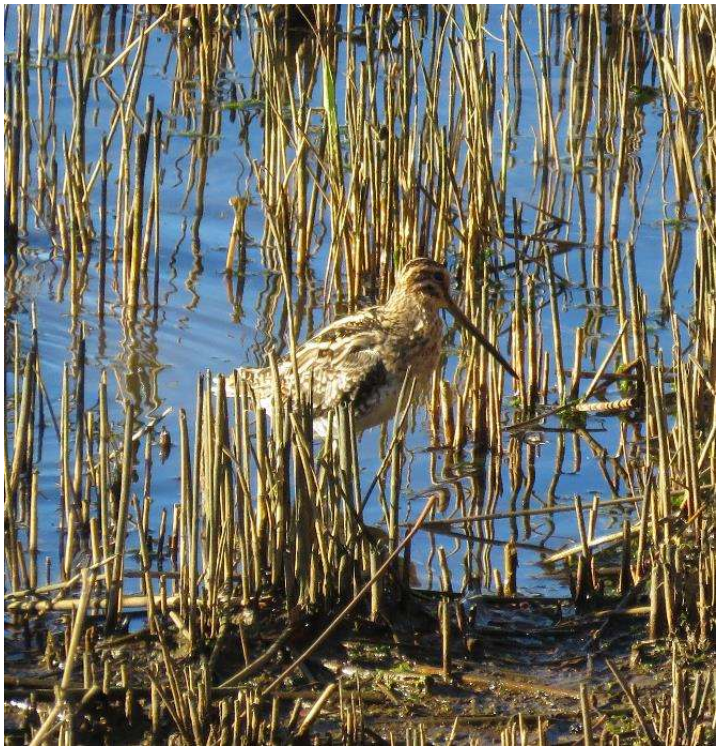

Figure 4: Common Snipe (*Gallinago gallinago*)

Photograph © Frédéric Duhart

Siberia for his revolutionary activity, he used his bright talents as writer and ethnographer to gain unique information about the inhabitants of the Russian Ustje district, Verkhoyansky province in Yakutia. First his writings were edited in *Ethnographical Review* in 1913 and in 1914 they were edited in Moscow into a separate book with photos. This rare edition was re-edited almost one century later, in 2001 in Yakutia. Zenzinov wrote that game, mainly geese and ducks, once killed were kept in special holes dug in the frozen tundra to preserve them (Zenzinov 2001:160).

Figure 5: Rock Ptarmigan (*Lagopus muta*)
Photograph © Frédéric Duhart

Religious prescriptions

There were many religious rites and prescriptions about eating birds and the beliefs about such traditions in the past. Several examples of magic rites with chicken can be found in the book written (Zelenin 1927) by the famous Russian ethnologist, D.K. Zelenin (1878-1954), and then re-edited in 1991 (Zelenin 1991; Chistov 1991). For instance, he wrote that Russians would take a chicken's egg and touch cattle with it to protect them from evil. It also meant a wish for the cattle to be as round and sleek as an egg and as fertile as a hen. Some rituals were made on special days devoted to the Saints Kosma and Damian (1st November), who were considered to be patrons of poultry and their Saints' day was called the 'name-day of chickens'.

Zelenin (1991: 90, 92-93) explains that these zoolatric rituals were also connected with ancient pagan offerings, but not with totemism. For instance, there was a tradition in Russia (in Ryazan province), that when women went around the village and collected eggs, which they carried next to their skin between their breasts, they put these eggs on the table at home and prayed to the Saints Kosma and Damian: 'Please, Kusma-Demjan, give us chicks this autumn, we shall prepare the hen and the cock!' And on the day devoted to the mentioned saints they always prepared a special dinner with cock and hen birds. Such prayers were aimed at protecting the home poultry from evil, diseases and bad people (Selivanov 1987: 112). Chickens also had their own chicken talisman which was any small stone with one or several holes found in a river or in the soil. In Tula, Tambov and Jaroslavl provinces such stones were put in the chicken-house to give the chickens health and also to protect them from evil (Zelenin 1991: 94). Later on, such stones were replaced by the neck of a milk bottle. Such stones had also been common for the stables and cowsheds in England, France and Switzerland to protect animals from wizards and witches (Sébillot 1908: 223).

Figure 6: Greylag Goose (*Anser anser*)

Photograph © Frédéric Duhart

Marks and signs that contained a sacred element were very often used by professional hunters. Some of these signs were connected with the church calendar. Sometimes Christian mythology gained much from a pagan feature. For instance, the first shot black grouse (*Lyrurus*

tetrix) meant misfortune. Also, it was forbidden to take women hunting (Gromyko 1975: 198, 207).

Birds in Russian cuisine

A famous specialist in the field of Russian cuisine, D.V. Kanshin, wrote (1893) that wild birds, foraging for food and getting food themselves, never have the chance to rest like domesticated birds, which is why they do not have fat in their meat. This lack of fat during preparing game for eating was overcome by putting animal fat into birds' meat, or, if birds were small, they were wrapped around with a slice of fat and then during cooking the meat of the bird became less dry. Kanshin noted that the fat of birds was never set in their meat, but always only under the skin. When food was plentiful, some wild birds laid down fat under their skin, especially in autumn before flying away to the South. Great snipe and quails are the birds with most fat, and such birds were roasted without animal fat, but the meat was wrapped around with vine leaves to protect their fat from escaping during roasting and to protect the meat from drying out.

Wild birds each have their special taste, flavour and smell, and, to intensify it and also to make it less tough, many cooks kept dressed poultry until they began to show obvious signs of decomposition. It is a well-known fact that the English liked strongly decomposed hare and pheasant and the French liked decomposed pheasant. However, better by far in Russia were other quick ways of softening meat, and in this case the smell was almost not apparent: they buried wild birds in the ground for 1-2 days, or pickled the meat in vinegar with spices, or simply in kvass! Then, it was necessary to roast the birds to a turn (Kanshin 1893: 725).

Domesticated birds

Poultry keeping was invented in India, where about three thousand years ago they began to domesticate hens. Then it went to Persia, to Egypt and other countries. The first mentions of domesticated goose and duck in Europe and Asia appeared several centuries BC (Wood-Gush 1959, Woldekiros and D'Andrea 2016). Turkeys (*Meleagris gallopavo*) were domesticated in the Americas, (see Gabriel and Jiménez this volume) and brought to Europe in the sixteenth century

(see Macbeth this volume). With the development of the domesticated poultry industry new cultural uses of goose and ducks were invented.

Eating domesticated and wild birds is an old tradition in Russia, that has been confirmed by many archaeological findings (Rabinovitch 1994). The fact that chickens came to Russia from other countries became a subject of scientific argument, in particular among philologists. A famous Russian slavist and linguist, Trubachev (2003), wrote that the domesticated chicken (*Gallus gallus domesticus*, Figure 7) was imported to Russia from elsewhere (maybe from the south-west, i.e. from the Mediterranean area, or from the south-east, e.g. from Iran). The Russian word for chicken, *kur* (*kuritsa, kura),* was also borrowed. The fact that the word *kur* was used also for the name of a quail makes its origin uncertain. It is worth noting the results of investigations: "On the whole it is better not to confuse the fact of the late cultural

Figure 7: Orloff Chicken Breed (*Gallus gallus domesticus*)
Photograph © Frédéric Duhart

borrowing and spread of chickens as domesticated birds in Europe coming from the East (and its name 'Persian bird' in Greece) with an ancient onomatopoeic word, *piik*, that was used secondarily for the domesticated chicken. A relative antiquity and primordial meaning of the Slavonic word, *kurъ*, is confirmed by its previous use in toponymy and hydronymy" (Trubachev 1987: 130).

In any case the word, *kur*, is a preslavonic and ancient word. The article by Trubachev (2003) about the origin of Russian words for common quail (*Coturnix coturnix*) and hazel grouse or 'hazel chicken' (*Tetrastes bonasia* syn *Bonasa bonasia*) was provoked by the work, written by the Professor of Slavistics in the University of California, Los Angeles, Henning Andersen (1998). Andersen argued that the first 'Easter eggs' celebrated during the spring holiday of fertility belonged to the hazel grouse. 'The results of his arguments were that the word, hazel grouse, (*'рябчик'* in Russian) could have been borrowed from the Indo-European dialect, the forerunner of German, Baltic and Slavonic languages once it was absorbed into the forests of East Europe' (Trubachev 2003: 445, 449).

In accordance with the Russian custom from olden times, almost all noble people had poultry-yards beside their houses. Ordinary poultry included chicken, duck, goose, turkey and, very rarely, guinea-fowl (*Numida meleagris*) (Selivanov 1987: 119). Poultry was usually sold in the market places in wattled cages.

In the nineteenth century, Russia had a dominating position in some branches of international trade in the world market, for instance, in delivery of poultry and eggs. During the nineteenth century, Russian live poultry and eggs (as well as grain, long-fibred flax and hemp) were exported to many European countries, especially to Great Britain and Germany. Besides Russia, the main suppliers of eggs to the international market were the Austro-Hungarian Empire, Italy, Denmark and France.

The import of eggs was a comparatively new business for Russia but by the end of the nineteenth century it sent twice as many eggs to the Austro-Hungarian Empire as it received from abroad – worth 7,607,000 Russian roubles. Export to the Netherlands increased 10

times – worth 825,000 Russian roubles. In 1856 only 417,000 (pieces) were exported for 4,000 roubles; in 10 years that number increased to 1,150,000 (pieces). Thus, the export of eggs increased more than 2.5 times. Export of eggs continuously, and rather quickly, increased up to the end of the nineteenth century (see Table 1).

Table 1. Export of eggs from Russia to West Europe. 1870-1898

Years	Exported (thousands of eggs)		Price (thousands of roubles)
1870	10,988	for	110
1871-1880	67,752	for	759
1881-1890	365,850	for	5,832
1891-1895	945,600	for	14,724
1896	1,475,200	for	21,926
1897	1,713,751	for	25,520
1898	1,830,551	for	31,134

(*Source: Brockhaus and Efron 1991: 333*)

Besides eggs in shells, egg whites and yolks were also exported:

- in 1887–1891 an average of 72,000 poods (1 pood=16.38 kg. or 36 lbs. avoirdupois) were exported amounting to 322,000 roubles;
- in 1892–1896, 74,000 poods for 362,000 roubles;
- in 1897, 91,000 poods for 431,000 roubles;
- in 1898, 75,000 poods for 361,000 roubles.

(*Source: Brockhaus and Efron 1991: 333*)

As mentioned above, the Austro-Hungarian Empire, Great Britain and Germany were the most important consumers of Russian eggs. The Austro-Hungarian Empire itself exported almost the same number of eggs. Yet, if it needed more eggs from Russia, this could be explained because the Russian eggs were cheaper, and Austrian consumers were pleased with their prices while they could sell their eggs as more valuable goods to English buyers for the more fastidious clients.

In the 1890s eggs were exported from Russia more often thanks to improved refrigeration which allowed the transport of eggs to more remote districts. This trade can be seen from Table 2:

Table 2. Export of eggs from Russia to West Europe. 1886-1898

	Exported as millions of pieces		
Year	to Germany	to Austria	to Great Britain
in 1886	148	158	22
in 1887 – 1891	283	267	109
in 1892 – 1896	444	353	226
in 1897	614	510	377
in 1898	602	544	419

(*Source: Brockhaus and Efron: 1991: 329-333*)

Eating birds during the Soviet era

During the Soviet period (1917-1991) poultry farms grew to huge sizes, especially in the collective farms (*kolkhoz* in Russian), mainly using incubators (Prohorov 1972). Chicken meat was sold in large amounts everywhere in the shops, as well as in preparing different dishes for cafés, restaurants, kindergartens and the canteens of schools, factories and plants; the number of public catering establishments increased considerably. Chicken eggs were in great demand because they were used for daily eating after boiling, and also for preparing various dishes and confectionery.

According to official information, during the Soviet period about 50 million individual wild birds were also shot. Water-fowl were of paramount importance. Among these were the widespread feathered birds on inland reservoirs of the country and on the islands of the North Sea, the Arctic and the Pacific Ocean. During the 1960s some 25-30 million of these birds there were shot annually. From West Siberia to Kazakhstan, the coastal districts and bays of the White, the Baltic, the Black, the Caspian and the Aral Seas were the main districts. In the forest and forest-steppe zones of the European part of the USSR and West and East Siberia, some 12-15 million birds of the coniferous forest were shot annually. Also shot were some 3 million wader birds, mainly sandpiper and woodcock in the European part of the USSR,

West Siberia and Kazakhstan. About one million steppe birds were shot in the new lands of Kazakhstan and the Baikal region. A few mountain gallinaceans, like Caucasian snowcocks (*Tetraogallus caucasicus*), were shot in the mountains of the Caucasus, Kopet-Dag, Tan-Shan and Altay (Prohorov 1972: 348).

