

The Dragon and the Rainbow

Man's Oldest Story

Robert Blust



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The Dragon and the Rainbow

Man's Oldest Story

By

Robert Blust



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“We are as ignorant of the meaning of the dragon as we are of the meaning of the universe.”¹



¹ “Ignoramos el sentido del dragón, como ignoramos el sentido del universo, pero algo hay en su imagen que concuerda con la imaginación de los hombres, y así el dragón surge en distintas latitudes y edades.” (“We are as ignorant of the meaning of the dragon as we are of the meaning of the universe, but there is something in its appearance that agrees with the imaginations of men, and therefore the dragon emerges in distinct places and times.”). Borges (1978:7).

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Foreword

Here at last—and available in open access—is Robert Blust’s passion project *The Dragon and the Rainbow*. How is that Blust, most widely known as one of the world’s greatest experts in comparative Austronesian linguistics, came to write a book about dragons, and how is this book connected to contemporary scholarship more broadly? In this introduction I hope to contextualize *The Dragon and the Rainbow* to help readers appreciate the origin and argument of this unusual volume.

While this book may at first appear to be a departure for Blust, it has many things in common with his other work. To begin with, while some of his colleagues may be surprised that he wrote a book on dragons, few will be surprised that it is over 120,000 words long. Blust was a man of endless energy capable of producing massive synthetic works, including his 638 page *Eight Languages of The Admiralty Islands*, his 845 page *The Austronesian Languages*, and his 1,106 page *Thao Dictionary*. And this is not to mention the online *Austronesian Comparative Dictionary*, a work which would, if printed, run over 9,000 pages (Lobel 2022:143). The length of this volume, then, is no surprise.

Neither is the passion with which Blust makes his arguments. Drive was a central part of Blust’s personality, along with an unyielding insistence on integrity and intellectual consistency. As a result he always took a principled stand, even if that meant walking a lonely path. For instance, as a child in the early 1950s he refused to say the pledge of allegiance because of the atrocities of settler colonialism. This insistence on justice for indigenous people seems ahead of its time today, even if it seemed unpatriotic when Blust was a child. This volume reflects Blust’s insistence on following evidence wherever it led him. Integrity and consistency were central values for him. For Blust scholarship was a moral mission, and every typo was an ethical outrage. *The Dragon and the Rainbow* is born of that same rigorous insistence that drove the rest of his professional work. In this volume he has followed the evidence wherever it led him, regardless of whether his conclusions appeal to the preconceptions of others.

The central question of this book is: Why are dragons found universally across all cultures, and why are they often associated with rainbows? Like so many things in his life, Blust pursued this question regardless of whether others found it interesting. Indeed, he pursued it despite the manifest fact that in many places dragons are *not* associated with rainbows. In the preface of this book Blust describes the skeptical reaction that he sometimes received when he described this process to people. It is important to emphasize that while

some may have found Blust's project quixotic, a knee-jerk skepticism fails to recognize the depth and ambition of *The Dragon and the Rainbow*, as well as its connection to ongoing and important debates in the human sciences.

Readers will notice that Blust draws repeatedly on Edward Tylor (1832–1917), the first person to hold an academic appointment in anthropology. In Tylor's day (to simplify greatly), anthropology consisted of the natural history of humanity, with special reference to 'preliterate'—that is, colonized—people. Where had they come from? What were their histories? Had, for instance, the bow been invented once and then knowledge of it spread across the world, or had it been invented multiple times in different places? In my own conversations with Blust, he often emphasized the importance of these early studies of the origin and diffusion of culture traits. While Tylor is cited in this book, we also often discussed Boas and the 'four-field' vision of anthropology (see below) in which historical linguistics was just one part of a broader attempt to document the human past. *The Dragon and the Rainbow*, then, is rooted in this natural-historical project.

The Dragon and the Rainbow seems unusual to contemporary scholars because of transformations in the academy since Tylor's time. Anthropology classically had a 'four field' approach to the natural history of humanity, drawing on ethnology, archaeology, anatomy, and philology to paint a complete picture of our species. Since then, the capacious discipline of philology has lost its unity and splintered into many specialties. In anthropology today, it has been replaced by linguistic anthropology, which studies language use in interactional context as a form of communicative practice. Linguists following the legacy of Bloomfield and Chomsky, on the other hand, tend to study grammar as an autonomous mental phenomenon whose structure could be revealed by examining the intuition of fluent speakers. Historical linguistics, Blust's area of expertise, was once central to philology. Today, however, it has no clear institutional home, and practitioners find themselves in departments of linguistics, anthropology, literature, and history. It is important that we look beyond the current academic division of labor to understand that Blust's project seeks to reconnect psychology, history, cognitive anthropology, and other approaches in a synthetic way which has salutary novel elements as well as a deeper scholarly genealogy.

Despite his use of terms like 'universal', Blust does not argue, as perhaps Jung might, that all humans have dragons buried somewhere in their subconscious. His argument is more subtle. In several times and places in history, he claims, human beings independently invented a belief in rainbows and dragons because of the visual and material properties of rainbows such as their occurrence in the sky during times of sun and rain, their serpentine shape, and other

factors. Given the regularity of these natural phenomena and the uniformity of human nature, he argues, we may expect to find the same concept—the dragon—developed independently in different places. In doing so, Blust is in essence taking a path out of Tylorian anthropology which is uniquely his own, one very different from the paths which others have taken.

Blust believed that the origin of dragons has an inherent intellectual appeal despite the manifest fact that he is one of the very few scholars currently working on this project. In typical Blust fashion, when only one in a hundred people are interested in a problem, but that one person is him, it is the ninety-nine people whose variation must be explained away. I would argue that most people should be forgiven for focusing on the pressing issues of the day given the urgent challenges of climate change, pandemics, increasing economic inequality, and a changing global order. Even Tylor did not study survivals out of abstract intellectual curiosity. A Quaker, his goal was to reveal the superstitious and primitive elements infecting Christianity in order to purge them and create a church truer to Christ's vision for the faithful.

But let us set these quibbles aside. Blust's project is thus bigger than just one book—even a book this big. It is a program of research that will require an entire intellectual community to fully bring to fruition. What would a Blustian approach to dragons look like? What work remains to be done?

First, we must continue to develop the logic of Blust's methods. Modern anthropology convincingly criticized Victorian approaches for ripping concepts out of context in order to compare them. These older approaches created objects of study like 'totemism' or 'myth' which had no natural unity and whose coherence was an illusion created by the presuppositions of the scholars who studied them. To his credit, Blust deals with the issue of 'lumping' and 'splitting' instances of the culture trait of 'the dragon' in his book. However, we must go further and develop a methodology examining the logical consistency of Blust's synthetic project. If it is fit for the purpose of tracing the origin of dragons, perhaps it could be used in other areas as well. More work on this topic needs to be done.

Second, we must continue the empirical investigation of Blust's claims. Currently, his assertions lack a fully sound evidential basis. Some dragon beliefs are the result of diffusion, he claims, and some the result of independent invention. But which are which? And why prefer independent invention as a mechanism over diffusion? Blust claims all instances of dragons-as-rainbows extant today have not changed in thousands of years, whereas instances where dragons are not rainbows are the result of historical change. Sadly, Blust provided us with a comparative Austronesian dictionary that traced the diffusion of culture traits across vast areas of time and space, but he did not give us a work of compa-

rable scope for dragons. Indeed, how could he? Even a man as tireless as Blust had limits. We need modern, high-quality, detailed studies of dragon beliefs to document and reconstruct the natural history of discourse which Blust could only gesture to in this volume.

Third, we need a fuller account of the cognitive pathways which, Blust claims, turn rainbows into dragons in the minds of humans. Blust presents little biological argument for this biological claim, nor does he reconcile it with the fact that human perception is shaped by the arbitrary and contingent cultural categories to which humans are socialized. Blust is too careful to give in to biological determinism, but did not have the time to provide us with a more nuanced account of the interaction of these different causal forces. What is the relationship between historically specific cognitive categories, species-wide perceptual capacities, and the organoleptic properties of objects? Future researchers interested in dragons will have to answer these questions, hopefully by building bridges with relevant contemporary work in other disciplines.

How many scholars will take up the gauntlet that Blust has thrown down in this volume? It is hard to say. Regardless of whether this book is the beginning or the end of a Blustian approach to the study of dragons, we are lucky to have it. No one can deny the effort that Blust has poured into *The Dragon and the Rainbow*. There is no doubting that this volume should be celebrated for its originality and passion. In all of these areas, *The Dragon and the Rainbow* is a unique volume by a unique scholar, and an important part of his legacy.

Alex Golub

Department of Anthropology, University of Hawai'i at Mānoa

In Memoriam

To everyone who knew him personally, Bob was a good storyteller. I vividly recall how, in the early nineties after we were married, Bob amused my family, especially the younger generation, with fascinating stories of unusual encounters during his extensive fieldwork, and how intrigued they were to learn about the taboo of pointing at rainbows. During his first sabbatical in Taiwan (1994), Bob and my father would always have a joyful time at our Saturday dinners exchanging wishes for good health and happiness over a drink and engaging in small talk about their life experiences. Once, out of curiosity, Bob asked my father, Chang Hsiang-shun (1917–2004), a retired WWII air force pilot originally from China, if there was any story that he recalled from childhood about rainbows. Much to my surprise, my father not only confirmed the rainbow taboo as what Bob had described, but also mentioned taboos against pointing at agricultural crops, such as budding cucumbers. In conversations that later ensued with a Mr. Du, also a veteran of my father's generation from China who worked as our building manager at the time, the rainbow narrative became more complex. Instead of just being associated with the rain and crops, it was frequently tied to the appearance of dragons and the omens associated with them. Upon reflection, these beliefs must have been salient in the minds of people who lived an agricultural lifestyle in the bygone time in which my father and Mr. Du grew up.

In modern times, any Chinese urbanites untrained in archaeology or historical linguistics like me may still discern the rainbow-dragon connection in a variety of commonly known remnants of the past. First, the word 'rainbow' is written in Chinese characters as 彩虹 (lit. 'colorful worm-creature *hóng*'), with the second character consisting of the 'worm' (虫) radical on the left, corresponding to a semantic root encompassing worms, insects, and reptiles (e.g., 蛇 'snake'). Second, a substantial amount of the dragon motif has been found on ceremonial and burial objects made of jade and bronze in early archeological sites, dating from the Shang (1600 to 1046 BCE) to Western Han period (206 BCE to 9 CE). Among such artifacts preserved and exhibited in museums today, the most intriguing are the jade pieces that present the dragon in an arched or curving shape (often with a cloud motif), in a half-circular jade *huang* (璜) form (see cover photo) and occasionally in a circular *bi* (璧) form similar to the 'uroboros' described in Bob's book. It is also a widely held view that the jade *huang* (璜) form symbolizes the rainbow. In addition to these historical relics, the dragon has persisted as an imperial symbol throughout the various Chinese dynasties, right up to 1911. Many Chinese, including me, may have seen a Qing

Dynasty (1644–1911) emperor's robe on display and found themselves baffled by the rainbow-colored bands, and the waves, clouds and lightning symbols surrounding the imperial dragons on it. Finally, the mere fact that the dragon is included as an 'animal' in the Chinese zodiac, the only one of the 12 signs that does not represent a real creature, continues to arouse curiosity among the Chinese about its origin. I believe the thesis presented in Bob's book offers a convincing solution to this puzzle in Chinese culture.

Because of my entirely different professional focus, I had not been involved in Bob's scholarship over the years, and, in fact, had little knowledge of the extent of Bob's research on this project until his passing in early 2022. Just a couple of months prior to that, he was delighted to get his manuscript ready for publication. It was an unorthodox project, outside his expertise in historical linguistics, yet he considered it to be one of "[my] life's most important works". It wasn't until I started to read through the pages that I realized how much information he had collected from a wide array of sources. Even though the exposition of his thesis is at times intricate, largely due to the breadth of the data cited, Bob's effort to peer into human cognition through the window of folklore and animistic beliefs is both daring and enlightening. It allows both a reconstruction of the origin of the dragon myth and an explanation of its connection to a natural phenomenon, i.e., the rainbow. Extending far beyond the mythical dragons of Chinese culture, Bob's undertaking not only offers a solution to a longstanding trans-global mystery, it underlines the critical importance of pre-modern beliefs and folklore. In our high-tech world in which so much human ingenuity is dedicated to exploring the possibilities beyond ourselves, Bob's work points to a path for understanding the almost unfathomable workings of the human mind throughout history. I hope that his work will inspire more careful and respectful study of the indigenous cultures in our search to better understand ourselves through the clues that come from the creative mind of our forebears.

In the long journey of his research on this topic, Bob received immense help, moral support and constructive feedback from his friends, colleagues and students alike, many of whom have been included in his Acknowledgements. In addition to all who have contributed to make his work possible, I would like to express my sincere gratitude to several people who have assisted me in the long and arduous process of preparing this book for publication. First, sincere thanks are due to April Almarines, who faithfully read through Bob's earlier chapters, offered editorial assistance and collected relevant images to better conceptualize descriptions of the dragons. In the latter regard, my deep gratitude goes to Orlyn Esquivel, a multi-talented graduate student in Linguistics at the University of Hawai'i at Mānoa, who patiently worked with me on the illus-

trations for this book, drawing on her artistic skill to bring to life the various dragons about which Bob described. I also wish to thank Eline van der Veken, who has helped prepare the index of this book with unparalleled professionalism.

On a broader scale, I am profoundly grateful to Professor Kenneth Rehg, a close friend of Bob's for over half a century, who has graciously provided numerous helpful pieces of advice and input, from sharing his knowledge and insight to proofreading the manuscript. I am also thankful to my daughter, Jasmine Blust, for being my other "second pair of eyes", with her gift for spotting typographical errors and suggesting stylistic improvements. Throughout the entire process, no words of gratitude could be adequately given to Professor William O'Grady, also a longtime friend of Bob's, who voluntarily took on the role of facilitator from day one, always looking out for Bob's best interests, synthesizing communication from all sides, and working as the driving force behind the scenes to make things happen. His selfless acts of kindness and unwavering support have meant everything to me and my family. Last but not least, this project could not have become a reality without the guidance and support of Dr. Uri Tadmor, Publishing Director at Brill, who has been a godsend. I owe my deepest gratitude to him for his stewardship and faith in Bob's scholarship.

On behalf of the Blust family, I would like to dedicate this book to the inquisitive minds and creative humans that came before us, whose legacies we now inherit.

Laura Chang-Blust

Preface

In discussing my plans to write this book with friends, colleagues and acquaintances, the reactions I received ranged from some who thought it was a joke that shouldn't be taken seriously, to others who looked forward eagerly to seeing it in print. Few people understood, or understand today, that the path that led me to the origin of the dragon idea did not come from addressing this issue directly, but rather from seeing how people reacted toward others who pointed at rainbows.

It began in the fall of 1980, when I was employed as a professor at the University of Leiden in the Netherlands. In accordance with a bilateral agreement between Holland and the Republic of Indonesia, five teachers from Indonesian teachers' training colleges were chosen annually to spend nine months in the Netherlands, where they focused on one area in the broad field of linguistics (the scientific study of language) as a way of upgrading their professional qualifications before returning to Indonesia as college teachers. The selection process began with a larger group of teachers that received basic instruction in-country, followed by a vetting process and the selection of the lucky five who would go for more in-depth training in Europe.

As part of one of these cycles I was sent to a small community called Tugu, among the scenic tea plantations in the mountains of west Java, where I was tasked from September 30 to November 1, 1980 with teaching the fundamentals of historical linguistics (the study of language change over time) to a group of about 30 Indonesian teachers, drawn from all parts of that large and diverse island nation. My lectures (in Indonesian) took up about six hours of each day, punctuated by a lunch break, ending in the late afternoon or evening with a spirited game of badminton if the weather permitted. At one lunch break during the month I was there a number of us were queued up outdoors waiting for our food in a light drizzle, and a brilliant rainbow suddenly arched through the sky from mountain top to mountain top. Impulsively, I pointed it out to someone standing in front of me. In the most courteous way possible he told me that where he had been raised (somewhere in Sumatra) people think it is not a good idea to point at rainbows. Before I had a chance to ask him why, someone behind me who was from another, rather distant part of Indonesia, said "What—you have that belief too?". Both then stated that as children they had learned that the consequence of such untoward behavior would be that the offending finger would be permanently bent into the shape of the rainbow. I don't know whether I gaped, but I was transfixed by this correspondence of fantastic beliefs from widely separated islands. It clearly wasn't true, so why should people share the same colorful falsehood?

As a first attempt at understanding, I assumed that this was an arbitrary belief that had arisen at a time when the language groups in question were a single community. After all, this was what I was teaching in our classes about the nature of language change: communities split up and over time the language of each changes in its own way, but for a period of up to several millennia the common origin of this set of linguistic relatives can still be detected by systematic comparison. I put the matter aside, we got our lunch, and the rest of my month in Indonesia went smoothly.

That could have been the end of the matter. However, this experience stayed in my mind, and on returning to Holland I began to dig into ethnographies of linguistically unrelated groups, looking for anything I could find about how the rainbow was viewed by traditional tribal peoples. It did not take long for the shock to set in. Within a very short time I discovered very similar beliefs among the tribes of the Naga Hills in Assam, eastern India—people who are linguistically unrelated to those in Indonesia, but who share a similar traditional culture. This meant that I could no longer harbor the comfortable belief that this was an arbitrary invention of one prehistoric culture that had been passed on to its descendants—most of the peoples of Indonesia speak languages that belong to the vast Austronesian ('Southern Islands') language family, while the languages of the Naga Hills belong to the Sino-Tibetan language family, which includes the various forms of Chinese.

At this point I had no choice but to assume that there was *something* about the human reaction to rainbows that had triggered a parallel response to pointing at them in historically unconnected societies. This was a small beginning, but within the next few years my efforts to expand the documentation of this belief (which I had begun to call 'the Rainbow Taboo', or RT) showed that it is a global belief, reported in Europe, Africa, East Asia, Southeast Asia, aboriginal Australia, New Guinea, and North, Central and South America. Individual writers had previously recognized that the RT is found across a number of cultures in geographically restricted areas, as North America, but no one had previously seen that it is in fact a culture universal, that is, a feature of culture with a distribution that cannot plausibly be explained by common history or borrowing, and so implies some kind of universal psychological motivation.

The RT has already been extensively documented (Blust 2021), but what is to the point here is how my pursuit of this belief led me to dragons. In my effort to collect as much data as possible concerning attitudes toward the rainbow, I prepared and sent questionnaires to colleagues who were teaching in Papua New Guinea or doing linguistic or anthropological fieldwork in several Pacific Island and African countries, and to heads of missionary field stations connected with the Summer Institute of Linguistics (SIL) and other Bible translation groups

around the world, with a request that they be completed by workers in the field, a technique similar to that pioneered in the nineteenth century by the American anthropologist Lewis Henry Morgan in collecting data on kinship systems. This provided by far the richest source of data on the ethnology of the rainbow, and should show that Morgan's method of data collection remains useful even today for certain types of information.

These questionnaires asked not only about the RT as such, but also about traditional views of the rainbow in general. In effect, this method of data collection allowed me to indirectly interrogate hundreds of indigenous peoples, many of whom still retained large parts of their traditional animistic belief systems. From the completed questionnaires, most of which were obtained between 1981 and 1985, together with published sources from other writers, some of which proved to be extraordinarily helpful (although their authors probably would never have suspected it), it soon became apparent that most traditional societies share strikingly similar beliefs about the rainbow that differ radically from the Western conception in nearly every respect. In pursuing the ethnology of the rainbow, then, I was led metaphorically into the den of the dragon, for it soon became all but impossible to distinguish the two.

Chapters 5 and 7 of this book are very data-heavy, since they provide the basic documentation of the globally distributed traits of dragons and rainbows, respectively. Documentation requires broad cross-cultural sampling, and as most anthropologists have recognized for some time “language, although admittedly not always in agreement with the realities of cultural identification and cultural dynamics, nevertheless offers the only consistent and complete basis for the selection and arrangement of units” (Lebar, Hickey and Musgrave 1964:v). Consequently, the sample units used for purposes of documentation are ethnolinguistic groups (people who share a similar culture and a common language). As much as possible each informant from whom questionnaire data was obtained is identified by name, language group represented, language family affiliation, and in many cases major branch of the family, as well as country of residence. The classification of North American languages follows Goddard (1996), and for most others I follow Simons and Fennig (2018). Because the genetic classification of the non-Austronesian languages of New Guinea and neighboring areas remains unsettled, and because many language names in this area are quite variable, I have had no choice in a few cases but to fall back on the default label ‘Papuan’, although it should be made clear that this term means nothing more than ‘non-Austronesian.’

I wish I could thank those two Indonesian teachers whose mutual surprise in learning that they shared the RT started me on a long journey that has led to this book, nearly forty years later. Alas, their names and identities have long

since been forgotten, but there are many others whose help I can still acknowledge. The Acknowledgements provides a partial list, with apologies to anyone who I may have inadvertently overlooked.

Many of the traditional belief systems represented by the material in this book are rapidly disappearing as a result of globalization and the end of animism. The beginning of the Industrial Revolution prodded Jakob and Wilhelm Grimm to record the folklore of Europe before it ceased to be transmitted through an oral tradition. In much the same way this book aims to document concepts of the rainbow as these were expressed in the vast majority of the world's cultures, before modernization and conversion to a world religion put these ancient beliefs on a path to eventual extinction, leaving only a mysterious trace of their former existence in the form of the dragon itself.

A NOTE ON SPELLING. Because the Rainbow Serpent in aboriginal Australia is commonly treated as a personified being, its name is usually written with upper-case 'R' and 'S'. Not all writers follow this convention, but enough do that I have chosen to adopt it, and since I use it for the Australian version of this creature, consistency has called for me to use it in other areas as well. The dragon, however, is not treated in this way in any source available to me, and as a result 'dragon' is consistently written with a lowercase 'd'. Similarly, when used specifically as the name of the planet we live on, I write 'Earth', but in more general references to ground or soil I use the lowercase alternative 'earth'. Conventions regarding the use of upper and lower case symbols that are used in quoted material are naturally left as found in the original. Finally, both *nāga* and *Shintō* properly have long vowels. These appear correctly in de Visser (1913), and I follow his practice here, but vowel length is ignored in the less specialized sources I have cited, and since they are quoted verbatim, I have left the original spelling unchanged in these cases, despite the inconsistency this creates. Finally, the linguistic classification of the 378 ethnolinguistic groups cited in the text is given in the Appendix.

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Where not cited from published sources, the data for this book was collected from the following individuals, mostly in the 1980s. Those with an institutional affiliation (or who had one at the time the data was collected) are either academics, students, or missionaries, while most of those without an institutional affiliation are indigenous people who provided primary data about the ethnology of the rainbow; in some cases an individual may fit into more than one of these categories:

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As this list shows, much of the material acquired from questionnaires comes from Africa (Ivory Coast, Sudan, Nigeria, Cameroon, Ghana, Kenya), Indonesia, South America (Colombia, Peru, Brazil, Ecuador), Australia, Papua New Guinea, various Pacific islands (Palau, Solomons, Kiribati, Chuuk), Central America, and Mexico, with a scattering from mainland Asia. Material from other parts of the world, primarily North America, Europe, the Middle East and China, is mainly from published sources, although some revealing information was obtained firsthand regarding dragon beliefs in the folk culture of China (as opposed to the imperial tradition).

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Introduction

The central thesis of this book can be stated in four words:

Dragons evolved from rainbows

While this is both accurate and concise, it is apt to strike most readers as bizarre, facetious, or just plain outrageous. The reason for this likely reaction is simple: few Westerners realize how radically the conception of the rainbow in the Judeo-Christian tradition, or even in pre-Christian Europe, differs from that in the vast majority of the world's traditional cultures. As will be seen, nearly all attempts to understand why a belief in dragons is found in many parts of the world, despite the lack of evidence that such a creature ever existed, start with reports of dragons themselves. While this may seem reasonable, explorations of the subject adopting this approach have almost invariably ended in speculative dead-ends, even for accomplished scholars. Searching for the origin of the dragon idea by studying beliefs about dragons without exploring the ethnology of the rainbow simply generates far more questions than answers.

The fields of anthropology and folklore began in the nineteenth century with broadly comparative perspectives. For reasons that need not concern us here, this approach became disfavored, and even tainted in some quarters with the result that the editor of one prominent journal recently told me with respect to the topic of this book “we aren’t interested in universals.” Yet the belief in dragons is a culture universal, as it has either been inherited from the dawn of human consciousness, or has arisen repeatedly in different parts of the world for what are demonstrably similar reasons. To suppress interest in such a basic question in folklore studies because the study of culture universals is out of fashion seems perverse to anyone who believes that an interesting scientific question remains interesting, whether or not it happens to agree with contemporary fashions. Basic scientific questions are timeless, and if they have not previously been answered adequately, then the time to address them is now.

One of the consequences of the loss of faith in broad comparative studies in both anthropology and folklore is that many topics that could profit immensely from focused cross-cultural attention have been completely neglected as unworthy of study by the very community of scholars that should be devoted to them. One need only consider the fundamentals of the ethnology of albinism, crystals, mushrooms, pointing, and many other topics to see the potential yield of insights that has been largely overlooked as a result of the adoption of restrictive approaches to the study of culture, and in particular to the study of

non-Western belief systems. While some of these topics have received passing attention, as with Lévi-Strauss (1976b) for the ethnology of mushrooms, or Kita (2003) for the ethnology of pointing, after a century and a half of scholarship in cultural anthropology and folklore there has been no dedicated study of the ethnology of albinism, of crystals, and most to the point, of the rainbow.

The worst possible reaction to this longstanding neglect would be to assert that the topic has no value, and therefore would yield no new information or insights into the nature of culture or of the human mind. Nothing could be further from the truth. Once one begins to seriously investigate the ethnology of the rainbow the trail of facts leads inexorably not just to the appearance of dragons, but to naturalistic explanations for some of their most puzzling traits: why are they associated with waterfalls and caves in many parts of the world? Why do they fly? Why do they breathe fire? Why do they guard treasures? Why do they also guard springs? Why are they considered hermaphroditic in cultures that otherwise have little in common, such as imperial China and aboriginal Australia? In short, a concentrated attempt to understand the ethnology of the rainbow leads us, unsuspecting, into a rich and detailed explanation for why the dragon idea is universal.

The book is organized into two major divisions: Part I, 'Dragons', and Part II, 'Rainbows'. It concludes with two chapters that sum up the multiple points of agreement between traditional animistic beliefs about the rainbow, and beliefs about the dragon.

Chapter 1, 'What, if anything, is a dragon?' addresses one of the most basic questions in dragon research: what qualifies as a dragon, and what does not? I take the position that all categories have variable members, and what matters in defining category membership is a set of overlapping shared features, or traits that distinguish objects that belong to a category from those that do not. One of these traits is that all dragons are chimerical—that is, composed of the parts of different animals. While this is also true, e.g. of unicorns, kirins, and some other fabulous creatures, dragons are unique in combining the parts of cold-blooded and warm-blooded animals, as in all cases they are essentially snakes that have hair in various forms (whiskers, mane, etc.), horns, or other traits of mammals, or that have feathers, which links their cold-blooded reptilian body to warm-blooded birds. Dragons are, in effect, contradictory, as they are formed by what might be called a fusion of opposites. It concludes with a table showing the geographical distribution of widespread draconic traits over six major regions of the Earth: Europe, the ancient Near East, South Asia, Central and East Asia, and aboriginal North and South America.

Chapter 2, 'Why dragons? Theories from A to Z', surveys theories of the dragon. Without attempting to be exhaustive, it shows that no previous the-

ory is generalizable to dragons as a universal category, or comes even close to accounting for the distribution of traits that will be outlined in chapter 1, and discussed in detail in subsequent chapters. Rather, every published theory leaves masses of relevant detail unexplained.

Chapter 3, 'Dragons and waterfalls', selects one particular trait—the demonstrated tendency (it may, in fact, be invariable) for every major waterfall to have a resident dragon, and shows that this striking association is found in at least Southeast Asia, Australia, North America, and several disconnected parts of both South America and Africa.

Chapter 4, 'Dragons and thunder/lightning', selects another particular trait—the widely-attested conflict between the dragon and thunder or lightning. Like the association with waterfalls, the global distribution of this initially puzzling trait turns out to be physically transparent when considering the nature of weather phenomena everywhere on the planet, and the ways that preliterate peoples might plausibly have interpreted them.

Chapter 5 provides a more general ethnology of the dragon, touching on each of the other traits in Table 1, providing explicit documentation for them, and in many cases discussion for why they exist. In the interest of accuracy, material is frequently quoted from primary sources, and since more than one trait is often cited in a single sentence, some duplication is unavoidable. Every effort was made to keep this to a minimum, but it could not be eliminated completely, and it may not be entirely a disadvantage that certain key ideas are reinforced through repetition. This concludes Part I of the book, which is concerned with the dragon as an independent entity.

Part II begins with Chapter 6, 'What, if anything, is a rainbow?', which attempts to disabuse readers of the idea that the Western, or even more narrowly, Judeo-Christian view of the rainbow is typical of the world's cultures. It provides a brief demonstration that the rainbow is viewed in most parts of the traditional world as an animate being of menacing character. It then uses an analysis of names for the rainbow to indicate that there is a range of views about the nature of the rainbow, although the notion that it is an enormous snake that drinks water from the earth and sprays it out to make the rain, or that drinks up the rain to make it stop is clearly dominant, and without question is the idea that has the longest history in the cognitive development of our species.

Chapter 7 provides a more general ethnology of the rainbow. It is the longest and internally most complex chapter of the book, which concludes with two sub-topics, namely the ethnology of sunshowers (rain when the sun is shining), and a brief look at the rainbow taboo (RT), the culture universal that started me on this long journey. Although sunshowers are difficult to separate from

rainbows in the natural world, their separate treatment here is justified by the fact that they have been treated as distinct in the world of culture, where certain seemingly arbitrary beliefs are associated with this phenomenon across a broad swath of the Earth's surface. Again, because of the high priority placed on documentary evidence, this chapter includes much quoted material, and is therefore subject to the same limitations and potential objections as Chapter 5 (i.e. that a certain amount of repetition could not be avoided). Because of its marginal relationship to the origin of the dragon idea and its fundamental importance as a culture universal in itself, the RT is treated at greater length in Blust (2021).

Chapter 8, 'A glimpse of the glory', relates to the physics of the rainbow and similar optical phenomena. It begins with a transformative personal experience, and then suggests how seeing circular rainbows, or glories might have influenced certain perceptions of the dragon, in particular the *uroboros* (dragon encircling the world, or forming a circle by swallowing its own tail).

Chapter 9, 'Connecting the dots', returns to Chapters 5 and 7, on the ethnology of the dragon and the ethnology of the rainbow respectively, and explicitly marks those traits of dragons that correspond exactly, or nearly so, to globally attested traits of the rainbow. A number of these are readily explainable as products of animistic thinking, while others are not. However, in either case multiple agreements linking the two categories provide a trail of evidence that the dragon in cultures that no longer connect it with the rainbow must have originated as the Rainbow Serpent.

Chapter 10, 'Conclusions', provides a few remarks about why it has taken so long for anyone to see what now seems so hard to deny, namely that dragons evolved from rainbows through the concept of the Rainbow Serpent, and that the Rainbow Serpent itself came into being as the result of a prescientific attempt to explain the causality and nature of the rainbow. Unlike the rain, which is simply the familiar substance, water, falling from the sky, the rainbow—a visually spectacular display that is here now, but gone a minute later—is a phenomenon that continues to puzzle children, or adults in traditional societies today, and that clearly puzzled our distant ancestors in the dawn of our emergence as a thinking species.

Prologue: From Nature to Culture in Two Steps

In conversational settings many people have expressed interest and excitement about the ideas presented in this book. However, when forced to delve into the factual basis of the argument, few have had the patience or dedication to get beyond reading a select chapter or two, and with such a limited basis they have not truly understood what the book is about. To cite an especially egregious example, one disappointed reader who reportedly read the Preface, Introduction, two other chapters and the Conclusion said he had hoped to find “some general insight into how humans think”, apparently oblivious to the fact that this is the central thesis of the explanatory sections. To make matters worse, he also wondered why I had not mentioned “the concepts of Yeti, Bigfoot, Chupacabra, crop circles and maybe UFOs,” assuming implicitly that the topic was fantasy rather than an attempt to address a recalcitrant scientific problem, revealing a total lack of engagement with the actual material. This prologue is intended to remedy that problem by laying out the main features of the story in two parts: 1. From rainbow to Rainbow Serpent, and 2. From Rainbow Serpent to dragon.

1 From Rainbow to Rainbow Serpent

Mythologists and folklorists have long been familiar with what the British social anthropologist A.R. Radcliffe-Brown (1926) called ‘the rainbow-serpent myth of Australia’. Briefly, the Rainbow Serpent myth holds that the rainbow is an enormous spirit snake that controls rainfall while in the sky, and in its terrestrial manifestation guards waterholes against the intrusion of humans. As noted by Buchler and Maddock (1978), and by Radcliffe-Brown himself, there is considerable elaboration upon this basic pattern in one society or another across the landscape of Australia, but these two traits are among the most constant. Because of its immense spiritual power the Rainbow Serpent figures in the initiation rites of adolescent males in the transition from boyhood to manhood, and it is nearly always inimical toward women or adolescent girls, especially when they are menstruating.

To Radcliffe-Brown this belief complex, which is widely shared in varying form over much or all of the continent, was a distinctive marker for the Australian cultural province—one not known in the same or a similar form anywhere else. Some writers, as Mead (1933) and Brumbaugh (1987) have argued that a similar set of beliefs is found in at least some parts of highland New

Guinea, but these attempts to extend the documentation of the Rainbow Serpent myth beyond Australia have not been generally accepted, and standard encyclopedias of folklore and mythology to this day continue to state that the Rainbow Serpent myth is a uniquely Australian cultural phenomenon.

This book directly challenges what has been essentially a longstanding academic myth by documenting beliefs about the rainbow in tribal societies around the planet that are very similar in detail with the celebrated Rainbow Serpent myth of Australia. Far from supporting the claim that this belief-complex is peculiar to one continent, the ethnographic record shows that it is a culture universal that is more prominent in some areas and less so in others. A comprehensive review of the evidence strongly suggests that the Rainbow Serpent myth has existed since the origin of modern humans, and that its prominence in Australia is a product of cultural conservatism, not of a unique development *in situ*, as has been maintained, explicitly or implicitly, for generations.

The ethnographic data supporting this position is given in the following pages, particularly in Chapters 6 and 7. Suffice it to say for now that the reader must be willing to recognize a view of the rainbow in most tribal societies that is not only radically different from his own, but one that is strikingly similar across continents. Few readers will be mentally prepared for accounts of “a hungry, meat-eating Rainbow” (Uduk, Sudan), a rainbow that can “eat or suck the blood” from a person without him or anyone else noticing it (Tarahumara, northern Mexico), or for conceptions of the rainbow as “a giant snake with two heads of deer or cows, one of which drinks from the Indian Ocean, the other from the Java Sea” (Java), or “a dragon that drinks water from the sea and sprays it out as rain” (Chinese of Lanzhou, Gansu province). These snapshots, from Africa, Mexico, island Southeast Asia and northern China are only the tip of the proverbial iceberg, for they are fragments of a much larger picture of the human past that this book strives to restore for readers living in the digital age through interviews with the last adherents of a nearly bygone view of a world run by powerful spirits rather than by the laws of physics.