As explained above, hunting was regulated by fixed dates and rules for hunting that were adopted by government bodies. Many rare kinds of feathered birds (swans, flamingo, red-crowned crane, bustards and others) were protected by the State, and hunting was temporarily forbidden. Meat of feathered birds is a dietary product of high nutritional qualities. The USSR was considered a primary place in the world for its stock of birds. As in other countries wild birds were considered to be national property, and so the preservation, rational use and extended reproduction of these birds were under control of the State.

Rearing wild birds for meat and eggs, especially quail (*Coturnix coturnix*) was widely practised on special farms. Beginning in the 1950s, this practice developed thanks to the Japanese tradition of breeding domesticated quail (*Coturnix japonica*, Figure 8).

Figure 8: Japanese Quail (*Coturnix japonica*)

Photograph © Frédéric Duhart

Necessary and valuable albumen and fats were considerably satisfied by preparing dishes with poultry and game that included mainly broilers, chickens, ducks, geese, turkeys, quails and also game, such as hazel grouse, black grouse, western capercaillie and common pheasant. Such dishes are easily assimilated by the human organism. Their meat is characterised by a high nutritional value, which has a similar optimal correlation of protein and fats, containing a large amount of valuable protein (Skurihin 1992: 156).

V.V. Pohljobkin, who wrote several books on the history of Russian food and provided many culinary recipes on how to prepare dishes from poultry and game, noted that the Russian tradition was only to roast poultry by adding some fat. It was also traditional for hunters to coat birds with clay and to put them on to the live coals of a fire. When the clay split, the bird was ready to eat, accompanied, for example, by wild berries (Pohljobkin 1997: 88-92).

The contemporary situation

Now it is common to prepare soup with poultry or to roast it as a main course dish. It is even possible to prepare goose with apples and fermented cabbage for Christmas which was not traditional in the past. Chicken eggs are easy to prepare for everyday meals.

The incubation of quail eggs is still popular in Russia because of their high nutritional value and protein. Their nutritional value is exceptionally high: they contain 11.9 % protein, 13.1 % fat, and 0.6 % carbohydrate. Their energy value is 168 kilocalories (according to the label on a box with eggs packed in Marjino village, Lenin District, Moscow province, 16th March, 2012). Quail eggs clean blood, remove radionucleids, normalise blood pressure, saturate the organism with vitamins, amino acids and micro elements. They contain phosphorus, iron, micro elements, minerals, vitamins A, B1 and B2. The meat of the birds is healthy for people of different ages, especially for children. Thanks to their nutritional value, quail eggs are widely used for preparing sauces such as mayonnaise or provençal sauce. Unfortunately, during recent decades no book devoted to Russian traditions of eating wild birds has been published. This absence could

be filled by studying a magazine such as '*Hunting and Fishing'* which is written for hunters and fishermen.

Conclusion

It is clear that domestic and wild birds were from antiquity food on the table of Russians and they are still included into every day and festival menus.

In order to pay attention to the results from different disciplines, it becomes clear that domestic and wild birds and eggs are beneficial for nutrition and their absence at the table can cause nutritional losses. The problems of breeding and rearing domestic and wild birds and their protection was the focus of the Tenth International Congress of Biologists and Ornithologists (Paris, 1971). As for ethnologists, their task is of course to report on the situations for breeding and hunting birds and to take note of the traditions of eating birds in the past and nowadays, but also to prevent the disappearance of the best kinds of domesticated and wild birds.

References:

Andersen, H. (1998) A glimpse of the homeland of the Slavs: ecological and cultural change in prehistory', in Volpe, A. della (ed.) *Proceedings of the Seventh UCLA Indo-European Conference, Los Angeles, 1995,* Journal of Indo-European Studies Monograph Series, 27, Institute for the Study of Man, Washington D.C.

Beme R.L. and Flint V.E. (1994) Pjatijazychnyj slovar nazvanij zhivotnih. Ptitsy (Five-languages vocabulary of animals: Birds). In Sokolov, V.E. (ed.) *Russkiy Jazik*, Russo, Moscow.

Brockhaus, F.A. and Efron, I.A. (eds) (1991) *Rossija. Encyclopedicheskij slovar* (Russia: Encyclopedia vocabulary*)*, Lenizdat, Leningrad, Volume 32, [a reprinted edition of 1898, volumes 54 and 55].

Chekhov, A.P. (1987), *Iz Sibiri (*From Siberia). In Chekhov, A.P., *Collected works* in 18 volumes, Volume 14-15, Nauka, Moscow, pp.7-38.

Chistov K. V. (1991) Vostochnoslavyanskaya etnografiya D. K. Zelenina (D. K. Zelenin's Work on East Slavonic Ethnography). In Zelenin, D.K.

Vostochnoslavyanskaya etnografiya (The Ethnography of the Eastern Slavs), Nauka, Moscow.

Gromyko, M.M. (1975), *Trudovye traditsii russkih krestjan, 18 - pervaya polovina 19 veka* (Working traditions of Russian peasants of Siberia, 18th to first half of 19th Centuries), Nauka, Novosibirsk.

Kanshin, D.V. (1893) Dich (Game). In Brockhaus, F.A. and Efron, I.A. (eds), *Encyclopedicheskij slovar* (Encyclopedia vocabulary), Lithography of I.A. Efron, Petersburg, Volume **10a**.

Kostomarov, N.I. (1992) *Ocherk domashnej zhyzni i nravov velikorusskogo naroda v 16 i 17 stoletijah* (Essay on home life and tempers of Russians in 16th and 17th centuries), Respublika, Moscow.

Pohljobkin, V.V. (1997), *Natsionalniye kuhni nashih narodov* (National cuisines of our people), Tsentrpoligraph, Moscow.

Prohorov, A.M. (ed.) (1972), Dich (Game). In Prohorov, A.M. (ed.) *Bolshaya sovetskaya Encyclopedia* (Big Soviet Encyclopedia), Soviet Encyclopedia, Moscow, in 30 volumes (1969-1978), Soviet Encyclopedia, Moscow.

Rabinovitch M.G. (1994) *O drevnej Moskve. Ocherki materialnej kultury i byta gorozhan v 11-16 vv*. (About Ancient Moscow. Essays on material culture and everyday life of citizens in the 11th - 16h centuries), Nauka, Moscow.

Sébillot, P. (1908), *Le paganisme contemporain chez les peuples celto-latins (Contemporary paganism among the Celtic-Latin peoples)*, Octave, Paris.

Selivanov, V.V. (1987) God russkogo zemledeltsa, Zarajskij uezd, Ryazanskaya guberniya (The year of the Russian farmer, Zaraysky district, Ryazan province). In *Pisma iz derevni. Ocherki krestjanstva v Rossii vo vtoroj polovine 19 veka* (Letters from village. Essays on peasantry in Russia in the second part of the 19th century), Sovremennik, Moscow, pp. 24-145.

Skurihin, I.M., (ed.) (1992) *Kniga o vkusnoj i zdorovoj pishche* (*Book about tasty and healthy food)*, Lokid and Agropromizdat, Moscow.

Trubachev, O.N. (ed.) (1987) *Etimologicheskij slovar slavjanskih jazykov: Praslavjanskij fond* (Etymological Vocabulary of Slavonic Languages: Pre-Slavonic Lexical Fund), in 39 issues (1974-2014), Issue 13, Nauka, Moscow.

Trubachev, O.N. (2003), *Ethnogenez i kultura drevnejshyh slavjan. Lingvisticheskie issledovania* (Ethnogenesis and Culture of the Early Slavs. Linguistic Studies*)*, Nauka, Moscow, pp. 443-453.

Von Herberstein S. (2008) *Zapiski o Moskovii* (*Notes about Moscovia*), Nauka, Moscow.

Woldekiros, H.S. and D'Andrea, A.C. (2016) Early evidence for domestic chickens (*Gallus gallus domesticos*) in the Horn of Africa, *International Journal of Osteoarchaeology*, DOI: 10.1002/OA.2540.

Wood-Gush D.G.M. (1959) A history of the domestic chicken from antiquity to the 19th century, *Poultry Science.* **38:** 321-326.

Zelenin, D.K. (1927), *Russische (Ostslavische) volkskunde* (The Ethnograhy of Russians, Eastern Slavs), Walter de Gruyter, Berlin and Leipzig.

Zelenin D. K. (1991) *Vostochnoslavyanskaya etnografiya* (The Ethnography of the Eastern Slavs), Nauka, Moscow.

Zenzinov, V. M. (2001) *Starinnye ludi u holodnogo okeana (Ancient People in the Cold Sea)*. In papers compiled by Chikachev, A.G. and Chikachev, I.A., Yakutsky Krai, Yakutsk.

CHAPTER 14
BIRDS FOR WOMEN, BIRDS FOR MEN: FOOD TABOOS AND NUTRITIONAL WISDOM AMONG THE EIPO OF THE HIGHLANDS OF WEST-NEW GUINEA

by Wulf Schiefenhövel

Introduction: New Guinea: Home of Birds of Paradise and Bower Birds

By happenstance, the large island of New Guinea looks like a bird. The Dutch called the peninsula-like westernmost part 'Vogelkop', its present-day name in Bahasa Indonesia is, correspondingly, Kepala Burung and in English this large piece of land is known as Bird's Head. It constitutes the Indonesian Province of Papua Barat (West Papua). Towards the east one can follow the slim neck, then the somewhat clumsy body and the tail of this geographic bird. Right through its middle, along the 141° eastern longitude runs the international border between Indonesia and the independent state Papua New Guinea.

The effect of the Earth's long history forming shelves and continents has created an interesting analogy between geography and biology: ornithologically New Guinea is one of the richest regions in the world, the bird-shaped island is indeed home to many very interesting species, in particular the famous bird of paradise (family Paradisaeidae) and the less famous but even more astounding bower birds (Ptilonorhynchidae). Birds are not bound to land, the endemic ones of New Guinea's wonderful creatures could have perhaps made it to other islands in the West Pacific, like Timor, Flores and the other Lesser Sunday Islands or, in the other direction, to the Solomon Islands and further eastward, but they did not. As New Guinea was, until the end of the last Ice Age about 14,000 years ago, connected to Australia by the Sahul landmass it is not surprising that the fifth continent also has its, albeit smaller, share of birds of paradise and bower birds.

The birds of paradise (Figure 1) were given their name because Europeans received their feathers in the same form as they were, and still are, used as a means of a precious exchange good, i.e. much of the body, including the feet, was removed. One thought, therefore, was that these wonderfully colourful, impressive birds lived a non-terrestrial existence in Paradise where they did not need to have feet

and were constantly kept in the air by the power of their spread-out plumes.

Figure 1: Lesser Bird of Paradise *(Paradisaea minor)*
Photograph © Frédéric Duhart

These species are zoologically famous not only for the almost unreal shapes and colours but also for their unique forms of courtship. Their males all behave in most conspicuous ways, sometimes hanging upside-down from a branch, when they perform their seductive ballet, transforming their bodies into shapes and movements which even bewitch humans. How could this unique evolution have taken place? The females, cleverly camouflaged by dull colour and inconspicuous body shape, are scarcely visible in the rain forest. They exercise what all females in the animal world, including our species, do: they take a pick. As the birds of paradise did not have natural enemies in the mountains of New Guinea with its predominantly herbivore and fructivore marsupial ('Cuscus'-type) animals (Phalangeridae), there was no pressure from predators on the males. Plus, the rain forest provided enough food. In the course of evolution therefore, phenotypes

which were novel and a little bit more spectacular than the ones commonly around were favoured by the females as 'honest signals', signs that this particular male bird was a healthy, vital individual who could afford growing more extreme colours and feathers as well as dance more extraordinarily than the others. This is the peacock paradox, which haunted Charles Darwin: how can it happen that a male bird grows these enormous feathers which decrease his ability to move on the ground and fly in the air and thus render him easy prey? The pheasant has been successful with its evolutionary trait. The birds of paradise much more so, given their many species, which survive into our days.

The bower birds are, as mentioned, an even more amazing family of winged creatures. The males usually do not have any particularly conspicuous phenotype. Their strategy to attract the females is different: they use extra-corporal decoration of the most sophisticated type - the only such case in the animal world. To lure the females into their bowers, small often dome-shaped, very carefully constructed structures of twigs, the place of copulation, they decorate the entrance to these love-nests and an often wide area around with the most exquisite 'jewellery': colourful fruits and other objects, often of the same hue, including discarded pieces of our own modern luxurious culture: blue bottle tops, or sometimes even a plastic dinosaur, forgotten by a child somewhere and picked up by the avian artist. For the human viewer these courtship arenas are amazingly attractive as well, which is a most interesting parallel with regard to aesthetic perception. Obviously, very similar neurobiological mechanisms are at work when a bower bird female looks at artwork laid out by her possible mate as when we humans react to artistic creations. All over the world, humans have their own kinds of extra-corporal decoration; e.g., impressive necklaces, costumes, hairdos, body paintings or the like, which increases visibility and attractiveness (Vanhaeren 2014). Beauty, thus, is a much less fussy thing than is often thought.

It does not come as a surprise that the birds of paradise have captured the eyes and the fantasies of people for many centuries and that the bower birds and their veritable pieces of art are fascinating us as well; yet, they have come to a wider attention only in recent decades. A number of often wonderfully illustrated books on the two classes of

birds have been published in the last 150 years, from the rightly famous one by John Gould (1970 for1875-1888; with illustrations painted by his wife Elizabeth and other colleagues) to ones from the most recent time (Mayr, E. 1941, Rand and Gilliard 1967, Gillard 1969, Beehler et al. 1986, Coates and Peckover 2005, Madden 2008, Rowland 2008, MacKay and MacKay 2012, Endler et al. 2014). John Gould was the congenial co-worker of Charles Darwin and has immortalised himself through his incredibly encompassing, scholarly and beautiful work on birds of the world.

The Scene: The Star Mountains in Highland New Guinea

New Guinea is a fascinating island, in size second only to Greenland. At least 40,000 years before present or even earlier (Golson 1976, Swadling 1981, Pawley 2005) the first human immigrants arrived at its shores and have, since then, not only survived in coastal stretches, swampy lowlands, rolling foothills and rugged mountains reaching the 5,000 metre mark, but have built, as it were, in a truly large scale cultural laboratory, societies which, especially in Western New Guinea, became partly visible to outside observers only a few decades ago. Highland New Guinea was, therefore, the 'Last Unknown', as Gavin Souter (1963) called it in his book referring to the then also still partly unexplored Eastern half of the island.

When ice and snow of the last glaciation receded from most mountain tops, perhaps about 14,000 years ago, people began to explore and exploit the high mountains (Schiefenhövel 2014). Until then, during the Ice Age, they had lived up to altitudes of about 2,000 metres. In the tens of thousands of years of their presence in New Guinea, the Papuans or their predecessors lived as palaeolithic hunter-gatherers, a subsistence strategy still practised by local people living between the Upper Mamberamo River and the northern foothills as well as by members of the Korowai ethnic group who dwell in tree houses south of the Central Cordillera.

The Papuan peoples have retained quite a number of the subsistence strategies of the palaeolithic period. Hunting, snaring and collecting animals from the forest and from areas with secondary vegetation still contribute protein and fat to their traditionally otherwise almost vegetarian diet. To be sure, they love meat, but there is just so

little to be found in their environment. Birds, one can assume, played an important part in hunter-gatherer times and they still do so today.

My longest period of fieldwork (in field trips from 1974 until now) was and is spent in the formerly isolated Eipomek Valley. This region in the Star Mountains (Pegunungan Bintang) of Indonesian New Guinea was the focus of scientific inquiry of the interdisciplinary research project 'Humans, Culture and Environment in the Central Mountains of West-New Guinea', financed by the Deutsche Forschungsgemeinschaft from 1974 to 1976 and for some further projects up until the present. The ornithological data presented in this paper mainly stem from the work of the late Wolfhart Schultz, whose manuscript on the birds of the Eipo region (1986) has unfortunately remained unpublished until now. Günther Heidemann and Wolfgang Nelke, the latter also deceased, contributed to Schultz's work.

The Eipo

By 1974, when the first group of the interdisciplinary research project arrived in their hitherto hardly contacted valley (Gaisseau 1961, Tandjung 1969), the Eipo still lived a life of neolithic horticulturist hunter gatherers.

The Eipo are members of the Mek group (Schiefenhövel 1976, 1979, 1991) of Trans-New-Guinea-Highland Papuan languages (Wurm 1975, Heeschen and Schiefenhövel 1983) and cultures (Koch 1984, Eibl-Eibesfeldt et al. 1989) and live on the northern slope of the central cordillera in the valley of the Eipomek river, approximately on the 140° eastern longitude and 4° 27' southern latitude in what is now called Kabupaten Pegunungan Bintang ('Star Mountains District') of the Indonesian Province of Papua (formerly Irian Jaya). Thus, the Eipo language belongs to an estimated number of 760 Papuan languages of about 4-5 million speakers, divided up into sixty language groups (Bussmann 2008). The typical Eipo community consisted, until about 1980, of hamlets of 35-200 people situated at about 1,300-2,200 metres above sea level, but their hunting area extended, and still does so, up to 4,000 metres. Birds are caught throughout this wide range of altitudes.

The Mek share some cultural features with their neighbours in the east, the Mountain Ok, and in the west, the Yali/Jali/Jalé, who are a subgroup of the Dani. The Term *mek*, as mentioned above, stands for

'water', 'river', 'brook'. It was a logical local word to be used as ethnonym to designate the cultures and languages in the Mek area (Schiefenhövel 1976). The relationships between the groups in this region and their linguistic and cultural unity were, until 1975, unknown to the local people. It seems likely that the extraordinary variety of languages and cultures in this part of the world is the product of an aggressive (warrior-like) attitude of one group against the other, even inhabitants of one valley towards those in the neighbouring one. Intergroup warfare increases intragroup cohesion and is very likely to have led, in a process of character enhancement, to the very fragmented cultural and linguistic scene typical for mainland and island New Guinea (Schiefenhövel 2001). The data from New Guinea thus suggest that the process of pseudospeciation, the formation of cultures, is set in motion by biopsychological factors.

In 1979 the inhabitants of the Eipomek valley accepted Christianity brought to them by the missionaires of the Unevangelised Fields Mission (UFM). This acceptance was basically a political, not a religious decision. The Eipo realised that they had lived separated from the rest of the world with its stunning superiority in material goods and technologies, and they wanted to become part of this world. As in other regions of Melanesia the new religion was seen as holding out the promise of connecting them to hitherto almost completely unknown ways of life. Until now (2016), the strategy to accept Christianity as an avenue towards the modern world, has worked out well for them. Many children go to school and are doing very well, some of the young people are students of Cenderawasih University in the provincial capital of Jayapura or in other academic institutions of the Indonesian Republic, even in the capital Jakarta. All this remarkable change was managed in one generation. Many elements of their traditional lives have changed, but others have remained much the same as in 1974, partly due to the fact that there is no road for any type of vehicle connecting their region with any of the centres of the province. Walking and the plane will, for a long time to come, be the only means of transport.

Physique and health

Regarding their body height, the Eipo belonged in 1975 to the smallest populations of New Guinea. The physical anthropologist, Ernst Büchi

(Figure 2), (1981) and Horst Jüptner (1983), a specialist in tropical medicine, took body measurements and found that average male body length was about 146 cm. The women ranged several centimetres lower. It is important to note that this small stature is in no way connected to any pathology (such as chondrodystrophic dwarfism and the like). The Eipo were perfectly normally proportioned small people with enormous athletic abilities - and body length has markedly

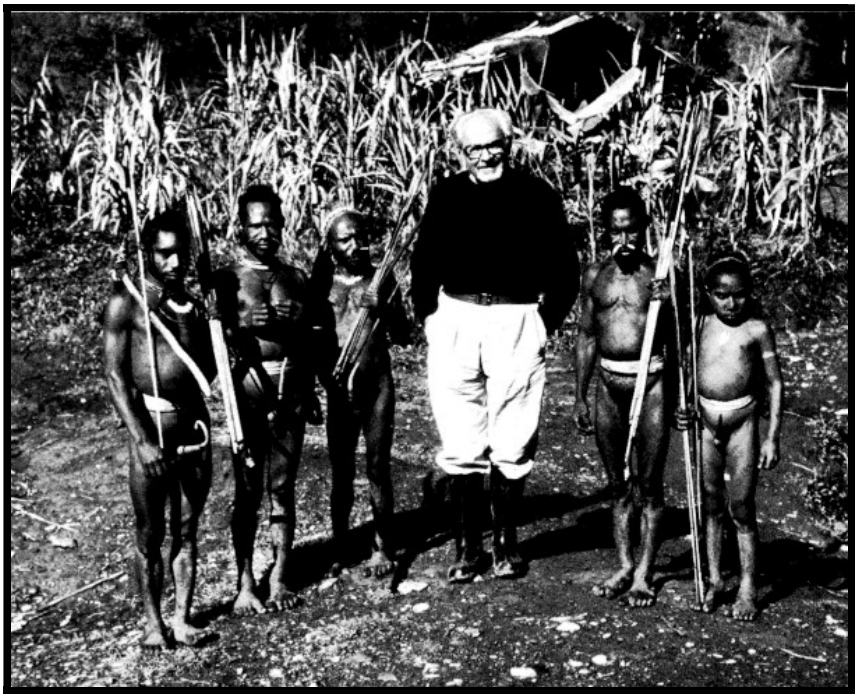

Figure 2: Ernst Büchi, physical anthropologist of the German Research Team, height 172cm, among some Eipo.

Photograph E.Buchi 1975

risen in the last decades, clearly an effect of an enriched diet due to industrially produced foods like rice, cooking oil, sugar, etc. The women were and are able to carry their own body weight of about 40 kg in string bags filled with garden produce or firewood, sometimes for two hours or more … with a smile on their lips.

Women and men were able to master altitude differences of 2,000 metres' climb and 2,000 metres' descent in a single day - thereby easily outcompeting even the most athletic of the researchers. No doubt, the small stature of these mountain Papua is the result of biological adaptation to life in the rugged environment with very limited access

to animal protein and fat. Furthermore, their physical health was surprisingly good (Schiefenhövel 1982, Braun 1996), despite the fact that they had no access to modern medicine. This is important for the main argument of this paper, namely that the cultural traditions of the Eipo had found a way to distribute rare animal protein in such a way that no section of the population suffered from any serious protein deficiency. We are dealing with an interesting case of biocultural co-evolution.

The birds

The two zoologists W. Schultz (1986) and G. Heidemann, assisted by the ethnologist Wolfgang Nelke, collected more than 100 species of birds in the Eipomek and adjoining Famek valleys. Predominantly, the following families of bird species were represented in this collection:-

Psittiacidae (parrots): 11 specimens,
Silviidae (silviids): 18 specimens,
Muscicapidae (flycatchers): 14 specimens,
Meliphagidae (honeyeaters): 14 specimens and
Paradisaeidae (birds of paradise) 8 specimens.

Birds from a total of 18 families were collected and the other families are represented by fewer specimens.

This survey most probably reflects the distribution of birds naturally occurring in this region of the Star Mountains. The lesser bird of paradise (*kwelib, Paradisaea minor)* with its brightly coloured yellowish-reddish tail feathers was and is particularly important for the Eipo, because it constitutes an important element of their head decoration during dance feasts (Figure 3). It regularly also forms part of the bride price, even today (2016). Its habitat is in the foothill region up to an altitude of approximately 1,700 metres above sea level, i.e. below the settlements in the upper Eipomek Valley where most of the fieldwork was carried out. The prized feathers, therefore, are traded from relatives and exchange partners in lower lying regions. Notwithstanding their very high value as elements of ornamentation and as a kind of currency, birds of paradise are consumed as food just like all other species.

Figure 3: Eipo woman during a dance feast in 2016 wearing a headdress with feathers from a male Lesser Bird of Paradise *(Paradisaea minor)* with its brilliantly coloured yellowish-reddish feathers and green neck.

Photograph © Wulf Schiefenhövel

After Bikmal had given birth to her second child her husband, Babesikna presented her with a female *Lophorina superba* (*benim,* superb bird of paradise) as a ritual gift (Figure 4). It had, in fact, been

Figure 4: this adult male, Babesikna, is bringing a *benim* Bird of Paradise *(Lophorina superba)* to his wife, who has just given birth. A traditional ceremony is carried out with its fat to ensure the well-being of mother and baby. In the background is Engento, a girl of the village.