2 From Rainbow Serpent to Dragon

It is only fair to ask why human beings in widely-separated parts of the Earth would choose to see the rainbow as an enormous spirit snake. To answer that question we must recognize how rapidly the human experience has changed over the past few thousand years. It is common knowledge that this change has been cultural rather than biological, since the modern human brain has

existed with little identifiable change for at least the past 100,000 years. With fully modern brains preliterate humans had the same intelligence, curiosity and need for explanation as any literate person today. What they lacked was scientific knowledge, the product of a gradual accumulation of insights into the workings of nature that was made possible after the advent of writing.

Anyone who has worked with modern tribal peoples will immediately confirm my claim that—despite their lack of scientific understanding—preliterate peoples were and are capable of highly accurate observations of the natural world. Where their thinking differs most markedly from that of most readers of this book is with regard to notions of causality. It is easy enough for someone with no understanding of science to describe *what* s/he sees in the world about him in considerable detail, but it is far more difficult for that person to explain *why* the observations take the form they have. With regard to rainbows in particular, it was an intellectual challenge for premodern humans (and their preliterate descendants today) to explain why rainbows appear only when the sun and rain are, so to speak, competing for control of the sky. Other explanatory challenges followed from this primary question. Where is the rainbow when it is not in the sky? How does it rise skyward when the rains begin? What is its shape when it is on the Earth? To modern humans equipped with physical explanations for such optical phenomena these questions may seem trivial or contrived. They are not. These are questions that cried out for answers, and human beings with the same brain power as us, but lacking scientific knowledge, strove to answer them as best they could.

In an animistic world—the universal world of preliterate humans—nature was pervaded by spirit presences that made their existence known in striking natural phenomena. These could be almost anything outside the realm of ordinary experience, from mountain peaks that stand out sharply from their surroundings, to mushrooms that seemingly spring up spontaneously overnight after a summer rain, to a whirlwind racing across the desert sands in ghostly attire. The rainbow, which inspires awe in most children at first exposure, surely stands pre-eminent among these manifestations of nature, and it is hardly surprising that preliterate peoples would conceive of it as a powerful spirit. Given its shape and coloration, it is also easy to see why in most places where snakes are found it was viewed as an enormous spirit snake that drinks water from the earth and spews it out to cause the rain, or that drinks the rain and makes it stop. These explanations drew upon a wider pool of beliefs about nature in which anything out of the ordinary was a manifestation of unseen spirit forces, and they did so in a way that gave consistent, satisfactory accounts of otherwise mysterious observations.

Whether this view of the world is one that originated once with the appearance of modern brains, and was passed down through countless generations until it finally yielded to scientific inquiry, or whether it was repeatedly reinvented in remarkably similar ways throughout human history will perhaps forever remain an unanswerable question. However, what does seem clear is that once a universal foraging lifestyle began to yield in favored areas to agriculture, and the subsequent, seemingly inevitable development of urbanization and literacy, the animistic hold on the human mind began to undergo a transformation. This transformation into a world governed by physical law did not happen instantly or uniformly in all domains of life. Indeed, many modern peoples who profess adherence to a major world religion that eschews the belief in nature spirits still cultivate folk beliefs that go under the general heading of 'superstitions'.

Once competition arose between explanations of natural phenomena based on physical forces rather than spirit powers the belief in the Rainbow Serpent began to suffer a gradual erosion. Rainbows were products of natural forces or of the will of a supreme deity, rather than spirit snakes that could fly to the sky, guard earthly waterholes or springs, and change size or shape in dramatic ways. But, like much that happens in such transformations, elements of the old way of thinking lingered on as independent beliefs. The rainbow was now a manifestation of physical law or divine intervention, but the serpent form that characterized it in the human mind for much of human history persisted as an independent creature with many or most of the traits that it had had as the Rainbow Serpent. In effect, the serpent idea that was now decoupled from the rainbow was what Tylor (1871) called a 'survival' in culture, that is, an element of belief or behavior that had originated in a culturally supportive context that changed, leaving it as a relic of an earlier conceptual system.

Tylor's theory of survivals has had a long history of both support and criticism (Stocking 1987, 1995). Like any idea that was once influential and then came under fire, it has undeniable merits, but in many cases was overplayed. However, certain widespread practices clearly support it. Why, in many cultures, does a sneeze evoke a wish for good health? The widespread traditional belief that the breath represents the life-force or soul implies that a sneeze is a moment of vulnerability, and that the one who sneezes should be offered support from those around him. This explanation is fully supported in cultures that still maintain a belief in the breath soul, but is not available in those that have lost it. Rather, in the latter expressions such as 'Bless you!', or 'Salud!' are now meaningless relics from an earlier conceptual system in which they had a serious function. They are what Tylor (1871) rightly called 'survivals'.

How can we tell that the dragon idea is a survival from an earlier stage in which it was the Rainbow Serpent? Dragons have many traits cross-culturally that appear arbitrary until they are seen as continuations of beliefs about the rainbow. Why do they fly? Why, in China and Mesoamerica, are they controllers of weather? Why do they guard springs, wells and the like? Why do they guard treasures? Why do they breathe fire? Why are they associated with major waterfalls such as Niagara, Iguassú and others across the planet? And why, in disparate cultural traditions, including the Rainbow Serpent complex of Aboriginal Australia, European alchemy, the Taoist metaphysics of China, and the plumed serpent complex of Mesoamerica, are they considered androgynous? These and other questions receive generally straightforward answers from the ethnology of the rainbow, something that would be totally unexpected if the dragon idea had no such history. It is time now to tell the story of how rainbows became dragons.

PART 1

Dragons



What, If Anything, Is a Dragon?

Most of us probably think we know what a dragon is, even if we've never seen one.¹ A dragon has a scaly, reptilian body, but one that is incongruously combined with features of mammals (horns, whiskers, mane), or in some cases, of birds (feathers). It is usually larger than a person, sometimes much larger, although there are notable exceptions. Dragons usually have two legs, but may have four. They have wings, so they can fly. They breathe fire, and guard treasures.

This brief description would likely satisfy most readers who lack the curiosity to inquire further, and it suffices as a common description of European dragons. But is it adequate as a description of all dragons? To someone steeped in the rich iconography of classical Chinese civilization, where dragons adorn almost every temple roof, are common subjects of paintings, and are stitched into the silk fabric of imperial robes, the European dragon sounds vaguely familiar, but it differs in a number of details from the one s/he knows.

First, the body of a Chinese dragon is typically far more sinuous than its European counterpart. One might characterize it as serpentine, or snake-like, as compared with the stocky, almost dinosaurian bodies of dragons in European art, where we see damsels in distress, and Christian knights rushing to their rescue, lance in hand, ready to slay the loathsome monster. Second, Chinese dragons almost always have four legs, while European dragons often do not. Third, they are portrayed with little, if any, indication of wings. Yet these wingless dragons fly with as much ease (or greater ease) than any of the winged dragons of Europe. In fact, they must, since Chinese dragons are universally characterized as controllers of the weather, which requires them to be in the sky among the clouds—something that goes almost completely unmentioned in descriptions of the dragons of European literature and folk tradition.

The latter point requires a bit of elaboration. European and Chinese dragons differ not only in their physical features, but also in their behavior, or in the attitudes that people have toward them. Even in Classical Greece, with few

1 Title inspired by Stephen Jay Gould's popular natural history essay, 'What, if anything, is a zebra?' (Gould 1983), which in turn was inspired by Albert E. Wood's 'What, if anything, is a rabbit?' (Wood 1957).

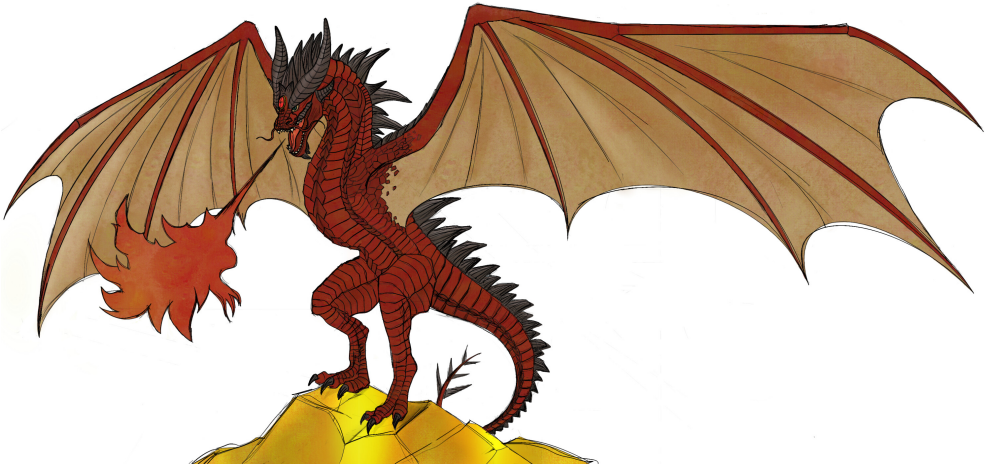


FIGURE 1 European dragon
ILLUSTRATION BY ORLYN ESQUIVEL

exceptions European dragons were regarded in a negative light. In later times they are clearly opposed to the cultural values represented by the likes of St. George, and are plausibly seen as representing the rejected belief systems of a pre-Christian past. Because they are seen as controllers of the weather, Chinese dragons are associated both with the positive and the negative aspects of rainfall, hence with fertility and with drought or flooding. In general, however, despite some ambivalence, they are auspicious creatures, not treated at all with the horror and rejection that pervades many medieval accounts of dragons in Europe. And, of course, the five-toed dragon became a symbol of the Chinese emperor, adding necessarily favorable features to its already basically positive image in connection with fertility. Europeans think of killing dragons as a noble sport, the common pastime of knights and saints, while to most Chinese this idea seems absurd, or as something deserving of punishment. Why would anyone destroy the source of the fertilizing rains that bring prosperity to the human community?

In short, European and Chinese dragons are not identical in imputed physical traits, in behavior, or in the attitudes surrounding them. What conclusion do we draw from this? Are there two partly overlapping, but separate categories of mythical creatures that just happen to share some striking traits despite the differences that distinguish them, both of which happen to be called 'dragons' in English? Or do we conclude that categories are inherently composed of variable members, and that category membership is determined by significant overlap of features rather than by identity?



FIGURE 2 Chinese dragon

ILLUSTRATION BY ORLYN ESQUIVEL

To the average reader this discussion may seem unnecessary. Many may say that it is *obvious* that European and Chinese dragons are the same type of creature, so there is no need to argue the point. However, the question then becomes ‘Where do we draw the line, and on what general principles do we justify where we draw it?’ A belief in ‘dragons’ has been reported from many other areas, and here the deviations from a common pattern may become more extreme than those seen so far, although many popular books on dragons open the door wide to all of these variants. A brief survey of dragon reports from other areas will serve to introduce the range of variation.

Since Islam has tended to expunge most earlier folk beliefs, little information can be obtained about dragons from modern Islamic societies of the Middle East. However, pre-Islamic depictions of creatures that are called ‘dragons’ appear in various sources. Drawings of the ‘dragon of the Ishtar Gate of Babylon’ dating from the sixth century B.C. have been reproduced by many writers (Ingersoll 1928:25, Hogarth and Cleary 1979:12, Newman 1979:111, Jones 2000:11, to cite a few). This is a horned, four-legged creature with a long tail that looks thoroughly mammalian except that its body is covered with scales, and it extrudes a forked tongue. It thus shares with both European and Chinese dragons the property of being chimerical (that is, composed of the parts of different animals), but instead of having a basically reptilian body with mammalian or avian embellishments, its body is mammalian and the embellishments reptilian.



FIGURE 3 Ancient Near Eastern dragon
ILLUSTRATION BY ORLYN ESQUIVEL

Similarly, the Babylonian creation epic depicts an Armageddon between the god Marduk (portrayed in human form), and his mother Tiamat, who is a four-legged non-human mammal with wings, body scales, horns and fangs (Hogarth and Cleary 1979:15). Tiamat is in charge of the release of waters from the sky, and so is reminiscent of the Chinese dragon's control of the weather. Notably, as will be seen in due course, Marduk wins the battle by attacking his monstrous mother, not with earthly weapons, but with thunderbolts.

Another variant of the dragon is attested on the Indian subcontinent. These creatures, called *nāgas*, are sometimes described as semidivine beings that are half human and half cobra. They thus differ from most other dragons in lacking horns, hair, feathers, or other features of non-human mammals or birds. However, their human part makes them—like all dragons—a fusion of a cold-blooded and a warm-blooded animal. A second feature of the Indian *nāga* that sets it apart from other dragons is that its serpent form specifically resembles the cobra, the most salient snake of this part of the world, sometimes being



FIGURE 4 Vedic Indian *nāga*
ILLUSTRATION BY ORLYN ESQUIVEL

described as a multi-headed cobra rather than a cobra with a human upper torso. Finally, the discussion of the Indian *nāga* as a dragon is complicated by its historical intersection with Buddhism, which may have played a role in introducing some Indian ideas about the dragon into China. Despite being snake-like beings, the *nāgas* clearly had human behavioral traits, and are described in classical Indian accounts as being among the worshippers of Buddha (de Visser 1913:1). Allen and Griffiths (1979:41) further note that

The Indian *Nāgas*, although serpentine, were sufficiently dragon-like to interbreed, at least mythologically, with the Chinese, and later the Japanese dragons The *nāgas* were water-deities. They were sometimes associated with sacred pools or wells, in which case they were presumed to live underwater at the base of an adjacent tree; and were sometimes sea-gods. Their palaces were opulent and beautiful and often took the

form of whole cities, encrusted with jewels, there they occasionally entertained men who managed to find their way there.

This association with pools or wells is one that will come back again repeatedly in looking at both rainbow serpents and dragons around the world, for when they aren't in the sky as rainbows, these mysterious creatures lurk in deep pools, lakes or rivers, and somewhat surprisingly, they often guard treasures.

Even this brief discussion shows enough differences between the European dragon, the dragon of Babylon, the Indian *nāgas* and the Chinese dragon to prompt some 'splitters' to divide them into several distinct categories. However, there are also enough similarities that are unlikely to be purely arbitrary that most writers on the topic have united them into a single 'dragon' category. As Ingersoll (1928:26–27) put it nearly a century ago:

This wonder-beast ranges from Western Europe to the Far East of Asia, and in the view of a few extremists, even across the Pacific to America. Although in the different localities a great number of most varied ingredients enter into its composition, in most places where the dragon occurs the substratum of its anatomy consists of a serpent or a crocodile, usually with the scales of a fish for covering, and the feet and wings, and sometimes also the head, of an eagle, falcon, or hawk, and the forelimbs and sometimes the head of a lion. An association of anatomical features of so unnatural and arbitrary a nature can only mean that all dragons are the progeny of the same ultimate ancestors.

Ingersoll's statement that the dragon idea has a single origin, whether through shared history or common psychology (he doesn't distinguish the two) is perceptive. However, his remark about 'extremists' shows that he himself regarded the dragon as an essentially Eurasian phenomenon, reaching from the Atlantic to the Pacific in varied forms, but not extending beyond this continental land-mass. However, most other writers do not seem to share this restrictive view. Hogarth and Cleary (1979:200–201) briefly note reports of dragons in North America, various parts of Africa, and even New Zealand, Huxley (1979:8–10, 22, 91) repeatedly refers to the Mesoamerican plumed serpent as a dragon, and G. Elliot Smith (1919) famously included both the North American horned water serpent and the Mesoamerican plumed serpent as types of dragons in connection with his radical diffusionist theory that the dragon idea spread around the planet from Egypt.

Beliefs about the horned water serpent were traditionally ubiquitous in aboriginal North America. Briefly, this creature was viewed as a large snake with



FIGURE 5 North American horned water serpent
ILLUSTRATION BY ORLYN ESQUIVEL

horns, which are sometimes described as ‘multicolored’, as among the Creek Indians from the American Southeast. Unlike Eurasian dragons the horned water serpent is never portrayed as flying, but like them it is a jealous guardian of springs, lakes or other water sources. It is thus purely terrestrial, but is always aquatic, and—like all dragons of Eurasia—has a body that combines reptilian and mammalian features.



FIGURE 6 Mesoamerican plumed serpent
ILLUSTRATION BY ORLYN ESQUIVEL

Unlike the horned water serpent of North America, but like Eurasian dragons, the plumed serpent of Mesoamerica is said to fly. However, unlike each of the above, it normally lacks horns. And, like the Chinese dragon, but unlike the European dragon or horned water serpent, it is a controller of the rains (Wisdom 1974:392–394, Huxley 1979:9–10). In the American Southwest the two creatures seem to overlap, as among the Zuni Indians of western New Mexico, where it is said that “In the sea and underground waters dwells the water serpent, conceived of as a plumed or horned snake. This monster can bring rain, and may impregnate bathing women” (Hultkrantz 1987:97).

Here, the weather-controlling function reminiscent of the Chinese dragon appears again, along with the body cover typical of the Mesoamerican plumed serpent, and the horns characteristic of the North American horned water serpent.

How can we unite all of these creatures? Or should we keep them apart? Despite local variations in details of body form or behavior, there is clearly a common thread that runs through this population of fabulous beasts. All Eurasian dragons, the North American horned water serpent, and the Mesoamerican plumed serpent share the property of combining reptilian physical traits with those of mammals, birds, or both. Everywhere except in the ancient Near East the basic body form is that of a reptile, with mammalian

or avian embellishments; in those limited examples we have from the Babylonian creation epic and early visual portrayals from Mesopotamia, the basic body form is instead that of a mammal, with reptilian embellishments. Huxley (1979:10) has perhaps put it best: "This combination of a hot-blooded and a cold-blooded animal aptly sums up the dragon's compound nature of fire and water."

There is one apparent exception to this statement that all dragons and only dragons are chimera that combine the body parts of warm-blooded and cold-blooded animals. This is the Scottish *nixie*, or 'water horse', a fabulous creature that has other similarities to the dragon, but has no reptilian component in its physical make-up. However, as will be seen in due course, the *nixie* can be included in the dragon category both because it guards terrestrial water sources and preys on young women like several other dragons, and also because its connections with a reptilian body are indirectly attested through the dragon-horse of China and Japan, which have the physical characteristics of both dragons and horses.

It is surprising how perceptive various writers have been in identifying the contradictory nature of dragons, without however seeming to understand how those contradictions could have arisen from observations of the natural world. As Huxley says, the dragon's 'compound nature', mingling the visual attributes of warm-blooded and cold-blooded animals, can be reduced to the statement that the dragon is, in some sense, a blend of "fire and water." But how can a mythical animal that breathes fire and controls rainfall in widely separated parts of the earth be made of fire and water, which are mutually incompatible? Doesn't water extinguish fire? And doesn't fire cause water to boil? This would be puzzling enough if such a belief were restricted to one geographical region, where it might be assumed to be an arbitrary invention of a particular culture. But, as many writers have pointed out, the dragon idea is universal in the sense that its geographical distribution cannot plausibly be explained by common origin among demonstrably related peoples, or by borrowing. We are therefore left to conclude either that it is a creation of the human mind that has mysteriously persisted in many of the world's cultures for tens of thousands of years, or that *something* has motivated the invention of this creature again and again throughout human history.

To answer the question posed at the beginning of this chapter, then, a *minimal* definition of what a dragon is would be 'a mythical creature compounded of bodily elements from cold-blooded and warm-blooded animals'. This suffices for European, ancient Near Eastern, Chinese, North American and Mesoamerican creatures that have been called 'dragons' in various publications over the past century and more. Other imaginary creatures are also

chimerical in combining body parts of different animals, as the unicorn. However, in this case both the equine body and the horn are traits of mammals. What cannot be stressed enough is that dragons differ from other chimerical creatures in showing a fusion of body parts from both cold-blooded and warm-blooded models in nature. No other creature shows this peculiarity of form, which can be seen as the physical embodiment of a contradictory nature.

This unique characteristic provides us with a minimal definition of what makes a dragon a dragon, but surely, we would like to add more detail to it. At first it might seem that the most straightforward way to do this would be to draw up a list of traits that have been reported for dragons anywhere in the world. To keep the model maximally simple in the interest of clarity let's consider only European and Chinese dragons. We start with the skeletal framework already established, namely that the creature we are calling a 'dragon' combines reptilian with mammalian or avian traits. What can we add to this? Among their better-known traits, European dragons 1. fly, 2. breathe fire, 3. guard treasures, 4. prey on young women, etc. Similarly, Chinese dragons 1. fly, 2. control the weather, 3. often carry a pearl in their mouths, 4. are fond of eating roasted swallows, etc. Based on this preliminary comparison we can compile a list of traits as follows:

1. the dragon combines reptilian with mammalian or avian traits
2. it flies
3. it breathes fire
4. it guards treasure
5. it preys on young women
6. it controls the weather
7. it often carries a pearl in its mouth
8. it is fond of eating roasted swallows

A moment's reflection will show that something should trouble us in thinking of using this list of traits or any other list like it to define the nature of dragons. Just because a trait is attributed to a dragon in a single culture does not imply that it is in any way intrinsic to the nature of a dragon. Points 7 and 8 make this particularly clear. These traits have never been reported outside Chinese culture, or the larger 'sinosphere' (the area in which Chinese cultural influence was historically dominant, as Vietnam, Korea or Japan). Why then should they be considered traits of dragons in general rather than as features of dragons that were independently invented in China? Based only on this preliminary (and deliberately simplified) inventory, the only traits that can safely be attributed to dragons are 1 and 2: they are mythical creatures that combine features of cold-blooded and warm-blooded animals, and they can fly.

While this gets us further than simply relying on point 1 as the defining feature of dragons, we can surely add further detail. Prodding deeper we find other points of agreement that are less apparent on the surface. European dragons breathe fire in a very conspicuous way, something that is much less commonly seen with Chinese dragons. Nonetheless the same trait is reported in the Chinese classics, where we are told that dragons breathe fire, but not fire of the ordinary kind. As de Visser (1913:67) expresses it, "Dragon fire and human fire are opposite. If dragon fire comes into contact with wetness it flames, and if it meets water it burns. If one drives it away by means of fire, it stops burning and its flames are extinguished."

Similarly, European dragons are well-known for guarding treasures, especially hoards of gold. Familiar examples are the fire-breathing dragon that guarded the golden fleece sought by Jason and the argonauts, and the later dragon *Fafnir*, who guarded a golden treasure trove in the medieval Icelandic *Völsunga saga* and its Middle High German equivalent, the *Nibelungenlied*. Although Chinese dragons are not commonly portrayed in this capacity, Ingersoll (1928:88) points out that in Korea a terrestrial dragon was formerly thought to be the protector of mines and gems "and the intense regard for it is perhaps the chief reason why mines have been so little worked in Chosen, the people superstitiously fearing that disasters may follow disturbance of the metals which they believe are peculiarly the treasure of the jealous earth-spirit." Whether this is a native Korean belief, or a product of cultural diffusion from China remains unclear, but in any case, the much-debated pearl that Chinese dragons carry in their mouths may well be equivalent to a treasure in European accounts of the dragon (Allen and Griffiths 1979:39).

Without looking further we can perhaps stop here and conclude tentatively that dragons:

1. combine reptilian with mammalian or avian traits
2. fly with or without wings
3. breathe fire
4. guard treasures

Points 5 and 6 from our longer list will eventually be justified as intrinsic traits of dragons as well, but to show this it will be necessary to expand our comparison to a wider area.

Although it may not be immediately clear, there is an important point of scientific method that governs this process of identifying the traits that count as *intrinsic* traits of dragons (or any other phenomenon that involves comparative data). Traits that are unique to one area must be considered independent inventions in that area until further evidence shows that they are not, while shared traits that are widely separated in space or time or

both, as the four cited above, must be attributed to 1) common origin in one ethnolinguistic group that passed them on to its descendants, 2) diffusion, or borrowing from one unrelated group into another, or 3) parallel development. Intellectually, the most challenging of these options for many has been the last: why would the same seemingly arbitrary ideas arise repeatedly in different parts of the world? Evolutionary biologists refer to this phenomenon as 'convergence'. Examples include the evolution of various kinds of anteaters (aardvark, armadillo, tamanduá, echidna) from very different ancestral animals. In biology convergence is explained by parallel adaptations to a similar environment, but what could motivate convergence in belief systems?

As will be seen in greater detail below, it was this problem that led G. Elliot Smith (1919) to his theory that the dragon was an invention of the Egyptian priesthood that was carried around the planet as the Egyptians supposedly crossed continents and oceans, spreading their religious ideas as they went. This approach, which assumes transcontinental or transoceanic contact influences, is generally known as radical diffusionism. We will look at the merits of radical diffusionism as an explanation for the widely-shared traits of the dragon in a later chapter. However, if this alternative is eliminated as a plausible explanation for the distribution of draconic traits, and if common origin is similarly eliminated (a relatively easy matter in cases such as the European and Chinese dragons, given the clear biological and linguistic differences of the populations concerned), we are left with what cultural anthropologists traditionally call 'independent invention'.

In some cases independent invention is not a vexing issue. That the bow may have been invented independently in many places from cultures that previously used only spears does not trouble most researchers: clever individuals, wherever they were, recognized at some point that a smaller version of the spear could be propelled to greater lengths if released from a tensed wooden lath. Similarly, it is not surprising that the idea of a supreme being has arisen again and again in human societies, since this serves to answer such basic questions as 'where did we and the world around us come from?' But why would an idea like that of the dragon emerge repeatedly in pre-Christian Europe, the ancient Near East, India, China, North America and Mesoamerica, to mention only some of the areas in which it is found, without any convincing evidence that it was spread by contact? Needless to say, this question has generated extensive speculation over the past 130 years, spawning theories that have varied from radical diffusionism, to psychological archetypes imprinted on the pre-human mind when our remote mammalian ancestors were simple arboreal primates.

It is important that we treat all theories seriously, whether we find them convincing or not. What will guide our decisions about the value of theories is their ability to explain observations in a straightforward manner—nothing more and nothing less. The observations that must be explained are those that, like 1–4 above, describe traits of dragons that are shared across widely separated cultures, and hence require a foundation rooted in perceptions of the natural world. In other words, there must be a *reason* why dragons in geographically distant areas combine reptilian with mammalian or avian physical features, fly, breathe fire and guard treasures, among many other traits yet to be discussed. Fanciful as these traits may seem at first, if they are widely shared (as these are) they must be motivated by observations that are available to all human beings regardless of location, language, or culture. Stated differently, they cannot be products of freewheeling psychology or imagination, but must derive from some aspect of a universal human response to the observable world.

We have now reached our first plateau—a tentative definition of what a dragon is. Every other conclusion reached from this point on must be based on the same type of logic, namely are widely-shared features of dragons most likely to have arisen from 1. a single cultural community that spread out over the world, carrying the dragon idea with it, 2. the borrowing of ideas about dragons from one community to another across continents until they encircled the planet, or 3. separate, parallel developments motivated by the similar reactions of human beings everywhere to features of the natural environment that they sought to explain without the benefit of science?

The last thing we need to do in this chapter is perhaps to provide a preliminary indication of how many dragon traits must be regarded as inherent because they are found in at least two widely separated regions. The most convenient way to do this is in a table. This is done below for six geographical regions that can be considered the ‘core’ areas from which dragons have been reported, although as will be seen, chimerical serpents that are indistinguishable from features of the natural environment are also known in tribal societies elsewhere, and when these are considered, further traits will be proposed that are found in just one of the core areas below plus a non-core area. Note that EUR = Europe, ANE = the ancient Near East, SA = South Asia, CEA = Central and East Asia, NAM = North America and Mexico, and CSA = Central and South America:²

Some of these traits are widespread, as 1) ‘giver/withholder of rain’, 2) ‘guardian of springs or other bodies of water’, 3) ‘lives in caves’, 4) ‘can fly’, 5)

² Adapted and expanded from Blust (2000a).

TABLE 1 Preliminary geographical distribution of draconic traits

	EUR	ANE	SA	CEA	NAM	CSA
1)	?	+	+	+	+	+
2)	+	+	+	+	+	
3)	+	+	+	+	+	
4)	+	+	+	+	+	
5)	+	+	+	+	+	+
6)	+	+	+	+	+	
7)	+?	+?	+	+		
8)	+	+				
9)	+	+	+	+	+	
10)	+	+	+			
11)	+	+	+	+	+	
12)	+	+	+	+?	+?	
13)	+	+	+			
14)	+	+				
15)	+	+				
16)	+	+	+	+		
17)	+	+				
18)	+	+	+			
19)	+	+	+	+?		
20)	+	+	+	+		
21)	+	+	+			
22)	+	+	+			
23)	+	+	+	+	+	
24)	+					
25)	+	+	+			
26)	+	+	+	+	+	+
27)	+	+				

- 1) = is a giver/withholder of rain
- 2) = is a guardian of springs or other bodies of water
- 3) = lives in caves
- 4) = can fly
- 5) = has scales
- 6) = has horns
- 7) = has hair (mane, whiskers, etc.)
- 8) = has feathers

- 9) = is opposed to thunder/lightning or the sun
 - 10) = is bisexual/androgynous
 - 11) = is colorful/red
 - 12) = guards a treasure
 - 13) = has a jewel/other valuable on its head
 - 14) = lives in waterfalls
 - 15) = encircles the world
 - 16) = terrifies women/can impregnate them with demonic child
 - 17) = is offended by menstruation
 - 18) = is connected with hooved mammals
 - 19) = has fiery breath
 - 20) = has fetid or toxic breath
 - 21) = causes earthquakes
 - 22) = causes whirlwinds and storms
 - 23) = causes floods
 - 24) = is a sign of war
 - 25) = causes sickness, disease or trouble
 - 26) = has human traits
 - 27) = can be personified
-

'has scales', 6) 'has horns', 9) 'is opposed to thunder/lightning or the sun', 11) 'is colorful/red', 12) 'guards a treasure', 23) 'causes floods', and 26) 'has human traits', all of which are found in at least five of the six regions considered here. Other traits are rare (or perhaps under-reported), as 8) 'has feathers', reported only in the western part of North America and in Mesoamerica, 17) 'is offended by menstruation', reported in the areas covered here only in the Americas (where it is widespread, although it also occurs in other areas that we will examine later), 24) 'is a sign of war', which is unique to Europe (but which we will find in other locations in Chapter 7), and 27) 'can be personified', which is found only in Europe and South Asia, among the areas considered here. As will be seen in later sections, there is another fundamental division within this list, namely that traits 1–15 are readily, or at least plausibly, explainable by reference to features of the natural environment, while traits 16–27 are not.

This is already a rather bewildering variety of traits that need to be reconciled with one another, which is perhaps why many general books on the dragon mention only a few of them and ignore the others. No dragon has ever been reported with all of these traits, or even a majority of them. Rather, the need to posit them as inherent features of dragons is required by their

appearance in widely-separated geographical areas where their presence cannot plausibly be a result of borrowing or common origin in a single ancestral community.

Before concluding this chapter it is important to stress that although my narrow aim here is to define what is or is not a dragon, my broader aim is to define how *any* category is formed and justified, and to better understand the arguments that follow, it will be worthwhile to take a moment to consider this point. Categories, by their nature, are collections of entities that vary to differing degrees. The Austrian philosopher and logician Ludwig Wittgenstein (1889–1951) is remembered, among other things, for his concept of ‘family resemblance’, which holds that members of a category may be connected by overlapping similarities, where no feature is common to all of them (Wittgenstein 1953). He models this in several ways, one of which is the following:

Item 1 A B C D

Item 2 B C D E

Item 3 C D E F

Item 4 D E F G

Item 5 E F G H

In Wittgenstein’s terms, then, it is clear that items 1 and 5 are connected through a linking relationship, even though they share no similarity that is revealed by direct comparison. This type of connection was used by the linguist Joseph Greenberg (1957:41) to argue that the demonstration of a historical relationship between any two languages may face shortcomings that can be overcome by including a larger number of units of comparison. Reduced to its minimal expression Greenberg argued that ‘If A is related to B, and B is related to C, then A is related to C’, even where evidence of relationship has been entirely lost through change. In this way he argued that both the Hadza and Sandawe languages of Tanzania, which were traditionally treated as isolates (languages having no known relatives) are each related to the Khoisan (‘click’) languages of southern Africa, and that they are therefore related to one another. Subsequent linguistic scholarship has deconstructed the ‘Khoisan family’ into several language families, and has returned the classification of Hadza to its original position as a language isolate, but none of this affects the logical integrity of the argument that ‘If A is related to B, and B is related to C, then A is related to C’, as the same formula can be applied in cases where it may turn out to be true.

Ruhlen (1987:118) calls this linking of category members by overlapping shared properties a relationship of ‘transitivity’ (if item 1 is related to item 2, 2 to 3, 3 to 4 and 4 to 5, then item 1 must be related to item 5, despite the absence of any common property). In general, what is important in establishing a cate-

gory is to find a common thread that unites all its members by some distinctive feature that sets them apart from all non-members, regardless of how different they are in other respects. Few people would have a problem including sparrows, robins, crows and eagles in the category 'bird', but the definition of 'bird' becomes more difficult when penguins, kiwis and cassowaries are added to the mix. Nonetheless, all and only birds have feathers. For the most part all dragons can be defined in this way: they are mythological creatures that combine the body parts of cold-blooded reptiles with those of warm-blooded mammals, or less commonly, birds, and no other creature, real or mythological, shares this property. Nonetheless there are some 'outlier' dragons, such as the Scottish *nixie* or 'water horse', and I will appeal to Wittgenstein's concept of 'family resemblance', or the principle of transitivity, to show that they belong to the category 'dragon'. Because of its fundamental importance, this question of category membership will also be discussed briefly in later sections, in particular at the end of Chapter 5, and again in the concluding chapter of the book.

For now it is perhaps enough to say that the patchwork pattern shown in Table 1, which includes overlapping shared traits extending from Europe through South and East Asia to the Americas, suggests that the idea of the dragon is either an extremely ancient inheritance, or that it arose repeatedly in different areas through observation of common features of the natural environment and similar modes of thinking about man's relationship to it. Before examining the origin of the dragon idea, however, it will be worthwhile to first survey the wide range of theories that have been proposed to account for the global distribution of this belief, and then to document in at least minimal detail some of the traits that are simply checked off in the above distribution matrix, which no existing theory has accounted for, or even addressed.

Why Dragons? Theories from A To Z

Theories of why dragons exist in the cultural consciousness of many peoples, ranging from tribal nomads to sophisticated urbanites, are nearly as numerous and confusing as the range of traits that have been attributed to dragons in widely separated regions. This chapter offers a critical survey of the range of ideas that have been proposed to account for the global presence of dragons.

It is clear that dragons have mystified and befuddled many writers on the topic, some of whom would rather, so to speak, just enjoy the ride and not care how they got there. Allen and Griffiths (1979:6), for example, say that

The dragon has immense power as a symbol and yet remains nebulous in form and meaning. Compiling a book on dragons is rather like taking on one of the impossible tasks of epic legend; pursuing him through libraries and museums seems to parallel more ancient pursuits across deserts and up mountains! It is almost as if he retains his potency through preserving his privacy. Get in close and he floats away elsewhere, look directly at him and he shifts his shape as clouds or mist shift theirs. Eventually it becomes almost possible to believe that the dragon deeply resents this attempt at a form of capture and that simple evasion may turn into some kind of vengeance.

This is one approach to the problem of explaining the origin of the dragon idea, namely to suggest that it is beyond all means of solution, as is reflected in the quote from Borges (1978) on the title page of this book. I will argue that this defeatism is premature, but will also show that virtually all efforts to explain the origin of dragons have been flawed by a failure to account in a plausible way for any of the globally-distributed traits in Table 1, which hold the key to its genealogy.

In the hope of introducing some order into a complex and disparate literature, I have segregated dragon theories into several types: 1. naturalistic theories, or theories that appeal to real organisms in the natural world, 2. symbolic theories, or the dragon as a reflection of nature or psychology, 3. neo-Lamarckian theories, or theories of the dragon as biological memory, 4. diffusionist theories, or theories of the dragon as a unique invention that spread by contact, 5. other theories.

1 Naturalistic Theories of the Dragon: Cryptozoology

Cryptozoology is a term invented to describe the study of animals that are believed by some to exist, but are unknown to science, such as Bigfoot or the Loch Ness monster. Until someone produces physical evidence of a dragon, we have little choice but to apply it to this ‘animal’ as well. Nonetheless, purported eyewitness reports of dragons (often somewhat confusingly called ‘worms’) occurred regularly in Europe throughout the Middle Ages, and in some other parts of the world, such as China, until much more recently. For Britain alone Newman (1979:118–198) reports dozens of firsthand sightings, distinguished by the name of the location where they allegedly occurred: The Linton Worm (in Roxburghshire), The Loathly Worm (in Northumberland), The Lambton Worm (in Durham), The Pollard Worm (in Yorkshire), The Mordiford Dragon (in Herefordshire), etc.

In describing two of these—the Bures Dragon, and the Flying Serpent of Henham, Newman (1979:190) says “Bures, a town on the Essex-Suffolk border, once experienced harassment by a dragon. Documentary evidence of this particular event is afforded by a chronicle written by John de Hokelowe, a monk living at the period, who transcribed an account of its appearance and subsequent retreat in 1405.” Similarly, with regard to The Flying Serpent of Henham, Essex, he relates that in 1354, during the reign of King Edward III, a two-headed dragon with wings like a bat and each face that of a woman with different attire, was seen near Chipping Norton in Oxfordshire. The document which recorded this event is a pamphlet on the title page of which “are printed a list of names of people who attest to the truth of the matter set down. They include Richard Jackson, the churchwarden; Thomas Presland, the village constable; and John Knight, the overseer for the poor” (Newman 1979:193–194).

In both cases, then, people with a social position and personal reputations at stake came forth to proclaim the truth of the sighting and to mark its trustworthiness with their good names. And they were not alone. As noted by Hogarth and Cleary (1979:113)

Even the most truthful observer could contribute to the popular belief in dragons. Marco Polo, traveling in thirteenth century Caragian, which is now the Chinese province of Yunnan, wrote of ferocious “serpents” ten paces in length and as thick as a cask, with two squat forelegs near the head, claws like those of a lion, enormous heads, eyes “bigger than loaves” and a mouth that could swallow a man in one gulp.

Hogarth and Cleary speculate that these were crocodiles. It is, of course, hard to know now what motivated people to concoct such fabrications, but the end

result was that dragons were widely believed to be just another type of animal, although one that was very hard to classify in terms of its relationship to others. Certainly, by the first half of the nineteenth century, if not earlier, this indiscriminate commingling of real and fanciful animals had ceased to influence the scientific community, but it still held sway with popular writers.

1.1 *Charles Gould and the Exaggerations of Travellers' Tales*

One of these popular writers was Charles Gould, who wrote what appears to be the first book devoted to the question why a belief in dragons exists in many parts of the world. Given the long tradition of dragon 'sightings' in his native country, Gould was perhaps predisposed to imagine that, while the good citizens of medieval England did not create outright falsehoods, they or their countrymen who travelled abroad may have seen something real that they misinterpreted as a dragon. Since Europe has few creatures that qualify as monsters, Gould (1886, Chs. 7–9) argued that when European adventurers began to visit other regions of the world during the Age of Exploration, they encountered unfamiliar creatures, some of which were quite menacing. In visiting Egypt or any part of sub-Saharan Africa, for example, they would have seen crocodiles, or very large snakes, and the tales that spread from person to person might well have become magnified in the telling. Gould reasoned that there were enough of these kinds of events to ensure that Europeans had plenty of raw material from the natural world to construct a fanciful world of creatures derived from them. In this way the idea of dragons arose from the repetition and exaggerations of travellers' tales.

The first problem with this proposed explanation is that reports of dragons in England, not to mention dragons in classical mythology, preceded the Age of Exploration by many centuries. Moreover, the accounts of English dragons could hardly be misinterpretations of sightings of real creatures if these creatures are not found in the British Isles. It is often hard to tell where Gould stands on particular issues, as he constantly alternates between apparent gullibility and skepticism. In one breath he tells us (170) "It is a well-known fact that during the Punic War at the river Bagrada[s], a serpent one hundred and twenty feet in length was taken by the Roman army under Regulus," and he then tries to rein in this improbable statement by noting that the largest snakes known today are less than 40 feet in length. Nonetheless, he concludes shortly afterwards that

The explanations of these legends attempted by mythologists, based on the supposition that the dragons which are their subjects are simply symbolic of natural phenomena, are ingenious, and perhaps in many

instances sufficient, but do not affect, as I have before remarked, the primitive and conserved belief in their previous existence as a reality.

In passages such as this he not only supports the belief that dragons arose from the observation of real reptiles, but he implies that these reptiles may have been different from anything known today—in other words, that dragons may have been actual creatures matching their counterparts in mythology rather than ‘mythical’ monsters, and that the reason no one has produced concrete evidence of them is because they have everywhere become extinct. Much the same mentality is apparent in his description of the Chinese dragon (212):

We now approach the consideration of a country in which the belief in the existence of the dragon is thoroughly woven into the life of the whole nation. Yet at the same time it has developed into such a medley of mythology and superstition as to materially strengthen our conviction of the reality of the basis upon which the belief has been founded, though it involves us in a mass of intricate perplexities in connection with the determination of its actual period of existence.

And finally, in a passage that leaves no doubt he was convinced that dragons are real biological organisms that inspired the widespread traditional belief in them, he notes with respect to the Chinese dragon (259):

The idea of its fondness for swallows, and power of attracting them, mentioned in some traditions, may not impossibly be derived from these birds hawking round and through its open jaws in the pursuit of the flies attracted by the viscid humours of its mouth. We know that at the present day a bird, the trochilus of the ancients, freely enters the open mouth of the crocodile, and rids it of the parasites affecting its teeth and jaws.

At the same time he expressed this belief, Gould (200) dismissed the possibility that dragons could be “symbolic of natural phenomena.” How could something so obviously physical be a product of people observing the rain or clouds? We will return to this question in a subsequent chapter, since the issue is not, and never has been, whether the dragon idea arose from the observation of rain and clouds, but whether it could have arisen from animistic conceptions of the rainbow that were retained after the rainbow came to be understood in a different light.

Gould’s is one of the simplest types of explanations for why the belief in dragons is ubiquitous, namely that they are derived from living prototypes, or

from unknown animals that no longer exist. However, this leaves many basic questions unanswered. Why, for example, do dragons combine reptilian traits with traits of mammals or birds? Why do they fly? (Gould refers again to travellers' tales of fanciful winged snakes). Why do they breathe fire or guard a treasure? And, to anticipate an association that will be explored in greater detail in the next chapter, why are they associated with waterfalls around the planet?

Gould's naturalistic explanations also tend to be Eurocentric, even though he recognized a belief in dragons in China, Egypt, Ethiopia and India. While European travellers may well have sent back reports of exotic reptiles that became enlarged to dragons in the retelling, it is hard to argue the same thing for China. First, apart from monks making pilgrimages to India after the introduction of Buddhism, China had no tradition of visiting exotic countries from which they might have carried back reports of strange animals they encountered. When a national exploration policy was briefly adopted during the Ming Dynasty, under the leadership of the eunuch admiral Zheng He (1371–1433), the emperor of China sent a series of seven exploratory fleets as far as the coast of east Africa for purposes of trade and the quest for exotic substances that might promote longevity, but this foray into the unknown did not result in the kinds of fantastic travellers' tales so familiar from the stories of European explorers, in part because they were largely conducted over water. Second, whereas to Europeans dragons were 'monsters' to be slain, this was not the case for most Chinese, who generally revered them as beneficent creatures necessary to fertility and harmony. Finally, if the Chinese dragon was a product of encountering real biological organisms, how could it be a controller of the weather? What living animal could possibly serve as a model for such a creature?

Despite his failure to answer (or even raise) any of the questions about well-known traits of dragons, such as their ability to fly, or to control the weather, and despite his use of 'mythical' in the title of his book, Gould (1886:201) pointed out with some satisfaction that dragons were still included in European works on natural history until a little before the renowned French zoologist Georges Cuvier (1769–1832) established the sciences of comparative anatomy and paleontology and provided a comprehensive classification of all animal species. However, just because science has advanced does not necessarily mean that the popular demand for evidence has.

I once gave a public lecture on the origin of dragons, and during the question period an old friend insisted that dragons must have originated from encounters with crocodilians. When I asked him why they were associated with waterfalls he replied without hesitation 'Crocodiles live in water!'. This kind of reply unfortunately typifies the looseness of thinking that has characterized so much research on the origin of dragons. Yes, crocodiles live in water, but this is nor-

mally in sluggish rivers, or in saline estuaries, not in association with waterfalls, particularly in view of the fact that dragons are sometimes said to live in the *spray* of the falls. Water is water, but it is a long way from the comparatively placid rivers in which crocodiles or their close kin tend to congregate, to the crashing cataract of a waterfall, together with the 'reverse rain' that it produces from breaking on the rocks below and sending spume back into the surrounding atmosphere.

To summarize, Gould's proposal for why the dragon idea is found in widely separated and very distinct cultures was the first in a series of claims that continues to be made to this day in defense of the value of cryptozoology, or the search for creatures whose existence has been inferred from myth and legend, but has not stood up to scientific scrutiny.

1.2 *Prehistoric Survivals*

Under the category 'prehistoric survivals' it will be convenient to include claimed evidence for what are assumed by their adherents to be Mesozoic reptiles that have survived into modern times. There are undoubtedly more of these than I indicate here, but my aim is to highlight at least one from Europe, in this case Scotland, and another from North America, where the horned water serpent myth is omnipresent.

1.3 *The Loch Ness Monster*

The Loch Ness monster needs no introduction. If it is a biological organism, as some have claimed, it raises the prospect that some survivals from the age of dinosaurs have coexisted with humans throughout the period of hominid development, and that a physical model for the dragon might well exist in the natural world. Some have tried to connect it with Scottish legends of the kelpie or water-horse, a creature that can assume human form. This seems far from the typical image of a dragon, although it will be seen at a later point that although most dragons are blended of a reptilian body with cat-like claws, some have hooves or even partially human torsos.

Needless to say, there have been numerous attempts to prove that a creature like one of the ancient aquatic plesiosaurs that lived at the time of the dinosaurs lies behind the stories of the Loch Ness monster. Exciting and potentially earthshaking as these efforts may be, no replicable evidence of such an animal has ever been uncovered. If Loch Ness were found in North America, 'Nessie' could easily be discounted as an extreme expression of the ubiquitous horned water serpent in the mythology of Native Americans. However, without such a supporting mythic tradition in Scotland, it simply remains an anomaly.

1.4 *The Ogopogo of Lake Okanagan and Similar Creatures in North America*

Lake Okanagan in British Columbia has long been regarded as the home of a large unidentified aquatic animal not unlike the better-known Loch Ness monster—that is, a surviving mosasaur, plesiosaur, or elasmosaurus from the Mesozoic era. A number of reported sightings have been made, but, as with the monster of Loch Ness, they all resolve themselves into something much less newsworthy when they are studied closely. There is no need to dwell on this ‘dragon’ for long, as there is no confirmation that it exists, and by all indications it is simply a highly publicized example of the horned water serpent belief that is found throughout aboriginal North America.

Essentially identical is the so-called ‘monster’ of Lake Champlain (known to its aficionados as ‘Champ’), which has also been the subject of reported sightings, including sightings by experienced fishermen who claim to have observed it from above as it swam below the surface. However, as with the Loch Ness monster and the Ogopogo of Lake Okanagan, there have been no undocored photographs or other types of objective evidence that might remove the taint of skepticism that surrounds the claims made for such reputed creatures.

1.5 *Primitive Palaeontologists?*

The last type of dragon theory that can comfortably be called ‘naturalistic’ is not associated with any named individual, but is occasionally mentioned in general books on dragons. This is the claim that humans got the idea of dragons by finding dinosaur bones and somehow visualized the kind of creature they came from. This idea has been expressed as recently as the past quarter century, as seen in the following passage:

Like other creatures, both mythical and real, the dragon has evolved. The giant saurian—the whale-sized fish-lizards, the fifty-foot tyrannosaurs and the tank-like dinosaurs—disappeared from the face of the earth millions of years before man appeared, but it is possible that their fossils and remains inspired the earliest stories about dragons (Phillips 1995:630).

The anthropologist David Jones (2000), whose own ideas will be examined below, dismisses this claim by raising the reasonable question, “How can one recognize something as a dragon unless one already knows what a dragon is?”.

The reason that such claims have been made at all probably depends in large part on the Chinese tradition of using ‘dragon bones’ for medical cures.

The term ‘dragon bones’ is not to be taken literally, since Chinese herbalists have traditionally used any excavated bones to pulverize and include in medicinal concoctions: they were all ‘dragon bones’ regardless of the kind of animal they came from, because this naming convention gave them an imaginary potency they would not otherwise have. No doubt, when Europeans heard about ‘dragon bones’ in Chinese medicine, some of them assumed that the bones sold as such in apothecary shops actually were from extinct giant reptiles. However, as Jones correctly points out, this is fanciful. The reconstruction of dinosaur skeletons (hence of body form) only became possible with the rise of paleontology in the nineteenth century. Prior to this, to the untrained observer a bone was simply a bone, and the kind of animal it came from, or its proper position in the body, would have been a matter of sheer guesswork which could hardly be expected to lead to a visual representation of a dragon, let alone a dragon that could fly, control the weather, breathe fire, or guard springs, among many other things.

2 Symbolic Theories of the Dragon

2.1 *The Dragon as a Weather Phenomenon*

Another proposal for where the dragon idea originated is also mentioned in general treatments of the subject, but normally without a specific source. This is that dragons are symbolic of the shifting shapes of clouds in a stormy sky. The Chinese dragon is often shown in this context, twisting its body about among the rain clouds. In most accounts the dragon is said to *control* these features of the weather, but in some variants it is actually derived from them.

With specific reference to the slaying of dragons, Evans (1987:36) states that the Macedonian general Antipater (398?–319 BCE), and the Athenian playwright Euripides (480?–406? BCE) both maintained that “the dragon-slayer myth derives from the sun’s drying of water vapor, which sometimes resembles a coiling serpent.”

What is most remarkable about this idea is that it comes tantalizingly close to understanding the nature of dragons as argued in this book, without taking the extra step needed to get there. Yes, dragons are associated with stormy skies and the control of rainfall. But, as will be shown, to understand how they became a culture universal we need to find specific traits of dragons that are widely-shared, as these are both diverse and surprisingly consistent in pointing to a specific natural phenomenon and its conceptualization by countless culturally diverse communities.

2.2 *Carl Jung, the Dragon as the Unconscious or the Dark Force*

The Swiss psychoanalyst Carl Jung combined his medical practice as a psychiatrist with a deep interest in mythology as a mirror on the human mind, and these threads are closely interwoven in a number of his books. In some of these, as in Jung (1956), he makes repeated reference to the dragon as a symbol of various psychological forces. Much of his discussion is all but unintelligible to any who have not adopted his unique view of psychology, and his rapidly shifting references to ancient literature often leave it unclear what he has actually claimed. However, in at least some passages he sees the dragon as the Anti-Christ, as where he says (1956:368)

The original unity of opposites is still discernible in the original unity of Satan and Yahweh. Christ and the Anti-Christ of the dragon lie very close together so far as their historical development and cosmic significance are concerned. The dragon legend concealed under the myth of the Anti-Christ is an essential part of the hero's life and is therefore immortal.

Elsewhere he suggests that the dragon represents the negative elements of the unconscious mind (1956:374) "Taken purely as a psychologem the hero represents the positive, favorable action of the unconscious, while the dragon is its negative and unfavorable action—not birth, but a devouring; not a beneficial and constructive deed, but greedy retention and destruction." And in still another context he notes (1956:362, n. 110), "The dragon in the cave is the Terrible Mother. In German legend the maiden in distress often appears as a snake or dragon that has to be kissed; then it changes into a beautiful woman."

Jung's association of the dragon with the Anti-Christ seems clearly to derive from its function as a foil for Christian knights. In this respect it simply reflects the long tradition in European art of dragons attacking young women, who are duly rescued by a hero who symbolizes civilization and morality. Perhaps a less theory-dependent interpretation of those aspects of the dragon that figure prominently in European iconography is that it represents the pre-Christian past, since the dragon idea clearly preceded Christianity, and its negative connotations are often indistinguishable from the negative connotations commonly attributed to paganism.

Whatever interpretation one chooses to impose on Jung's often shifting allusions, one thing is clear: to him the dragon is a consistently negative force. More importantly, in nearly all of his sometimes painfully erudite appeals to the dragon motif, Jung shows little interest in how the dragon idea might have arisen in the first place. Rather, his concern is with how it has been used to

represent supposed psychological forces since it came into being, a concern that has been taken up by some of his followers, as Gardner (1990), or others who believe that the dragon idea is a projection of negative human emotions (Tuschman 2008, Arnold 2018).

3 Neo-Lamarckian Theories: The Dragon as Archetype

In biology the linchpin of standard evolutionary theory is natural selection: all populations of organisms show individual variations that correlate with heredity (meaning that an organism is likely to resemble its parents more closely than it resembles the general population). This pool of variation may be non-functional for generations, but if for any reason—as with a change of environment—some variant becomes more advantageous to survival and gene transmission, individuals that possess it will be more likely to survive and reproduce while others pass away.

Despite the occasional naysayer within the scientific community, natural selection has proven itself again and again in the more than a century and a half since Charles Darwin published *The Origin of Species* in 1859, and no modern course in evolutionary biology would be complete without a full account of how it works, and most importantly, of how it explains in a very straightforward way the process of speciation, or new species formation.

Before young Charles Darwin embarked on the famous voyage of HMS Beagle (1831–1836) in which he made the primary observations that led him to see natural selection as the key to organic evolution, the French biologist Jean-Baptiste Lamarck (1744–1829) had wrestled with the problem of new species formation and come up with a different solution. To Lamarck it seemed reasonable to suppose that an organism could pass on characteristics acquired in its lifetime to its offspring, a position that came to be known as ‘the inheritance of acquired characteristics’. Genetics did not yet exist in Lamarck’s time, or even in Darwin’s time, but the error in Lamarck’s thinking is quite clear in modern perspective. All heredity is based on genes that are passed on when a new individual is created through the fusion of a male sperm and female egg. Acquired characteristics, as Lamarck saw them, affected the body of the individual who experienced a change. Since these did not affect the genes, they could not possibly be passed on to offspring. In its most extreme form Lamarck’s theory might hold that a man who had lost an arm during his life would be more likely to father a one-armed child, a possibility that is clearly at odds with modern genetics. Although some writers have claimed that this extreme view of evolutionary process was never espoused by Lamarck himself,

it certainly was the position adopted by some of his later followers who came to be known as ‘neo-Lamarckians’ (Gould 1982).

This background may seem like a digression, but it is necessary to set the stage for certain theories of the dragon that, in effect, appeal to the inheritance of acquired characteristics. Two of these are especially prominent, not least because of the professional qualifications of their proponents, and each will be treated in turn.

3.1 *Carl Sagan, the Dragons of Eden*

Carl Sagan was a famous planetary astronomer, much in the public view, who is remembered most for his hundreds of scientific papers, and for his starstruck recitation on the Johnny Carson Show of the words “billions and billions” in reference to the starry vastness of the cosmos. Moreover, in addition to his groundbreaking work in planetary astronomy he was the author of the Pulitzer Prize-winning book, *The dragons of Eden: Speculations on the evolution of human intelligence*.

Sagan’s basic thesis in this book is that the modern human brain incorporates an older ‘reptilian’ brain over which a more advanced mammalian brain (the neocortex) has evolved, and that such features of human experience as dreams are products of the ancient reptilian brain that we still carry within us. Although this is his more general thesis, in the course of what is clearly an exploratory and tentative argument, often framed by questions rather than statements, he has some very explicit remarks to make about the universality of the dragon idea. To avoid possible misrepresentation, it is best to quote his views on this matter in full. After speaking of “our ancient enemies, the reptiles” in the Mesozoic-Cenozoic transition (146), and commenting on the modern Komodo ‘dragon’, Sagan (1977:149–151) has this to say:

The pervasiveness of dragon myths in the folk legends of many cultures is probably no accident. The implacable mutual hostility between man and dragon, as exemplified in the myth of St. George, is strongest in the West ... But it is not a Western anomaly. It is a worldwide phenomenon. Is it only an accident that the common human sounds commanding silence or attracting attention seem strangely imitative of the hissing of reptiles? Is it possible that dragons posed a problem for our protohuman ancestors of a few million years ago, and that the terror they evoked and the deaths they caused helped bring about the evolution of human intelligence? ... Could the pervasive dreams and common fears of “monsters,” which children develop shortly after they are able to talk, be evolutionary vestiges of quite adaptive—baboonlike—responses to dragons and owls?

To extract a scientifically testable statement from this passage is challenging, but there seems no way to avoid concluding that to Sagan the pervasiveness of dragon myths in the world's cultures may reflect experiences that our primitive primate ancestors at the end of the Age of Dinosaurs had with the last archosaurians. In other words, the mental impressions made on the brains of these remotely related creatures were somehow transmitted through countless generations to the present, where they surface as "evolutionary vestiges" in the brains of children who dream of "monsters", or in the brains of adults who imagine the existence of dragons. The fact that the dragon is essentially a positive creature in the Chinese tradition is passed over in silence when Sagan declares that an "implacable mutual hostility between man and dragon ... is a worldwide phenomenon."

It is good to remind the reader that the subtitle of Sagan's book begins with 'speculations', because his approach to understanding the universality of the dragon idea is based on speculation rather than on anything resembling the scientific method that he so ardently defended in other contexts. Given his training as a scientist, and his often-repeated remark that "extraordinary claims require extraordinary evidence", it is little short of astonishing that there is no consideration of the geographical distribution of the draconic traits noted in Chapter 1, a set of observations that must constitute the foundation of any theory of why the dragon idea exists in so many of the world's cultures. What we witness in these speculations is a world-class scientist completely abandoning the scientific method once he is working outside his chosen area of expertise. Had Sagan approached the question 'why dragons?' as a responsible scientist he would have begun as he did in his work on planetary astronomy by first collecting all observations relevant to the question at hand (something he obviously did not even begin to do with dragons), and then proposing explanations for these observations based on independent lines of supporting evidence and of parsimony.

Perhaps most astonishing of all is the clearly Neo-Lamarckian overtone of Sagan's proposal that mental impressions on an ancient ancestral organism could still be present in the reptilian brain that modern humans possess. There is no way to mince words here: Sagan's claim is that an acquired characteristic (fear of dinosaurs) was transmitted through the gene line for tens of millions of years into the brains of modern humans, where it surfaces as the universality of the dragon motif. This is quite simply Lamarck reborn in a most unexpected context. Despite the obvious problems with this proposal, it is still taken seriously in some quarters, as by Allen and Griffiths (1979:126), who mention a theory "which has most recently been put forward by Dr. Carl Sagan, that we still retain a dim race memory of a time when our proto-human ancestors were

in conflict with the great reptiles whose primeval shapes and world-wide power haunt us still.”

3.2 *David E. Jones, an Instinct for Dragons*

David E. Jones, an anthropologist at the University of Central Florida, has proposed an account for the origin of dragons that in its basic features closely parallels that of Sagan, since it also assumes that experiences during the lives of our remote mammalian ancestors have somehow been transmitted genetically to modern humans.

After a whirlwind survey of the distribution of dragon tales around the Earth, Jones begins (2000:3) by stating the problem clearly: “The source of the dragon, however, is a mystery. How can something so impossible exist in the art, mythology, religion, and legend of so many places?”

To answer this question, he begins by dismissing the dinosaurs as possible contenders for the dragons of Eden, and he does so for the obvious chronological reasons. He follows this up by noting that the discovery of dinosaur bones circumvents the problem of coexistence, but can hardly help to explain the mystery since, as he correctly notes, “How can one recognize something as a dragon unless one already knows what a dragon is?”

He then moves on to consider attested large reptilian creatures, such as the Komodo ‘dragon’ (*Varanus komodoensis*), the large monitor lizard of the Lesser Sunda islands in Indonesia, giant pythons, etc., and also dismisses these as plausible sources of the dragon idea since they are locally distributed, while dragons are universal. Jones then springs his conclusions on the reader all at once. While preparing an undergraduate lecture on primate behavior he was reminded that vervet monkeys in Africa are notable for having three warning calls that signal the most dangerous predators they face: leopards, martial eagles, and pythons. In a ‘eureka’ moment he saw this as the solution to the dragon mystery: the three predators that most threatened our ancestors—the eagle, the leopard and the snake—in his words “merged in mythology to become a single creature” (2000:5, Fig. 2). Although this theme is explored in greater detail throughout the book, the reader is never given a clear idea of when or how this fusion of three distinct creatures into a single mental image took place. Since it presumably happened at a time when these ancestral primates were still arboreal (with predators coming from both land and air), this hypothesized event would have taken place millions of years ago.

Jones states that the three predators “merged in mythology” to become a single creature, but that cannot be what he actually means, since primitive primates still living in the trees would have had no language, let alone mythology.

What he must have meant is very similar to the claim made by Sagan—the mental impressions made by these predators on the minds of primitive primates were *retained* and passed through the gene line to modern humans. Without the possibility of cultural transmission at such an early time this is the only interpretation possible.

If it is accepted, Jones' argument helps in a novel way to account for why dragons combine reptilian and mammalian or avian features, and why they fly. However, it fails to come to grips with any of the many other widely distributed features of dragons already noted, including why they are givers or withholders of rain in China, the ancient Near East, and Mesoamerica, why they are guardians of springs around the planet, why they are recurrently associated with waterfalls, why they guard treasures, or—another point that will be examined in a later chapter—why they are regarded in Taoist metaphysics and European alchemy as hermaphroditic or androgynous. His own discussion of the geographical distribution of dragon traits is extremely brief, non-specific, and inconclusive (2000:19). The rest of the book explores beliefs about the dragon around the world, and contains much useful material, but in the end, like Sagan's argument, it is clearly an exercise in Neo-Lamarckian speculation, and is subject to all the criticisms that the inheritance of acquired characteristics faces in any of its manifestations.

4 Diffusionist Theories

4.1 *Grafton Elliot Smith and the Egyptian Origin of World Civilization*

Grafton Elliot Smith (1871–1937) was an Australian-born anatomist and Egyptologist who spent most of his adult life in England, where he worked at the University of Manchester at the time he published his best-known book, *The evolution of the dragon* (1919). Smith received an M.D. from the University of Sydney in 1895 based on the structure of the brain in monotremes, but his deeper interest was in the function of the convolutions of the human brain, and this led him in turn to an interest in studying the brains of Egyptian mummies. In 1900 he was hired at the Cairo School of Medicine, and through personal connections was appointed advisor to the archaeological survey of Nubia, with the result that by this point his connections as an Egyptologist were firmly established. Apparently during this period Smith became convinced of two basic premises: 1. humans are essentially non-inventive, and are therefore unlikely to strike upon the same idea twice, and 2. Egypt was the cradle of world civilization. It was the union of these ideas that led to his radical diffusionist theory of why the dragon motif is globally distributed.

Smith was not the only radical diffusionist. Harris (1968:380–381) includes him with W.H.R. Rivers and W.J. Perry, as representing British diffusionism, and although Rivers was interested only in diffusion within Melanesia and Polynesia, both Smith and Perry were radical diffusionists in claiming that some culture traits have spread around the world by borrowing. In this respect they resembled the contemporaneous *Kulturkreislehre* of German anthropology, which operated with the same basic premise that humans are fundamentally uninventive. What distinguished Smith, and later Perry (1887–1949), who was influenced by him, from other radical diffusionists, was the claim that all cultural inventions of any consequence had originated only once, in Egypt.

Smith begins his book (1918:vii–viii) with an apology for its disjointed character, which he tells the reader is a result of the difficulties under which the writing had to take place:

Had it been possible to review the whole book at one time, and if the pressure of other duties had permitted me to devote more time to the work, these blemishes might have been eliminated and a coherent story made out of what is little more than a collection of data and tags of comment. No one is more conscious than the writer of the inadequacy of this method of presenting an argument of such inherent complexity as the dragon story This book must be regarded, then, not as a coherent argument, but merely as some of the raw material for the study of the dragon's history.

Having deflected possible blows from critics in this way, he then began to expound his argument, beginning with the claim that humans are singularly uninventive: in his view the likelihood that a similar invention, no matter how useful, would be struck upon in more than one culture, is virtually nil. Since agriculture, the rise of organized priesthoods, and urbanization arose as early or earlier in Egypt as anywhere else, it was easy for Smith to give Egypt *a priori* consideration as the source of cultural inventions that happened only once and then spread by diffusion. What made his argument exceptional is that *every* world culture that possessed a trait even vaguely reminiscent of Egyptian cultural traditions was said to have borrowed it from Egypt. This required him to assume that Egyptian emissaries travelled the globe, spreading the largesse of Egypt to all parts of the planet. No culture was spared: even China, with its rich and highly distinctive cultural history, owed most of its culture to Egypt. In the words of Harris (1968:380–381) who discusses the Egyptocentric theory of world civilization in a critical commentary on radical diffusionism in general:

As the Egyptians progressed in civilization, they set about journeying by land and sea over great distances in search of precious metals and other raw materials. And in so doing, they rapidly spread, through diffusion and colonization, varieties of the original archaic civilization, which had been founded on the banks of the Nile.

As part of this massive cultural transmission the idea of the dragon—originally an invention of the Egyptian priesthood—became globalized, reaching the length and breadth of Eurasia, and extending beyond to the Americas. I will not attempt to explore every detail of Smith's elaborate scheme on how the dragon motif originated, evolved, and spread, but a few basic guidelines are needed in order to properly evaluate his claims.

First, according to Smith (1919:viii)

In the earliest records from Egypt and Babylonia it is customary to portray a king's beneficence by portraying him initiating irrigation works. In course of time he came to be regarded, not merely as the giver of the water which made the desert fertile, but as himself the personification and the giver of the vital powers of water.

To this he adds that the people came to see their well-being as dependent on the king's vitality, and if he showed signs of decline it was "not illogical" to kill him, since his decline spelled the decline of the community as a whole. However,

when the view developed that the dead king acquired a new grant of vitality in the other world he became the god Osiris, who was able to confer even greater gifts of life-giving to the land and people than was the case before. He was the Nile, and he fertilized the land. The original dragon was a beneficent creature, the personification of water, and was identified with kings and gods.

In this rather circuitous and arbitrary fashion, Smith connected the centrality of Chinese beliefs about the dragon's control of water and the weather with an Egyptian origin, and through arguing that the dragon idea was spread to all quarters of the globe from Egypt he managed to account for the universality of the dragon idea. However, he has no explanation for most of the traits described in Table 1, nor does he seem to have been aware that they need an accounting: Why would dragons have been created as chimera? Why would they be recurrently associated with waterfalls? Why, in widely separated cultures, would they

be considered androgynous? Were these traits all fanciful details invented by the Egyptian priesthood for its own amusement?

Like other varieties of radical diffusionism, Smith's Egyptocentric theory of the origin of the dragon is rejected by most scholars, who recognize that diffusion is real, but is typically more locally confined to cultures that have been in sustained and demonstrable contact. However, a segment of the scholarly community continues to support the idea that global diffusion should be taken seriously, as seen in the work of some art historians, as Grieder (1982), and by the implicit endorsements of this position by Leach and Fried (1972:323) and Hogarth and Cleary (1979:25), the latter of whom state that "The origin of the Aztec people remains a mystery. But aspects of their legendary art, and their belief in dragons, suggest links either with Egypt or with Asia."

A somewhat narrower defense of the dragon idea spreading by trans-Pacific diffusion was offered by Hentze (1966), who maintained that artistic motifs found in grave goods from Shandong province in northern China resemble others found in Chimbote, a coastal city located on Chimbote Bay, south of Trujillo some 250 miles north of Lima, Peru. The image that impressed him most forcefully was that of a double-headed Rainbow Serpent (*Regenbogenschlange*) in a Han dynasty burial from 150 CE, and a Chimbote ceramic vessel showing a lightning god with jaguar teeth, and under it a similar double-headed Rainbow Serpent. In addition, he cites another artistic parallel of the same kind in artefacts from the grave complex of Colima-Nayarit-Jalisco on the west coast of Mexico which date to 200–300 CE, roughly contemporaneous with the Eastern Han materials, and concludes (1966:259) that the artistic motifs in the American sites were inspired by the Wū-Liang-tsū culture of China.

It is not entirely clear whether Hentze intended his claim to be restricted to the borrowing of an artistic motif, or whether he believed that the idea of the Rainbow Serpent/dragon itself was transmitted via long-distance contact. In either case there are serious problems with his claim that the artistic motif in the Americas was acquired from China. The first of these is sailing technology. The Chinese have never been sea-oriented people and, as already noted, it was not until the Ming dynasty (1368–1644 CE) that a Chinese emperor endeavored to explore areas outside China, when he sent the famous eunuch admiral Zheng He on a series of expeditions along the coast of the Malay peninsula, and then on to India, eventually reaching the east coast of Africa repeatedly between 1405 and 1433. However, this was not open-sea voyaging, but rather a fleet of Chinese junks that hugged the coast the entire distance, going and returning.

The Eastern Han dynasty existed well over a millennium before the Ming, and its capital was at Luoyang, on the Yellow River, hundreds of miles inland,

with no ready access to the sea. These considerations of culture and geography make it very unlikely that any Chinese ship would have been able to contact the Americas in the second or third century CE, or even a thousand years later. Hentze does not consider the difficulty of crossing the Pacific in pre-modern times. Even the Polynesians, who were vastly more accomplished navigators than the Chinese, were stalled in western Polynesia (Fiji-Tonga-Samoa) for two millennia before improved sailing technology enabled them to reach eastern Polynesia, with a first landfall in the Society Islands no earlier than about 1025 CE (Blust 1999b: 77–82, Wilmschurst, et al. 2011). Add to this the impressionistic nature of the artistic comparisons in question, and there seems to be little reason to reject the interpretation that the double-headed rainbow snake in the art of both areas is a product of convergence.