Photograph © Wulf Schiefenhövel

hunted by Mirwo, the son of Babesikna's sister (the mother's brother/sister's son relationship is, as in many other cultures, a special one in the Eipo society). Bikmal prepared the meat over the fire of the baryeik, the women's (birth and menstruation) house and used the fat to treat her breasts and the skin of the baby - a ritual to ensure that enough breast milk would be produced and the newborn would grow well. In this way, the father of the child contributed to the health of mother and child, even though access to the women's house itself was taboo for him, as for other men except for healers.

Many of the birds collected during the project were caught (usually with the help of nets) by the scientists, whereas others were brought by boys and male juveniles (Figure 5), who had quickly

Figure 5: Boys are often successful catching *kokalema (Collocalia hirundinacea)* swallows by hitting them along rocky cliffs.

Photograph © Wulf Schiefenhövel

understood that the white men were interested in their wildlife. Just as in the fieldwork of other teams it became quickly obvious that the Eipo had an extraordinary knowledge of animals and plants and a classification system (Hiepko & Schiefenhövel 1987). All birds have names, e.g. the *kokalema* (Figure 6), and their phylogenetic relationship

Figure 6: A *kokalema (Collocalia hirundinacea)* swallow.
Photograph © Wulf Schiefenhövel

is expressed in terms of human genealogy. This knowledge is stunningly precise and holistic, especially as the Eipo had developed it without any access to books, pictures, school education and the like, exclusively by observing nature. I have, in 2011, gone through the rather badly reproduced images in a photocopy of W. Schultz's manuscript (op. cit.) with four of our best co-workers while they were on a visit to Germany and noted down the local names of the birds represented there. Even when the picture was quite blurred the four Eipo men were, in most cases, able to identify the species. They also gave indications as to their preferred habitat, nutrition etc.

It is truly impressive to watch an Eipo man mimic the dance performance of e.g., *Lophorina superba*. He will describe how the bird cleans the place of his performance of twigs and leaves, which might obscure the view of possible females and then starts to carry out his most acrobatic and unreal movements. The Eipo also fully understand the purpose of this paradisical dance: impressing a female to such an extent that she will agree to have sex with this particular male. Her choice is responsible for all the beauty and splendour we can, gaspingly, watch.

All birds, without any exception, are eaten. Indeed, any source of animal protein and fat, except earthworms, centipedes and millipedes, is utilised for human consumption. Insects play an important role in

Eipo nutrition: women as well as children and juveniles consume them almost every day, thereby adding a numerically few, but nutritionally valuable, grams of animal food and thus essential amino acids to their diet (Schiefenhövel & Blum 2007).

As mentioned above, missionaries of the protestant, Unevangelized Fields Mission moved in after 1976 and began their activities which led to a surprisingly swift general turn to Christianity in 1979. They brought basic education (later taken over by the Indonesian Government) and a number of cultural innovations which have become very important for the new lives that the Eipo are leading now, blending old and new. Of particular, nutritional importance was, besides maize (*Zea mays*) and other food plants, the introduction both of fish - e.g., of the carp family, (*ikan mas* in Bahasa Indonesia, *Cyprinus carpio*) and Tilapia (*mujair* in Bahasa Indonesia, *Oreochromis mossambicus*) and of chicken (*ayam, Gallus gallus domesticus*), all of which types of animal were unknown before 1974.

Today, chickens are a regular sight in the villages and they play an important role in the protein supply of these continuously growing communities. The chickens' eggs are sometimes eaten, but people tend to prefer the breeding of chicks which will be, in due time, suppliers of valuable meat. A count made by Gerhard Medicus on October 29, 2016 in 'Lokasi 3' of Eipomek, a hamlet of approximately 150 inhabitants (approximately 25 families), had the following result:- There was a total of 5 cocks and 16 hens; among these were: 1 hen with 8 small chicks, 2 with 5 small chicks, 2 with 2 small chicks, 4 with 10 larger chicks and 1 with 1 almost adult chick. The number of chickens kept is likely to be similar in other villages of the Upper Eipomek Valley. Chickens are sometimes sold at an intra-village market taking place in front of the church, but eggs are rarely on sale. Not every family owns chickens but this new domesticated species, the third one after the traditional dog (*kam, Canis familiaris*) and pig (*basam, Sus scrofa*), clearly is an important addition to the nutrition of the Eipo people.

Eipo traditions of allocating birds as food to the sexes

As stated above, the primary and secondary forests in the Eipo area, as well as their garden land, are home to many birds, most likely considerably more than the roughly 100 species collected and described

by Schultz et al. (op. cit.). It is a very surprising fact, indeed worthy of explanation, that Eipo tradition strictly regulates their use of food.

Of all birds, only four species could be eaten by fully initiated males:-

1) *yalma* (bare-eyed mountain pigeon or D'Albertis mountain pigeon, *Gymnophaps albertisii*). This was the only species exclusively reserved for the men. The bird, quite special in some ways, plays a role in the myths of the Eipo. It is hunted opportunistically, like all other game, whenever one has a chance to catch it, but there is also a particular form of hunt from specially constructed, carefully camouflaged blinds, to which the prey is lured by sounds imitating their own calls. It is a relatively large, fat and tasty bird, like generally all the members of the Columbidae family. It is not so numerous and easy to come by that one could argue Eipo allocation rules generally favoured men. The opposite is true. Schultz and co-workers on only two occasions saw flocks of these birds (about 15 animals) in the mountains near Eipomek, its typical habitat (according to Schultz, between 700 – 3,300 metres above sea level). The Kalam in Eastern Papua New Guinea also valued this bird very much as food and ascribed a mythical-religious function to it (Maynep & Bulmer 1977) by eating the D'Albertis pigeon in old taro gardens to propitiate the ghosts of ancestors who cultivated this land long ago.

2) *lon* (also a pigeon, black-billed cuckoo-dove or lesser bar-tailed cuckoo-dove, *Macropygia nigrirostris*), which is allowed to be eaten by men and women. The bird lives at altitudes up to 1,500, and rarely 2,600, metres above sea level and is of a brownish colour.

3) *mun*: this is allowed to be eaten by men and women. This species was not ornithologically identified by Schultz (op. cit.). It is likely also to be a pigeon, as in the village of Talimwe, further down the Eipomek Valley, the researchers were given the term *mun* for the *yalma* pigeon.

4) *dik*: this is allowed to be eaten by men and women. This bird may get its name from the verb stem *dik-,* which signifies 'to speak or make sounds in a shrieking, piercing voice'. It is also not included in the list of species collected by Schultz (op. cit.); therefore, its taxonomical position is unknown. I believe that it may also be a member of the Columbidae family as they are highly valued as food throughout New Guinea.

Conclusion: Wisely managing one's ecological niche

This pattern of allocating valuable animal protein is striking: less than 4 percent of the birds, which were listed in the survey by Schultz (op.cit), can be eaten by fully initiated males. Given the fact that only a certain proportion, at best perhaps one half, of all bird species living in the mountains of the Mek area were caught and examined in the course of the ornithological research, this ratio is, in reality, even lower, probably in the range of 2 percent (Figure 7).

Figure 7: Urye, approximately 6 years, with bird he caught
Photograph © Wulf Schiefenhövel

In the emic view of the Eipo this food taboo is an important ancient custom, specified by the spirits who created the world, animals, plants and humans and gave them the rules to live by. An etic explanation will surely have to stress the functionality of this ancient custom: women and children are clearly favoured. Insect food is also reserved for them (Schiefenhövel and Blum 2007).

This is in stark contrast to the situation in many other cultures, including the European ones, where men were usually given larger portions of food and, especially, more valuable food - this may have often been sensible in the past when men were doing physically very demanding work, but it may well also reflect the patriarchal strand of European (and other) societies. The Eipo, until recently a Neolithic, strictly patrilineal and socio-politically patriarchal society with non-submissive women having a strong say in family and public matters, distribute valuable food differently. Perhaps this is a model of the human past.

I see this remarkable cultural rule of the Eipo as a highly functional pattern of distributing meat from birds: women menstruate, grow babies in their womb, often lose some blood during childbirth and lactate, breastfeeding their babies for 2 ½ years (that was the practice in the past, now weaning often takes place earlier). In the Eipo tradition, these losses are made up, at least to a certain degree, by giving women exclusive access to by far the majority of birds as food. In a similar way, small children and juveniles, who are in particular need of valuable protein and fat from animal sources, are favoured by this nutritional divide. It is most likely that this very wise allocation pattern is the result of cultural evolution, which adds, as it were, a societal domain to the bio-evolutionary process of physical adaptation to this harsh environment, namely favouring a small stature, and, at the same time, a powerful athletic body.

The early inhabitants of the steep mountains of the Mek region and beyond were living at the fringe of sufficient nutrition. Since the start of domesticating taro (*am, Colocasia esculenta*), sugar cane (*kuye, Saccharum officinarum*) and other plants, among them some leafy greens with a high protein content, about 8,000 years ago (Golson 1976), which is after leaving the solely hunter-gatherer mode of subsistence and moving into the higher mountains with their malaria-

free, but also protein-scarce environment, the Eipo and their neighbours must have been under strong nutritional pressure. If they had not developed a custom of reserving almost all birds for the ones who needed animal protein and fat most, they would probably not have been able to survive in the high mountains and build one of the impressive traditional cultures of New Guinea.

References

Beehler, B. M., Pratt, T. K. and Zimmermann, D. A. (1986) *Birds of New Guinea*, Wau Ecology Institute, Handbook No. 9. Princeton University Press, Princeton.

Braun, A. (1996) *Häufigkeit und Verteilung von Erkrankungen bei zwei Naturvölkern neuguineas*, Verlag für Wissenschaft und Bildung, Berlin.

Büchi, E. (1981) *Physische Anthroplogie der Eipo im zentralen Bergland von Irian Jaya (West-Neuguinea), Indonesien*, Reimer, Berlin.

Bussmann, H. (2008) *Lexikon der Sprachwissenschaft*, Kröner, Stuttgart.

Coates, B. J. and Peckover, W. S. (2005) *Birds of New Guinea and the Bismarck Archipelago: A photographic Guide*, Dove Publications, Lynx Edicions, Barcelona.

Eibl-Eibesfeldt, I. Schiefenhövel, W. and Heeschen, V. (1989) *Kommunikation bei den Eipo - Eine humanethologische Bestandsaufnahme*, Reimer, Berlin.

Endler, J.A., Gaburro J. and Kelley, L.A., (2014) *Visual effects in great bowerbird sexual displays and their implications for signal design,* Proceedings of the Royal Society, London.

Gaisseau, P. (1961) *The Sky above the Mud below (La ciel et la bout*), a Film.

Gillard, E. Th. (1969) *Birds of Paradise and Bower Birds*, Littlehampton Book Services, Worthing.

Golson, J. (1976) Archaeology and agricultural history in the New Guinea Highlands. In Sieveking, G. de, Longworth, L.A. and Wilson, K.E. (eds) *Problems in economic and social archaeology*, Duckworth, London, pp. 201-220.

Gould, J. (1970, new edition) *Birds of New Guinea*. Methuen Young Books, Slingsby, York - [original version: *The birds of New Guinea and the adjacent Papuan Islands, including many new species recently discovered in Australia*;

London 1875-88. 5 vols., completed after Gould's death by R. Bowdler Sharpe].

Heeschen, V. and Schiefenhövel, W. (1983) *Wörterbuch der Eipo-Sprache. Eipo-Deutsch-Englisch,* Reimer, Berlin.

Hiepko, P. and Schiefenhövel W. (1987) *Mensch und Pflanze. Ergebnisse ethnotaxonomischer und ethnobotanischer Untersuchungen bei den Eipo, zentrales Bergland von Irian Jaya West-Neuguinea., Indonesien*, Reimer, Berlin.

Jüptner, H. (1983) *Tropenmedizinische Untersuchungen der Eipo im zentralen Bergland von Irian Jaya West-Neuguinea*, *Indonesien,* Reimer, Berlin.

Koch, G. (1984) *Malingdam. Ethnographische Notizen über einen Siedlungsbereich im oberen Eipomek-Tal, zentrales Bergland von Irian Jaya (West-Neuguinea), Indonesien*, Reimer, Berlin.