Although presented differently, another dragon study in the same radical diffusionist mold is that of the Egyptologist George Davis Hornblower (1933), which looked at the dragon idea exclusively in urbanized, literate cultures, and speculated that the idea first arose in Mesopotamia or Egypt, as a way of showing the power of the local deities:

Briefly, we may reasonably suppose that composite animals were pictured to represent concretely the special qualities attributed to each of them: the fierce strength of the lion, the keen swiftness of the eagle, or the mystery and deadliness of the snake. In Mesopotamia such creatures were connected very early with deities ... and it seems likely that they were intended to convey the idea that the gods were endowed with the combined virtues of the animals included in the composition (Hornblower 1933:80).

From the Levant this idea then spread east as far as northern China. Like other studies of its kind, this one provides no explanation for many widely distributed traits of dragons, including why they are controllers of rainfall, why they dwell in waterfalls, why they guard springs, and a host of other critical observations that are simply ignored.

5 Other Theories

There may be additional theories of the dragon that can be assigned to a more general category, but the following are all radically different from those considered so far, and must be treated as unique.

5.1 *Mary Barnard, a Dragon Hunt*

In a short but original paper Barnard (1964) rejected explanations of the universality of the dragon that appeal to contact with archosaurians, vague references to the weather, extreme diffusion, or psychological archetypes. To her the shortcomings of each of these types of explanation had become all too apparent, and she sought an entirely new way to account for this phenomenon ---one that was, in effect, a social explanation.

Barnard begins her story by arguing that a careful study of dragon myths leads inevitably to the conclusion that they have been invented repeatedly, rather than spread from a single source of origin. In considering appeals to symbolism she can hardly conceal her annoyance with the arbitrariness of this position, since it leads in so many different directions:

As for its symbolism, that differs from one myth to another, and the effort to make all dragons emanate from one unconscious fear or desire is useless. Dragons have been described as symbolic of clouds, fire, rivers, darkness, time, evil, the unknown, one's father, the *status quo*, the Milky Way, the heavenly movements, and other assorted phenomena. St. George's dragon is symbolic of heresy (Barnard 1964:422).

After this brief dismissal of ideas that have been touted in the literature since at least the 1880s, she reminds the reader that dragons are a part not just of mythology, but also of folk culture, as in the Chinese public New Year celebration, or the dancing dragon called La Tarasque, of Tarascon in southern France, in which a dragon body is animated by a line of partly concealed human dancers. In a type of eureka moment reminiscent of the formulation of some other theories of the dragon, she then reverses the relationship between myth and dance, and asks the reader whether the dragons of myth might not simply be projections of the dragons seen in dances. In her own words she asks (1964:423) "Was the archetypal dragon first conceived in the imagination and then later impersonated by dancers, or was he not rather invented by the dancers themselves when one of them suddenly cried: "Look, we're making a big snake!"

According to Barnard snake-dancing in public festivities is sufficiently common and ancient that it could have served as a model for the form of the dragon through the form of the dance. In other words, people involved in snake-dancing for whatever purpose, then projected the shape of the dance onto a beast that blended reptilian traits with those of mammals or birds, that could fly, that breathed fire, guarded treasures, etc. She attempts to account for some of these properties (as its bodily form) by variations in dance costume

(as the use of feathered headdresses). However, the reader is left to guess how the dragon of the dance originated if it did not already exist independently of the dance, or more generally why anyone who was dancing for a completely unrelated purpose would find a reason to project the form of the dance onto a rich mythical tradition about a creature which had no obvious connection to its physical model. Finally, despite its references to the Chinese dragon, as with several other theories considered here, Barnard's theory is Eurocentric: how can it account for the dragon idea in places that have no tradition of line-dancing, such as Mesoamerica, or aboriginal Australia?

5.2 *Paul Newman, the Viking Connection*

In a 12-page chapter on 'Theories' Newman (1979:202–204) suggests that the concentration of dragon stories in certain parts of Britain may not be accidental. He refers in particular to the area of northeast England once known as the Danelaw (where, following repeated Viking attacks and settlements, the laws of the 'Danes' dominated those of the Anglo-Saxons), commenting

it is often acknowledged that the frequent occurrence of worm legends in the counties of Northumberland and Durham may be connected with the impact of the Norse sea-pirates on this region It is possible that, on settling in northern England, the Norsemen created a mythological tradition of their own reconciling their old beliefs with their new environment. Alternatively, it has been construed that the worms are no more than the Vikings personified as mindless reptilian killers (Newman 1979:202).

By "their old beliefs" what Newman appears to mean is the way Viking longships were outfitted with "brightly painted dragon figureheads", implying a belief that the dragon was their companion and protector in war. Regrettably, like every other theory of the dragon that has been proposed to date, this one is far too narrow to account for even a small percentage of the globally distributed traits of dragons displayed in Table 1: why, in widely separated parts of the world are dragons considered to be controllers of rainfall? Why do they guard springs, wells, lakes and the like? Why do they fly high up among the clouds? Why are they basically reptiles, but with added traits of mammals or birds? Why are they recurrently associated with waterfalls? The list goes on, but is routinely ignored by those who prefer to indulge in speculation rather than pursue the trail that they must follow if they begin with the globally distributed traits that are given in Table 1, and discussed in detail in later chapters.

5.3 *Barber and Barber: One Dragon, Many, or None?*

Barber and Barber (2006:231–244) are particularly concerned with where the idea of Germanic dragons originated. In pursuing this question, they look at the dragon of the Icelandic sagas, dating from as early as the ninth century CE, and its equivalent in the Old English Beowulf epic (first written down in 975 CE), and the Middle High German Nibelungenlied, composed around 1200 CE. In so doing they are attracted to the idea that in breaking into an ancient barrow (burial mound) to search for treasure an intruder would have experienced a sequence of events that could have been mentally combined to form the idea of a dragon. They describe what they call a ‘Stripping Procedure’, with the following steps (2006:234):

- (1) Someone steals a cup from an old barrow.
- (2) Fire erupts from the barrow and spreads.
- (3) Near the stone entrance, our hero stabs blindly at the source of flames while shielding himself (ineffectively) from them.
- (4) It smells bad
- (5) People stab deeper, and eventually the flame goes out
- (6) Inside the barrow is treasure but no trace of a dragon’s body.

They then add: “We don’t know the dragon’s appearance, however, because while it’s alive all you can see is flame and once the fire is out, *there is nothing left.*” In this way they try to show why dragons breathe fire, have toxic breath, and guard treasures, but may otherwise vary in appearance.

This is certainly a novel approach to understanding how certain dragon beliefs might have arisen, one which implies that a single theory of the origin of dragons is futile, since one can hardly assume that the idea of dragons arose from breaking into burial mounds in every part of the planet.

After all, the Chinese classics tell us that Chinese dragons also breathe fire, as we will shortly see, the horned water serpent, or dragon of native North America, is described in several parts of the continent as having fetid or toxic breath, and dragons guarded treasure in classical Greece. Barber and Barber are aware of this problem, and in an effort to cope with it they adopt a catholic definition of dragons as a *class* of partly similar creatures, concluding that Germanic and Chinese dragons were not necessarily the same type of beast, and neither of these was necessarily the same creature as “the cosmic dragon of early Mesopotamia and Greece” (2006:240). In this way they evidently hope to reconcile the obvious variations that every observer has commented on in the form and behavior of the dragon in different regions of the world.

The observant reader will see two features of this argument that by now are familiar. First, like Jones, they assume a stable concatenation of ideas based not on direct observation of a single phenomenon, but on serial association

(their steps 1–6). Moreover, they assume that this associative matrix then produces a coherent unity (the dragon idea) that is transmitted from one generation to the next. Unlike Jones, their argument has the advantage that the complex of images that gave rise to the dragon idea arose at a much later period in human history, and they can therefore appeal to transmission via language, rather than invoking a mysterious transmission of ideas through our DNA. However, the claim that enough people would codify the same physical experience in the same way so as to produce a culturally stable concept of the dragon seems far-fetched at best. Second, for all its originality this theory overlooks one critical point: that despite their cross-cultural variations dragons around the globe *share certain apparently arbitrary traits* which point to a convergent development that must have been motivated by observations of the real world that were available to humans everywhere. In short, this approach takes us back to Chapter 1, where our first concern was to establish that dragons are a conceptual unity. Once they had arisen from a common source they could be molded in ways suitable to individual cultures, as with the pearl in the mouth, or the passion for eating roasted swallows distinctive of Chinese dragons. The claim of Barber and Barber (2004:241) “that some “slain dragons” originated as methane, others as lava, rain-clouds or stars” thus totally fails to explain the agreement across widely separated cultures even of the traits they consider most central to their argument, as why they can fly, why they breathe fire or guard treasures—are these traits of dragons in other parts of the world also products of the activities of grave-robbers?

5.4 *Summing Up*

Why are there so many mutually incompatible, and in some cases surprisingly fanciful ideas about why the dragon-belief is universal? Is it because we have no way to study cultural universals? Is it because the dragon—a creation of our own minds—is actually trying to elude us, as Allen and Griffiths (no doubt tongue-in-cheek) suggest in the quotation cited at the beginning of this chapter?

Or it is perhaps because no one has previously adopted the right approach to this topic, namely not to pursue the dragon itself, but instead to pursue the natural source of the dragon and see where it might lead? Or has a century of accumulated intellectual prejudice in academic circles made it impossible to believe that the dragon might have arisen from preliterate attempts to understand events in the natural world, as proposed for other mythological themes by the distinguished, but now discredited nineteenth century linguist, folklorist and scholar of comparative religion, Friedrich Max Müller?

The preceding survey of theories of the dragon may be incomplete. Nonetheless, even in its present form one thing about it is particularly noteworthy: there is little agreement among scholars who have researched the dragon literature about how the concept of the dragon originated. Some believe that the dragon was inspired by real creatures, even though it has characteristics found in none of these. Others propose that the discovery of buried animal bones could have led to a 'mental reconstruction' of dragons without a model to follow. Others insist that dragons are symbolic in some vague way of clouds and rain, or of negative psychological forces in the human personality—the latter despite the obvious point that the Chinese dragon has overwhelmingly positive associations. In a premature rush to explanation a world-class astronomer and a professor of anthropology both abandoned what they surely knew about the wrongheadedness of the inheritance of acquired characteristics. A distinguished professor of anatomy argued that the dragon idea originated just once—in Egypt—and from there it was carried around the world by ancient Egyptian explorers. And others, who have become disenchanted with the rank speculation, or 'turning a blind eye' of much of the literature, argue that dragons began as dance figures that were later projected onto belief-systems, or that they originated in many ways, and should not be considered a single phenomenon.

It is hard to imagine another question that has attracted human curiosity for as long as the origin of the dragon, which has led to such utter chaos in the scholarship associated with it. It is as though the fantastic nature of the dragon itself has infected the thinking of nearly everyone who has addressed this issue, causing them to favor wild speculation over basic, well-established principles of science. In any scientific field how do we begin to find an explanation for observations that are puzzling? Here is a set of guidelines:

- First, we record and study the observations relevant to the question we address in order to ensure they are accurate. In the case of dragons this means carefully noting the physical and behavioral traits that are attributed to them across a wide range of human cultures. This has been done in a preliminary way in Chapter 1.
- Second, with comparative research in the social sciences we must take note of Galton's Problem (ensuring the historical independence of the units of comparison). Thus, we would not base a theory of dragons on traits found only in Europe, China, or any other single geographical location, or only in societies that speak related languages, since these may be purely local developments that are truly arbitrary (that is, products of culture) rather than apparently arbitrary (that is, surprising ideas that turn out to be motivated by natural causes).

- Third, we isolate those apparently arbitrary traits that are found in a least two regions of the Earth that are not likely to have been in intensive cultural contact, as the dragon's ability to fly, or its propensity for guarding springs and treasures. These traits can be called 'universal', not because they are found in all cultures, but because their distribution cannot plausibly be explained by assuming that they began in a single culture that passed them down to its descendants, or in a single geographical area from which they spread.
- Fourth, universal traits of dragons must be explained as having arisen independently in many human cultures, and this could only have happened if perceptions of the world were similar in different regions of the Earth. This implies that whatever physical or psychological stimuli led to the creation of the dragon idea, had to be found everywhere.
- Fifth, the universal traits of the dragon must then be explained by reference to carefully recorded features of the physical and cultural environment in which dragons were created.
- Finally, we look for correlations between the traits of dragons and features of the environment and try to minimize the chances that they could be fortuitous by following the usual procedures of seeking converging lines of evidence, and adhering to Occam's razor.

It is surprising how close some writers of general books on the dragon have come to understanding its true nature, without making the connection between belief and observation. To cite just one of several possible examples, Allen and Griffiths (1979:6) hold that "There are no such things as dragons. Yet the dragon as a symbol has been used by virtually every culture throughout the history of the world. Most mythologies agree that he was born of clouds and water. Like them he is everywhere, and his appearance is as mutable as theirs."

This is a perceptive beginning, but it stops short of tracing dragons to their source. Why would many cultures simply invent a quasi-reptilian chimera that controls the weather, guards springs and treasures, etc. out of pure imagination? And if this is what happened, why would we see striking agreements in details of the dragon's physical and behavioral features in widely separated regions of the Earth? The tremendous variation of the world's cultures shows without question that the workings of the imagination may vary dramatically from one culture to the next. However, beliefs about the real world tend to be tightly constrained by observation, and this is why we must look for correlations between the traits of dragons and features of the natural environment if we are to explain the striking similarity of the dragon idea around the planet. Only in this way can we hope to make progress in understanding one of the longest unsolved mysteries of the human mind.

Having laid out the path before us we will now look at one of those correlations, namely the fact that dragons are associated with waterfalls in widely separated areas, including at least North and South America, Insular Southeast Asia, and discontinuous parts of Africa.

Dragons and Waterfalls

Why would dragons be associated with waterfalls? What is it about these striking features of nature that would attract a totally fantastic creature? Are dragons found in all types of waterfalls, or only in some?

The first thing to note in trying to answer these and similar questions is that it can be very difficult to find information relevant to the topic. There are numerous websites devoted to waterfalls by those who value them for their beauty or for the soothing sound of running water, but very few travellers learn anything about the mythology of the indigenous peoples who formerly lived, or in some cases still live, near these majestic features of the natural world. To find relevant information it is necessary to search through hundreds of travel books (generally those from the nineteenth century or earlier), or through accounts of the mythology of indigenous peoples who lived or still live near waterfalls. Even then, it is often possible—even likely—that real beliefs in dragons haunting local waterfalls may simply not be stated, and the only way to get that information would be to interview culturally traditional aboriginal people *in situ*. Despite these barriers the following examples have been collected, representing a clear association of dragons with waterfalls in North and South America, Insular Southeast Asia, and Africa. This association cannot be arbitrary, or there would be no explanation for its recurrence in widely separated parts of the world.

1 North America

1.1 *The Horned Water Serpent of Niagara*

Of all waterfalls in North America those of the Niagara River near Buffalo, New York, are easily the most famous. If dragons are associated with waterfalls in various parts of the world the falls at Niagara are sure to be a prime target for investigating this connection, and in this respect, we are not disappointed. The native people of this area were the Seneca, the westernmost of the five nations of the Iroquois confederacy.

One of the most cited legends of the Iroquois people is a Seneca story about the ‘horned serpent of Niagara’, a variant of the horned water serpent legend found across North America. In his *League of the Ho-de'-no-sau-nee, or Iroquois*, published in 1851, Lewis Henry Morgan (1954:149–151) presented

the earliest, and one of the best-known versions of this story, which goes approximately as follows:

He'-no, an assistant of the Great Spirit responsible for the formation of clouds and rain, and a keeper of the thunderbolts, was a guarantor of fertility. In one account he made his home in a cave behind Niagara Falls. A young woman in a village at the mouth of Cayuga Creek above the falls was betrothed to a disagreeable old man, and to escape her fate she sat in a bark canoe and released herself on the current to plunge to her death and freedom. On her descent over the falls, however, she was caught by He'-no and his two assistants, taken to his cavernous home and joined with him in marriage. Before this event the people of her village had been plagued by a mysterious pestilence that had poisoned the waters of the Niagara River and Cayuga Creek, and He'-no now revealed to her the cause: a gigantic water serpent dwelt under her village, poisoning the waters and feeding on the bodies of the dead buried there. He told her to return home and advise her people to move to a new location, which they did. The serpent, losing its source of sustenance, emerged from the earth to find the cause, and entered the water to follow the people to their new home. While swimming in the channel of Buffalo Creek the monster was spotted by He'-no, who struck it dead with a thunderbolt, and as it turned to escape it shoved out the banks on either side of the stream, creating the Horseshoe Falls.

Essentially the same version of this story was retold by Converse (1908), but two somewhat different versions were narrated by the Seneca Arthur C. Parker (1923:218–227). In the first of Parker's two variants a young marriageable woman is courted by a Thunderer named Hi"no, who is described as a friendly man who would have no dealings with witches. Hi"no was sure he would win the hand of the girl he courted, but she was slow to respond. He suspected that she had been bewitched by a competitor, and he and the girl's father waited to spy on her actions. Shortly afterward they saw her meet a stranger with a long neck and small, beady eyes, who she accepted as her husband. Her husband took her, crawled down the cliff of the great falls at Niagara, splashed into the water, and swam back into a cave behind the cataract, which housed a dimly-lit lodge. Inside were many suits of clothing, and before excusing himself for three days the woman's new husband encouraged her to find one and put it on. However, she was reluctant to do this, because everything she tried had a strange, fishy smell. There was one dress that particularly attracted her, and she nearly put it on, but she desisted because of the odor. When her husband returned, he asked her if she had selected a suit, and she explained that she found one she liked very much, but that she was reluctant to put it on because of its smell, and the fear that it might bring evil on her. Her husband protested that this was precisely the suit he had hoped she would choose, and that it would greatly please

him if she wore it. The next day he excused himself again, promising to return before long. This time while he was away the girl carefully examined all the suits in the lodge, and at that point realized to her horror that these were the clothing of great serpents. Seeing how she had been deceived, she resolved to leave. Escaping from the cave lodge she swam to the surface of the water, but it was dark and the sky was filled with thunder clouds. As Parker puts it (1923:221):

A great storm was coming up. Then she heard a great splashing, and through the water she saw a monster serpent plowing his way toward her. Its eyes were fiercely blazing and there were horns upon its head. As it came toward her she scrambled in dismay up the dark, slippery rocks to escape it. As the lightning flashed she looked sharply at the creature and saw that its eyes were those of her husband. She noticed in particular a certain mark on his eyes that had before strangely fascinated her. Then she realized that this was her husband and that he was a great horned serpent.

In the conclusion to this dramatic tale (a literal cliffhanger) her husband coiled around to embrace her, but in a flash of lightning and a peal of thunder he collapsed, pierced by one of Hi'no's arrows. The girl was about to fall, but she was swept up and carried off to her father's lodge, saved by the Thunderer, who told her he had wanted to save her, but had been kept at bay by the monster's magic. He then asked her the most important question: had she put on any of the dresses she was offered in the underwater lodge? If she had, he explained, she was no longer a woman, but had become a serpent.

She replied that she had resisted the urge to put on the serpent garments, and Hi'no told her that she must then go to a sweat lodge to be purified. She accordingly went to the women's sweat lodge, and when she had sweated and been purified by herbs "she gave a scream and all the women screamed for she had expelled two young serpents and they ran down and slipped off her feet. The Thunderer outside killed them with a loud noise" (Parker 1923:221–222).

There is no need to recount the second version offered by Parker, since the two versions of this story that have already been given are sufficiently different to raise important questions. Although they tell the same tale they clearly do so for different purposes. The version given by Morgan is essentially a 'just so' story, telling how the Horseshoe Falls at Niagara was formed. The version given by Parker, on the other hand, is far more entangled with Seneca ideas about witchcraft, and is no doubt embedded in a larger cycle of stories in that genre.

It is easy to become distracted by the details of these kinds of stories, which no doubt were elaborated through the generations for their entertainment

value on dark winter nights, but we must not lose sight of the fact that here we find a dragon associated with a waterfall. Niagara, of course, is not a single cataract, but a series of falls formed by the river splitting into several channels before reaching the precipice that it plunges over, and anyone who has visited it will know that the tremendous water volume produces a 'reverse rain', a constant ascent of spray high into the air, generating rainbows on sunny days, which is why one of the streams is called 'Rainbow Falls'. What is particularly interesting about the horned water serpent of Niagara is that it lived in Cayuga Creek, *above* the falls, a point that is not without significance, because given the huge water volume of Niagara and the consequent high-rising spray, rainbows normally appear *over* the falls, rather than in front of the cave formed by natural hydraulic erosion at the base of the cliff.

2 The Caribbean and South America

2.1 *The Dragon of Haiti*

Of all parts of the western hemisphere that were populated by freed African slaves, Haiti probably lays claim to preserving more of traditional West African culture than any other place. One African-derived feature of Haitian culture that particularly stands out is its animistic religion, known variously as Vodoun or Voodoo, which is a blend of European Catholicism and indigenous oral traditions that focus on the placation of spirit presences. As described in various sources, supplicants of this religion make an annual pilgrimage to the Saut d'Eau waterfall on the La Tombe river in the mountains of central Haiti, where they seek the blessings of the waters guarded by Ayida Wedo, the rainbow, who arches over the falls intertwined with her consort Damballah, the serpent (Métraux 1959:329ff., Davis 1985:170–185).

As will be described in greater detail in a later chapter, what is most striking about this ceremony is that it centers around a deity that is both rainbow (female), and serpent (male), and these two alter egos are intertwined in an inseparable unity that is at once male and female, a fusion of opposites characteristic of the dragon in contexts as disparate as imperial China, aboriginal Australia and the medieval intricacies of European alchemy, as will be shown in due course.

2.2 *The Dragons of the Guianas*

The Guianas and adjacent parts of Venezuela are noted for their *tepui*s (flat-topped mountains which are islands of biodiversity in a vast sea of jungle), as well as for a terrain that is generally conducive to the production of water-

falls. Angel Falls in Venezuela, at 3,212 feet, is generally regarded as the world's highest uninterrupted waterfall, but little is known about the indigenous folklore concerning it. However, two other waterfalls or waterfall complexes in the neighboring Guianas have been reported as having a resident dragon.

The first of these was described by the explorer Henri Coudreau (1895), who spent time among the Tupi-Guarani-speaking Oyampi Indians (called 'Wayampi' in more recent sources) of the middle and upper Oyapock river in French Guiana toward the close of the nineteenth century. Modern sources indicate that three of the Oyampi villages are located near Trois-Sauts ('Three waterfalls').

Coudreau tells us that the falls of *Ouroua Itou*, rushing between many islets, is a long, rapid and dangerous drop, the nastiest besides *Coumaraoua*. The large trunks of rolling trees carried by the water crash into the rocks below with a deafening roar, like cannons firing in their passage. *Ouroua Itou*, like *Coumaraoua*, *Acouciragne*, *Arario* and *Massara*, are the legendary falls of the Oyampis. Each of these waterfalls has a gigantic serpent at the base, hidden in the eddy of the crashing water, and more than once the Oyampis say they have seen it raise its monstrous head. All their efforts are then useless, as canoe and Indians are carried under water, where the giant reptile in its ferocity devours the Indians, and sometimes the canoe as well. Each waterfall thus has its mythical guardian. For this reason, the Oyampis will never speak the name of a waterfall before passing it, since the serpent at the bottom of the water is able to understand the utterance of its name and will pursue those who have been so bold as to utter it.

The second of these waterfall complexes was described by the German explorer and ethnologist Theodor Koch-Grünberg (1924), who travelled through the Guianas in the first two decades of the nineteenth century, taking copious notes on the culture and mythology of the local peoples. His particular focus was on two Carib-speaking groups that he called Taulipáng and Arekuná. Today these are known as the Taulipang and Arecuna, and each ethnolinguistic group is considered to speak a dialect of the Pemon language. For the Arecuna Koch-Grünberg (1924:15) has this to say:

Keyeme, the rainbow, when it appears is thought of as a large multi-colored snake that lives in the high waterfalls. This belief probably originated from the observation that numerous rainbows form in the spray or mist that arises from the falls. When *Keyeme* sheds his skin, he is a man of malevolent character. However, this does not prevent him from being called "the father of all animals."

A bit later he adds that *Keyeme* can have a human form, but is a huge water snake when he undresses, and that animals have souls, which go to *Keyeme* after their death, which is why he is called the “father of all animals.”

In addition to these descriptions Koch-Grünberg recorded many Arecuna tales in which *Keyeme* plays a role, but these appear to be completely independent of his association with waterfalls. The primary relationship of this mythical character, who appears to be half-human, half-dragon, is thus with the waterfalls that provide a physical source for his existence, and once brought into being as a cultural creation, the Arecuna were free to elaborate on his character in myth and story, much as the Seneca were able to do with the dragon of Niagara.

Superficially these two South American examples might seem to be near-duplicates, but the facts speak otherwise. First, although both groups are located in the Guianas they are nearly as far removed from one another as is possible within that geographical context. The Oyampis on the Oyapock river are on the far southeastern side of French Guiana, while the Pemon/Arecuna are in the Pacaraima Mountains in central-west Guyana, along the border with Venezuela and Brazil, well over 800 miles distant. Moreover, the Oyampi reportedly came from south of the Amazon about 1736, and did not enter French Guiana until about 1800–1820 (Gillin 1963:814–815), meaning that these two groups were even more widely separated until the past two centuries. Second, they speak unrelated languages, and are culturally very distinct. What this tells us, then, is that the monster serpents in the waterfalls of Guyana and French Guiana probably are not copies of one another through cultural borrowing, but that if better documentation were available, we probably would encounter many more examples of this type throughout the South American continent (and no doubt elsewhere in the world). We will have to be satisfied with what we have from very sparse and random reporting of such beliefs. However, they show sufficient agreement and geographical spread to make it clear that there must be a reason that dragons are associated with waterfalls in widely separated regions.

2.3 *The Dragon of Iguazu*

Given the presence of dragons in other major waterfalls, for some time I suspected that the great falls of Iguazu (Portuguese: Iguassu) on the Brazil-Argentinian border, which prompted Eleanor Roosevelt on seeing them to exclaim “Poor Niagara!”, must also have a resident dragon. However, I had never been able to obtain any information relevant to this question until Antonio Andres-Lopez, a travel agent and friend who often conducts tours to South America, was able to inquire about this for me (p.c. 8/29/11). What he discovered on a tour that he led to Iguazu is related here:

Prior to the arrival of the Spanish, the land around Iguazu Falls belonged to the Guarani Indians. Every year the Guarani tribe would sacrifice a beautiful virgin to the Serpent God M'Boi who lived in the Iguazu River. Usually these women were bred to be sacrificed, and no one protested as the girls were thrown into the river. Naipi, however, was not one of those condemned girls. She was to be married to Taruba, a great warrior from a neighboring tribe.

A few weeks before the marriage ceremony Naipi was walking near the river and M'Boi saw her reflection in the water. The Serpent God thought she was the most beautiful woman he had ever seen and demanded that the Guarani tribe give her to him. The elders of the tribe were too afraid to upset M'Boi because his father was Tupa, the Supreme God of All; so they arranged to sacrifice Naipi a day before she was to be united with Taruba.

Naipi was devastated, as she and Taruba were madly in love. Taruba was furious and believed he could rescue Naipi from her grim fate. The lovers arranged to meet at the Iguazu river and run away. Unfortunately M'Boi saw Naipi climbing into the escape canoe and he raced to catch up with them. Taruba rowed as hard as he could, and was able to keep a few feet of space between them and the serpent. This made M'Boi so angry that his body expanded to the size of the river. He slithered and squirmed, causing the river to form new curves, and the little canoe to rock back and forth. When Taruba wouldn't give up M'Boi became so furious that he caused the earth to split. The river spilled over the cracked earth, sending the canoe into spirals. Taruba was knocked out and tossed onto the embankment. Naipi was trapped inside and about to smash into the land below when M'Boi changed her into a large rock so she wouldn't be able to run away. Taruba saw the transformation and tried to rush down to her, but his hands were pulled into the earth by M'Boi. His fingers were stretched so deep into the embankment that they turned into roots and Taruba grew into a palm tree, forever rooted to the earth above the falls.

This was M'Boi's way of revenge, separating the two lovers by an enormous waterfall, so they could see each other, but never touch. M'Boi is said to lurk deep in the waters of Devil's Throat, watching the palm tree and the rock, making sure they never unite. Although Naipi and Taruba can never be together, they still manage to show their love by forming a rainbow which starts at a palm tree on the Brazilian side of the falls and reaches over to the rock of Naipi in Argentina.

There are elements of this story that suggest it might be a later, Europeanized version of an original Guarani tale, as with the romantic view of the rainbow

that memorializes the plight of the doomed lovers, which is not typical of tribal ideas about the rainbow anywhere on Earth. Whether this is accepted or not, the key element remains unchanged: the falls of Iguazu house a resident dragon.

Like Morgan's account of the horned water serpent of Niagara, this can be seen as a 'just-so' story told by the local people to explain striking features of the local landscape. Such stories, however, appear to be secondary to the primary belief that the falls were inhabited by a monstrous serpent. Once this belief existed, it could be elaborated in horror stories of the kind seen here, or in connection with Niagara. Although fully elaborated tales of resident dragons have been recorded only at Niagara and Iguazu, these may very well exist elsewhere, but were not part of the observations made by European visitors to other waterfalls.

3 Insular Southeast Asia

3.1 *The Dragon of Southern Sarawak*

Spencer St. John, a nineteenth century British consul in Brunei, wrote a book of memoirs entitled *Life in the forests of the Far East* in which he described many personal adventures on the island of Borneo. In recounting one of these that involved a trip out of the Iban village of Sebuyau in southern Sarawak to the neighboring mountains, he begins (1863:28) with the following narration:

Next day we started for a waterfall, which we were told was to be found on the sides of the Gading mountain, a few miles below the village. After leaving our boat, the path lay through a jungle of fruit-trees; but as we ascended the spur of the mountain these ceased. In about an hour we came to a very deep ravine, where the thundering noise of falling water gave notice of the presence of a cataract. This was by far the finest I had yet seen; the stream, tumbling down the sides of the mountain, forms a succession of noble falls...

After launching into further poetic descriptions of the view before him, he continues (28–29)

A slight detour brought us to a spot above the cascade, and then we could perceive that it was but the first of a succession. One view, where six hundred feet of fall was at once visible, is extremely fine: the water now gliding over the smoothest granite rock, then broken into foam by numerous

obstructions, then tumbling in masses into deep basins—the deafening roar, the noble trees rising amid the surrounding crags, the deep verdure, the brightness of the tropical sun, reflected from burning polished surfaces, then deep shade and cooling air. This varied scene was indeed worth a visit. We ascended to the top of the mountain, though warned of the danger we incurred from a ferocious dragon which guarded the summit.

This description is particularly clear: St. John was positioned above the first of multiple cascades tumbling down some six hundred feet into a ravine below. As he ascended higher his Iban guides warned him that a dragon lived above the falls, where it presumably would have been visible in the spray rising high into the air from the great volume of water crashing into the ravine.

This writer says nothing further about the dragon—he simply notes it in passing as a belief of the local people, and then moves on to other topics. Despite the brevity of this observation, however, it is important, because it agrees with the dragon of Niagara residing in Cayuga Creek above the falls, exactly where rainbows form in the rising spray, and very similar descriptions have been reported in other cases far from Sarawak.

4 The Pacific

4.1 *The Battle of Wailuku*

Visitors to the largest of the Hawaiian Islands (locally known as the ‘Big Island’) are treated to the spectacle of two large waterfalls near the major population center of Hilo, on the ‘wet side’ of the island. The more popular of these is Akaka Falls, but given its connections in Hawaiian mythology, the more interesting one is Waiānuenue, or Rainbow Falls (*wai* = ‘fresh water, stream’, *ānuenue* = ‘rainbow’) on the Wailuku river. As the name suggests, this waterfall produces rainbows on sunny days on account of the volume of water that cascades over it, generating a ‘reverse rainfall’ that simulates the conditions conducive to rainbows in the sky.

What makes Rainbow Falls of more than usual interest in the context of dragons and waterfalls is a story about the Polynesian culture hero, Maui, that is connected with this location. According to a Hawaiian legend which occurs in several versions that differ only in details, Maui’s mother, Hina, lived in the large cave formed by hydraulic erosion under the falls, where she was being harassed by a giant *mo’o*, or reptilian monster named Kuna, who lived above the cascade, and continually troubled her by sending logs, stones, and other trash down to her dwelling. She protested this behavior, and in an angry response he

sent a large stone over the falls to partially block the entrance to her cave, allowing water to enter it and flood her home, but preventing her escape. Fearful of drowning, Hina called out to her son, Maui, to confront this monster, and this resulted in the Battle of Wailuku, in which the culture hero saved his mother and vanquished the beast.

Like nearly all parts of Polynesia, Hawai'i is free of snakes, and this natural biological model was therefore not available for conceptions of the rainbow, which in most contexts was viewed as a bridge to the afterlife. Nonetheless, Hawai'i does have both lizards and freshwater eels. Pukui and Elbert (1971) gloss *mo'o* as 'lizard, reptile of any kind, dragon, serpent; water spirit', and *kuna* as 'a variety of freshwater eel'. The monster of Rainbow Falls in this case could not be a serpent, but Hawaiian mythology made the most of locally available zoological resources by representing the rainbow in this one specific context (at a waterfall) as a gigantic lizard that bore the personal name Kuna (freshwater eel). The parallels with beliefs about serpents living in the spray of rainbow-generating waterfalls in other parts of the world are clearly too striking to be due to accident, and point to a common human propensity to view the rainbow as an animate being of reptilian (generally serpentine) form.

5 Africa

5.1 *The Dragons of Basutoland*

Given their reported existence elsewhere, we would expect a number of dragon-haunted waterfalls in Africa, and this no doubt is the case in reality. In particular, we would expect the majestic Victoria Falls on the Zambesi River to harbor a resident dragon. However, few travellers comment on such matters, and as a result I have found only a single well-documented example to date, and a passing reference to a second case. With regard to the first of these, T. Lindsay Fairclough (1905:201), a member of a British surveying team in Basutoland in the early twentieth century, observed the following:

The two principal waterfalls in Basutoland are on the Maletsunyane and Ketane rivers, both tributaries of the Orange. The former river falls into a vast chasm, which is exceedingly grand in its bare ruggedness. The actual fall is 630 feet, but the walls of rock on either hand rise over a thousand feet. The Ketane fall, about 400 feet, is smaller in volume, and the gorge is full of bush, and small green hills in the background still further add to the beauty of the scene. The average native will not willingly approach the

foot of these falls, on account of a gigantic snake, the spirit of the place, supposed to live in the pool below. The rainbow shining in the spray also alarms them.

The second example appears in a very brief passage in Werner (1933:232), who notes with reference to the spray from a waterfall in Kenya that “the Kikuyu say the rainbow in the water and the sky is not the animal itself, but its picture, because in a very distant region of West Africa the Ewe (in Togo) say the same thing: the rainbow is the reflection of the snake in the clouds.”

These are surely not the only places in Africa or other regions where gigantic serpents are thought to inhabit waterfalls, but without far more searching or contact with indigenous peoples who have preserved traditional beliefs it is all that we have to date. Nonetheless, this brief survey is not without value. Two observations stand out in these stories. First, it is almost too transparent to require comment that the dragon in each of these falls is the rainbow, and although the two are distinguished by comments such as that of Fairclough that *both* the dragon and the rainbow alarm the local people, simple observation tells us that the dragon exists only in their minds, while the physical basis for these representations is the refraction of sunlight shining through the ‘reverse rainfall’ of a major cataract. Second, as the dragons of Niagara and Iguazu illustrate, these dragons are also perceived as preying on young, marriageable women, much like the dragons of Europe who are confronted in mortal combat by knights in shining armor, a point to which I shall return in discussing the ethnology of the rainbow.

Sir James George Frazer (1922:169), the renowned author of the multi-volume classic *The Golden Bough*, was so impressed by the wide distribution of this second theme that he believed a custom of sacrificing human beings to water spirits conceived as great serpents or dragons was once prevalent around the world, and that one form this custom took was to provide a woman to be the spirit’s wife so as to pacify his fury, or provide him a way to reproduce. However, while it is tempting to conclude that these many mythic references to dragons preying on young women may derive from an actual cultural practice of human sacrifice, this conclusion is not inescapable, and in cross-cultural perspective it appears less likely to be the case than other possibilities that will be considered in due course.

To summarize, dragons (or, more appropriately, Rainbow Serpents) have been reported as residents of waterfalls in at least the following locations:

1. Niagara, as reported by the local Iroquoian-speaking Seneca people, where it is the ubiquitous horned water serpent of North America.
2. Haiti, where it is clearly a West African import.

3. Various waterfalls of French Guiana, as observed by the Tupi-Guarani-speaking Oyampi/Wayampi Indians, where it is a gigantic serpent.
4. Various waterfalls of west-central Guyana, as observed by the Carib-speaking Taulipang and Arecuna Indians, where it is a gigantic serpent.
5. Iguazu falls on the Brazil/Argentina border, as observed by the Tupi-Guarani-speaking Guarani Indians, where it is a gigantic serpent.
6. A waterfall on the Gading mountain of southern Sarawak, Malaysian Borneo, as observed by the local Austronesian-speaking Iban people, where it is reported simply as 'a dragon'.
7. Rainbow Falls, on the island of Hawai'i in the Hawaiian chain, as reported in connection with the Polynesian culture hero Maui.
8. Two waterfalls on the Maletsunyane and Ketane rivers in Basutoland, southern Africa, as observed by the local Bantu-speaking people, where it is a gigantic serpent.
9. An unnamed waterfall in Kenya, as observed by the Bantu-speaking Kikuyu people, where it is said to be a 'picture' of a snake in the spray, with a similar idea reported in passing for the Kwa-speaking Ewe of Ghana.

In each of these cases (and no doubt many more that remain unreported) the rainbows produced by the 'reverse rainfall' common to waterfalls of large water volume are seen by the indigenous local people as gigantic serpents, or Rainbow Serpents (in Hawai'i, where snakes are unknown, this is a *mo'o* or lizard, which has the personal name *Kuna*, which means 'freshwater eel').

Looking ahead, we can add that the Rainbow Serpent of aboriginal Australia is also said to be "particularly associated with waterfalls" in the New England tableland, where waterfalls are common (Radcliffe-Brown 1930–1931:343). Needless to say, this seems clearly to be the same phenomenon wherever it is found, showing that the Rainbow Serpent, contrary to general belief, is not confined to the Australian continent, but is the product of a universal response by preliterate peoples to understanding the nature of the rainbow.

Dragons and Thunder/Lightning

Some readers may have noticed another association between dragons and a feature of the natural environment that has turned up more than once in earlier discussions, this one highly negative. In the Babylonian Creation Epic the hero Marduk destroys his dragon mother Tiamat (a four-legged non-human mammal with wings, body scales, horns and fangs) by attacking her with what are described as thunderbolts. Unlike the Chinese dragon, which generally provided the fertilizing rains, the Babylonian Tiamat was said to ‘hold back’ the heavenly waters, and by killing her Marduk released these waters for the benefit of mankind.

In a similar vein, Hogarth and Cleary (1979:27–29) observe that among the Canaanites, southern relatives of the Phoenicians who inhabited the ‘Land of Israel’ before the arrival of Abraham, the most prominent figure in their mythology was the god Baal, meaning ‘The Lord’. However, they then add that Baal’s proper name—presumably as opposed to his title—was Haddad, which meant ‘Thunderer.’ According to one passage of the epic, he

... will send abundance of his rain
And he will utter his voice in the clouds,
He will send his flashing to the earth with lightning.

What is most relevant to the topic at hand is an episode in the life of Baal in which he reportedly fought and slew a monster so obviously dragon-like as to recall the Mesopotamian Tiamat:

... thou didst smite Lotan the Primeval Serpent,
And didst annihilate the Crooked Serpent,
The close-coiling one of Seven Heads ...

Given this observation it is of no small interest that in the story of the dragon of Niagara his enemy, the hero He’-no is described as a keeper of the thunderbolts, and is known as a ‘Thunderer’. In the account given by Morgan the horned water serpent is struck dead by a thunderbolt, while in the first of Parker’s two versions it is killed by the Thunderer’s arrows. Since the story repeatedly describes the lightning that was flashing at this time, we can feel confident that a ‘thunderbolt’, or the ‘arrow’ of the Thunderer was a light-

ning bolt. These accounts of dragons on different continents suggest, then, that there is a fundamental antipathy between dragons and thunder or lightning.

This antipathy is in fact expressed widely in North America through the opposition of the horned water serpent and the Thunderbird. In a brief survey of its occurrence among Algonquian-speaking peoples, who were once spread over much of the northeastern quadrant of the United States and adjacent parts of Canada, Chamberlain (1890) repeatedly returns to the characterization of the Thunderbird as a great bird that flies in the sky flapping its wings to produce the sound of thunder, while flashing lightning from its eyes. As he notes with regard to the Cree of central Canada (1890:51) "The Crees believe that certain divine birds cause the lightning by the flashing of their eyes, and with their wings make the noise of thunder. The thunderbolts are the invisible and flaming arrows shot by these birds." He then adds (1890:51–52) "that the Ottawas believed the thunder was a great bird which flapped its wings on high over the earth to guard its inhabitants and to prevent those evil monsters hidden in the bowels of the earth from coming forth to injure them." Although the reference to "evil monsters" is non-specific, he immediately follows this with a comment (1890:52) on the Ojibway, who "consider the thunder to be a god in the shape of a great eagle that feeds upon serpents, which it takes from under the earth." Finally, in a passing aside on the similarity of this belief among Siouan-speaking peoples, Chamberlain adds (1890:54) that "With the Tetons the snake appears as the enemy of the thunder."

A very similar account of the Thunderbird myth appears in McClintock (1941), based on his personal experience among the Blackfoot of southern Alberta. Again, thunder is described as produced by a great bird flying with the clouds, and lightning by the flashing of its eyes. And like Chamberlain, he notes that the Thunderbird feeds on serpents.

The Mohawk of upstate New York believed in a lake serpent called *Onyare* which, according to Gatschet (1899:259)

traversed their country, and by coiling up in dominant positions near the pathways or trails interrupted communication between the settlements of the Iroquois. Onyare's breath, diffused through the air, brought on sickness; it was finally with its brood destroyed by thunderbolts, or compelled to retire into deep water.

Speaking generally of Native American peoples indigenous to the southeastern United States, Lankford (1987:77) observed that

many aspects of the Thunderbird belief, which are held by so many tribes over such vast distances and across all known cultural boundaries, suggest that this is a body of mythology which is ancient in North America. The tension between the Thunderbirds and the Underwater Serpents is a dualism of ancient origin, and it is still present in the lore of the Southeast. It may be that the much-debated "forked-eye design" of the Southeastern Ceremonial Complex should be seen as a convention denoting lightning, and all who wear it as Thunderbirds, or related to that function.

The latter reference is to a debated artistic motif found on shell engravings from the Craig Mound at Spiro, Oklahoma, which suggests to some that the idea of the Thunderbird and its use of 'thunderbolts' to combat the horned serpent was also present in prehistoric mound-building cultures (Phillips and Brown 1984).

According to Swanton (1928:251), among the Creek Indians of Georgia there was a belief in a horned snake called *sint-holo* ('sacred snake'), which

lived along big creeks or in caves ... These snakes often moved from one stream to another, and it was claimed they could make it rain in order to raise the rivers so that they could leave their hiding places with more facility ... The *sint-holo* is said to have made a noise like thunder. Once a hunter discovered a *sint-holo* fighting with the Thunder ... My informants knew nothing about the thunderbird, nor any story bearing on the rainbow.

This inherent conflict between thunder/lightning and the horned serpent is clearly apparent in the broad picture of North American cultures, although particular belief systems may have altered it in surprising ways. With reference to the Blackfoot, for example, McClintock (1941:166) notes that "The symbolizing of lightning by the serpent is a twin myth and also the natural evolution of the Indian's method of reasoning backward from effect to cause. He sees the resemblance in the lightning's sinuous motions, quickness, and fatal stroke, to similar qualities in the serpent." This interpretation, of course, reverses the far more common idea that the lightning is a 'thunderbolt', that is, an arrow shot by the Thunderbird to destroy the horned water serpent. Here, in a novel twist the weapon used to kill the serpent has become the serpent itself. It should not be surprising that we find some contrary interpretations of the relationship between thunder/lightning and the dragon in particular cases, since once these elements, drawn from the natural world, have become part of myth, they are subject to the storyteller's individual elaborations and alterations.

It seems clear that the Thunderbird belief across North America is a mythic attempt to account for the nature of thunder and lightning, both of which can be intimidating when experienced at close quarters, and which have negative associations as forces of destruction, but positive associations as forces that bring the fertilizing rains. What is less visible at this point in the North American tradition of dragons, is whether the horned water serpent is also a mythic attempt to account for some complementary aspect of nature. Given the pairing between thunder and lightning with the horned water serpent, which Lankford (1987) describes as a “dualism of ancient origin”, it is likely that the horned water serpent myth reflects some property of nature that is closely bound in an antagonistic manner to the natural forces that produced the myth of the Thunderbird.

Although the Thunderbird myth is generally regarded as confined to North America, the opposition of thunder/lightning to a horned serpent has also been reported from Central America. Conzemius (1932:169), points out that the Sumu, or Sumo Indians of Nicaragua believe in a creature they call *waula*, which is described as a large boa constrictor “with two horns on the head like a deer.” He adds that the Ladinos call the creature *mazacuate*, from the Mexican (Aztec) *mazatl* ‘deer’, and *coatl* ‘serpent’. This dangerous beast is said “to inhabit certain lagoons in the pine ridges, far away from the nearest Indian village”, and it is maintained that “Man has no power to kill such a boa constrictor, as bullets have no effect on it; it can be destroyed only by a stroke of lightning.”

Within Europe the opposition of the dragon to thunder and lightning is largely concealed in the literature and art describing that part of the continent which had already become Christian. Here, as is well known from the story of Saint George and the dragon, and many similar depictions, the dragon is opposed not by a god of thunder, but by the lances of Christian knights who confronted them as symbols of Europe’s pagan past. Nonetheless, despite the cultural overlay produced by the introduction of Christianity, this more ancient antagonism does show up in several interesting ways. Writing of folk traditions in southern Greece at the turn of the twentieth century, Abbott (1903:261–262) relates a tale about a wedding party that was stopped on its way to the house of the groom by a dragon that blocked the path and held it at bay even though the dragon happened to be lame. Fortunately, the quick-witted bride thought of a means of escape, declaring:

<i>Bride:</i>	I am Lightning’s child, Thunder’s grandchild. I am the Hurler of Thunderbolts, she who flashes and booms,

Once when I flashed I burnt up forty Dragons,
 One was left, a lame one: can that be your lordship?
Dragon: I am he.
Bride: Stand aside, friends, that I may flash and burn him
 up.
Dragon (frightened): Come, pass on; come, go your way; good luck to your
 wedding.

Taken alone this can easily be overlooked as a quaint folk belief in one small corner of Europe, but in a theoretically focused comparative context we see the same antipathy between dragons and thunder or lightning here as in the Babylonian story of Marduk and Tiamat, the Canaanite story of the conflict between Baal and the 'primeval serpent', the Thunderbird throughout North America, or—as will be shown in Chapter 7—the lightning and the rainbow over much of Bantu-speaking central Africa.

Allen and Griffiths (1979:22–24) note the common confrontation of a storm-god and the dragon in the mythologies of the ancient Middle East. According to them "This confrontation is frequently between a monster and a storm-god who is armed with thunderbolts or lightning shafts. Indra appears armed in this way, as do the Sumerian gods and the rain-god of the Mayas." Shortly after this they note that in the mythology of the Hittites, an Indo-European-speaking people who inhabited the Anatolian plateau of modern Turkey at the start of the second millennium BCE, the dragon Illuyankas is similarly confronted by the Hittite storm god, who initially suffers a reversal, but then takes revenge upon the monster with thunderstorms and lightning.

Norse mythology provides another perspective in which the relationship between dragons and thunder or lightning is reminiscent of beliefs from other parts of the world, although it is elaborated through an extremely intricate narrative tale. Since Christianity diffused into Europe from the south, Scandinavia was the last part of the continent to renounce its pre-Christian polytheism. With regard to the unique stave churches of Norway, many of which, ironically, predate the arrival of Christianity, Lindholm and Roggenkamp (1969:48) note that "The pagan world of heroes, gradually sinking into the twilight of the gods, went hand in hand for several centuries with a form of Christianity not yet grasped intellectually. Sigurd, the conqueror of the dragon, and the risen Christ—both had their appropriate place in the stave churches." To this Allen and Griffiths (1979:51) add:

The place of the dragon was the inferior one; he was clearly the degenerative and negative force, dragging men down, which must be over-

come if the message of the risen Christ was to be understood in any way, intellectually or emotionally. The doors of stave churches are so narrow that only one person can pass through at a time, so that entry into the body of the church has to be a thoughtful and personal experience. And the door frames tend to be carved with a multiplicity of dragons and snakes, perhaps, Lindholm suggests, as a reminder of the tangled thoughts and lower, dragon-nature that should be overcome on entering the church.

For this and other reasons we can plausibly suppose that folk belief in Scandinavia remained conservative even after most parts of Europe were Christianized, and this is seen clearly in the *Eddas*, the most important literary documents from Scandinavia in the medieval period.

The *Eddas* are two lengthy Old Icelandic poems on mythical and religious subjects that are often divided into the Elder, or Poetic/Verse Edda, probably composed in the late eleventh or early twelfth century, and the Younger, or Prose Edda, probably written in the late twelfth to early thirteenth centuries. In examining these documents it is easy to become lost in a maze of irrelevant detail, so I will try to limit myself to the most important features they contain with regard to the relationship of dragons to thunder and lightning.

Among other things, the *Eddas* describe the mythical worldview of pre-Christian Iceland, in which a number of gods with human foibles were ultimately descended from the supreme god Odin and his wife Frigg. Most important of these for our purposes was Thor, the thunder god, who is generally depicted as wielding a mighty hammer (the blows of which produced thunderclaps). The world itself was divided into three parts, an Upper world, a Lower world, and the Middle world in which we live. Separating upper and lower worlds was an enormous reptile, the Midgard Serpent, or *Jörmungandr* ("Great Beast"), which encircled the world holding its tail in its mouth. This peculiar trait, which the psychologist Carl Jung called the *uroboros* (circular serpent devouring itself), will be revisited in a later chapter.

European dragons are sometimes individuated, with personal names and in some cases genealogical histories, as with the dragons Typhon, Python or Ladon in classical Greek mythology, or Fafnir in the Norse *Völsunga* saga, and its equivalent, Fafner, in Wagner's version of the Middle High German Nibelungenlied story. The Midgard Serpent is no different, as it is named and said to be one of three children of Loki, the Norse God of mischief and the giantess Angrboða. Despite this divine parentage from gods that resembled ordinary humans, the Midgard Serpent was nonetheless clearly a dragon. The pri-

mary difference between it and the more conventional dragons of *Beowulf* or the *Nibelungenlied* was size: the Midgard Serpent enveloped the planet in one enormous coil. Much of this was under water, and hence unseen, and its presence there helped to explain tidal waves and other violent events at sea.

To move to the heart of the matter, Thor, the thunder god, is said to have had a particular hatred of the Midgard Serpent, and he was eventually (in the course of a long, involved story) able to fish it up from the depths when it took a bull's head used as bait, and was hooked. Although Thor was unable to kill it in this struggle, the reader is told that he will ultimately do so at Ragnarök, the final battle of good and evil at the end of the world, when Heaven, Earth and the Underworld will be destroyed (the 'twilight of the gods').

A similar use of thunderbolts to kill malevolent chimerical serpents appears in the dragon traditions of the Indian subcontinent. As related by Hogarth and Cleary (1979:44–45), who describe several different serpent myths in India

Another Indian myth in the tradition of dragon-slaying involves a clash between the demonic dragon Vritra and the god Indra. Vritra, the "Enveloper" or "Obstructor," is depicted as a limbless cloud serpent, writhing about the mountain tops and holding the waters of heaven in its belly. Indra is a weather god who rides the skies in a chariot and is armed with the rainbow and the lightning. He launches a thunderbolt at Vritra; the dragon bursts asunder and the pent-up waters stream down freely across the thirsty land, bringing new life to all.

These writers speculate that this legend is especially pertinent to India, because it is "a parched land." However, this statement is true only of parts of India (mostly the northwest), yet the relationship between thunder/lightning and the dragon appears everywhere to be the same. First, thunder and lightning are produced by a divine or semidivine agent in the sky, and they are used to combat a dragon which resides in watery domains below. Second, the dragon is commonly seen as 'holding back' the rain, which can only be released by striking the monster dead with a thunderbolt. The Indian tradition in fact seems to be a blend of several diverse elements, some of which appear to be mutually incompatible. The fact that Indra "is armed with the rainbow and the lightning" is particularly odd. Lightning would form a potent weapon against an adversary, since it can strike with deadly force (as humans have occasionally found when surprised by a lightning strike that left them unconscious), but the rainbow offers no such power as a weapon, and in this description it must be regarded as an enigma.

In other versions it is not the storm god Indra who combats the water-controlling dragon, but rather the Garuda—a gigantic celestial bird connected with the deity Vishnu. As Allen and Griffiths (1979:43) put it, in Vedic India “The Garuda was a gigantic divine bird who became the steed of Vishnu. In Vedic times the Garuda was entirely eagle, although he was represented in partly human form later. Garudas lived on snakes and were therefore the deadly enemies of the *Nāgas*.”

This relationship of enmity or opposition between thunder/lightning and the dragon is far less apparent in China. However, it is not absent. Allen and Griffiths (1979:36) note that “Floods were caused by dragons fighting in the water and storms by dragons fighting in the air. Lightning was heavenly fire sent to stop the dragon fights, for dragons fear fire.” Moreover, as noted by de Visser (1913:83) large boats which were used by the emperors for pleasure trips, often were painted with the emblem of a bird “not to denote their swift sailing, but to suppress the water-gods” (and so prevent disasters caused by drowning, flooding, waterspouts and the like).

This passage raises another point that deserves attention. Although the usual explanation for thunder among North American Indians was the flapping of the wings of the Thunderbird, the Seneca legend of the dragon of Niagara describes He'-no, the slayer of the horned serpent, only as a ‘Thunderer’, with no explicit reference to his appearance. This characterization seems to be nothing more than a personification of the thunder in almost human form, and it shows how a basic idea can assume variant forms in different mythic traditions. In the Hindu tradition Indra is the god of thunder, lightning, storms and rain, and he is opposed to Vritra, the cloud serpent, much as the Thunderbird is opposed to the horned water serpent in aboriginal North America. The chariot of Indra is drawn by the Garuda, usually described as a huge bird or bird-like creature that was the deadly enemy of the serpentine *nāgas* that guarded earthly waters, making the similarity of these geographically widely separated belief systems even more striking.

Finally, the use of a bird emblem on imperial pleasure boats in China “to suppress the water-gods” shows how the elements of thunder and lightning that are normally associated with a celestial bird in other cultures can be symbolized by a bird even though the association of a bird or bird-like creature with thunder and lightning is rarely, if ever, mentioned in references to the Chinese dragon. Hogarth and Cleary (1979:126) bring up a similar point in connection with the European dragon, where we rarely hear of this connection: “Wise consumers of dragons’ blood could protect themselves by a simple test: due to the natural antipathy between dragons and eagles, the blood of a dragon would not mix with that of an eagle.”

In another of those curious cross-overs, Allen and Griffiths (1979:36–37) say

The Chinese classics teach that the dragon is thunder, and also that he is a creature of the waters who rests in pools in the winter and rises in the forms of rain clouds in spring. In the autumn, the dry season, he sinks back into the pools where he sleeps as he waits for the spring ... Always it is made clear that the dragon must fly up to the sky before the rain can fall to earth and so, in times of drought, various methods were employed to persuade, or even to frighten, the dragon into leaving his pool and rising in the form of a cloud. Sometimes gongs were beaten, so that the dragon, although deaf, would respond to their vibration ... At the water festival on the fifth day of the fifth month, dragon boat races were deliberately organized in such a way that they seemed to represent fighting dragons in the hope that this would precipitate a real dragon fight with its accompanying heavy rains.

These writers also claim that the dragon could be raised from his sloth “with effigies of the Garuda”, evidently by frightening him into vacating the comfort of the pool he was guarding. This is surprising, since the Garuda is part of Hindu cosmology rather than traditional Chinese culture. However, similar ideas evidently penetrated insular Southeast Asia from India at an early time. I was once given a wood-carving by the Berawan people of northern Sarawak on the island of Borneo. It consists of a single piece of wood which terminates at one end with the head of a horned dragon, and at the other end with the head of a hornbill, a crested bird with a prominent beak. The celestial bird/terrestrial dragon motif was thus neatly represented in a single body with two heads, representing the same kind of dualism expressed in the Thunderbird myth of North America.

Any one of these confrontations between a dragon and thunder/lightning might be regarded as contrived for entertainment, but the pattern that emerges from an overview of widely distributed beliefs suggests that this recurrent association is rooted in basic relationships in the natural world to which all humans have access. In connection with this observation, it is worth noting that in some traditions the dragon is also opposed to the sun. Cotterell (1989:120 ff.), for example, reports with regard to the Chinese *lóng* (dragon), that there was “some form of antagonism between dragons and the sun.” Initially this may seem contradictory—what could be more different than a stormy sky with thunder and lightning, and a sunny sky without rain? However, the common element shared by these opposed weather conditions, namely the absence of a competition between sun and rain, evidently was hostile to the survival of

the dragon, just as it is hostile to the production of rainbows (rainbows cannot appear in sunny skies without rain, or in thunderstorms). As we will see in later chapters, the dragon's existence in the minds of those who created it depended on a delicate balance of opposed forces that were capable of rapidly changing, and this provides an observational basis for understanding why dragons have been considered crossculturally ambivalent—intransigently negative in Europe, and North America, but overwhelmingly positive in China (Allen and Griffiths 1979:9).

To summarize, dragons are reported as enemies of thunder or lightning, sometimes portrayed as birds, in at least the following locations:

1. The Fertile Crescent, in the ancient Babylonian creation epic, where they are slain by 'thunderbolts' (= lightning).
2. The Canaanites in 'the Land of Israel', where they are slain by lightning.
3. Throughout North America and parts of Central America, where they are opposed to the Thunderbird.
4. In southern Europe, where they are slain by 'thunderbolts' (= lightning).
5. In India, where the thunder god Indra slays them with 'thunderbolts' (= lightning); in other accounts it is the Garuda, the celestial bird that draws the chariot of Indra, that is the mortal enemy of the *nāgas*.
6. In the Anatolian plateau of Turkey, where the Hittite storm god confronts them with thunder storms and lightning.
7. In Scandinavia, where the thunder god Thor is the mortal enemy of the Midgard Serpent.
8. Looking forward, in Chapter 7 we will see that the lightning and the rainbow are mortal enemies in the mythology of many Bantu-speaking peoples across central Africa, where again the rainbow is seen as a giant serpent.

The Ethnology of the Dragon

We have now reached a point where we must begin digging deeply into data, which will require a different reading style. Rather than continuous connected text, as in the preceding chapters, this chapter will provide a kind of encyclopedic text in which the reader moves from one element or trait in the ethnology of the dragon to the next, with areal documentation of each, punctuated by brief discussions that will be elaborated more fully in later chapters.

The major purpose of this chapter is to justify Table 1, which presents the geographical distribution of 27 draconic traits, all but one of which are found in at least two widely separated regions of the Earth (the reason for the one exception, the dragon as a sign of war, will be explained in Chapter 7). This can only be done by providing data that supports the statements made there. The presentation of data will follow the categories established in that table 1) = giver/withholder of rain, 2) = guardian of springs or other bodies of water, 3) = lives in caves, etc. However, before presenting the supporting evidence, a few words on the term ‘ethnology’ are in order.

One definition of ethnology is that it is the comparative study of cultures, or of selected elements of culture across a broad spectrum of sample units. It contrasts with ethnography, which is concerned with the firsthand holistic description of single cultures. Ethnology is thus inescapably concerned with history: why does a culture trait have the distribution it does? Is it best explained by diffusion across cultures in contact, by descent from an ancestral culture in which an arbitrary invention was passed on by inheritance, or by independent invention in cultures that are too widely separated and distinct from one another for contact to be seriously considered as a cause of similarity?

One useful way to characterize the difference between these two approaches is with the linguistic terms ‘diachronic’ (through time) and ‘synchronic’ (at one point in time). Diachronic studies attempt to understand how languages or cultures have changed or developed over time, while synchronic studies focus on the interaction of parts within a system that need not be related to any preexisting state.

Both ethnology and ethnography are branches of cultural anthropology, and cultural anthropology was the wellspring out of which such academic disciplines as folklore developed. Anthropology began as ethnology, for the simple reason that reliance on the reports of travellers and missionaries preceded

the presence of professionally trained scholars in the field, where 'in the field' means living among the people whose culture is being described, an approach sometimes called 'participant observation'. Although professionally grounded field studies of indigenous peoples were already underway in some quarters of North America by the 1850s, nineteenth century anthropological research was almost exclusively dominated by ethnology, and only around the First World War did ethnography begin to gain a foothold through the pioneering fieldwork of scholars such as Bronislaw Malinowski, who lived in the Trobriand Islands of western Melanesia and described the culture of its people in a number of seminal works, and of A.R. Radcliffe-Brown, who worked in Sri Lanka, the Andaman Islands, and Australia.

Once the collection of data about traditional societies had become professionalized through detailed ethnographic studies, a tendency developed among anthropologists to eschew ethnology as a dated approach that lacks a trustworthy descriptive basis, and often focuses on what is sometimes dismissively called 'conjectural history'. Others criticized it for having an elitist, 'Europe at the top' mentality in discussing levels of cultural evolution. There are many reasons to consider this attitude an overreaction, as much valuable work was done in the way of generalization about human societies through a broadly comparative approach, despite the varying quality of the data used. One need only think of E.B. Tylor's theory of animism, published in 1871, which held that preliterate societies around the planet see nature as pervaded with spirits that are present in unusual natural phenomena, and that motivate many natural processes. Rather than the mechanistic approach to the physical world that we know through the labors of science, then, preliterate humans saw many inanimate phenomena as living things, an insight that still rings true today, even with the most up-to-date research methods and information.

A basic question that arises in doing ethnology is 'What do we compare?'. Do we compare whole cultures, and if so, how can that be done? If not, do we compare single elements, or traits, of cultures, and if so what issues does this method of comparison create? This question has led to a split in the scholarly community that is in some ways reminiscent of political parties. To keep matters simple, let me call one side in this divide the Tapestry School, and the other the Necklace School. Members of the Tapestry School see a culture as being like a tapestry decorated with images woven of fine threads. Take out a thread to show to someone and it has no meaning, as it tells us nothing about the picture of which it was a part. Compare it with a similar thread from a different tapestry, and even if the two threads are identical this similarity has no significance, since they may have been parts of very different woven images. There

is an implicit assumption in this approach that cultures are tightly interconnected sets of principles, values, and ideas that cannot be separated from one another without losing their fundamental integrity. A view of essentially this kind was first expressed explicitly in a paper originally published in 1896 by the pioneering field anthropologist Franz Boas, who maintained that “research which compares similar cultural phenomena from various parts of the world ... makes the assumption that the same ethnological phenomenon has everywhere developed in the same manner. Here lies the flaw ... for no such proof can be given” (Boas 1940:273 ff.).

On the other hand, members of what for convenience I call the Necklace School see cultures as more loosely associated collections of elements or traits that are more like beads on a string than like threads in a tapestry. Take a bead out of a necklace, and it is still a bead, and a recognizable part of a necklace. Compare it with a bead from a different necklace and its similarity or difference tells you which necklace it came from. The implicit assumption of this approach is that although cultures may have certain tightly interconnected organizing principles, many practices and beliefs are only loosely associated with these principles, and can easily be separated and compared across ethnolinguistic groups. The archaeological theorist Lewis Binford (1987:399), who represents this second position, responded to the above quotation from Boas with the remark that “To a scientist this is an intellectually strange conclusion to draw,” and as noted in Blust (1984:31 ff.) a position like that adopted by Boas and endorsed by later anthropologists such as Leach (1951) is hard to separate from a rejection of generalization in anthropology.

Although it became disfavored among the majority of anthropologists in part because the act of comparison requires that comparata be extracted from their contexts in particular cultures, ethnology never died—it simply became an adjunct to the primary focus on ethnography, and remained alive because of individual anthropologists who had an interest in broad generalizations about the nature of culture. In looking at the data collected here we must recognize that much of it was not collected by professional anthropologists, and that it is atomistic—that is, not embedded in a larger cultural matrix. However, the claim that decontextualized culture traits have no value because they lack a demonstrated connection with other parts of the culture from which they are extracted is a fallacy. Applying the same standard to such disciplines as historical linguistics or comparative anatomy would make it impossible to do any work in these well-established fields. For example, the genetic relationship of languages is commonly based on the recognition of cognate vocabulary, and this means extracting individual words or morphemes (the smallest units of meaning) from the larger contexts in which they occur (Greenberg 1957:35–

45). English *three*: German *drei*, English *thorn*: German *Dorn*, or English *path*: German *Pfad* are non-controversial pieces of evidence for the common origin of English and German that would be inadmissible if isolated elements of language were rejected for comparative purposes. Similarly, the evolutionary identity of reptilian forelimbs to the wings of birds would be impossible to show if these organs could not be compared in isolation from the total anatomical structures in which they are found.

The present study thus uses large data samples that consist of decontextualized culture traits, in the tradition of the Human Relations Area Files as developed by George Peter Murdock (1967), or the Culture Element Distribution Studies, founded by Alfred L. Kroeber as part of the University of California Anthropological Records, and developed further by scholars such as Driver and Massey (1957), and Jorgensen (1974, 1980). In each of these studies culture traits are plotted by geographical distribution, and language family affiliation in an attempt to determine their causation.

To conclude, the comparison of isolated culture traits is not only a legitimate scientific enterprise,—it is *required* in most comparative work, since the comparison of total cultures would be as impossible as the comparison of total languages. In much the same way that comparative linguists or comparative anatomists draw their conclusions from data points that are extracted from larger contexts, the traits of dragons and rainbows that are documented here can be usefully compared, not so much for inferences about common history, as for inferences about common cognitive pathways by which human psychology has responded to the natural environment in a wide array of cultures around the world. Between these two extremes the comparison of culture complexes—conceptually integrated facets of a culture—is possible, but rarely attempted. An exception is seen in de Heusch (1982:34–75), where the rainbow, portrayed as a giant snake that holds back the rain in the dry season, and the lightning, representing the rainy season, and the mortal enemy of the rainbow, constitute an evolving mythic cycle in a number of Bantu-speaking societies across a broad swath of central Africa, as will be shown in Chapter 7.

This chapter and Chapter 7 concern the ethnology of the dragon and the rainbow respectively. Both are ‘data-heavy’, since it is necessary to establish a solid base of facts in order to justify the claims made in Table 1, and other claims that will follow. Too often in discussing the nature of the dragon statements have been made impressionistically, or without references that allow ready checking. I have made every effort to provide my sources to the interested reader. Data will be cited in the following format. First, all citations are assigned to major geographical regions, of which twelve are recognized, the six

shown in Table 1, and six others that are added here as 7–12 to round out our global picture of the dragon as a universal human creation:

1. Europe
2. The ancient Near East
3. South Asia
4. Central and East Asia
5. North America and Mexico
6. Central and South America
7. Mainland Southeast Asia
8. Insular Southeast Asia
9. New Guinea and satellite islands
10. Australia
11. Pacific islands (beginning with the Solomons chain)
12. Africa

First, for historical reasons Egypt is assigned to the ancient Near East rather than to Africa. Second, I give the name of the ethnolinguistic group in which a trait is found, each of which is classified by language family affiliation in Appendix. This citation feature is important in order to control for Galton's Problem (ensuring that the units of comparison are historically independent), since language relationship can normally be established with confidence as indicating cladistic descent, whereas nothing similar exists for non-linguistic aspects of culture. Where a language is generally regarded by linguists as having no well-established relationships its affiliation is given as 'Isolate'. Third, the location of the group is given. Fourth, the relevant information regarding a belief pattern is related, and finally the source of the data is given with page references for published material, and date of personal communications where it was still possible to do this. To illustrate:

1 Central and East Asia

"Like the Shintō dragon-gods the dragon in the Sacred Spring Park was believed not only to be able to make rain, but also to possess the faculty of stopping it, if it was pouring too abundantly" (de Visser 1913:161).

2 North America and Mexico

The Western Mixe of the state of Oaxaca in southern Mexico, say that a snake with a red and green back resembling a mat lives in springs. River floods are caused by this snake (Beals 1945:94).

In the interest of accuracy, I cite material from most published sources verbatim, as in the above quotation from de Visser. However, since even a single sentence may contain information that relates to more than one trait, and since each trait is treated separately, some repetition is unavoidable. I have tried to keep this to a minimum, but have not been able to eliminate it entirely.

Finally, because of the inherent difficulty in several parts of the Earth of distinguishing dragon from Rainbow Serpent, and hence from the rainbow, I have chosen to restrict my citation of dragon traits to dragons that have no explicit connection with the rainbow. Where one and the same phenomenon is described as a water serpent in its terrestrial form, and as a rainbow in its celestial form, I normally treat it in Chapter 7 as a rainbow even though it may also appear as a serpent, and hence as a dragon. With these prefatory remarks we can now begin our global survey of the ethnology of the dragon following the order of traits cited in Table 1.