MacKay, R. D. and MacKay, M. (2012) *Papua New Guinea Birds*. University of Papua New Guinea Press, Port Moresby.

Madden. J.R. (2008) Do bowerbirds exhibit cultures? *Animal Cognition,* **11**: 1-11.

Maynep, I. S. and Bulmer, R. (1977) *Birds of my Kalam Country*, Auckland University Press.

Mayr, E. (1941) *List of New Guinea Birds*, American Museum of Natural History, New York.

Pawley, A. (2005) The chequered career of the Trans New Guinea hypothesis. In: Pawley, A., Attenborough, R., Golson, J. and Hide, R. (eds), *Papuan Pasts: cultural, linguistic and biological histories of Papuan-speaking peoples*. Pacific Linguistics. Research School of Pacific and Asian Studies, The Australian National University, Canberra, pp. 67-107.

Rand, A. L. and Gilliard, E. T. (1967) *Handbook of New Guinea Birds*, Weidenfeld and Nicolson, London.

Rowland, P. (2008) *Bowerbirds*, Australian Natural History Series. CSIRO Publishing, Collingwood.

Schiefenhövel, W. (1976) Die Eipo-Leute des Berglands von Indonesisch-Neuguinea: Kurzer Überblick über den Lebensraum und seine Menschen.

Einführung zu den Eipo-Filmen des Humanethologischen Filmarchivs der Max-Planck-Gesellschaft, *Homo* 26(4): 263-275.

Schiefenhövel, W. (1979) The Eipo - Members of the Mek Group in the Highlands of Irian Jaya. Irian, *Bulletin of Irian Jaya Development* VII(2): 47-67.
Schiefenhövel, W. (1982) Results of Ethnomedical Fieldwork among the Eipo, Daerah Jayawijaya, Irian Jaya, with Special Reference to Traditional Birthgiving, *Medika (Jakarta)* 11(8): 829-843.

Schiefenhövel, W. (1991) Eipo. In: Hays, T. E. (ed.) *Encyclopedia of World Cultures, Volume II, Oceania*, G.K.Hall and Co, Boston, pp. 55-59.

Schiefenhövel, W. (2001) Kampf, Krieg und Versöhnung bei den Eipo im Bergland von West-Neuguinea - Zur Evolutionsbiologie und Kulturanthropologie aggressiven Verhaltens. In: Fikentscher, W. (Hrsg.) *Begegnung und Konflikt - eine kulturanthropologische Bestandsaufnahme*. Bayerische Akademie der Wissenschaften, Philosophisch-Historische Klasse, Abhandlungen, Neue Folge, Heft 120. C.H. Beck, München: 169-186.

Schiefenhövel, W. and Blum, P. (2007) Insects: Forgotten and Rediscovered as Food. Entomophagy among the Eipo, Highlands of West-New Guinea, and in other Traditional Societies. In: MacClancy, J., Henry, J. and Macbeth, H. (eds) *Consuming the Inedible. Neglected Dimensions of Food Choice*. Berghahn Books, New Yok, Oxford: 163-176.

Schiefenhövel, W. (2014) Human Ethological Perspectives on Prehistoric Adaptation and Dispersal in the Central Highlands of New Guinea. In: Sanz, N. (ed*.) Human Origin Sites and the World Heritage Convention in Asia,* World Heritage Papers **39**. UNESCO, Paris & Mexico City, pp. 235-254.

Schultz, W. (1986) *Vogelkundliche Untersuchungen im Eipo und Fa-Tal, Irian Jaya (West-Neuguinea) Indonesien*. Unpublished manuscript.

Souter, G. (1963) *New Guinea. The Last Unknown*. Angus & Robertson, Sydney.

Swadling, P. (1981) *Papua New Guinea's Prehistory*, Trustees of the National Museum and Art Gallery; Port Moresby.

Tandjung, F. E. (1969) Laporan team expedisi ilmiah Lembah-X tgl. 2 Okt. s/d tgl. 20 Des. 69, (*Report of a military expedition to the Eipomek Valley,* Typewritten manuscript in Bahasa Indonesia), Komando Daerah Militer XVII Tjenderawasih, Jayapura.

Vanhaeren, M. (2014) The Beauty of Beads: from prehistory to present day. In: Sütterlin, C., Schiefenhövel, W., Lehmann, C., Forster J. and Apfelauer G. (eds), *Art as Behaviour. An Ethological Approach to Visual and Verbal Art, Music and Architecture*, Hanse-Wissenschaftskolleg Institute for Advanced Study: Bis-Verlag der Carl von Ossietzky Universität, Oldenburg, pp. 273-288.

Wurm, S. A. (1975) (ed.) *New Guinea Area Languages. Vol. 1: Papuan languages and the New Guinea linguistic* scene, Pacific Linguistics, Canberra.

EPILOGUE

Braised squabs (*Columba livia domestica*), Hong Kong
Photograph © Frédéric Duhart

BEING IN THE WORLD AND EATING BIRDS

by Frédéric Duhart

The coexistence of the members of a human group with the other elements of the ecosystem to which they belong classically translates into creating a conceptual order of the world. In modern western cultural formation, we can find a systematic concept of nature that constitutes a very tasty food for epistemological thought: the 'scientific taxonomy'. For instance, current academic debates about 'taxonomic inflation' or 'taxonomic progress' in the class *Aves* remind us that our scientific knowledge makes sense in an intellectual *hic et nunc* (Sangster 2009; Feyerabend 1987). However, as this concept of nature is currently dominant throughout the world, it can have more impact than many others on the fate of bird populations, even those that live far from the places where western rationality was born. Scientifically deciding that the Asian population of the houbara bustard would no longer be a subspecies of *Chlamydotis undulata*, because it was the full species *Chlamydotis macqueenii*, did not reduce the interest of some wealthy Arabian falconers in hunting this game, but it could be useful in the emergence of a strong conservation policy (Tourenq et al. 2005, Figure 1).

Yet, many other ways of creating a conceptual order of nature exist: there are ancient and folk taxonomies, etc. Logically, distinctions that are fundamental in the western scientific tradition are not necessarily present in different cultural systems. For instance, Aka Pygmies put all the flying vertebrates (to us, birds, bats, etc.) in the same category: 'those that fly' (Bahuchet 1985). In the upper Kaironk Valley, the Karam people also put flying birds and bats into a unique category: the *yakt*. In return, cassowaries (*Casuarius spp.*) were the sole members of another category, the *kobtity*, because their mobilisation in a complex symbolic construction was superficially reinforced by comparative readings of their anatomy with those of *yakt* species. The fact that the *Casuarius* were *kobtity* did not exclude their meat as possible food, just as around 120 other zoological taxa identified by the Karam people, *kobtity* could be eaten while respecting certain restrictions (Bulmer, 1967).

Figure 1: MacQueen's bustard (Chlamydotis macqueenii)
Photograph © Frédéric Duhart

Bird species good to eat

Cultural choices largely define the boundaries and the internal organisation of a food landscape, but there are limits to what a society can decide to consider as normal or regular food: some living beings and minerals exist that humans cannot ingest even once in their lifetime, because such an item would be fatal, while others cause physiological rejection or have harmful, but non-fatal, effects after their ingestion. The former cannot be a regular food, although, on occasion, they can be recognised as lethal poisons, perhaps with special ritual value. The latter cannot be regular food either, but some of them may be used with care as medicines, ritual hallucinogens or famine foods.

Are the meats of bird species in either of the above groups of products eaten? As for any example in the first group, the answer based on current knowledge is none. Indeed, some people have suffered fatal poisoning from eating chemically contaminated specimens of ruffed grouse (*Bonasa umbellus*, Figure 2) or common quail (*Coturnix*

coturnix) (Dumbacher and Pruett-Jones 1996)[1]. However, the majority of these people died because they wanted to eat meat of these species, which were much appreciated foods in their culture. Here, there were no tragic confusions between species! The classical hypothesis, that the birds involved in poisoning cases may have eaten plants that contain substances toxic to humans, seems to be insufficient; there are no definitive explanations of these phenomena (Giannopoulos et al. 2006). Nevertheless, something is clear: poisonous specimens of Ruffed Grouse and Common Quail exist, but it would be total nonsense to regard all members of these two species as poisonous.

Figure 2: Ruffed Grouse (*Bonasa umbellus)*

Photograph © Frédéric Duhart

The same observation applies for the majority of bird species of which specimens have been involved in non-fatal poisoning cases. In North Bénin, for instance, European visitors have been known to experience the priapism that characterises cantharidin intoxication after eating specimens of spur-winged goose (*Plectropterus gambensis*); it seems that the birds accumulated cantharidin toxin by ingesting meloid

[1] To assign responsibility for human deaths to quail specimens, we have to read at face value the *Book of Numbers*, because the literature about coturnism redacted during the last centuries mentioned cases of quite serious poisoning (acute rhabdomyolysis), but no deaths were recorded (Sergent 1941; Korkmaz et al. 2011).

beetles (Eisner 1990). However, other specimens can be eaten without any trouble: in fact, spur-winged geese were hunted to obtain normal food by the Muzey people of North Cameroon (Garine and Garine-Wichatitsky 2006).

Nevertheless, yes, the meats of some avian species do seem to be among those non-lethal, but troublesome, products, because of a very small number of New Guinean species[2]. The skin, the feather, the muscles and even the liver of the specimens of Hooded Pitohui (*Pitohui dichrous*) contain batrachotoxins that cause 'numbness, burning and sneezing on contact with buccal and nasal tissues' (Dumbacher et al. 1992; Dumbacher et al. 2009). Even though the specimens of variable pitohui (*Pitohui kirhocephalus*) globally are slightly poorer in batrachotoxins, they have similar adverse effects.

According to the Nokopo people, the birds of both species (*Muguguk*) may cause nausea just by their odour. At the end of the twentieth century, the Mek people emphasised their ability to induce a physiological disgust calling them '*Kok isip*': 'irritant to the intestines' (Kocher Schmid 1993). There are less toxic pitohuis (*Ornorectes cristatus, Melanorectes nigrescens* and *Pseudorectes ferrugineus*). The other species, which is well-known for their unavoidable effects on the human body produced by the batrachotoxins that its specimens normally contain, is the blue-capped ifrit (*Ifrita kowaldi*) (Dumbacher et al. 2000). All these birds 'instinctively' repel human predators, thanks to their defence system. Consequently, they are commonly rejected out of their usual food landscape by the societies that cohabit with them (Bartram and Boland 2001). As the Nokopo people did with '*Muguguk*', human communities could completely exclude them from their food possibilities, by giving up hunting them.

Nevertheless, humanity is able to establish complex biocultural relationships with all kinds of products that a human being can eat at least twice in their lifetime. The meats of such birds are not lethal in a normal consumption situation. So, certain communities accepted the intoxicating pitohuis and ifrits as unusual food, developing special techniques to make them more edible. In the 1970s, when the Kalam

[2] In view of the differences in the levels of toxicity that can exist between populations and between specimens within a population, I invite readers to regard a species as toxic, when the non-toxic specimens are exceptions.

people had to eat an ifrit, they consciously skinned this small bird which weighs only around 30 grams. The Gimi people explained to the ethnobotanist, Todd Capson, that the only way to make a pitohui edible was by stripping off its feathers, skinning it and smearing charcoal all over the meat before roasting it. Such a human cultural adaptation does not only produce a technical response, but also symbolical and metaphysical ones.

In the 1990s, the Bonua people did not regard the pitohuis as inedible, but they avoided consuming them. An intellectual construction helped them to manage such a situation: if someone killed a pitohui and wanted to eat it, he had to mourn for it. If he mourned for it long enough and sincerely enough, then it could be eaten without risk. However, if he should be sick, since nobody would be able to know if he had mourned sufficiently, it was better never to eat a pitohui, except on occasions of *force majeure* (Tidwell 2001). Hence, when they have to (or want to), human beings can eat specimens of the physiologically most troublesome species that currently coexist with us.

From the study of the ethology of predation, we might learn if some non-intoxicating birds exist that human beings would universally reject because of olfactory or gustatory perceptions. Of course, there are so many avian species and listed cultures that it is an almost impossible task to check this. Even to conduct a study of the perception of a few wild bird meats by representatives of a reasonable number of cultures would be just a pleasant dream[3]. However, we can take the first steps towards answering this question.

In 1997, Paul J. Weldon and John H. Rappole did an outstanding work of identification. After reviewing an important corpus of literature and collecting the opinions of 92 American and European ornithologists, they established a long list of species that human beings find malodorous or unpalatable (Weldon and Rappole 1997). Certainly, it would be longer and ethnologically more interesting to extend an inquiry to informants from other continents and professional categories. It is easy to criticise but much more difficult to tackle the tremendous task the authors of the survey had conceived. The question

[3] Does anyone today agree to support such pure research on food that is not of interest from a marketing point of view, not directly connected with a major health issue, or then, out of the interest of the media?

is how our sensitivity to odorous and gustatory characteristics of birds impacts on the organisation of our food landscape. Weldon and Rappole logically noted divergences of opinions on the gustative appreciation of some species. We can go further: the palatability or the unpalatability of a bird meat is mostly a cultural construction. Human senses are responsive to odorous and gustatory characteristics of birds, but as nobody lives outside of some culture, their final reaction is cultural. Sensory and objective characteristics never make a bird meat delicate or repugnant; it is their interpretation by a society that does. Take, for example, the case of the northern lapwing (*Vanellus vanellus*, Figure 3). In France in the sixteenth century, its meat was greatly appreciated by the elite (Belon 1555). Two hundred years later, it was not - even though a proverb still claimed it was a great delicacy: '*Qui n'a pas mangé de vanneau, n'a pas mangé de bon morceau*' (Magné de Marolles 1788).

Figure 3: Northern Lapwing (*Vanellus vanellus*)
Photograph © Frédéric Duhart

'Palatability' includes that the ingested food procures a pleasant experience 'on the palate'. If we just take into account the 'eatability', then it would appear that a bad odour, or taste or their combination is

not enough to protect any of the avian species against the human appetite for their meat, bearing in mind total ranges of distribution and all kinds of food consumption situations. In several places, for instance, the strong and special odour of the hoatzin (*Opisthocomus hoazin*) keeps it from being hunted for food. But, in Bolivia, the Sirionó Indians of Beni Department, at the end of the twentieth century, still killed and ate a few specimens of this species during a normal year (Townsend 2000).

A Mexican proverb, delightfully mentioned by Rodolfo Fernández during the Sopron conference from which this volume arises, says: '*Todo lo que vuela, a la cazuela*, *excepto el zopilote*' (All that flies, to the cooking pan, except the black vulture) (*Coragyps atratus*)'! Such a saying reminds us that each society thinks of the contribution of the avian species to its diet through cultural choices.

Through arbitrary cultural decisions, some birds become edible, others inedible. Dietetic and gastronomic hierarchies can be established within the first mentioned. Written at a time when the Galenic tradition strongly started to integrate newer dietetic ideas and the gourmet concern was taking on a new importance, *A treatise of all sorts of foods* by Louis Lémery provides examples about such ordering. For instance, 'The flesh of the turtle [dove] is not so dry as that of the wild pigeon. It's better tasted, and produces good juice; when this bird is fat, tender and young, it is a delicate food' ([1702] 1745: 233). This last remark recalls that gradations within the specimens of a species can also be created on the basis of criteria such as subspecies/breed/variety, sex, age, breeding system/place of capture, etc. They can determine levels of gourmet interest, culinary or dietetic values or medicinal efficiency.

In the Chinese world, for example, the black bone chickens have been especially valued for centuries within the framework of medicinal cuisine (Figure 4)[4]. These birds are provided by several breeds of the *Gallus gallus domesticus* of which specimens are immediately recognisable because of their dermal hyperpigmentation and a few other phenotypic characteristics, when visible on a stall, and because of the dark colour of their skin and bones when they are served, cut in

[4] I discovered this fascinating topic thanks to a presentation by Christine Binder-Fritz during the conference *Birds as Food* (Sopron, 2012).

pieces, in a broth (Zhu et al. 2014). For a long time, their fibromelanosis was the unique factor that strongly distinguished them from the white and yellow skinned chickens (Lukanov and Genchev 2013). In 2006, research demonstrated that the meat of the 'black bone silky fowl' specimens contained much more carnosine than those of the 'Plymouth Rock' ones (Tian et al. 2007). Just when this peptide was becoming fashionable among the food supplement consumers, this new defining feature appeared by chance to open western markets to this product! In Europe, where the silky chicken was mainly identified as an ornamental one, some producers of black bone chickens appeared. Nevertheless, the construction of a market for its meat was not easy because the local consumers did not find it easy to accept this 'strange' chicken as normal poultry. Black bone chicken producers had to look for solutions to promote it as a super food and as a delicacy used by star chefs. In 2016, an ambitious enterprise started to sell black bone chicken at £48 per bird (O'Callaghan 2016)!

Figure 4: Black Bone Chicken (Hsinchu Market, Taiwan)

Photograph © Frédéric Duhart

This final detail reminds us that the hierarchical ordering of edible birds can play a role when human beings want to distinguish themselves socially. In the middle of the sixteenth century, for example, the blue peafowl (*Pavo cristatus*) was still a perfect representative of the 'foods for wealthy people' in the kingdom of France. Difficult and costly to breed, it was sent to the biggest urban

consumption centres. There it was bought at a high price by elite members to serve it during the most prestigious banquets they organised. Meanwhile, peasants in certain regions would, through necessity, eat birds such as young owls. Physicians, however, regarded this kind of food as harmful to the people who had a less coarse temperament than such robust men; in other words, it was considered harmful to the elite. The rest of the upper classes agreed with them and rejected these birds as disgusting (Belon 1555; Bruyérin Champier 1560).

As the determination by a society of what is or is not edible is a mostly cultural construction, the reasons for excluding certain birds from a food landscape are not necessarily the sole results of a calculation that takes into account biological costs, benefits and risks. They are frequently far more subtle constructions. The Hidatsa did not eat the wood swallow (*Tachycineta bicolor*) because its tail looked like that of the thunderbird (Chandler et al. 2017).

Two types of inedible birds can be identified.

- Those rejected because the relevant society develops extremely strong scruples against them (Millán 2000).
- Those that are taboo, banned for a religious or ideological reason.

A consequence of this difference is that it is generally much more difficult to overcome a taboo than a scruple.

The origin of such scruples is extremely variable. In sixteenth century France, for instance, the inhabitants of some provinces did not eat Western jackdaws (*Corvus monedula*) or common magpies (*Pica pica*) because they believed that these birds had a kind of epilepsy. In other regions, the common ravens (*Corvus corax*) were rejected because they ate carrion and human cadavers. For their part, the Eurasian eagle-owls (*Bubo bubo*) were not accepted because they were birds of omen. The strength of a scruple is also variable. When it is extremely potent, people forget if the exclusion of the bird from the food landscape was caused by a cultural aversion or through the identification of toxic risk: nobody ate golden orioles (*Oriolus oriolus*) or barn swallows (*Hirundo rustica*) and it was not necessary to justify why, even for an erudite scholar. When the scruple is less powerful, people do not as far as possible eat the bird, but they still know that

they can use it as food if it becomes necessary to do so. For instance, the European green woodpecker (*Picus viridis*) was not regarded as a normal food because of the unpalatability of its flesh; but people knew they could eat it without damage (Bruyérin-Champier 1560).

I am currently working on a fascinating cultural negotiation about a strong scruple. In northeast Puebla, Mexico, a few cases of the consumption of the black vulture (*Coragyps atratus*, Figure 5) have been reported to me in the mestizo community, where this *zopilote* is regarded as unclean and disgusting because of its proximity to and tendency to eat trash. The first elements of the inquiry suggest that this consumption of zopilote is closely tied to trying to fight advanced cancer.

Figure 5: Black vulture (*Coragyps atratus*)

Photograph © Frédéric Duhart

The primary justification of the preparation of black vulture broth is that as this bird eats carrion, it can be useful to reduce the metastasis - regarded as an auto-putrefaction. It seems that people overcome the strong scruple as a last resort, and the main cause of the classical rejection becomes a therapeutic virtue within the framework of a contemporary and dynamic 'magic eating'.

Some native peoples of Mexico regard the black vulture as inedible because of a taboo linked with their cosmogony. In the Otomi culture, it is the incarnation of the Old God of Fire and its main behavioural traits are read in a symbolical/metaphysical way (Galinier 1990). In San Agustín Oapan (Alto Balsas, Guerrero), a *mole de guajolote*[5] is even prepared to be exclusively served as an offering to the black vultures within the framework of the celebration of the 'Petition of rain' ceremony (Raby 2013). Indeed, the cultural construction of our relationships with the birds can be very complex!

A classical example of taboo on consumption of some bird species can be found in *Leviticus* 11, 13-19:

> '*And these you shall detest among the birds; they shall not be eaten; they are detestable: the eagle, the bearded vulture, the sea eagle, the kite, the vulture of any kind, every raven of any kind, the ostrich, the nighthawk, the sea gull, the hawk of any kind, the little owl, the cormorant, the short-eared owl, the barn owl, the tawny owl, the carrion vulture, the stork, the heron of any kind, the hoopoe, and the bat.*'

For us, this text poses a number of translation problems that make the precise identification of various taxa impossible. However, for a Hebrew who lived when it was written, it would have been clear what was prohibited. This text may be no more than a list: all these birds would not be unclean for the same reason (Bush 1842).

What is certain, however, is that each human group proceeds with its own logic when it establishes its prohibitions. So, suggesting *a priori* the exclusion of the same species by two different groups as a result of the same intellectual construction would be nonsense. Some divergences between Muslim juridical schools are good to consider at this point. According to Al-Nawawi, birds of prey are unlawful because they have claws; from an Ibadite point of view, they are unlawful because they kill animals and eat flesh. From a Maliki perspective, claws are equivalent to human nails and there are no birds of prey as violent and unfair as carnivorous mammals, because they only kill for food; consequently, they are lawful (Hocine Benkheira 2000). Here, we have three ways of ordering the avian species and of thinking about human food without even leaving the beliefs of Islam.

[5] See Saucedo Arteaga and Jiménez Lopez in this volume.

Because it is a cultural production, the status of the meat of a bird species can dramatically change over time. A highly appreciated food can become an inedible product as a result of changes in tastes or philosophical positioning. For instance, let us observe the conduct of French society towards the grey heron (*Ardea cinerea*, Figure 6). In the sixteenth century, this bird was quite appreciated by falconers as game and as a supplier of highly valued meat: its breast was regarded as a 'royal food' and the immature specimens were also considered as a delicacy. In imitation of King Francis I, nobles even arranged a heronry on their land to be sure to have enough herons on hand (Belon 1555).

Figure 6: Grey Heron (*Ardea cinerea*)
Photograph © Frédéric Duhart

At the end of the eighteenth century, the hunters with guns just considered the grey heron as possible game, should they happen to encounter it. Its meat was no longer served on the best tables and its presence on the most rustic ones was extremely unusual. When a heron was shot, people began to nail it on a door as they did with birds of prey (Magné de Marolles 1788). This piscivorous bird had become a thief, that should be pilloried. One hundred years later, the grey heron had become a disappearing species in most of France (Marion 1997). For decades, it had been intensively hunted to protect fish stocks in accordance with a widely held belief and despite the efforts of a few naturalists who advocated a more balanced point of view (Lescuyer

1876). In Moselle and other departments, it had even been classified as an injurious species by the prefects (Malherbe 1854). In this period, only great wildfowl eaters were able to find any quality in the heron meat. Charles Diguet wrote, for instance: 'I gave one to roast; and despite my apprehension, I found it tasty. Its very black flesh, rich in iron, did not have a fish taste and had a certain flavour. But, there is a big gap between it and the woodcock.' (1881: 89). In France, after the Nature Protection Law was passed on July 10th 1976, the grey herons, their nests and eggs were totally protected (Voisin 2010). Then, another phase of cohabitation started, during which men protected their former enemy. As heron meat was always regarded as 'unappetising', the fact that it became illegal to hunt provoked no heated debate.

Social distance and edibility of bird specimens

The question of the edibility of a bird specimen can also arise at an individual level. Logically, occupying a function in the human environment will never convert a specimen of a species that is regarded as inedible into an accepted food product. But, playing a special role in a human activity can radically change the status of a representative of a species considered to be good to eat.

For a very long time, in many parts of the world, some wild birds are kept 'at home' by humans who enjoy their companionship, the beauty of their singing or the distinctive touch they add to their properties. In Western Europe, for instance, goldfinches (*Carduelis carduelis*, Figure 7) were caught alive to be caged. In the middle of the sixteenth century, Jean Bruyérin-Champier noted that the birds that experienced such a fate were generally not eaten in France, whereas their species was regarded as eatable in absolute terms (1560).