3 The Data

3.1 *Trait 1: The Dragon Is Giver/Withholder of Rain*

3.1.1 A Giver of Rain

3.1.1.1 *South Asia*

In India “The Nagas were water-deities There are supposedly four types of Nāga. There are the Heavenly Nāgas, who uphold and guard the heavenly palaces; Divine Nāgas who cause clouds to rise and rain to fall; Earthly Nāgas who clear out and drain off rivers; and Hidden Nāgas who are the guardians of treasure” (Allen and Griffiths 1979:42).

In India, as in China, the basic concept of a dragon was elaborated beyond the simpler forms that are commonly found in preliterate societies. Here, a division of labor is presented for the various types of *nāgas*, or water serpents, with only the Divine Nāgas being givers of the fertilizing rains that are critical to life in traditional agricultural societies.

3.1.1.2 *Central and East Asia*

In China “When black and yellow clouds covered the sky, and thunder and lightning raged, the ancient Chinese said, like those of to-day: “The dragons are fighting; look at their blood spreading over the sky.” And at the same time the heavenly dragons caused the rain to pour down upon the grateful earth” (de Visser 1913:38).

In China “the dragon belonged to the emblematic figures depicted on the upper sacrificial garment of the emperor. It is not to be wondered at that this

divine giver of rain, at the same time symbol of a good sovereign and his blissful government, should be represented among the Imperial ornaments" (de Visser 1913:99).

"On Japanese prints the dragon is often accompanied by a huge spiral, representing the thunderstorm caused by him" (de Visser 1913:105).

With reference to the dragons of Japan at a period when the native Shintō religion was still more important than Buddhism, we read that the word *tatsu* meant 'dragon', and

the fact that the ancient Japanese had such a word indicates that they themselves knew a kind of dragon before they were taught by Koreans and Chinese about the existence of the Chinese dragons ... These dragons were *kami*, gods, who lived in rivers and seas, valleys and mountains (in rivulets, lakes and ponds), bestowing rain upon their worshippers (de Visser 1913:154).

In medieval Japan various schemes were used to force a dragon to ascend and bring the desired rains. The Sacred Spring Park is said to have been an important place where Buddhist services were held to obtain rain. During one lengthy drought in 875 CE the Buddhist priests who had not succeeded in their prayers for rain were advised by an old man that people had earlier resorted to an unusual stratagem to achieve their ends: "In the pond of the Sacred Spring Park there is a divine dragon. Formerly in times of heavy drought the water of this pond was let out and the pond was dried up; bells and drums were beaten, and when (the dragon) answered (the request) it thundered and rained" (de Visser 1913:160). In other words, by depriving the dragon of the comfort of its terrestrial habitat where it slumbered underwater, it was forced to fly up to the clouds to assume its celestial role as a rainmaker.

3.1.1.3 *North America and Mexico*

As noted earlier, according to the Creek Indians of Georgia the horned snake called *sint-holo* ('sacred snake') "lived along big creeks or in caves These snakes often moved from one stream to another, and it was claimed they could make it rain in order to raise the rivers so that they could leave their hiding places with more facility" (Swanton 1928:251).

This is the only citation I have found which associates the horned water serpent of North America with the production of rainfall, and the context is one in which rainfall is produced not for the benefit of mankind, but rather to facilitate the translocation of the serpent itself.

3.1.1.4 *Central and South America*

Huxley (1979:9–10) reports a belief common to the Maya which shows close parallels to the Chinese notion that the dragon makes rain when it flies among the clouds at the start of the rainy season, but at other times sleeps in terrestrial water sources or in caves. This rain-making function takes place

when the Chacs, as the present-day Maya call the four Iguanas of the House, have deserted their pools and rivers during the dry season to sleep overlong in their caves in the hills, causing earthquakes as they toss in their dreams. They then surge out with their water jars, shouting at each other and causing storms whenever a female Chac collides with a cloud. Both sexes are imagined as having the body of a plumed serpent and a human head, which in the male is crowned with antlers.

Here the well-known Mesoamerican plumed serpent is portrayed as a provider of rain, bringing the dry season to an end as it leaves its pools or rivers to take up residence in the sky at the onset of the rainy season. The most important thing to note in this connection is that the plumed serpent—like the dragon in other regions—spends the dry season dwelling in terrestrial water sources, but the wet season flying in the sky. It is thus not only a creature that varies its residence at different times of the year, but one in which this variation is correlated with rainfall or drought.

In a brief comment on the Botocudo, or Krenak of eastern Brazil, Métraux (1963a:540) noted that these people believe “A great snake is lord of the water, signals to the rain, and makes it fall.” Nothing more is said, but even this limited statement reveals a belief in a supernatural serpent that guards water sources and causes the rain to fall at certain times of the year.

In summary, the dragon as a giver of rain is robustly attested in India (where the Divine Nāga has this function), in China, Korea and Japan, in Central America (specifically among Mayan-speaking peoples, although it may be more widespread, but unrecorded in this area), and in at least one tropical forest tribe in South America. There clearly was an indigenous dragon in Korea and Japan, but Chinese cultural influence in both areas was so dominant for over a millennium (from roughly the beginning of the Tang dynasty in 618 to at least the beginning of the Qing dynasty in 1644) that it is often difficult to separate indigenous from introduced elements of culture in these countries. However, it is unlikely that the Indian *nāga* is a borrowing from China, or that the very different Chinese dragon was borrowed from India, and the similarity of the Chinese and Mayan beliefs cannot seriously be considered a product of contact. A more marginal expression of this belief appears in the Creek Indian

reference to the ability of the sacred snake (*sint-holo*) to produce rainfall in order to move from one stream to another.

3.1.2 A Withholder of Rain

The dragon is more sparsely attested as a withholder of rain. I have found a single mention in the literature on the European dragon, it is implied in Sumerian and Babylonian mythic accounts, and is a secondary phenomenon in Chinese traditions. In Japan, where desired rainfall sometimes came in unwanted quantities, measures were taken to compel the dragon of the Sacred Spring Park to withhold the rain to prevent flooding.

3.1.2.1 *Europe*

Although a connection with the weather is rarely mentioned for European dragons, early in the twentieth century Abbott (1903:261) recorded the following lines from a Greek-speaking population in rural Macedonia which, he says, “form the beginning of a song heard at Nigrita”:

Yonder at St. Theodore's, yonder at St. Georges's
A fair was held, a great fair.
The space was narrow and the crowd was large.
The Drakos held back the water and the people were athirst,
Athirst was also a lady who was heavy with child.

According to Lawson (1910:280) the term *drakos* “indicates to the Greek peasant a monster of no more determinate shape than does the word ‘dragon’ to ourselves. The Greek word however differs, and has always differed, from the English form of it in one respect, namely that it is often employed in a strict and narrow sense to denote a ‘serpent’ as distinguished from a small snake.”

3.1.2.2 *Ancient Near East*

As noted earlier, in the Babylonian creation epic the monster/dragon Tiamat, who “holds back the waters”, controls the release of rain from the sky, and must be slain with a thunderbolt to unleash it.

3.1.2.3 *Central and East Asia*

Although the great majority of ancient Chinese texts stress the role of the dragon as a beneficent being in bringing rain, and hence agricultural fertility to the human community, there are isolated passages which suggest that this relationship is sometimes reversed. According to one document translated as ‘Various divinations of farmers’ “when black dragons descend this means

drought or at least not much rain, hence a proverb says: “Many dragons, much drought.” The descending of *white* dragons, however, was explained to be a sure sign of coming rain” (de Visser 1913:111).

With respect to ancient Japan, where flooding sometimes occurred as a result of excessive rainfall, we read that “Like the Shintō dragon-gods the dragon in the Sacred Spring Park was believed not only to be able to make rain, but also to possess the faculty of stopping it, if it was pouring too abundantly” (de Visser 1913:161).

3.1.2.4 *Central and South America*

Allen and Griffiths (1979:11) maintain that

In Central and South American mythology ‘the monster that kept back the waters’ is represented as a snake, and is shown in the company of the elephant-headed rain god. The Maya Codex Troana shows the elephant-headed god Chac standing on the head of a serpent as he himself pours water to the earth. In the Codex Cortes, the serpent is clearly seen to be restraining or holding back the waters.

Although its central claim about a serpent withholding the rains may be correct, this is a puzzling statement since there have been no indigenous elephants in the Americas for many thousands of years. It is apparently motivated by the depiction of an upright humanoid with a proboscis like that of an elephant.

Without question the most important point to take away from this section is the *ambivalent* nature of the dragon as either a giver of rain (normally positive), or a withholder of rain (normally negative). A number of writers have noted the ambivalent character of dragons in general, but have rarely if ever suggested an explanation for this trait in observations of the natural world. There is no obvious reason why such an ambivalence would be attributed to a mythological character if it were purely whimsical. However, as will be seen in Chapter 7, this is exactly the view that many tribal peoples have of the rainbow—some see it as a sign that rain is coming, while others (in some cases quite closely related) see it as a sign that the rain has stopped or will stop.

3.2 *Trait 2: The Dragon Is a Guardian of Pools or Springs*

As summarized in Table 1, the belief that dragons are serpent-like creatures that live in springs, ponds, lakes or rivers, and jealously guard their waters from human intruders is almost universal. In some areas, as China and Mesoamerica,

there is a stated seasonality by which dragons inhabit ponds in the dry season, but ascend to the clouds in the wet season, where they stay for extended periods as producers of rain.

3.2.1 Europe

The mythology of Classical Greece treats us to some of the best-known examples of dragons guarding springs. In a well-known Greek myth King Cadmus, founder of the city of Thebes, has an encounter with a dragon that lives in a water-filled cave. This is how Ovid, in Book 3 of his *Metamorphoses* describes the event:

He was now going to offer sacrifice to Jupiter, and commanded his servants to go and fetch some water for the libation from the running springs. An ancient grove was standing there, as yet profaned by no axe. There was a cavern in the middle of it, thick covered with twigs and osiers, forming a low arch by the junction of the rocks; abounding with plenty of water. Hid in this cavern, there was a dragon sacred to Mars, adorned with crests and a golden colour (Riley 1919:84).

The servants were rattled, but Cadmus arrived in time to promptly slay the beast with a large rock. As will be seen shortly in discussing another trait of dragons, Ovid's comment that this dragon was "sacred to Mars" is significant in showing a connection of dragons with war. On the same page Riley adds the following footnote: "Euripides says that the dragon had been sent there by Mars to watch the spot and the neighbouring stream. Other writers say that it was a son of Mars, Dercyllus by name, and that a Fury, named Tilphosa, was its mother."

A little over a century ago at least one informant who was interviewed by a folklorist in the Greek-speaking part of rural Macedonia proclaimed "I myself remember seeing, as a child, monstrous horned snakes swarming on yonder plain. Where are they now?" Furthermore, in this district it was widely believed that "the drakos" (dragon) "haunts the wells (hence called 'dragon springs') and works mischief on the people by withholding the water" (Abbott 1903:260–261).

Freshwater springs seem to have been less important in northern Europe than in the Mediterranean region, so that in Norse mythology "dragons often lurk in the cold sea or in gloomy lakes, to be glimpsed or imagined amid storms or fogs" (Hogarth and Cleary 1979:90).

In a massive study focused primarily on the dragon in classical Greek myth and literature, Fontenrose (1959:545–549) devotes an appendix (Appendix 6: 'Dragons and springs') to the question why dragons are so often seen as

guardians of springs. Drawing on the ideas of Norman Douglas (1928), whom he quotes, he says “The dragon, I hold, is the personification of life within the earth—of that life which, being unknown and uncontrollable is *eo ipso* hostile to man.” Following this quotation Fontenrose (545) continues his endorsement of Douglas’s ideas:

He believes that the primordial dragon is the spring; for, he says, springs are called ‘eyes’ in Italy and Arabia; and the eye must be upon a head and the head upon a body; the snake suggested the proper animal shape for the spring to take because of his glassy eye, earth-dwelling habit, cold blood and tenacity of life: hence the dragon As springs flow night and day, so the dragons are sleepless. As earth’s children they guard the treasures within her. The spring-dragon easily becomes a river-dragon, who becomes hungry and spreads out over the land in floods. There are heavenly springs so that he becomes a cloud-dragon that can fall in ruinous thunderstorm upon the fields. A volcanic crater is a spring of fire; so he becomes a fire-dragon that flows forth in lava torrents, or whose poisonous breath becomes the noxious exhalations from volcanic fissures.

This remarkable chain of methodologically uncontrolled speculation is offered to explain various dragon traits without any consideration of the rainbow, which is mentioned nowhere in the book. There is, of course, a reason for this damaging omission: erudite though it is, this study is thoroughly Eurocentric. Since there is little evidence (at least in the literary tradition) for an association between dragons and rainbows in Europe, one must search elsewhere for connections, which Fontenrose is simply not interested in doing. Instead, he has found the sources for various draconic traits through a method that hardly differs from free association.

3.2.2 South Asia

The belief that the Indian *nāga* was a guardian of springs or other water sources is less developed than in some other areas. Allen and Griffiths (1979:42) state that “The *Nāgas* were water-deities. They were sometimes associated with sacred pools or wells, in which case they were presumed to live underwater at the base of an adjacent tree; and were sometimes sea-gods.” The association of *nāgas* with water is well-established, then, but most often they dwell in sumptuous palaces under the sea, rather than jealously guarding springs, waterholes or wells that humans might approach in order to drink.

3.2.3 Central and East Asia

The Chinese classics make it clear that although the dragon flies high among the clouds when it produces rain, it is not always in flight. Rather, the dragon “is a water animal, akin to the snake, which sleeps in pools during winter and arises in spring” (de Visser 1913:38). Its habits are thus seasonal, leading to its presence among the clouds during the rainy season, but to watery slumber at other times of the year. Detached from the natural world this trait may appear arbitrary, but we will see that it is based on meteorological processes that are universally available to human observation, and critical to human well-being.

In China, as in Europe, dragons may take up residence not only in natural water sources, but also in those created by humans, as wells. Most wells were safe sources of drinking water, but apparently not all, since “a ‘dragon-rearing well’ in a ‘dragon king’s temple’ was said to be inhabited by a dragon. Nobody dared draw water from this well, because, if one did so, strange things happened, and the person who had ventured to thus arouse the dragon’s anger fell ill” (de Visser 1913:133).

As already noted with regard to the dragons of Japan, when the native Shintō religion still dominated Buddhism, and hence embodied traditions that were indigenous rather than importations from China, dragons were regarded as gods (*kami*) that lived in rivulets, lakes and ponds, providing rains for the human community.

3.2.4 North America and Mexico

Among the Kato and Yuki Indians of northern California, “A horned and feathered water serpent dwelt in tule marshes, and young girls might be ravished if they approached such places” (Essene 1942:72).

To the Zuni Indians of western New Mexico “The Water Serpent is a collective being who may be found in every spring or body of water” (Wright 1988:153).

According to Grinnell (1972:197) the Cheyenne Indians of the Great Plains held that

In some bodies of water there are said to live great snakes. One underwater monster was the *mihn*, described as somewhat like a very large lizard, with one or two horns on the head, and often covered, or partly covered, with hair. Sometimes these monsters caught people who went into the water and swallowed them. The thunderbird has been known to kill these monsters.

The Gros Ventre/Atsina Indians of the northern prairies believed in a water monster called *Bax'aa*, a name that reportedly also applied to the thunder. Yet,

as stated by Kroeber (1908:278–281), “The water-monster is the enemy of the thunder It is long, snake-like and black, with a long head and turned-up nose and horns. It causes the death of all persons who drown.”

The Lakota of the northern plains of North America believed in the *unktehi*, mythical creatures that reside in swampy places. The exact body form of the *unktehi* is unclear, but it is presumably reptilian with mammalian additions, an inference that is supported by the mutual enmity between it and the *wakinyan* or Thunderbird:

They have four legs and horns which they can draw in or extend them to the skies. They have long hair on the neck and the head which is *wakan* (sacred). Their tails are strong, and they can shoot or strike with them, and they use their tails as men use their hands. They are always at war with the *wakinyan* (Walker 1980:108).

According to Gatschet (1899:257), the Potawatomi Indians of the upper Mississippi river and western Great Lakes region believed there was a huge serpent in Lake Manitou, an artificial lake created for them in northern Indiana as compensation for lands taken by white encroachment. However, this gift had unintended consequences:

When the government officers were about erecting the Potawatomi mills, the Indians strenuously objected to the erection of a dam at the outlet of the lake, lest its accumulated waters might disturb and overflow the subterranean abode of the serpent, the exasperated demon rush forth from its watery domain, and take indiscriminate vengeance on all those who resided near the sacred lake.

This example is particularly interesting, as the lake did not exist prior to a land treaty with the displaced Potawatomi, and was created in 1827 by the federal government of the United States to provide a sawmill for the resettled Indians as a source of income. The belief that it contained a horned water serpent therefore implies that these creatures could move over land from one water source to another.

Among the Yaqui Indians living near the Bacatete mountains in southern Sonora, Mexico, the *yo aniya*, the “ancient and honorable realm”, or world of respected spiritual powers, was experienced in various features of nature, “such as the springs on the eastern margin of the Bacatetes or in the very heart of the mountains, where, for example, snakes with rainbows on their foreheads lived and swam in the water” (Spicer 1980:64).

The Norwegian adventurer Carl Lumholtz, who explored portions of northern Mexico on foot and horseback toward the end of the nineteenth century was particularly impressed by the fear of water serpents among the Tarahumara Indians, living high in the mountains of southwestern Chihuahua:

The Tarahumares, another Indian tribe of Mexico, think that every river, pool, and spring has its serpent, who causes the water to come up out of the earth. All these water-serpents are easily offended; hence the Tarahumares place their houses some little way from the water, and will not sleep near it when they are on a journey. Whenever they construct weirs to catch fish, they take care to offer fish to the water-serpent of the river; and when they are away from home and are making pinole, that is toasted maize-meal, they drop the first of the pinole into the water as an offering to the serpents, who would otherwise try to seize them and chase them back to their own land (Lumholtz 1902:1:402 ff.),

As noted earlier, among the Western Mixe of the state of Oaxaca in southern Mexico, it is said that a snake with a red and green back resembling a mat lives in springs, and drags unfortunate people down into the water. River floods are caused by this snake (Beals 1945:94).

Among the Chontal Indians of Oaxaca, Mexico it is believed that certain spirits connected with water are found in springs. They appear as snakes, and can be either male or female (Carrasco 1960:107–108).

3.2.5 Central and South America

As already seen, the Maya Indians of Yucatan and central America believed that the *chacs*, or 'four Iguanas of the House', which are lizard-like controllers of rainfall, desert their pools and rivers during the dry season and rise to the heavens, causing storms by the collision of female *chacs* with a cloud (Huxley 1979:9–10).

In describing the Arawak-speaking tribes of what is now Guyana, Farabee (1918:151) noted that each of the deep pools along the Essequibo river is inhabited by a spirit, or *vidiu*: "These spirits are thought of as great anacondas with large eyes as bright as the moon These spirits or *vidius* do not kill people or eat them. They simply swallow them without injury, and they live in the *vidiu* forever."

The one region where a belief in the serpent guardian of springs appears to be absent is the Near East, and this may be because of the sacredness of springs and streams in traditional Semitic belief systems (W. Robertson Smith 1957:95 ff., 173 ff.). As Smith puts it with regard to all Semitic cultures, most of which exist in extremely arid environments (173):

The myths attached to holy sources and streams, and put forth to worshippers as accounting for their sanctity, were of various types; but the practical beliefs and ritual uses connected with sacred waters were much the same everywhere. The one general principle which runs through all the varieties of the legends, and which also lies at the basis of the ritual, is that the sacred waters are instinct with divine life and energy.

This attitude is clearly a product of the critical need for water to support life in a harsh desert environment, and it clashes with the idea that springs might be guarded by a dangerous creature that protects them against human intrusion. As Smith argues further, it was the location of precious water resources that determined the location of what eventually evolved into religious shrines in both the Judaic and Islamic traditions. Given the attitude of fear and even revulsion toward the Rainbow Serpent that is found in most cultures, it seems clear that a serpent guardian of springs in the torrid climate of the Arabian Peninsula and neighboring regions would conflict with the sense of reverence accorded to the life-giving waters of the unforgiving desert.

3.3 *Trait 3: The Dragon Lives in Caves*

The lair of a dragon is often said to be in a cave, but why? We will soon see that this apparently arbitrary trait has clear connections with other traits of dragons that derive from observations of the natural world.

3.3.1 Europe

As evidence that European dragons sometimes lived in caves, we have several reports from antiquity. As seen under trait 2), the first of these comes from the Roman poet Ovid, who described a violent encounter by King Cadmus of Thebes with the serpent of Mars, which was guarding a spring within a cave.

The second comes from the story of St. Simeon Stylites (390?–459), a Syriac monk renowned for a life of rigid asceticism which led him to live atop a series of increasingly more lofty pillars for 37 years to escape society and temptation. At one point in his life as an act of charity he reportedly rescued a dragon from a terrible accident in which a stake became embedded in its eye. After he helped to remove the stake “The dragon arose, adored for two hours, and then returned to his cave, completely cured” (Hogarth and Cleary 1979:118).

Much later, in the sixteenth century, the British legend of the Loathly Worm of Northumbria describes the vindictive transformation of a beautiful young princess into a repulsive serpent that “crawls away to a cave at Spindleston Heugh,” where she remains thereafter (Newman 1979:123).

Finally, the *mélusines* and *vouivres* of French folklore, which combine “a woman’s seductive body and serpent tail” are often described as dragons, and “live in river caves, near watering-places, where they drown men and eat them” (Huxley 1979:13).

3.3.2 Ancient Near East

Among the Hittites, who ruled an empire centered on the Anatolian plateau in what is now Turkey from about 1850 to 1200 BCE, the demon Typhon was a half-human and half-reptile dragon who “lived in a cave which was connected by an underground passage with the cave of the gods” (Mackenzie 1913:260).

3.3.3 Central and East Asia

Traditional Chinese medicine makes much of ‘dragon bones’. As noted in chapter 2, these may be the bones of any number of real animals. However, so long as they were believed to derive from dragons the conclusion seemed to follow that dragons, although sometimes considered immortal, had limited lifespans. Li Shi-chen, the author of a classic Chinese medical work that referred to the use of dragon bones for medicinal purposes, “on comparing all the different views and tales, arrives at the conclusion that the dragon, although a divine being, certainly dies like other animals.” Dragon bones therefore belong to dead dragons, and “They come from (lit. are produced in) the valleys of Tsin land (Shansi province) and from spots where dead dragons are lying in caverns on the steep water banks of T’ai Shan” (de Visser 1913:90–91).

3.3.4 North America and Mexico

The Seneca legend of the horned serpent of Niagara has already been related in discussing dragons and waterfalls. In at least one account he made his home in a cave behind Niagara Falls (Morgan 1954:151), and as also mentioned earlier, the *sint-holo*, or ‘sacred snake’ of the Creek Indians of Georgia was thought to live along big creeks or in caves (Swanton 1928:251).

3.3.5 Central and South America

Among the Maya it is believed that during the dry season the *chacs* (plumed serpents with human heads) “sleep overlong in their caves in the hills” before surging out at the change of the seasons to bring rain (Hogarth and Cleary 1979:9–10).

This account of where dragons live may appear to conflict with the widespread belief that they inhabit pools, rivers or lakes, but it has a clear basis in the observation of nature. As already seen in Chapter 3, dragons are associated with waterfalls in widely separated regions because they are identified

with the rainbows produced in the rising spray on sunny days, and there is reason to believe that once exhaustive research is conducted it will be found that every major waterfall has its resident dragon in the mythology of local indigenous people. Rainbows are most likely to be produced in waterfalls of large water volume, since these give rise to 'reverse rainfall'. Because of natural hydraulic erosion at the foot of the falls, major waterfalls are also more likely to produce caves behind the veil of water, and this is where the dragon is often reputed to live. Once an association was established between dragons and caves in this context, it was free to be extended to caves in general.

3.4 *Trait 4: The Dragon Can Fly*

3.4.1 Europe

Because they often possess conspicuous wings it is natural to assume that European dragons can fly, but artists' portrayals rarely show them in any posture other than that of a land-based antagonist of human beings. In this respect they differ radically from wingless Chinese dragons, which are commonly depicted as flying among the clouds, and are rarely represented on the ground even though they are described in the Chinese classics as inhabiting watery domains on the Earth during the dry season. European dragons appear to fly when they are agitated, as in the year 1222, when "there were tumultuous riots in the city of London. Dragons were seen flying through the air. At the feast of St. Andrew there was terrible lightning and thunder; houses and trees were blown down, and there were bad floods" (Hogarth and Cleary 1979:101). Given such portrayals, we must conclude that European dragons are capable of flight, even if they rarely undertake it.

3.4.2 Ancient Near East

In a picture showing the winged female dragon Tiamat from the Babylonian creation epic, we read: "The Babylonian god Marduk attacks his mother, Tiamat, the first dragon, with thunderbolts. Her defeat and death heralded the creation of Man, but not the end of dragons" (Hogarth and Cleary 1979:15). Although there is no clear description of her flying, the mere fact that Tiamat has wings is an indication that she was capable of doing so.

3.4.3 South Asia

The Indian *nāga* is usually thought to be an enormous snake that resides in an undersea palace resplendent with jewels. According to one prominent researcher who refers to the *jātakas* (tales about the incarnations of the Buddha in both human and animal form before his enlightenment)

the Nāgas are always described as enormous serpents; sometimes, however, they appear in later Indian (i.e., Graeco-Buddhist art) as real *dragons*, although with the upper part of the body human. So we see them on a relief from Gandhara, worshipping Buddha's almsbowl, in the shape of big water-dragons, scaled and winged, with two horse-legs, the upper part of the body human (de Visser 1913:6).

The same writer adds that the *nāgas* appear in three forms: common snakes guarding jewels, human beings with four snakes in their necks, and "winged sea-dragons, the upper part of the body human, but with a horned, ox-like head, the lower part of the body that of a coiling dragon." Given this description, in which wings are mentioned, we must assume that at least some *nāgas* were able to leave their watery domain and fly.

3.4.4 Central and East Asia

The ability of the Chinese dragon to fly is hardly in need of demonstration, as this creature is commonly represented in art as suspended mid-air in a martial pose, or winding effortlessly among the clouds, despite the absence of any visible wings. In those rare cases in which it is not airborne it appears as a decorative piece on temple roofs, which it presumably has reached by its powers of flight. In addition, the Chinese classics say that the dragon has both an earthly and a heavenly life, the former as a guardian of springs, wells and the like, and the latter as a rainmaker. According to Allen and Griffiths (1979:36–37), in China "Always it is made clear that the dragon must fly up to the sky before the rain can fall to earth and so, in times of drought, various methods were employed to persuade, or even to frighten, the dragon into leaving his pool and rising in the form of a cloud."

3.4.5 Central and South America

Opinion appears to be divided on whether the plumed serpent of Mesoamerica is capable of flight.

Although it has feathers, it does not have wings, and in most depictions, it is comfortably situated on the ground. An implicitly negative view appears in the following comment: "One South American statesman—now many years dead—told a journalist who was searching for a solution to his country's problems that Latin America would discover and fulfil her true destiny only when the plumed serpent learned to fly" (Nicholson 1985:83).

Somewhat more ambiguous views have been expressed by other writers: "The dragon, or feathered snake of South America and Mexico is central to the mythology of the region—reptilian, powerful, possibly capable of flight, con-

nected with fertility, with weather phenomena and the life force, the symbol of resurrection" (Allen and Griffiths 1979:59).

However, among at least some modern Mayan groups the feathered serpent is clearly thought to fly. To the Chortí of Guatemala, for example

Chicchan is the most important of the native deities and is generally thought of as a giant snake He may have the giant form of an ordinary snake, or his upper body may be that of a man while his lower body is that of a feathered snake Cloudbursts and violent rainstorms are caused by the swift passage of female Chicchan across the sky, the impact of her body against the clouds causing the rain to fall. The rainbow is the body of a Chicchan stretched across the sky (Wisdom 1974:392–394).

The most important lesson to draw from this section is surely that the dragon has a body that is essentially reptilian, but it is capable of flight. Although flying reptiles (the pterosaurs) co-existed with the dinosaurs long before humans entered the scene, no modern reptile flies (some can glide by launching themselves from heights, but true flight is unknown). By contrast, dragons are portrayed as reaching the clouds, where they trigger the onset of rain. Again, it is difficult to see why such a trait would be attributed to a purely imaginary creature, as opposed to a creature that was conceived to account for features of the natural world.

3.5 *Trait 5: The Dragon Has Scales*

This is perhaps a trivial point. Dragons, being basically modified snakes, are normally thought to have a scaly skin. We can therefore safely assume this is the case for all dragons, except those of Mesoamerica, where the scales have been replaced by feathers. However, this trait is more clearly represented in some geographical regions than others. The Chinese evidently paid more attention to the scales of the dragon than any other people. As will be noted elsewhere in connection with discussions of the sex of the dragon, in the Taoist metaphysics of China disagreements about whether the dragon was Yang (male) or Yin (female) were settled by at least some scholars on the basis of what amounted to mathematical principles:

Whether dragons derived from the Yang principle or from both was the subject of much learned debate in which the number of scales on a dragon was of great significance Some experts insisted that the scales of a true dragon numbered exactly eighty-one, equaling nine times nine. According to Chinese philosophy, the number nine is Yang Other

experts, arguing that dragons were not purely Yang but a combination of the qualities of Yang and Yin, put the number of scales at 117, made up of 81 imbued with Yang and 36 (six times six) with Yin (Hogarth and Cleary 1979:52–54).

3.6 *Trait 6: The Dragon Has Horns*

3.6.1 Europe

European dragons are most commonly represented without horns, although these sometimes appear in pictures that emphasize its ferocity (Hogarth and Cleary 1979:188–189), or that stress its identity with Satan, when in combat with Christian knights (Hogarth and Cleary 1979:148).

3.6.2 Ancient Near East

As seen earlier, the reconstruction of the Ishtar Gate of Babylon has a four-legged dragon figure with what appears to be scaly skin on a dog-like body, and what looks like a single horn projecting vertically from its forehead (Ingersoll 1928:25).

Similarly, portrayals of the Babylonian god Marduk attacking his demonic mother Tiamat with thunderbolts, show her as a winged dragon with two short horns protruding from the sides of her head above her eyes (Hogarth and Cleary 1979:15).

3.6.3 Central and East Asia

According to traditional Chinese texts “the nine classic resemblances of the Chinese Dragon, or ‘lóng’ as it is called, are as follows: it has the head of a camel, the horns of a deer, the ears of a cow, the neck of a snake, the body of a fish, the scales of a carp, the claws of an eagle, the eyes of a devil and the paws of a tiger” (Newman 1979:99). In most artistic representations of Chinese dragons, two horns (sometimes forked, like antlers) are clearly visible on the head (Huxley 1979:33, etc.).

3.6.4 North America and Mexico

All over North America the dragon is known as the horned water serpent because it is the guardian of springs or rivers, and has the body of a snake, with horns like a mammal. Numerous individual descriptions could be cited; the following are representative:

The Warm Springs Apache of New Mexico believe in a feathered, two-horned water serpent which they say is buffalo-like (Gifford 1940:77).

The *mihn*, or horned water serpent of the Cheyenne Indians of the Great Plains has already been described above (Grinnell 1972:1:97).

According to Gatschet (1899:259), the Creek Indians in the southeastern United States

believed in a miraculous horned snake, which at times appeared at the surface of water-holes, and whose horns, used as a war-physic, were prized higher than any other fetish within their knowledge Fragments of the horns were carried along in the warriors' shot-pouches on their expeditions, and the song-lines of the horned snake referred to all the manipulations connected with the capture of the snake's horns.

3.6.5 Central and South America

It was seen above that among the Chortí Indians of Guatemala, Chicchan is the most important of the native deities, and in addition to being basically a snake or human-snake hybrid we can now add that "He is sometimes said to have four horns on his head, two small ones in front and two large ones at the back, the former having the luster of gold" (Wisdom 1974:392–394).

As noted earlier, among the Maya the *chacs* (four Iguanas of the House), which bring the rains at the end of the dry season "are imagined as having the body of a plumed serpent and a human head, which in the male is crowned with antlers" (Huxley 1979:9–10).

Likewise, it was already seen in connection with the conflict between the water serpent and the lightning among the Sumu Indians of Nicaragua, that this creature is said to resemble a large boa constrictor "with two horns on the head like a deer" (Conzemius 1932:169).

3.6.6 Insular Southeast Asia

To the Javanese of western Indonesia "the rainbow is a giant snake with two heads of deer or cows, one of which drinks from the Indian Ocean, the other from the Java Sea" (Hooykaas 1956:291). Here the reference to horns is not explicit, but is clearly implied by a visualization of the ends of the rainbow (or snake) as terminating in the heads of horned animals.

This feature seems to be missing from the Indian *nāga*, which is much more snake-like (specifically cobra-like) than most dragons. Again, we should take note of the fact that although the dragon's body is essentially reptilian, its horns or antlers are characteristic of certain classes of mammals. Horns do not occur in reptiles, except for the minor protrusions on relatively small lizards (as the horned toad, or some chameleons), which make a poor model for the horns of dragons, and are not available as models in some parts of the world where horned dragons occur.

3.7 *Trait 7: The Dragon Has Hair (Mane, Whiskers, Etc.)*

Yet one more physical trait that the basically reptilian dragon shares with mammals is hair in the form of a mane, whiskers, etc. This trait varies considerably for dragons from different regions, but is almost always found on the face or neck.

3.7.1 Europe

Most European dragons are hairless, although somewhat obscure manes do appear in some artists' conceptions (Hogarth and Cleary 1979:141, 179). The closest thing to a hairy European dragon is the problematic case of the Scottish *nixie*, or 'water horse', often treated as a type of dragon, although its body is essentially that of a horse, which therefore has a mane. According to Huxley (1979:19) "The same water-horses once roamed throughout France, where they were called *dracs* [dragons], and when not carrying off their victims they were being ridden by the *mélusines* [female spirits of sacred springs or rivers that were serpent or fish from the waist down]."

3.7.2 Ancient Near East

Whether the dragon of the ancient Near East had hair-like features is hard to determine, since the only evidence we have for this creature comes from limited literary documents written on clay tablets, or from rare sculptured portrayals such as the dragon of the Ishtar Gate in Babylon. Given the mammalian (sometimes described as 'dog-like') torso of the latter it is a reasonable guess that this dragon had hair, although it is far from conspicuous.

3.7.3 Central and East Asia

This physical trait is especially prominent in the Chinese dragon, which is often drawn with whisker-like projections curling off to the side of the face, a mane, or occasionally with a beard hanging from the chin (Allen and Griffiths 1979:38, 42, Huxley 1979:33, 61, 77, etc.).

3.7.4 North America and Mexico

As noted earlier, among the Lakota of the northern plains of North America the horned water serpent, or *unktehi*, is said to "have long hair on the neck and the head which is *wakan* (sacred)" (Walker 1980:108).