At the beginning of the twenty-first century, specimens of wild bird species may sometimes be present in backyards of Southeast Mexico. Some of them are treated as long-life ornamental birds, and sometimes, as real pets. Parrots (*Amazona spp*.) are typical representatives of this group of creatures and they are never eaten. Captured when immature, specimens of species that provide appreciated wild meat can be integrated into the backyard avifauna: such as the black-bellied tree-duck (*Dendrocygna autumnalis*), the plain chachalaca (*Ortalis vetula*), the ocellated turkey (*Meleagris ocellata*, Figure 8), etc. For a time, they are regarded as ornamental

Figure 7: Caged goldfinch (*Carduelis carduelis parva*)

Photograph © Frédéric Duhart

birds, but when they become adult they can be slaughtered and eaten…or not: it all depends on the kind of relationship the human family members built with them (Mariaca Méndez 2012).

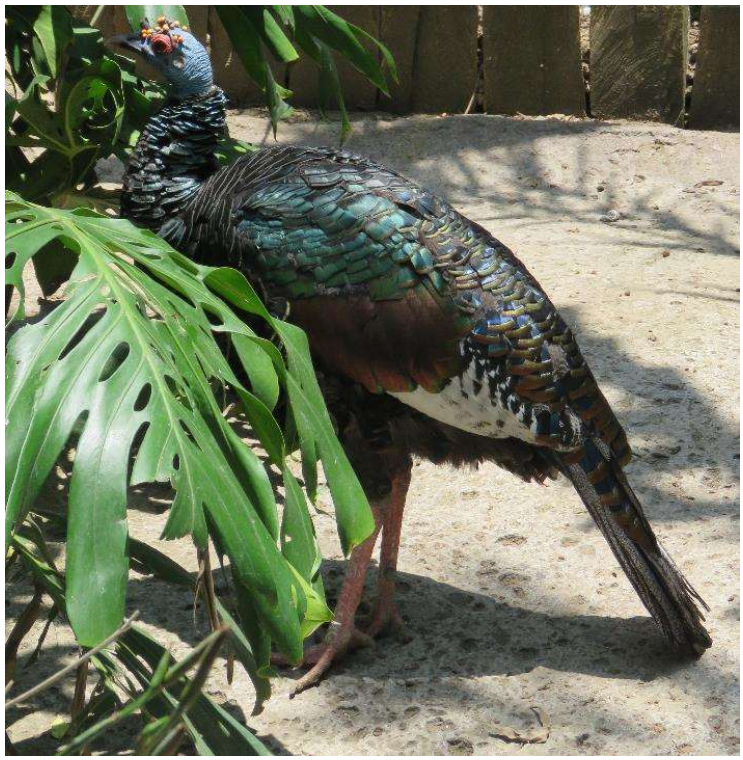

Figure 8: Ocellated Turkey (*Meleagris ocellata*)

Photograph © Frédéric Duhart

In certain regions, specimens of prestigious game species are traditionally used to attract their congeners. As the performances of these hunting auxiliaries frequently get better with time, considerable efforts are made to keep them healthy from one hunting season to another. As long as they fulfil their mission properly, the 'callers' are too precious to be eaten. As good birds are able to remain useful for several years, they can avoid the pan at the end of their career, because of their age or the relationships established with them. In Mediterranean Spain, for instance, the cages of the red-legged partridges (*Alectoris rufa*) used within the framework of the *caza con reclamo* were traditionally kept in well-frequented parts of the house, because it was important they were familiar with humans and this situation could sometimes lead to a pet conversion process (Escalante and Moreno 1874; Fernandez Flores 1870).

Even in places where birds of prey were easily eaten, the well-trained hawks were too expensive, useful and prestigious to be eaten. Nevertheless, they could lose their protected status after a hunting accident: Pierre Belon observed that some falconers killed and cooked their wounded birds (1555). This case underlines that utilitarian considerations can play a major role in the construction of the inedibility of certain specimens of good-to-eat species.

Nevertheless, as previous examples showed, the question of the distance established between some human and some avian beings is frequently essential in such a process. For example, consider the birds that form certain numerous urban commensal populations. In the contemporary megalopolis, they are frequently regarded at the same time as friendly neighbours and as pestilential freeloaders (O'Connor 2017), because each urban actor, local community or individual can have a drastically different view about their presence, their reproduction, their singing or excremental activity and, of course, on the benefits of the direct interaction with them. Signs that can be found in most parks and squares of the major cities show that the urban authorities must emphasise the ban on bird feeding, because honest citizens just cannot resist the temptation to throw a few crumbs to any of the last attractive free animals they are in contact with.

In agreement with Edmund Leach ([1962] 2000), the urban commensal bird is from one point of view 'very near' – which perfectly

underlines the degree of physical proximity and contact that a child feeding such a bird, and his or her parents, accept. But from another one point of view, it is quite 'distant' and frequently 'very distant' because it is an uninvited and uncontrollable living creature in the place where the human beings need symbolically to control everything, a 'savage' conqueror that storms the civilisation fortress. It is easier to find newspaper articles that explain that bird droppings are destroying heritage buildings than ones that insist on the corrosive effects of car exhaust gases on bronze sculptures and other monuments! 'Very near' or 'very distant', the urban commensal bird should be, according to Leach, inedible. Ethnographic data show that the theory is confirmed in various modern western cities, where only a few people, considered by the majority as 'deviant', are identified as commensal bird eaters.

For instance, the house sparrow (*Passer domesticus*, Figure 9) never became a normal food within the city of New York. Voluntarily introduced from Europe to Brooklyn (1851, 1852), to Madison Square (1860), to Central Park (1864) and to Union Park (1866), it remained a quite friendly bird until at least the early 1870s. In this period, it was

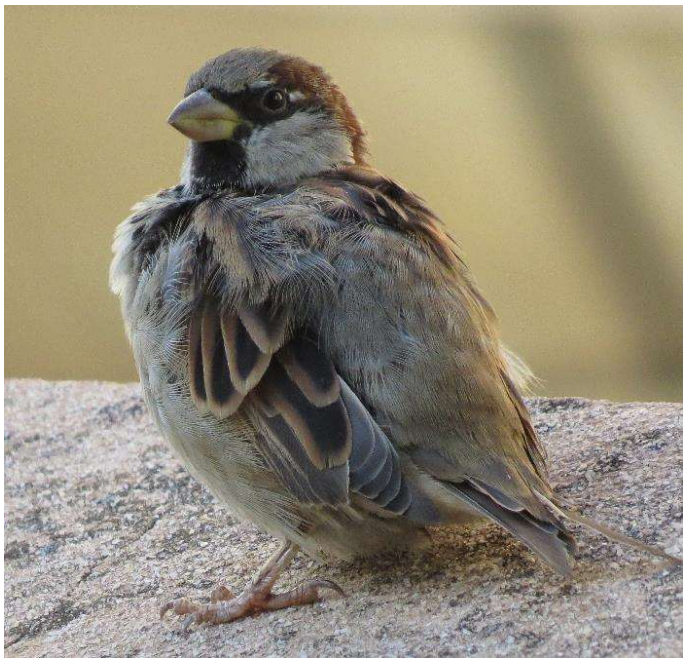

Figure 9: House Sparrow (*Passer domesticus*)

Photograph © Frédéric Duhart

too cute to be eaten and feeding it was fashionable. When house sparrow expansion started to be regarded as a threat for agriculture, the

relationship with this 'avian rat' changed (Barrows 1889; Tegetmeier 1899). But the New Yorkers did not change their attitude towards its meat. The only persons who managed to put sparrows on the plate of normal New Yorkers were the unscrupulous cooks who sold these birds as if they were reed birds (*Emberiza spp.*)[6].

In 1980, Michael Royko discussed the consumption of city pigeons (*Columba livia domestica*) captured in Chicago's parks by a few European-born migrants and Asians and the disgusted outrage of the majority of the local population at this practice (2001). Thirty years later, the publicised city pigeon hunting and eating by extreme locavores did not indicate any change in attitude: these urban 'hunter gatherers' were only representative of a subculture which is based on a renewed representation of the town (Kelly 2012).

Conclusion

Our relationships with birds are strong; either they are due to cohabitation with wild species or to coevolution with the avian populations that were domesticated. Maybe, there is an injustice in such a formulation. We are one species, *Homo sapiens*, while they are more than 9,000 living species which we arbitrarily group together in a category called 'birds' and such grouping does not even make traditional sense for all the humanity.

The satisfaction of a need for food is essential in the relationships established with some bird species by human societies; we might have traditions to hunt them or to force-feed them, etc. Throughout the world, *Homo sapiens* asserts its biocultural nature through its ways of regarding birds as food. Our decisions on the edibility of avian species and our interactions with the birds we eat are a part of our way of being in the world as actors within the ecosystems.

On 15th March, 2017, Memphis Meats announced that it had developed 'clean poultry' from cultivated chicken and duck cells (Deviit 2017). In the face of such a proposal for the future, when eating 'poultry' might not even imply an interaction with any real animal, not even an industrial, cold and shameful one, I simply have one question: Did any birds sing in *Soylent Green*[7]?

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[6] 'Things at hand', *The New York Times*, 20/07/1887.

[7] Richard Fleischer, 97 minute film, USA (Walter Seltzer Productions, Inc.), 1973.

References

Bahuchet, S. (1985) *Les Pygmées Aka et la forêt centrafricaine. Ethnologie écologique*, SELAF, Paris.

Barrows, W. B. (1889) *The English sparrow (Passer domesticus) in North America: especially in its relations to agriculture*, Government Printing Office, Washington.

Bartram, S. and Boland, W. (2001) Chemistry and Ecology of Toxic Birds, *ChemBioChem*, **2:** 809-811.

Belon, P. (1555) *Histoire naturelle des oyseaux*, Gilles Corrozet, Paris.

Bruyérin-Champier, J. (1560) *De re cibaria. Libri XXII*, Sébastien Honorat, Lyon.

Bulmer, R. (1967) Why is the Cassowary Not a Bird? A Problem of Zoological Taxonomy Among the Karam of the New Guinea Highlands, *Man*, **2(1):** 5-25.

Bush, G. (1842) *Notes Critical and Practical on the Book of Leviticus*, Ivison, Finney, Blakeman & Co, New York.

Chandler, K., Field Murray, W., Nieves Zedeño, M., Samrat, C. and James, R. (2017) *The Winged. An Upper Missouri River Ethno-ornithology*, The University of Arizona Press, Tucson.

Diguet, C. (1881) *Livre du chasseur*, Fayard, Paris.

Deviit, E. (2017) Artificial chicken grown from cells gets a taste test - but who will regulate it?, *Science*, accessed at http://www.sciencemag.

Dumbacher, J. P., Beehler, B. M., Spande, T. F., Garraffo, M. and Daly, J. W. (1992) Homobatrachotoxin in the Genus *Pitohui*: Chemical Defense in Birds?, *Science*, **258:** 799-801.

Dumbacher, J. P. & Pruett-Jones, S. (1996) Avian Chemical Defense, *Current Ornithology*, **13:** 137-174.

Dumbacher, J. P., Spande, T. F. and Daly, J. W. (2000) Batrachotoxin alkaloids from passerine birds: A second toxic bird genus (*Ifrita kowaldi*) from New Guinea, *Proceedings of the National Academy of Sciences*, **97(24):** 12970-12975.

Dumbacher, J. P., Menon, G. K and Daly, J. W. (2009) Skin as a Toxin Storage Organ in the Endemic New Guinean Genus Pitohui, *The Auk*, **126(3):** 520-530.

Eisner, T. (1990) Note added in proof, *Chemoecology*, **1:** 62.

Escalante y Moreno, J. J. G. (1874) *Manual del cazador de perdices con los reclamos*, Miguel Guijarro, Madrid.

Fernández Flores, I. (1870) La perdiz blanca. In *Almanaque de la Ilustración de Madrid para 1871*, El Imparcial, Madrid, pp. 54-57.

Feyerabend, P. (1987) *Farewell to Reason*, Verso, London.

Galinier, J. (1990) *La Mitad del mundo: Cuerpo y cosmos en los rituales otomíes*, UNAM, Mexico.

Garine, I. de and Garine-Wichatitsky, M. de (2006) The Hunter's Status in Northern Cameroon and New Caledonia. In Prinz, A. (ed.) *Hunting food and Drinking Wine*, Lit Verlag, Vienna.