3.8 *Trait 8: The Dragon Has Feathers*

Since many dragons have wings, one might expect them to have feathers in the same locations, but this is not true. The feathered serpent concept appears to be a Mesoamerican invention, an overlay on the more general dragon theme

that spread with other Mesoamerican cultural influences into the American Southwest, and possibly further north. It is likely that it also spread into parts of the American Southeast, as the lower Mississippi Valley, where the prehistoric mound-building cultures of North America made a landfall, spreading northward from there into the Tennessee and Ohio river valleys. However, the native people of the lower Mississippi Valley lost most aspects of their traditional culture before it was recorded (cf. Swanton 1911, which reviews the seventeenth century French literature on the Natchez and culturally similar peoples in considerable detail, but with no mention of local dragon beliefs as taking the form of either the horned water serpent or the feathered serpent). While the idea of a feathered snake evidently spread northward from its area of origin, it does not seem to have spread into South America.

3.8.1 North America and Mexico

As already mentioned in connection with the role of the horned water serpent as a guardian of springs, among the Kato and Yuki (Yukian) peoples of northwest California this creature was believed to have both horns and feathers (Essene 1942:72).

Based on the pioneering fieldwork of F.H. Cushing in the second half of the nineteenth century, it has been observed that the horned water serpent among the Zuni Indians of western New Mexico was conceived of “as a plumed or horned snake” (Hultkrantz 1987:97).

Among the San Carlos Apache of eastern Arizona, the horned water serpent is described as a feathered serpentine water monster with two horns; and, as already noted, the Warm Springs Apache of New Mexico add that it is buffalo-like (Gifford 1940:77).

Mexican and Mesoamerican cultural similarities in the American Southwest are clear enough that attributing this feature to diffusion from further south is not problematic. However, it is harder to apply the same explanation to a belief in feathered snakes among indigenous groups in northern California, particularly since this is unknown in central or southern California, or the Great Basin.

3.8.2 Central and South America

The figure of the plumed serpent is so pervasive in the art, architecture and mythology of Mexico and Central America that specific documentation seems superfluous. Allen and Griffiths (1979:57–58) note that

Various suggestions have been put forward to explain the origins of this particular composite dragon, who is perhaps best known as Quetzalcoatl of Mexico Quetzalcoatl is the Mexican equivalent of the Maya Kukul-

can And so all over the Yucatan and Mexico the image of the plumed serpent persists. As one of the aspects of Kukulcan-Quetzalcoatl, he is the subject of monumental stone carvings around the pillars and along the walls of temples and pyramids, which were a source of great puzzlement to early archaeologists.

Among some modern Mayan groups the plumed serpent goes by other names. As already observed, for example, the most important native deity of the Chortí of Guatemala is Chicchan, who is sometimes thought of as an ordinary snake, but may appear as a composite figure with the upper body of a man and the lower body that of a feathered serpent (Wisdom 1974:392–394).

Traits 5–8 can be treated as a unity, since together they characterize the dragon as a chimera—a fanciful animal made up of the parts of disparate living animals. But, as noted earlier the dragon is not just an ordinary chimera. In most variations his basic body plan is that of a snake, hence a cold-blooded animal, and it is combined with horns, whiskers, a mane, feathers, etc., all of which derive from mammals or birds, hence from warm-blooded animals. This feature is critical, as it mirrors the common perception of the rainbow as blend of fire and water, hot and cold.

3.9 *Trait 9: The Dragon Is Opposed to Thunder/Lightning or the Sun*

The opposition of the dragon in its various areally-determined forms to thunder/lightning or the sun was discussed in Chapter 4, and need not be repeated in detail here. The relevant point to keep in mind is that the dragon, whatever the natural basis for its origin in human thinking, is incompatible with thunder or lightning on the one hand, and with the sun on the other. At first this might seem to put us in a quandary, since weather conditions could be divided into ‘sunny’ vs. ‘rainy’. However, a little thought will show that this is not the case, as will become apparent in considering the ethnology of the rainbow, a phenomenon that can occur only when sun and rain are in competition for control of the sky, and neither is dominant.

3.10 *Trait 10: The Dragon Is Androgynous*

One of the best-kept secrets of the dragon, rarely mentioned in the generalist literature, is its dual, or ambivalent sexuality. This is easily overlooked, since the well-known predations of dragons on young women in European dragon lore would predispose most observers to consider the dragon unambiguously male. However, its ambivalent sexuality emerges in unexpected contexts. This is treated at some length in Blust (2019), and will only be summarized briefly here.

3.10.1 Europe

Most portrayals of the European dragon in art and legend say nothing of its sexual ambivalence, and in fact commonly emphasize its menacing predations on young women, which might result in demonic pregnancy were it not for the timely intervention of knights like Saint George. However, the picture that emerges in European alchemy, is quite different. Here, as stressed by a few writers, like Jung (1968, 1970), the dragon played a symbolic role in portraying the philosophical concept of the conjunction of opposites, as stated in the following passage:

The two substances of Mercurius are thought of as dissimilar, sometimes opposed; as the dragon he is “winged and wingless.” A parable says, “On the mountain lies an ever-waking dragon called Pantophthalmos, for he is covered with eyes on both sides of his body, before and behind, and he sleeps with some open and some closed.” There is the “common and the philosophic Mercurius”; he consists of the dry and earthy, the moist and viscous. Two of his elements are passive, earth and water, and two active, air and fire. He is both good and evil.... Because of his united double nature Mercurius is described as hermaphroditic. Sometimes his body is said to be masculine and his soul feminine, sometimes the reverse (Jung 1970:217–218).

This dual gender is sometimes visually represented as a single body that is human at the top and serpentine at the bottom, and—more to the point—male on the right side and female on the left side facing forward (Hogarth and Cleary 1979:130).

To my knowledge this trait of the dragon does not otherwise surface in the European context. However, it is clear that its limitation to the context of alchemy does not in any way diminish its significance, since the same feature appears in other parts of the world.

3.10.2 Central and East Asia

Chinese preoccupation with the dragon idea has been so longstanding and convoluted that it is not difficult to find contradictory passages about the dragon in different texts. de Visser (1913:71–72) for example, includes a short section on differences between male and female dragons, citing a classical description which holds that “The male dragon’s horn is undulating, concave, steep; it is strong at the top, but becomes very thin below. The female dragon has a straight nose, a round mane, thin scales and a strong tail.” Despite this unambiguous distinction between male and female dragons, however, as noted in discussing

its scales, Chinese philosophers in the tradition of Taoist metaphysics debated whether the dragon should be considered purely an embodiment of the *yang* (male) principle, purely of the *yin* (female) principle, or as a blend of the two, with some favoring the latter interpretation.

3.10.3 Central and South America

The male-female nature of the serpent/rainbow pair in the vodoun religion of Haiti, as this is celebrated in the annual pilgrimage to the Saut d'Eau waterfall on the La Tombe river has already been mentioned. While this is demonstrably a west African import to the Americas, it can be cited as a historically distinct example of the double gender of the dragon.

Most references to the plumed serpent of Mesoamerica do not mention its gender, and if they do, they speak of male and female *chacs* as physically distinct. However, Huxley (1979:9) gives a different picture in discussing the Celestial Iguana of the Maya, or Itzam Na:

Itzam meaning iguana and Na, house or woman—whose name also has to do with milk, dew, wax, resin and sap. Itzam Na is bisexual, the male principle in the sky 'in the midst of the waves' while his consort is the unfaithful Earth, goddess of weaving and painting, whose moon-lover yearly emasculates her spouse.

Huxley drew, at least in part, on the work of the Mayan specialists Herbert Spinden (1957), and J. Eric S. Thompson (1970), who themselves relied heavily on early Spanish sources, and the contemporary ethnography of Mayan-speaking peoples. The latter writer (1970:21) observes with respect to modern Mayan groups that

Among the Lacandon, Itzam Noh Ku, "Itzam the Great God," is god of hail, lord of Lake Pelha in which he dwells, and according to a recent source, lord of crocodiles Itzam is a Pokom deity ... and among the Kekchi of the Alta Verapaz and southern British Honduras who claim him as both male and female, he is a world directional mountain deity.

These remarks are restricted to mythical creatures that most would consider dragons. However, when Rainbow Serpents are added in Chapter 7 we will see that the same duality of gender is found both in the classic Rainbow Serpent of Australia, and in the less well-known Rainbow Serpent of Bantu-speaking peoples across central Africa, where it is usually described simply as the rainbow.

3.11 *Trait 11: The Dragon Is Colorful/Red*

Comments on the color of the dragon vary. In most cases color is not mentioned, but if it is, there is usually an emphasis on the colors being prominent, or the dragon is described as ‘multicolored’. Occasionally the dragon is said to have the colors of the rainbow, even where a connection between dragons and rainbows is otherwise unattested (as among the Yaqui Indians of northwest Mexico, or the Creek Indians of the southeastern United States). Where a single color is chosen to describe the dragon, it is most often red.

3.11.1 Europe

In the Celtic dragon myths, “the fables of Merlin, Nennius, and Geoffrey describe it as red in color” (Gould 1886:197).

3.11.2 Ancient Near East

In the New Testament Book of Revelation as related by St. John the Divine the end of creation is described as beginning with a series of apocalyptic signs:

A great and wondrous sign appeared in heaven: a woman clothed with the sun, with the moon under her feet and a crown of twelve stars on her head. She was pregnant and cried out in pain as she was about to give birth. Then another sign appeared in heaven: an enormous red dragon with seven heads and ten horns and seven crowns on his heads. His tail flung a third of the stars out of the sky and flung them to the earth. The dragon stood in front of the woman who was about to give birth, so that he might devour her child the moment it was born.

Lehmann-Nitsche (1933:220) zeros in on this biblical text, and asks why the so-called ‘dragon of the apocalypse’ was colored red. He concludes that it represented the constellation Scorpio, in which the brightest star is Antares, a celestial body that appears reddish to the naked eye. Apart from his extremely narrow focus, the author of this piece appears to have no further interest in the dragon, and like any number of other studies, this one never considers more than one or two of the 27 traits summarized in Table 1, and so leaves most of what needs to be explained simply in limbo.

3.11.3 Central and East Asia

With reference to the Chinese dragon de Visser (1913:111–112) cites a passage from a literary text which describes the tower of a castle gate being struck by lightning, and subsequently it was seen that “There was a creature which

embraced the eastern pillar. It had the shape of a dragon and a golden color; its legs were about three *ch'ih* long, and its breath smelled very bad."

While this description refers to a golden color rather than red or the colors of the spectrum, other sources refer to the dragon as being multi-colored:

A dragon in the water, say the Chinese, covers himself with five colors (the rainbow), therefore he is a god. If he desires to become small, he assumes the shape of a silkworm, if he desires to become large, he lies hidden in the world. If he desires to ascend, he strives toward the clouds; descend, and he enters a deep well. He whose transformations are not limited by days and whose ascending and descending are not limited by time, is called a god (Huxley 1979:11).

Other early Chinese sources describe dragons of different colors. Referring to a text written during the Han dynasty (206 BCE–220 CE), for example, de Visser (1913:87–88) states that during a violent storm "a herd of dragons appeared at the surface and entered the Han River. The big ones were several *chang* long, the small ones over a *chang*. Some were yellow, others black, red, white or blue, and they resembled cows, horses, donkeys or sheep."

3.11.4 North America and Mexico

With regard to the 'snake-man' or 'tie-snake' in the folklore and mythology of many southeastern tribes, it is said that "not only is the water person a transformed human being, he is apparently an identifiable mythological figure. In three of the Creek texts it is a "tie-snake," and three others make specific reference to his multicolored horns, a characteristic feature of the horned water serpent" (Lankford 1987:86).

As noted in describing dragons guarding water sources, among the Yaqui in northwest Mexico, "snakes with rainbows on their foreheads" were said to swim in certain springs (Spicer 1980:64).

3.12 *Trait 12: The Dragon Guards a Treasure*

This is a common theme around the world that takes somewhat different forms in different locations (gold in Europe, jewels in India, a pearl in China).

3.12.1 Europe

European dragons are often represented as guarding a treasure, which is usually gold, or something with the attributes of gold. In the story of Jason and the argonauts the treasure guarded by a dragon is the Golden Fleece, and in that of Heracles and the dragon Ladon it is the golden apples in the garden of

the Hesperides. In the Icelandic *Völsunga saga*, the Anglo Saxon *Beowulf*, and the Middle High German *Nibelungenlied* the Germanic dragon guards a hoard of gold. Given their other attributes there is no obvious reason why dragons should guard treasures, so this trait appears to be arbitrary, which clearly conflicts with its wide distribution.

3.12.2 South Asia

As noted earlier, in India, according to Allen and Griffiths (1979:42) there are four types of *nāga*, one of which (the 'Hidden Nāga') is the guardian of treasures. More specifically, Huxley (1979:62–63) says that the Indian *nāga*

owns the most precious of jewels, which the Chinese call 'the pearl that grants all desires', saying that it is certain to be found in a pool nine layers deep under the chin of a horse-dragon. The pearl controls the phases of the moon; the ebb and flow of the tide; rain, thunder and lightning; and the course of birth, death and rebirth. Such pearls are sometimes spat out by dragons, and may be used to illuminate a whole house (or a whole man); and if kept in the mouth, it is as though you were drinking the finest wine.

3.12.3 Central and East Asia

Chinese dragons are often depicted in iconography as either pursuing a pearl or carrying a pearl in the mouth (Allen and Griffiths 1979:39), and rarely as guarding a treasure as European dragons do. The quotation from Huxley in the preceding entry for South Asia applies here as well.

In addition, however, the *cang long* are said to have been guardians of hidden treasures, charged with the duty "to guard and watch over the heavenly wealth concealed from mortal eyes." Although they are rarely, if ever, depicted in paintings, images of these dragons have been found on tiles and on light relief stone panels (Bates 2002:14–15).

As noted earlier, in Korea a terrestrial dragon was formerly thought to preside over mines and gems "and the intense regard for it is perhaps the reason why mines have been so little worked in Chosen, the people superstitiously fearing that disasters may follow disturbance of the metals which they believe are peculiarly the treasure of the jealous earth-spirit" (Ingersoll 1928:88).

3.13 *Trait 13: The Dragon Has a Jewel or Other Valuable on Its Head*

An apparent subtype of the treasure theme is that the dragon has a jewel in its head, or a horn that is precious. Here the treasure is part of the dragon's anatomy, rather than a separate object or set of objects over which it stands guard.

3.13.1 Europe

According to Hogarth and Cleary (1979:121) some European dragons resembled those of India and China in having a precious gem called “dracontias” in their foreheads that had magical properties. This had to be removed from a living dragon, since on dying the dragon would deliberately spoil its magic. Few dared to do this unless they could first put the dragon to sleep.

A similar idea apparently is expressed by the *vouivre*, or wyvern of France, “who in addition to a woman’s seductive body and serpent tail has the wings of a bat and a large carbuncle between her eyes. This stone she takes out whenever she bathes, and should any passer-by chance upon her thus defenseless he may safely steal the stone, leaving her blind as a glass-worm” (Huxley 1979:13).

3.13.2 South Asia

Wilkinson (1959:794) glosses Malay *nāga* as ‘dragon; etymologically not a saurian but a huge snake with a horn and on its brow, a luminous bezoar with which it lights its way at night.’ This is clearly due to Indian influence, and although I have not found any explicit mention of a jewel on the foreheads of Indian *nāgas*, it is likely that this idea was introduced to Indonesia during the Indianization of Southeast Asia in the first few centuries CE, hence its inclusion in this section.

3.13.3 North America and Mexico

Over much of North America horned water serpents “were almost always spoken of as having something growing from the tops of their heads—a horn, or a pair of horns, or a jewel. ... This horn, or jewel, was regarded by the Indians as highly valuable.” In a story told by the Cherokee of Tennessee and North Carolina, it is said that

Once upon a time among the glens of their mountains dwelt the prince of rattlesnakes. Obedient subjects guarded his palace, and on his head glittered in place of a crown a gem of marvelous magic virtues. Many warriors and magicians tried to get possession of this precious talisman, but were destroyed by the poisoned fangs of its defenders. Finally, one more inventive than the rest hit upon the bright idea of encasing himself in leather, and by this device marched unharmed through the hissing and snapping court, tore off the shining jewel, and bore it in triumph to his nation (Brinton 1905:137).

In another myth told by the Cherokee a captured Shawnee shaman secured his release by slaying a giant horned serpent (*uktena*) and delivering the flashing

“diamond” which adorned its forehead (traditionally this must have been some other stone) to his captors (Mooney 1970:299).

As noted earlier, the horns of the horned water serpent among the Creek Indians in the southeastern United States “were prized higher than any other fetish within their knowledge,” and fragments of them were taken on war expeditions for protection against attack (Gatschet 1899:259).

3.13.4 Central and South America

It was seen above that among the Chortí Indians of Guatemala, Chicchan, the major indigenous deity of this group, is a huge snake with “four horns on his head, two small ones in front and two large ones at the back, the former having the luster of gold” (Wisdom 1974:392–394).

3.14 *Trait 14: The Dragon Lives in Waterfalls*

Chapter 3 showed that the widespread connection between dragons and waterfalls has arisen spontaneously regardless of culture type because cataracts with large water volumes produce ‘reverse rainfall’ that generates rainbows on sunny days, and does so on a much more prolonged basis than is typical for rainbows produced by rainfall, where the delicately-balanced conditions for refraction of sunlight through water droplets exist for a much shorter time.

3.15 *Trait 15: The Dragon Encircles the World*

This theme appears in several guises, in each of which the dragon is an enormous serpent that encircles the Earth, biting or swallowing its own tail so as to form a circle. In the tradition of European alchemy this figure is known as the *Uroboros* or *Ouroboros*:

3.15.1 Europe

The best-known example of the dragon as an *Ouroboros* is undoubtedly the Midgard Serpent, described in the Eddas, Icelandic poetic epics written between the ninth and thirteenth centuries, which reflect the Scandinavian worldview at the close of the pagan period. In this conception of nature, the world was divided into upper and lower worlds in addition to the middle world in which we live. The Midgard Serpent (called “Great Beast” in Icelandic) separated the upper and lower worlds by encircling the globe with its tail in its mouth.

Similar types of circular dragons appear in European alchemy, as documented by Jung (1956) and other writers:

The alchemical dragon was often expressed as the *Ouroboros*, the circular serpent-dragon which bites its own tail, a symbol of unity and of the *prima materia* of the universe which is far older than alchemy and which may have had its origins in Egypt as Apophis, the encircler of the earth (Allen and Griffiths 1979:66).

3.15.2 Ancient Near East

With regard to ancient Egyptian mythology, we are told that “Another creature ... is the divine serpent Sito, reputed to encircle the world with its immense coils and also represented in several other mythologies. Sito is often merely depicted in the form of a circle, holding its tail in its mouth” (Hogarth and Cleary 1979:19).

3.16 *Trait 16: The Dragon Terrifies Young Women/Causes Demonic Pregnancy*

This theme is so common in European dragon traditions, both classical and post-Christian, that it is somewhat surprising to find it absent in some other parts of the world. However, even where it lacks the prominent role it has in Europe, it appears occasionally in unexpected places, like China.

3.16.1 Europe

One need only open most well-illustrated popular books that treat European dragons to find full-page pictures of nude or semi-nude women being menaced by a ferocious monster who is pierced in the nick of time by a noble knight's lance (Hogarth and Cleary 1979:76, 86–87, 141, 174, 180, Huxley 1979:47, the last two reproducing a painting of the ‘damsels in distress’ theme by the French Neoclassical painter Jean-Auguste-Dominique Ingres).

This theme recurs in Celtic folk tradition, where we learn of “the many stories of women who conceive when bathing mother-naked in a dragon-haunted stream.” An example is seen in the Celtic princess Ness, who after a forced marriage and a visit to the river Conchobar to fetch water, “gave birth to the hero Conchobar, who came out of the womb with a worm (another word for a dragon) clutched in each fist” (Huxley 1979:12).

“There are many dragons in France known to have a taste for young children, which they eat, and virgins, which they ravish” (Huxley 1979:42).

3.16.2 Central and East Asia

Although Chinese dragons generally leave attractive women alone, there is an interesting twist on this theme, in which the dragon's lust for female companionship is used to manipulate it into producing rainfall. One of the Chinese classics, the *Wu tsah tsu*

describes the remarkable way in which the people of Ling-nan caused rain. As dragons are very lewd and fond of women, a naked woman was placed on an elevated point in order to attract a dragon. As soon as there came one and flew around her, he was magically prevented from approaching her, so that his anger was aroused and heavy rains came down (de Visser 1913:120).

As seen in the preceding reference to Celtic beliefs, the idea that women may be impregnated by dragons so as to give birth to dragon-humans is also fairly widespread.

While a five-toed dragon symbolizes the Chinese emperor as a general artistic motif, the Chinese classics relate tales of more than one emperor who was fathered by a dragon and a human mother:

The emperor Yao was said to be the son of a red dragon, who came to his mother, bearing on his back the inscription "You also receive Heaven's protection." Darkness and wind arose on all sides, and the dragon touched her, whereupon she became pregnant and after 14 months gave birth to Yao in Tan. A similar story is told about Kao Tsu (B.C. 206–195), the founder of the Han dynasty. T'ai kong, his father, saw a *kiao long* (kind of dragon) above his wife amidst thunder and lightning and black darkness, while she was asleep on the bank of a large pond. She dreamt that she had intercourse with a god, and afterwards gave birth to Kao Tsu (de Visser 1913:123).

3.16.3 North America and Mexico

As mentioned in discussing Arthur Parker's version of the Seneca legend of the horned water serpent of Niagara, while being purified in the women's sweat-house on the advice of Hi'no the Thunderer, the heroine of the story gave birth to two young serpents who ran down her legs and slipped off her feet, a consequence of her unwitting marriage to the monster of Cayuga Creek.

It was seen in Chapter 1 that the Zuni Indians of western New Mexico believed that the horned water serpent "can bring rain and may impregnate bathing women" (Hultkrantz 1987:97).

Various legends of the Creek or Muskogee Indians of Georgia talk about the 'water panther' or 'water tiger' as a variant of the horned water serpent. In one of these stories

An unmarried woman in the town of Coosa went to draw water from the spring and was afterward found to be pregnant. Then her brothers

and some of her relatives thought this was the offspring of a water tiger (*wi katca*), which the Muskogee now identify with the leopard, became angry with her, and wanted to kill it (Lankford 1987:94–95).

3.17 *Trait 17: The Dragon Is Offended by Menstruation*

A theme that recurs repeatedly among tribal peoples in South America and aboriginal Australia, but has not been recorded in the traditions of Europe, the ancient Near East, India or China, is that dragons in the form of the Rainbow Serpent are offended by menstruation, and the water holes that they guard must be avoided by young girls who have just experienced menarche. A very similar belief occurs in North America with a water serpent that has no overt connection with the rainbow.

3.17.1 North America and Mexico

An elaborate version of this theme is expressed in a story told by the Shawnee Indians of central and southern Ohio, about a one-horned snake called *wewi-wilemitá manetá*, which in at least one version goes like this:

A young maiden who was “eating alone” (i.e., menstruating) saw a fawn who had one horn red and the other blue; it was lying in the waters of a lake, immersed up to the neck. The next time she saw it, it had become much larger, and was moving out of the watery element. The next time it appeared to her in the form of a snake. A fourth time the snake had disappeared from the lake, but the lake had increased in size, and its waters were hot and boiling. Having informed her father of the occurrence, he held council with the old men of the tribe, who agreed among themselves upon killing the snake, or trying to do so. For this purpose, they induced the young woman to go to the lake again, when her next courses should come on. Twelve old men accompanied her, singing and carrying a drum, taking along their shamanic “medicines” with them. They camped out that night, and next morning sent the girl into the lake to erect a tent-like structure or trestle in its midst. When they sang their magic songs many kinds of snakes appeared and laid their heads upon the (horizontal) cross-poles of the structure. The conjurers told them, “You are not the ones (wanted),” and the waters became excited and boiled. But when a certain snake came and put its head on the cross-poles, they said, “You are the one.” The girl was then ordered to enter the water again and to strike its surface four times with her underwear. This she did, and the effect on the snake was so weakening that it could be killed by the conjurer without any exertion (Gatschet 1899:256–257).

As will be seen in Chapter 7, the same theme of offending menstruation reappears in western North America in connection with the rainbow, where it has no overt connection with a water serpent.

3.18 *Trait 18: The Dragon Is Connected with Hoofed Mammals*

This next trait takes us into territory that is conceptually quite strange, but turns out to strengthen the connection between dragons and rainbows, as will be seen in Chapter 7. In several non-contiguous areas the dragon is conceived as part snake and part hoofed mammal. In Europe this appears only in the form of a horse that is behaviorally indistinguishable from a dragon, while in other parts of the world it is a chimera.

3.18.1 Europe

As noted earlier, the Scottish *nixie*, or ‘water horse’ (also called ‘kelpie’, or ‘water kelpie’) is often treated as a type of dragon, as it is reputed to seduce or devour young women. In some accounts this creature appears first as a handsome and polite young man, thereby duping his victims into believing they are safe with him. A clue to his true identity is that he may have hooves instead of feet, a trait that also links the nixie with Christian ideas of Satan. In at least one account the water horse and kelpie are distinguished: “Some writers speak as if the Water-horse were to to be identified with it, but the two animals are distinctly separate. The Water-horse haunts lochs, the Kelpie streams and torrents” (Campbell 1900:215). Like dragons elsewhere, the Scottish water horse is said by some to have the power to change its color and shape (Campbell 1900:204).

3.18.2 Central and East Asia

There is no need to repeat the ‘nine classic resemblances’ of the Chinese dragon, which were already mentioned under trait 6) in connection with the horns of the dragon. These link it, somewhat oddly, but in a way also found in other parts of the world, to camels, deer and cows (Newman 1979:99). However, the dragon is also linked, in widely separated regions, to hoofed mammals that lack horns, in particular horses.

As surprising as the Scottish *nixie* might seem, essentially the same link between dragons and horses is well-attested in East Asia. In his classic study of the dragon idea in China and Japan, de Visser (1913) dedicates a section to dragon-horses in China (56–59), and an entire chapter ‘The Chinese dragon and the dragon-horse as omens in Japan’ to the dragon-horse in Japan (146–151). As in Scotland, these animals live in rivers or other watery domains, and in typical florid Chinese style, they are described in minute detail. In a com-

mentary called the *Shui ying t'u*, written before 557 CE, the dragon horse in China is described as follows:

It is a benevolent horse, the vital spirit of river water. Its height is eight *ch'ih* five *ts'un*; its neck is long and its body is covered with scales. It has wings at its shanks, and its hair hangs down its sides. Its cry consists of nine tones, and it walks on the water without sinking. It appears at the time of famous sovereigns (de Visser 1913:57).

Whether the similar idea in Japan is indigenous or borrowed is moot, but various sources refer to the connection of dragons with horses as a well-developed concept in the Japanese islands. For example, in the *Masu kagami*, a text said to have been written in the period 1340–1350, the dragon horse is described as being able to cross broad rivers: “In 1221, when Hōjō Yoshitoki marched from Kamakura to Kyōto against the Emperor Juntoku, the rivers Fujigawa and Teuryūgawa (“Celestial Dragon-River”) were swollen by the rains to such a degree that even a dragon-horse could not have crossed them” (de Visser 1913:148).

Among other references to dragon-horses, or to the dragon and horse as interchangeable, is the Japanese aphorism

‘In heaven a horse is made into a dragon, among men a dragon is made into a horse.’ For the Japanese sacrifice horses at the spring festival, and also when the gods withhold the rain. They are sent to heaven, that is, so that they will become dragons and preside over the change of water into fire and fire back again into water: for the horse only has power over water because it is a solar animal (Huxley 1979:20).

3.18.3 North America and Mexico

The type of hoofed animal that a dragon is said to resemble varies with the local fauna. This can be seen with a report on the Umatilla Indians of eastern Oregon, who believed in a possibly double-headed serpent that was seen both in lakes and on the land. This creature, known as a ‘water elk’ in English despite its stated serpentine form was thus apparently a blend of snake and mammal (Ray 1942:255–256).

As mentioned previously, the Warm Springs Apache of New Mexico believe in a feathered, two-horned water serpent which they say is buffalo-like (Gifford 1940:77).

3.19 *Trait 19: The Dragon Has Fiery Breath*

3.19.1 Europe

One of the most conspicuous features of European dragons is that they breathe fire, a trait that assumes frightening proportions in some artistic portrayals (Hogarth and Cleary 1979: frontispiece, 188–189), and has been artificially reproduced in physical form at Universal Studios International in Orlando, Florida, where a dragon atop a three-story building spews out twenty foot long gas-fed flames every few minutes for the questionable entertainment of visitors.

3.19.2 South Asia

Few accounts of the Indian *nāga* mention it breathing fire but, surprisingly, this does appear in the Buddhist tradition of meditation and enlightenment. In one account the Buddha lived as a king of the *nāgas* before he was incarnated as a man. He is further said “to have been sheltered during the storm of his illumination by the seven-headed *nāga*, Mucilinda, who was the agent of that storm; and to have tamed a fire-dragon by making it enter his alms-bowl, as one of his first deeds when Awakened” (Huxley 1979:30).

3.19.3 Central and East Asia

Although Chinese dragons are rarely portrayed as breathing fire like their European counterparts, as mentioned in Chapter 1, this trait is reported in the Chinese classics, where we learn that “Dragon fire and human fire are opposite. If dragon fire comes into contact with wetness it flames, and if it meets water it burns. If one drives it away by means of fire, it stops burning and its flames are extinguished” (de Visser 1913:67).

3.19.4 North America and Mexico

The Shuswap Indians of central and southern British Columbia believed in a land serpent with a tongue like fire. This creature reportedly made furrows in the ground by crawling, and merely seeing it would cause illness or swelling of the body (Ray 1942:255–256).

Elsewhere in North America the horned water serpent was more commonly described as having fetid or poisonous breath, rather than breathing flames.

3.20 *Trait 20: The Dragon Has Fetid or Toxic Breath*

3.20.1 Europe

As just noted, in other contexts a dragon's breath is described as toxic rather than fiery. The sixth century Gallo-Romance saint, Gregory of Tours related such as case:

There was in Paris a lady of high rank who had lived a very abandoned life, and had died in her sins. Being a Christian, and not excommunicated, she was buried in consecrated ground; but that same night a hideous and gigantic dragon came from a desert to Paris, hollowed out a great hole for his lair, and began to feed on the dead body. It did not devour it all at once, but returned again and again. As the breath of the monster infected the air, those dwelling near the churchyard were so greatly alarmed that they were forced to leave their houses, and St. Marcel was beseeched to come to the rescue (Hogarth and Cleary 1979:117).

In the Norse Eddas the hero Odin, who sallies forth against the forces of evil with the thunder god Thor at his side, is devoured by the monstrous wolf Fenrir, "and although Thor manages to slay the serpent of Midgard, he himself is overwhelmed by the monster's toxic breath and staggers back only nine paces before falling dead in his tracks" (Hogarth and Cleary 1979:93).

The British legend of the Loathly Worm of Northumbria relates that the heroine, a beautiful young princess named Margaret, is cursed by her jealous stepmother, who wishes that the princess be transformed into a 'loathly worm'. The curse takes effect and we hear that "Margaret becomes a loathsome worm and crawls away to a cave at Spindleston Heugh. There she whiles her time as worms are wont: polluting the crisp Northumbrian breezes with her venomous breath and ingesting placatory tributes of milk volunteered by the terrified local populace" (Newman 1979:123).

Elsewhere we are told that "Whole tracts of countryside could be rendered uninhabitable and birds made to fall out of the sky by the very breath of a dragon. This problem was most acute in Ethiopia, where the great heat tended to make the dragons more poisonous than they were elsewhere" (Hogarth and Cleary 1979:117). Despite the reference to Ethiopia this appears to have been a European tradition rather than an indigenous African one.

3.20.2 Central and East Asia

In the Chinese classics 'dragon bones' or 'dragon eggs' are mentioned more often than dragon breath, but there are occasional comments which correspond with descriptions of the dragon's breath in other parts of the world. As noted earlier, with reference to a text on the *History of the Sung Dynasty*, we read the following passage:

In Ti Chen there fell a fire from the air upon the tower of the Northern gate of the castle. There was a creature which embraced the eastern pillar. It had the shape of a dragon and a golden color; its legs were about three *ch'ih* long, and its breath smelled very bad (de Visser 1913:111–112).

No explanation is given as to why, in some texts, the Chinese dragon breathes fire, but in others it produces fetid or toxic breath without flames. However, it must be remembered that the Chinese classics were produced over a number of centuries, and were written by scribes in different locations who were no doubt in each case influenced to some extent by local folk beliefs about the dragon, an important point to which I will return below.

3.20.3 North America and Mexico

It has already been observed that the Mohawk Indians of upstate New York believed in “a lake serpent called *Onyare*, whose breath, diffused through the air, brought on sickness” (Gatschet 1899:259).

3.20.4 Africa

“De Voragine tells of the city of Silene in Libya which was menaced by a dragon in a nearby lake with breath so foul that it poisoned the countryside” (Hogarth and Cleary 1979:141).

3.21 *Trait 21: The Dragon Causes Earthquakes*

3.21.1 Europe

In their account of ‘medieval dragons’ in Europe, Hogarth and Cleary (1979:101) provide a selective chronology of reported dragon sightings ranging from 1170 to 1532. One of these, in 1274, states that “In the vigil of St. Nicholas there was an earthquake and thunder and lightning; a fiery dragon and a comet terrified the English.”

3.21.2 North America and Mexico

Among the Zuni Indians of western New Mexico “The Water Serpent is a collective being who may be found in every spring or body of water. Although there are variations in form, the commonest is the Plumed Water Serpent, present throughout the Pueblo world. These beings are the cause of earthquakes, floods, and landslides” (Wright 1988:153).

3.21.3 Central and South America

In discussing the relationship of fire and water in the Mayan conception of the forces that govern rainfall and its absence Huxley (1979:9–10) notes that

the dragon-lord of fire and time must not only live in the water but make it. His power, for a start, is usually embodied in a green or blue stone which, when hafted as an axe, was also the sceptre of Mayan kings. This can be used to call up the rain when the Chacs, as the present-day Maya

call the four Iguanas of the House, have deserted their pools and rivers during the dry season to sleep overlong in their caves in the hills, causing earthquakes as they toss in their dreams.

Elsewhere, the same writer observes a similar connection with dragons in an unspecified ethnic group, which presumably is the K'iche' Maya, where Huracán is the god of wind, storm, and fire. "The hurricane is named after Huracán, the dragon of the Caribbean who is also responsible for earthquakes" (Huxley 1979:74).

3.21.4 Insular Southeast Asia

The Mamanwa of northeast Mindanao in the southern Philippines, "think that earthquakes are made by a giant snake." According to one informant the Earth rests on the back of an enormous python, and when it moves there is an earthquake (Maceda 1964:115).