Giannopoulos, D., Voulioti, S., Skarpelos A., Arvanitis A., and Chalkiopoulou, C. (2006) Quail Poisoning in a Child, *Rural and Remote Health*, **6(2):** 6

Hocine Benkheira, M. (2000) *Islâm et interdits alimentaires. Juguler l'animalité*, Puf, Paris.

Kelly, C. (2012) Cooking city pigeons, the ultimate in backyard foraging?, *The Washington Post*, accessed at https://www.washingtonpost.com.

Kocher Schmid, C. (1993) Birds of Nokopo, *Muruk*, **6(2):** 1-62.

Korkmaz, I, Kukul Güven, F. M., Eren, S. H. and Dogan, Z. (2011) Quail consumption can be harmful, *The Journal of Emergency Medicine*, **41(5):** 499-502.

Leach, E. ([1962] 2000) Babar's Civilisation Analysed. In Hugh-Jones, S. and Laidlaw, J. (ed.) *The Essential Edmund Leach. Volume 1: Anthropology and Society*, Yale University Press, New Haven and London, pp. 318-322.

Lémery, L. ([1702] 1745) *A Treatise of all sorts of foods*, Osborne, London.

Lescuyer, F. (1876) *La héronnière d'Écury et le héron gris*, Baillière, Paris.

Lukanov, H. and Genchev, A. (2013) Fibromelanosis in Domestic Chickens, *Agricultural and Science Technology*, **5(3):** 239-246.

Magné de Marolles, G. F. (1788) *La chasse au fusil*, Barrois, Paris.

Malherbe, A. (1854) *Zoologie du département de la Moselle*, Pallez et Rousseau, Metz.

Mariaca Méndez, R. (2012) La complejidad del huerto familiar maya en el Sureste de México. In Marica Méndez, R. (ed.), *El huerto familiar del sureste de México*, ECOSUR, San Cristóbal de las Casas, pp. 7-97.

Marion, L. (1997) Les populations de hérons cendrés en Europe et leur impact sur l'activité piscicole. In Clergeau, P. (ed.) *Les oiseaux à risques en ville et en campagne*, INRA, Paris, pp. 101-132.

Millán, A. (2000) Le scrupule alimentaire: une approche socio-culturelle. In Essid, Y. (ed) *Alimentation et pratiques de table en Méditerranée*, Maisonneuve et Larose, Paris.

O'Callaghan, L. (2016) Black Chicken: The controversial bird being sold to you at inflated prices, *Daily Express*, accessed at http://www.express.co.uk.

O'Connor, T. (2017) Commensal Species. In Kalof, L. (ed.) *The Oxford Handbook of Animal Studies*, Oxford University Press, Oxford, pp. 525-541.

Raby, D. (2013) Comidas del Zopilote, *Les Cahiers ALHIM*, 25, accessed at http://alhim.revues.org/4455.

Royko, M. ([1965-1996] 2001), *For the love of Mike. More of the best of Mike Royko*, Chicago University Press, Chicago.

Sangster, G. (2009) Increasing numbers of bird species result from taxonomic progress, not taxonomic inflation, *Proceedings of the Royal Society B: Biological Sciences*, **276:** 3581-3591.

Sergent, E. (1941) Les cailles empoisonneuses dans la Bible et en Algérie de nos jours, *Archives de l'Institut Pasteur d'Algérie*, **19(2):** 161-192.

Tegetmeier, W. B. (1899) *The House Sparrow (The Avian Rat)*, Vinton & Co., London

Tian, Y., Xie, M., Wang, W., Wu, H., Fu, Z. and Lin, L. (2007) Determination of carnosine in Black-Bone Silky Fowl (Gallus gallus domesticus Brisson) and common chicken by HPLC, *European Food Research and Technology*, **226:** 311-314.

Tidwell, J. (2001) The Intoxicating Birds of New Guinea, *Zoogoer*, **30(2):** 14-21.

Tourenq, C., Combreau, O., Lawrence, M., Pole, S. B., Spalton, A., Xinji, G., Al Baidani, M. and Launay, F. (2005) Alarming houbara bustard population trends in Asia, *Biological Conservation*, **121:** 1-8.

Townsend, W. R. (2000) The Sustainability of Subsistence Hunting by the Sirionó Indians of Bolivia. In Robinson, J. G. and Bennett, E. L. (ed.) *Hunting for Sustainability in Tropical Forests*, Columbia University Press, New York, pp. 267-281.

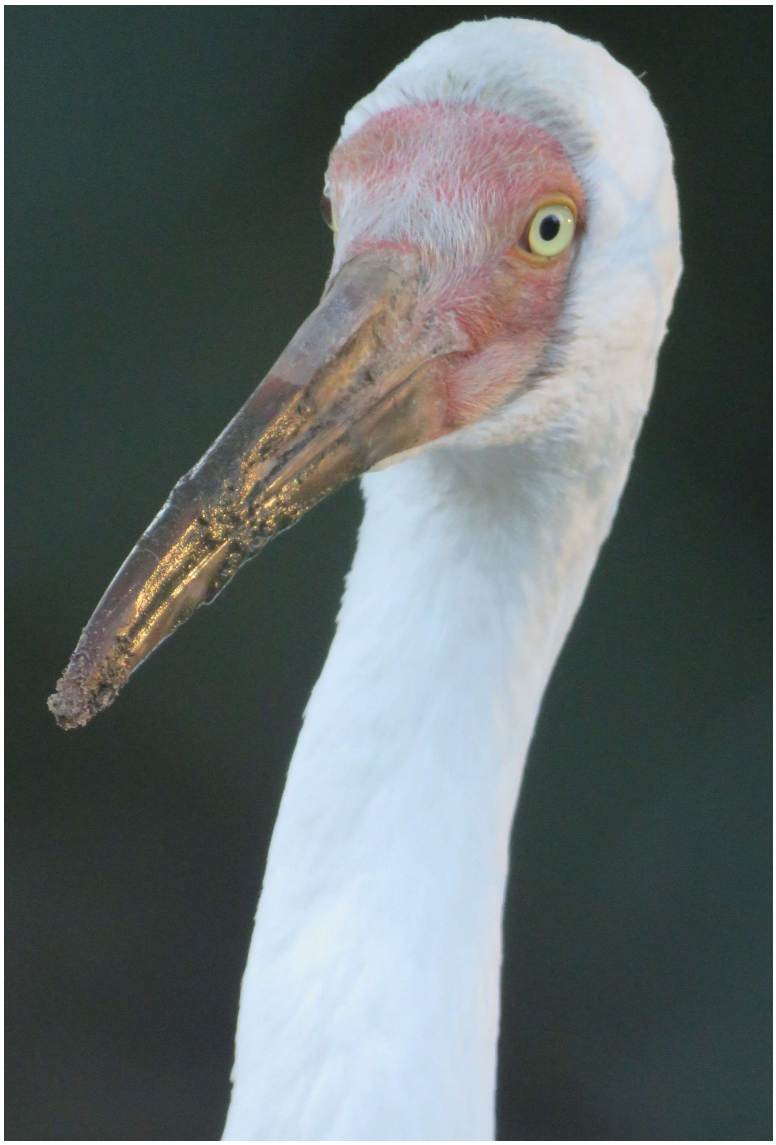
Voisin, C. (2010), *The Herons of Europe*, A & C Black, London.

Weldon, P. J. and Rappole, J. H. (1997) A Survey of Birds Odorous and Unpalatable to Humans: Possible Indications of Chemical Defenses, *Journal of Chemical Ecology*, **23(11):** 2609-2633.

Zhu, W. Q., Li, H. F., Wang, J. Y., Shu, J. T., Zhu, C. H., Song, W. T., Song, C., Ji, G. G., Liu, H. X. (2014) Molecular genetic diversity and maternal origin of Chinese black-bone chicken breeds, *Genetics and Molecular Research*, **13(2):** 3275-3282.

APPENDIX:

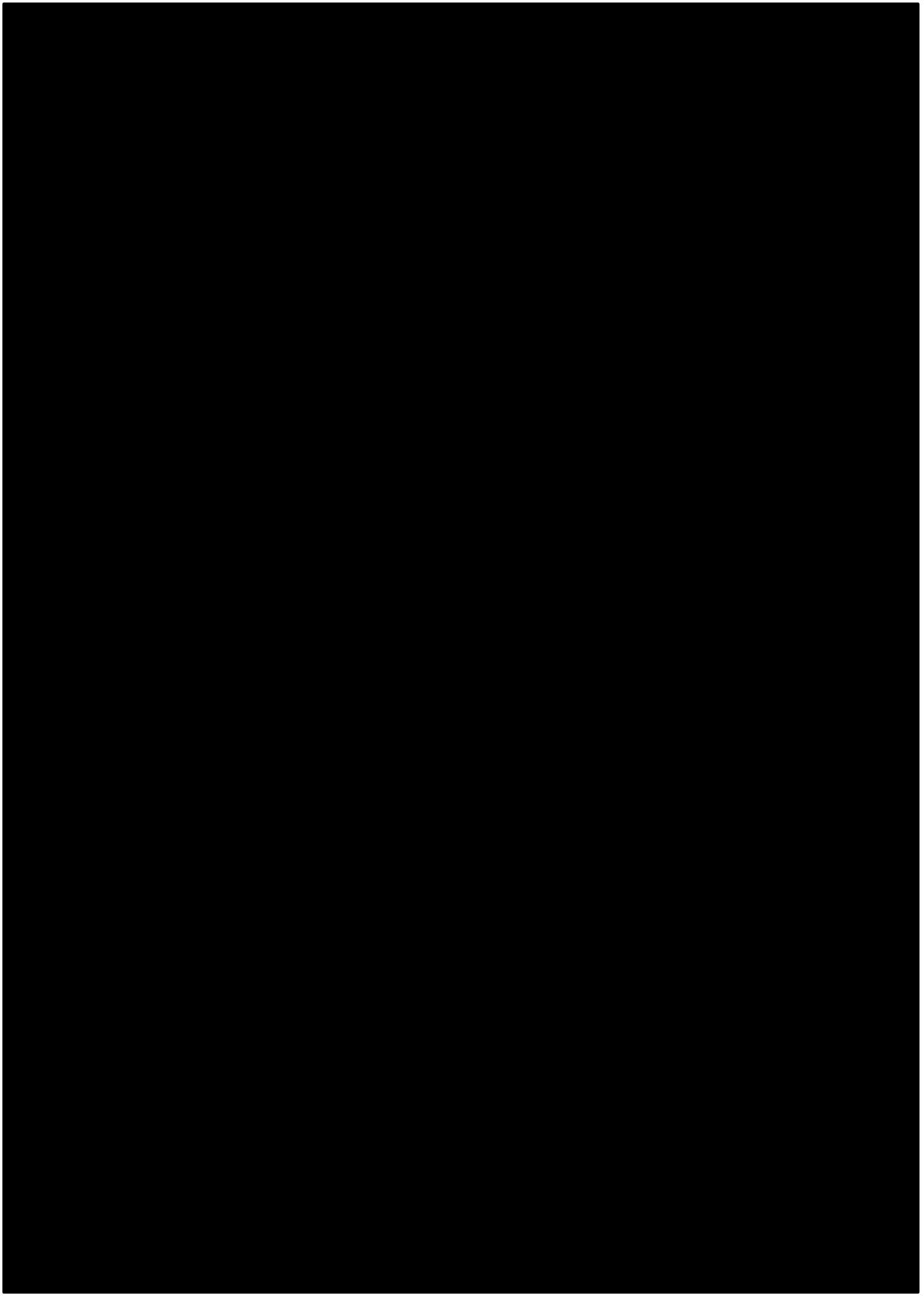
Indices



Siberian crane (*Leucogeranus leucogeranus*)
Photograph © Frédéric Duhart

INDEX OF CULINARY TERMS AND RECIPES

INDEX OF BIRD SPECIES
(using their scientific names)



Birds as Food: Anthropological and Cross Disciplinary Perspectives is a collection of essays by anthropologists and contributors from other disciplines. Traditions of using birds as food exist in almost all human societies past and present. Over a hundred different species around the world are mentioned in this volume. The contributions are supported with full colour illustrations of birds whether alive or in culinary preparations.

Frédéric Duhart is General Secretary of ICAF
and a teacher-researcher at the faculty of Gastronomic Sciences of the Mondragon University

Helen Macbeth is a past President of ICAF
and an Honorary Research Fellow in Anthropology at Oxford Brookes University

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