3.22 *Trait 22: The Dragon Causes Whirlwinds/Storms and Waterspouts*

3.22.1 Europe

The creature Typhon has been described as a monstrous serpent, and the most dangerous creature in ancient Greek mythology. His identity as a dragon is clear not only from his physical description, but also from his association with destructive whirlwinds, and from the use of a thunderbolt to strike him dead, both of which are associated with dragons in other parts of the world:

Typhon, who is sometimes identified with the Egyptian demon-god Seth, manifested himself as a powerful and destructive whirlwind, now known as a typhoon From head to thighs he approximated human form, but sprouting a hundred dragons' heads and numerous wings; his lower limbs were huge coiling serpents. So awesome was he that when the gods first saw him they all fled to Egypt and hid, in the guise of various animals. Zeus alone stood his ground against Typhon, first pelting the monster with the traditional thunderbolts and then closing in on him with a sickle made of adamant (a substance reputed to be as hard as a diamond) (Hogarth and Cleary 1979:68–69).

3.22.2 Central and East Asia

The recurrent association of dragons with unusual weather phenomena is further illustrated with respect to the Chinese dragon in the following quotation:

At the autumnal equinoxes many of them were believed to descend into the sea where, like the Indian *nāgas*, they dwelt in sumptuous ocean palaces. At the vernal equinoxes they arose from the waters and ascended into the sky. The tremendous disturbances caused by the swift emergence of these monsters caused typhoons and hurricanes along the coast (Newman 1979:101–102).

In a similar vein, a traditional Chinese belief held that it was unwise to keep dragon eggs, since they could hatch into a tiny snake or worm, and then very quickly expand to a full-sized dragon that would burst through the roof of the house in a thunderstorm on its way to the sky. “Whirlwinds and waterspouts are thus explained as a young dragon ascending to heaven” (Allen and Griffiths 1979:36). An identical idea is reported for Japan, where “the whirlwinds, called in Japan *tatsu-maki* or “dragon rolls”, which form waterspouts and carry heavy objects into the air, were looked upon as dragons winding their way to the sky amidst thunder and rain” (de Visser 1913:112). While this belief could be due to the influence of Chinese conceptions of the dragon, Japanese views of the dragon framed within the indigenous Shintō religion are much more likely to be native. In the Shintō conception, nature is pervaded by *kami* (spirits, gods), and in one account drawn from the classic text *Nihongi*, which relates how dragons were implored to bring rain in times of drought, it is said that the river gods (dragons) could also cause wind, and in one case made a whirlwind arise in order to submerge some calabashes (de Visser 1913:154).

3.22.3 North America and Mexico

The Shuswap Indians of central and southern British Columbia believed in dangerous beings in lakes that cause waterspouts and storms (Ray 1942:255–256).

The previously noted ‘water elk’ of the Umatilla Indians of eastern Oregon was thought to cause waterspouts and storms, and so was periodically propitiated (Ray 1942:255–256).

3.23 *Trait 23: The Dragon Causes Floods*

3.23.1 Europe

With reference to European dragons that needed to be slain, several saints, including St. Michael, “were reputed to have slain, tamed, or otherwise overcome this dragon or its progeny, in many of its manifestations, including flood, because the old association with water, and especially with inundation, remained unbroken” (Allen and Griffiths 1979:51).

As noted under trait 4), on the dragon's ability to fly, in the year 1222, while riots took place in the city of London "Dragons were seen flying through the air. At the feast of St. Andrew there was terrible lightning and thunder; houses and trees were blown down, and there were terrible floods" (Hogarth and Cleary 1979:101).

3.23.2 Ancient Near East

The Sumerians recognized a dragon-like monster called 'Kur', also known as 'the monster who held back the waters'. Presumably in an attempt to release the life-giving rains he was killed, but "When Kur is slain the primal waters are no longer held in check and there are terrible floods" (Allen and Griffiths 1979:19).

3.23.3 Central and East Asia

"From older times high floods, tempests and thunderstorms have been ascribed by the Chinese to dragons fighting in rivers or in the air" (de Visser 1913:45).

One type of dragon, the *jiao*, from the period of the Han dynasty (206 BCE–220 CE) is sometimes called the flood dragon, as it was thought to cause flooding (Bates 2002:13–14).

3.23.4 North America and Mexico

The Gros Ventre/Atsina of the northern plains believed in a large snake-like water serpent that could cause terrific floods (Kroeber 1908:281).

With reference to the Algonquian-speaking tribes of the Great Lakes region we are told that

The lake dragons of the North were more than just snakes. They were, like other dragons, variations on the theme of 'snake'. They were immensely powerful, since they could overturn a boat or drag down a swimmer, and in a more magical way since they could create storms and dangers for those who crossed them. Like the Chinese dragons, they were water deities. They always lived in lakes and, because of their association with lightning, which is most in evidence in the time of the spring rains, they were believed to control the fertility of the vegetation ... As the summer showers they were the emblems of fruitfulness but as the overwhelming rains and flood they were feared, and placated by offerings (Allen and Griffiths 1979:60–61).

With respect to the Zuni Indians of western New Mexico, it has already been noted in connection with earthquakes that the horned water serpent was also believed to cause floods and landslides (Wright 1988:153).

As observed under trait 2) the Western Mixe of the state of Oaxaca in southern Mexico, recognize a snake with a red and green back resembling a mat that lives in springs, and is responsible for river floods (Beals 1945:94).

3.24 *Trait 24: The Dragon Is a Sign of War*

A belief that the dragon symbolizes war is widespread in Europe. Although this is not attested in the ancient Near East, India, China, or North America, in other areas, where dragon and rainbow are more difficult to distinguish, it will be seen that the rainbow has an identical association.

3.24.1 Europe

In describing the Greek legend of King Cadmus the dragon slayer, we are told that

Following the directions of the Delphic oracle, he came to a locality that was later to become the site of the city of Thebes. The only water available thereabouts came from a spring sacred to Ares, god of war. This spring was guarded by the son of Ares, a ferocious dragon (Hogarth and Cleary 1979:77).

In another passage by the same authors, we read that “The use of a dragon to intimidate enemies is often mentioned by classical writers. The army of the later Roman Empire used a *draco* as the standard of a cohort, roughly 500 men, while an eagle standard signified the larger formation of a legion (Hogarth and Cleary 1979:158). Ingersoll (1928:129) states that in addition to the Romans, “the Persians, Scythians, Parthians, Assyrians and even the Saxons” had dragon standards that they carried into war, and strikingly, “in the painting in the Vatican depicting Constantine the Great announcing to his soldiers his conversion to Christianity, a buoyant image of a winged, four-footed proper dragon is prominently displayed, floating from a lofty pike-head.”

A similar use of dragons as symbols of martial intent is equally well-attested in northern Europe, where “In England before the Norman Conquest the dragon was chief among the royal ensigns of war” (Anon. 2002). Much the same can be said of Roman and Celtic martial symbols on shields and banners. Moreover, the end of winter was a time “when the Vikings longed to go a-raiding, and the dragon heads on the prows of their long ships speak plainly of the appetites stirred up by the spring, which for them included slaughter, pillage and rape” (Huxley 1979:81).

3.25 *Trait 25: The Dragon Causes Sickness, Disease or Trouble*

This category is not always easy to distinguish from the effects of exposure to a dragon's breath, but the following cases appear to be independent.

3.25.1 Europe

Among the many reports of dragon citings in medieval England, one that is said to have taken place in 1233 in southern England near the coast involved two huge dragons battling in the air until one was overcome and fled into the sea. To this description of physical combat between dragons it is added that social and political upheaval followed in the human community: "Moreover in this year great variance and strife rose betwixt the king and his barons ..." (Hogarth and Cleary 1979:101).

3.25.2 North America and Mexico

As mentioned earlier, the Shuswap of central and southern British Columbia believed in a land serpent with a tongue like fire, "and merely seeing it would cause illness or swelling of the body" (Ray 1942:255–256).

It was also noted above that among the Mohawk Indians of upstate New York the breath of the lake monster *Onyare* reportedly brought on sickness (Gatschet 1899:259).

3.25.3 Central and South America

The Toba Indians of the Gran Chaco in Paraguay have a myth about a young girl who became supernaturally impregnated by a snake while bathing in a water-hole that it guarded. The negative effects of contact with such a spirit water serpent could also be disease or death (Karsten 1964:54).

3.26 *Trait 26: The Dragon May Have Human Traits*

Occasionally, accounts of the dragon in different regions state that the dragon's body is part human, part snake. Alternatively, the dragon may alternate between reptilian and human form, or between a hoofed mammal conceived as a dragon, and its human alter ego.

3.26.1 Europe

As noted already under trait 18), the Scottish water-horse, which is generally regarded as the manifestation of a dragon, may appear in either human or equine form. In some accounts this creature appears first as a handsome and polite young man, thereby deceiving his victims into believing they are safe (Campbell 1900:215).

With reference to modern Greek folklore Lawson (1910:280) has observed that

a Greek ‘dragon,’ in the widest sense of the term, is sometimes distinctly anthropomorphic in popular stories, and is made to boil kettles and drink coffee without any sense of impropriety. It is in fact only from the context of a story that it is possible to determine in what shape the dragon is imagined.

Citing an earlier source Abbott (1903:265) notes that in Russian folklore regarding dragons “the Snake sometimes retains throughout the story an exclusively reptilian character; sometimes he is of a mixed nature, partly serpent and partly man.”

In European alchemy dragons represented the conjunction of opposites, a concept visually depicted as a single reptilian body topped by male and female human heads (Hogarth and Cleary 1979:130).

3.26.2 Ancient Near East

The Hittite empire, which controlled the region of central Anatolia in what is now Turkey from about 1850 to 1200 BCE, apparently had dragon ideas similar to those of Egypt and Babylonia. The demon Typhon, who warred against the gods and was slain by the hero Tarku, “was half-human and half-reptile—the upper part of his body was that of a man and the lower that of a serpent” (Mackenzie 1913:260).

3.26.3 South Asia

According to de Visser (1913:6) the Indian *nāgas* appear in three forms: common snakes guarding jewels, human beings with four snakes in their necks, and “winged sea-dragons, the upper body human, but with a horned, ox-like head, the lower body that of a coiling dragon,” and Huxley (1979:28) states that “Nāgas are snakes, often pictured with a human body, who live at the top of the present Mountain of the Gods, Mount Meru, in a golden palace echoing with music, containing beautiful women, wish-fulfilling jewels, flowers and ambrosial refreshment.”

3.26.4 Central and East Asia

According to the classic Chinese text *Shan hai king* the god of Mount Chung is called ‘Enlightener of the Darkness’. “As a living being, he has a human face, the body of a snake and a red color” (de Visser 1913:62).

The Chinese classics refer to the *khwei*, described as “a class of one-legged beasts or dragons with human countenances, which were fancied in ancient China to be amphibious and to cause wind and rain” (de Visser 1913:110).

3.26.5 North America and Mexico

As already seen, the 'snake-man' or 'tie-snake' in the folklore of many tribes in the southeastern United States, as the Creek, is said to be a transformed human being who has become an identifiable mythological figure (Lankford 1987:86).

The most extreme expression of this shifting dragon/human identity is seen with Quetzalcoatl, identified with the Toltec civilization of central Mexico between 900 and 1200 CE. According to Sejourné (1956:25), who believes he was a real person, Quetzalcoatl was a culture hero who reigned as king in the city of Tollan, a leader who was followed almost like a prophet:

His historical reality seems to be established without doubt, since his qualities as leader are many times mentioned But the fame of Quetzalcoatl spread far beyond his ancient capital. In fact, he was the central figure in all Meso-american history. No other name, not even the most powerful emperor's, is even distantly comparable to his ... His essential role as founder of Nahuatl culture was never questioned by any of the historians of the sixteenth and seventeenth centuries, who always state that, just as our era began with Christ, so that of the Aztecs and their predecessors began—at approximately the same time—with Quetzalcoatl. His image, the plumed serpent, had for pre-Columbian peoples the same evocative force as has the Crucifix for Christianity.

It is hard to test these claims without documents that separate history from mythology, but the simple fact is that a belief in the plumed serpent extends far beyond central Mexico to at least the American Southwest, and on to northern California, where both the Zuni Indians of western New Mexico and several Athapaskan-speaking peoples of northern California describe the horned water serpent as feathered. In Meso-America the name 'Quetzalcoatl' is inseparably associated with both the plumed serpent and the alleged founder of Nahuatl civilization. This raises a question about directionality: was the name of the great leader applied to the plumed serpent or vice-versa? Given the pattern seen in other parts of the world, it is extremely unlikely that the name of a real human being would be applied to a mythological creature. Rather, this would appear to be yet another example of the hominization of the dragon: a pre-existing mythical being of great spiritual power was, over time, treated as a human capable of leading men.

3.26.6 Central and South America

As noted already, for the classic Maya of central America the *chacs*, or serpents that control rainfall were "imagined as having the body of a plumed serpent

and a human head, which in the male is crowned with antlers” (Hogarth and Cleary 1979:9–10).

Similarly, among the Chortí Indians of Guatemala, “Chicchan is the most important of the native deities and is generally thought of as a giant snake He may have the giant form of an ordinary snake, or his upper body may be that of a man while his lower body is that of a feathered snake” (Wisdom 1974:392–394).

This peculiar variation on the physical characteristics of dragons almost certainly results from the use of a traditional dragon idea in narrative contexts, where the storyline is supported by giving the dragon the ability to speak and interact with humans like one of their kind. This can be seen in very different oral traditions, from anthropomorphic characterizations of the dragon in European oral literature to the Seneca myth of the dragon of Niagara who tried to take a human wife, and—as will be seen—to stories of the Rainbow Serpent in both South America and aboriginal Australia.

3.27 *Trait 27: The Dragon May Be Personified*

As a subtext of the dragon sometimes being imagined with human traits, it is noteworthy that it can further be personified, that is, identified by an individualizing name, much as a person can. Again, this is particularly true in narrative contexts. Ironically, in China, where the dragon has overwhelming positive associations, it apparently is never given a name, whereas in Europe, where its associations are overwhelmingly negative, it can be a character in stories like any human being. Several examples stand out, although others may well exist:

3.27.1 Europe

In classical Greek mythology dragons not uncommonly bore personal names. Typhon, a hundred-headed dragon, was the son of the Earth goddess Gaea and Tartarus, god of the Underworld. When he tried to seize control of the cosmos from Zeus, he was defeated and banished to the Underworld.

Python was a huge dragon that guarded the sacred oracle at Delphi, and Ladon was the dragon that encircled the tree in the Garden of the Hesperides, guarding the golden apples before he was overcome by Heracles.

The dragon Fafnir, who also guarded a treasure, was killed by the hero Sigurd in the Norse *Völsunga* saga, and his equivalent Fafner in the Middle High German *Nibelungenlied* bore the same personal name.

As noted above, the purpose in giving dragons personal names in these cases is almost certainly because they figured in narrative tales that required repeated recitation, and so long as the same dragon was involved each time it was mentioned, it was clearly more convenient to refer to it by name rather than by a longer description.

3.27.2 South Asia

In the *jātakas*, or accounts of the incarnations of the Buddha, *nāgas* often play a part, and in some cases the *nāga* kings may be given personal names. Here the narrative context differs widely from that of classic European dragon tales (as opposed to folk varieties of the type described by Lawson above), where the dragon is almost invariably a mindless, implacable foe that must be killed for the story to end well. Rather, in the Indian tradition the *nāgas* are commonly integrated into the social and religious fabric of the society. In one such tale a *nāga* king named Pandara is deceived by a treacherous ascetic who wishes to prevent him from successfully combating a Bodhisattva in the form of the Garuda king. But in the end Pandara and the Bodhisattva become friends and join forces against the ascetic. Judging from the description of the story the *nāgas* have language and interact with humans, from whom they are not mentally very different (de Visser 1913:8). Despite this humanization, however, the *nāga* remains at least part serpent, and shares a number of properties that define dragons in other cultures.

3.27.3 Categories Revisited

At the end of chapter 1 it was noted that the issue of category formation would be addressed again in later sections. We have now covered enough material to do that.

In 2001–2002, during a sabbatical a year spent teaching at the National Chengchi University in Taipei, Taiwan, I gave a talk which outlined the basic argument given in this book. There were perhaps 25 people in the audience, and when I finished one of them spoke up and said that she was happy to accept the argument for other dragons, but not for the Chinese dragon, as it is ‘different’. She was, of course, wrong. However, it is not hard to see why she felt the way she did. The Chinese dragon *is* different from many others, not least of all because of its extraordinary cultural elaboration, far exceeding that of any other known ethnolinguistic group. To take just the two best-known variants of the dragon idea, those of Europe and China, a detailed comparison reveals how differently the same basic original concept has been directed in its subsequent evolution as a result of cultural pressures that reflect the divergent histories of these areas.

In a small, but well-researched and carefully-written book on Chinese dragons, Bates (2002) has given readers a sense of how deeply the dragon idea has penetrated Chinese culture over the past three or four millennia. Bates begins by stating that “The dragon has been the symbol of China since ancient times and for many centuries has been considered immortal and omnipresent. It served as the emblem of monarchy and supreme power, yet the dragon

has always belonged to the people” (Bates 2002: vii). He then proceeds by steps to describe the extraordinary vitality of this image in all aspects of Chinese culture. To begin with, there are many named *types* of Chinese dragons. Among those mentioned are the following, listed in the order they are cited by Bates:

3.27.3.1 Kui

Elongated, serpentine body with upturned nose during the Shang dynasty (ca. 1600–1046 BCE), but downturned nose during the Western Han period (206 BCE to 9 CE) and later. These had two legs, each with four claws, and were considered a symbol of peace and good fortune. In addition, “they abhorred anything unclean, and were fastidious in what they ate” (Bates 2002:7).

3.27.3.2 Guaizi

Elongated, serpentine body with upturned nose during the Western Han period and later, when they contrasted with *kui* dragons, which by then had downturned noses. Often used to indicate a wish for a noble son, and depicted facing a lotus or a lucky *shou* symbol of longevity (Bates 2002:8).

3.27.3.3 Li

Used generally of hornless dragons (Bates 2002:9).

3.27.3.4 Chi

Hornless dragons, considered by the time of the Ming dynasty (1368–1644 CE) to be immature, or young dragons (Bates 2002:9).

3.27.3.5 Candle Dragon (*No Chinese Name Given*)

Had a human face, the body of a snake, and red, staring eyes in the Zhou dynasty (ca. 1027–221 BCE). Does not eat, sleep, or breathe; wind and rain are at his bidding (Bates 2002:9–10).

3.27.3.6 Ying Long

A flying dragon, depicted in the Ming Encyclopedia, compiled between 1607 and 1609 CE (Bates 2002:10).

3.27.3.7 Fei Yü

A flying fish kind of dragon, embroidered on robes as a badge of honor (Bates 2002:10–11).

3.27.3.8 Pai-Fang

These combine a fish's body with a dragon-like head. They are *piao*, or symbols of distinction, and often appear on honorary gates or archways. The story behind this type of dragon is that carp on the Yellow River must struggle tirelessly against the rapids to reach their spawning places, and these became symbols of "the long struggle of the literary scholar who eventually achieved success after much persistence and exertion Scholars who had passed examinations with distinction were often given gifts such as a plate decorated with one or more of these fish-dragons" (Bates 2002:11).

3.27.3.9 Jiao

This type of dragon was found on a tile from what is thought to be a Han dynasty (206 BCE–220 CE) tomb. It combines a long, curving body and horned head with an upcurving snout, and is sometimes called the flood dragon, as it was thought to cause flooding. This dragon was thought "to be a beneficent creature that exerted a restraining influence against the sin of greed. Because of this, *jiao* often appeared in a highly conventional form on ancient Chinese bronzes associated with the preparation of food" (Bates 2002:13–14).

3.27.3.10 Tian Long

Known as 'heavenly dragons', these were thought "to protect the mansions of the gods" (Bates 2002:14).

3.27.3.11 Shen Long

These 'spirit dragons' "had the duty of producing rain for the benefit of mankind" (Bates 2002:14).

3.27.3.12 Di Long

These 'dragons of the earth' had "the responsibility for marking out the courses of the rivers and streams" (Bates 2002:14).

3.27.3.13 Cang Long

These were dragons of hidden treasures, charged with the duty "to guard and watch over the heavenly wealth concealed from mortal eyes" (Bates 2002:14).

Apart from these various types of dragons with differing responsibilities, dragons of the cardinal directions were paired with colors or the seasons (or both): the Green dragon (also called *shen long*, or 'spirit dragon') was identified with the spring, the White dragon ruled the west and was connected with autumn, the Black dragon was connected with the north and winter, and both the Red dragon and the Yellow dragon were in the south, and "divided

the duty of ruling the summer. These ancient allocations were officially sanctioned in 1110 during the Song capitalised Dynasty for consistency, ok?Dynasty when these dragons were aggrandized by the granting of princely titles” (Bates 2002:17).

One could go on and on with descriptions of the Chinese dragon, but in the interest of space only a few additional examples are cited here. Dragons were often used as handles, as on bronze bowls (Bates 2002: plate 2). They were embroidered on imperial robes (which later were generalized to those of high government officials). They support astronomical instruments and stand guard in front of palaces (Bates: plates 6 and 7). They adorn the roofs of many buildings (Bates 2002: plate 8). They appear on stone carvings that serve as monuments honoring dragons for their service in protecting the city of Beijing (Bates 2002: plate 9). They appear in shrines, as one housing the imperial throne in the Manchu Imperial Palace in Shenyang (Bates 2002: plate 12). They appear on temple bells (Bates 2002: plate 21), and in many, many other contexts. And then “The dragon is usually credited with having nine sons and though they all possess some great talent, none of them perfectly resemble their ‘father’” (Bates 2002:43).

In short, anyone growing up in a Chinese culture will be surrounded with dragon images of all sorts from an early age, and in a wide variety of social contexts. It is instructive to compare this with the European dragon, which is well-known to everyone from an early age, but has almost no role in everyday life, being entirely a creature of fairy tales and paintings. It is all too easy to take these differences as showing that the Chinese dragon and the European dragon have sprung from unrelated sources of the human imagination. However, nothing could be further from the truth. The clues to common origin are everywhere, and—as will be stressed in a later chapter—the differences are entirely explainable as the result of cultural evolution.

In Europe the original folk beliefs and religion were swamped by Christianity, which on at least one level can be described as an imported Middle Eastern monotheistic creed that rejected all earlier religious or quasi-religious beliefs as ‘paganism’. As a result, the dragon became a symbol of the pagan past, and although, as noted in chapter 4, it survived in popular art for a short time in the stave churches of Norway (Lindholm and Roggenkamp 1969), it generally faded from recognition in everyday life and retreated to the realm of pure myth. By contrast, China never underwent a religious conversion that forced it to renounce its earlier beliefs. Buddhism, which was interested in personal enlightenment more than social reform, began as a monastic system that hardly touched the masses, and was easily integrated with beliefs in dragons, as was clearly the case in India, from whence it came. Equally important,

in Europe Christianity and literacy were introduced as an inseparable unity, whereas China had a literate tradition long before the introduction of Buddhism. As a result, the dragon idea was free to play a role in all aspects of Chinese culture, and given the demonstrated Chinese aptitude for inventiveness and artistic excellence, it is not surprising that this should have produced such an exceptional wealth of details in relation to dragons. In short, dragons evolve no less than biological species, but their evolution is conditioned by culture rather than by nature.

3.28 *Summary of the Ethnology of the Dragon*

Some readers may wonder why it has been necessary to enter into so many details about traits of dragons that are shared in widely separated parts of the world. Why should we care that dragons are controllers of rainfall in the ancient Near East, India, China, Mesoamerica, and at least marginally in Europe? Why should we care that they are described as multicolored or red in at least Europe, the ancient Near East, China, northwest Mexico, and the Southeastern United States? Why should we care that they can fly almost everywhere they are found, or why they are considered bisexual in European alchemy, the Taoist metaphysics of China, and modern portrayals of the plumed serpent in Mayan-speaking Mesoamerica? The answer is clear: by carefully documenting those traits of dragons that cannot be dismissed as products of arbitrary imagination or of borrowing among peoples in contact, we zero in on a set of properties that must have a natural basis, and by doing that we are compelled to ask 'What natural basis?'

Some readers may also have noticed that one of the difficulties in writing Chapter 5 has been to discuss dragons in isolation from rainbows. This can be done with some success in areas such as Europe, the ancient Near East (for which we have little data apart from an epic poem recorded on fragmentary clay tablets), India, China, native North America and Mexico, and to some extent Central and South America. However, in other parts of the world, it is all but impossible to discuss concepts of the dragon without mentioning the rainbow, since the two are identified as one and the same thing. Most readers of this book are likely to have been raised in a tradition in which the dragon and the rainbow are so clearly separated that any connection between them may initially appear absurd. This is why, in order to understand the universality of the dragon idea, it is necessary to see how the vast majority of the world's cultures understand rainbows.

PART 2

Rainbows



What, If Anything, Is a Rainbow?

1 Rainbows: Familiar and Fantastic

Just as most of us probably think we know what a dragon is even if we've never seen one, most of us surely think we know what a rainbow is. While we can't point to a dragon, we *can* point to a rainbow (although, as will be seen, in most of the world's cultures one is better advised not to do this!). What most readers might not appreciate is that this difference conceals the role of culture as a mold of human thought. To a physicist a rainbow is an optical phenomenon that can be entirely explained by physical law, with no relationship to human well-being. However, a moment's reflection should convince most people that to a preliterate human, no matter how mentally capable, the rainbow is typically something quite different.

To make this point more forcefully a brief thought experiment will help. Let us travel back in time, say, at least 10,000 years, but possibly much further. This is actually a tiny fraction of human history, which arguably begins with the rise of the genus *Homo* over two million years ago, and of our own species, *Homo sapiens*, between 150,000 and 200,000 years ago (Fagan 2010:83 ff.). However, 10,000 years is enough time to place us before the discovery of agriculture, and of the consequent population increases leading to urbanization, and the literacy that followed. Our fully human counterparts 10,000 years ago were, in short, hunter-gatherers whose lives were governed by the daily food quest, and who passed on what knowledge they had through oral transmission in the form of myth and story.

On a typical day if you were male, you would be out hunting. If you were female, you would be gathering wild plants (probably with a companion). Let's suppose that when you left camp the weather was showing signs of trouble, but was still good enough for you to go about the necessary tasks that consumed your every day. At some point, perhaps hours later, the heavy, darkening clouds reach a breaking point, and rain begins to pelt the earth, punctuated by flashes of lightning and the ominous rumble of thunder that terminates periodically in terrifying explosions overhead. You seek shelter from the storm, perhaps in a dense grove, a rockshelter or a cave. You wait, frightened and uncertain, praying to whatever spirits or deities you think might protect you. And then it stops.

The clouds part and the sun bursts through in all its brilliance while a light drizzle continues to fall. Out of nowhere there it is: a gigantic, dazzling, mind-

boggling arc of brilliant color stretching across the sky from horizon to horizon, or at least as far as the local horizon will allow. What is it? Where did it come from, and where will it go when it suddenly vanishes? These are not imaginary questions: they are the basic questions that *any* intelligent creature faced with such an experience would inescapably ask. We know this because we are human, and all humans possess the same cognitive capacity, and the same need to understand the environment in which they live.

What answers might our hypothetical Palaeolithic ancestor have given to these insistent questions? We cannot go back in time to ask him or her, but we can ask modern humans, from sophisticated urbanites to surviving foragers, what they think the rainbow is, and through questionnaires sent to both academic colleagues and field missionaries who were asked to collect data in their field locations, I have done that for scores of surviving tribal societies over the past thirty-seven years in a large-scale ethnology of the rainbow. It is the pattern of responses to these questions, as well as reports in published ethnographies and travellers' books that will be our most trustworthy guide to the past. As a footnote, it also goes without saying that I do not intend to imply by this manner of presentation that humans only began to puzzle over the nature of the rainbow in the late Pleistocene period. Rather, given the presence of sophisticated cave art well before 30,000 years ago (Chauvet et al. 1996), and burial of the dead by both *Homo sapiens* and *Homo Neanderthalensis* far earlier than this (Mellars 1996:366–391, Papagianni and Morse 2013:130ff.) it seems far more likely that these kinds of questions would have been asked once a complex brain had evolved the capability to think of unseen spiritual forces.

In what follows I will downplay or ignore views of the rainbow as reported in a single culture. The well-known Mayan text *Popol Vuh*, for example, describes a belief that the rainbow is the “flatulence of demons”, an idea I have found nowhere else. Similarly, the Ijok Negritos of the Malay peninsula see it as a fishing line that the king of the dragons requires his servants to use to catch fish for him. Rather than focusing on such intriguing, but apparently unique beliefs, my intent is to present recurrent conceptions of the rainbow which have been collected from hundreds of sources, both written and living. Some of these are limited in terms of geography, or cultural or linguistic relationships, and a few are globally distributed, but one stands out above all others.

Before beginning the survey of how the rainbow is conceived in the world's cultures, it will be well to warn the reader that the typical Western view of the rainbow within the Judeo-Christian tradition (thing of beauty, symbol of promise for a new beginning, etc.) diverges sharply from ideas about the rain-

bow held by most of humanity. The Western view of the rainbow as reflected in the Bible is summarized succinctly by Hastings (1908–1912), who points out that scriptural references to this topic are few, but invariably positive, reflecting the glory of God, God's covenant with man after the Deluge, etc. Because of the cultural presuppositions that we all carry with us we tend to think of our views as 'natural'—how could they be otherwise? But it is precisely this deeply-rooted ethnocentrism that has impeded progress in understanding the origin of dragons for generations. Most of the world's cultures see the rainbow in a very different light from ours, and once the ethnology of the rainbow is taken seriously and these radically distinct views are understood the natural basis for the globally distributed belief in dragons becomes almost embarrassingly obvious.

It will soon become clear how cross-culturally aberrant the typical Western view of the rainbow is, but before entering into details it will be useful to show that widely divergent cultures found around the planet share certain conceptions of this phenomenon that are both similar to one another, and fundamentally different from those likely to be shared by most readers of this book. Four of these should be enough to make the point.

1.1 *Philippines*

Among the Isneg people of northern Luzon in the Philippines *bunglún* 'the rainbow' is "supposed to be a spirit. Its first appearance marks the beginning of the rainy season." The derived word *ma-bunglún* 'a swelling of the abdomen caused by drinking water that has been touched by a rainbow', shows an unmistakably negative character, as do *ma-bunglún-ān* 'to die shortly after a rainbow has surrounded a house under construction. Said of the owner of the house in question,' and *pagbungbunglúnan* 'to inflict the disease of the rainbow' (Vanoverbergh 1972:182).

1.2 *Mexico*

Similarly negative ideas about the rainbow are held by the Tarahumara Indians of northern Mexico, where it is called *kino-ro* (in the north-central region of their territory), or *ko-nimi-ki* (in the south-central area). No particular meaning appears to attach to these variant forms of the word other than the general sense 'rainbow', but we are told that

The rainbow is considered a personage who comes from the evil underworld or underground people, and which is of evil omen. It can eat or suck the blood from a Tarahumara without his or anybody else's noticing it. When there is a double rainbow the bottom one is the woman of the

one above. She is fat and therefore lovely and men like her, but should a man *rimu-re* (dream) of her, he will be childless thereafter (Thord-Gray 1955:960).

1.3 *Africa*

Two examples from Africa, where the ethnic groups are 3,500 miles apart and linguistically unrelated, show the same general pattern. In the first of these the anthropologist Wendy James, who was studying the Komuz (Nilo-Saharan)-speaking Uduk people of the Sudan, was taken to a place called 'Silak', where she visited quite an impressive cave and waterfall where a rainbow was said to live. "It was a hungry meat-eating Rainbow living in a cave with water" (James 1988:276). As though this description were not startling enough for someone raised to considering the rainbow an inanimate thing of beauty, or a symbol of divine reconciliation, she added features of its physical description that are eerily similar to attributes sometimes imputed to the dragon, namely its body was a curious hybrid, identified with the python, but having ears and a mouth like a camel (James 1988:297).

Elsewhere, we are told that the Bantu-speaking Zulus of southern Africa

also feared the rainbow, which they associated with snakes. It was said to live with a snake, or at least, one always appeared whenever the bow was visible. When it was seen with its end touching the earth, it was believed to be drinking from a pool. Sometimes it lived in a large pool, and men were afraid to bathe in such waters, for fear that the rainbow might seize and eat them. On dry land it poisoned any man it met, or afflicted him with disease (Hole 1995:2153).

More generally, with regard to southern Africa as a whole Werner (1933:231) states that

Africans have been struck not so much by the beauty of the rainbow as by its strangeness, and they nearly always look on it as malignant and dangerous. This may seem unaccountable to us, accustomed to think of it as the symbol of hope, and familiar with the lovely figure of Iris, the messenger of the gods. But it is a common belief that it stops the rain, and this is quite enough to constitute it an enemy.

The first thing to note about these traditional views of the rainbow in contrast to our more familiar one is that within the Western tradition the rainbow is *inanimate*—it is a physical entity without life. By contrast, at least the Isneg,

Tarahumara, Uduk and Zulu see the rainbow as a living being, perhaps a spiritual or supernatural one, but nonetheless a creature capable of actions like any living being. The notion of a rainbow that can drink the blood of humans, or of a 'meat-eating rainbow' may seem bizarre or even ludicrous to those with different cultural backgrounds, but it is perfectly consistent with indigenous notions of the rainbow as a dangerous spirit animal. In this regard we must remember that to preliterate humans, who had no inkling of the physical basis of rainbows, much of nature, particularly anything unusual or striking, was animated by spirit presences. With respect to just one region of the Earth, for example, Métraux (1963b: 563) says the following, which could be repeated almost without change for the indigenous people of any other area on the planet:

Throughout South America natural objects and phenomena are personified or are believed to be the abodes or manifestations of supernatural beings. There is, nevertheless, considerable variation in the degree of individualization of these spirits, of their functions, and in the nature of their relationship with people.

As already noted, in 1871 the pioneering British anthropologist Edward Burnett Tylor coined the term 'animism' to describe this once universal cultural phenomenon—a stage through which, in his view, all humans passed, and his description of it rings as true today as it did nearly a century and a half ago when he first proposed it.

Although animism is generally associated with societies that have a simple material culture, this is not invariably true. Shintō is an animistic religion associated with a culture of a high level of material, social and mental sophistication. Unlike many cultures that have abandoned animism after the advent of literacy and the shift to an urban lifestyle, Japan has maintained its animist tradition next to later introductions (Buddhism, Christianity, Westernization in general). Although what is often stressed most is the focus on a ritual connection between modern Japan and its ancient past, the fundamental tenet of Shintō is that all of nature is pervaded by spirits—a tenet that is shared with tribal peoples of much less advanced levels of culture.

We will see that some traditional societies also portray the rainbow as inanimate—for example, as a bridge between heaven and earth, or as the belt or loincloth of a deity. However, most tribal peoples see it as an animate being capable of action, often action that is menacing to humans. In what follows I will survey the range of cultural conceptions of what a rainbow is. In general, I have limited myself to cases where the conceptualization can be expressed by a noun: the rainbow is an 'X', where 'X' is something that can be counted or given

a simple name (bow, sword, bridge, loincloth/belt/scarf, snake). However, there also are recurrent associations of the rainbow with certain traits (sign of blessing, sign of sickness, sign of coming war), and these will be treated separately in Chapter 7.

The evidence for how the rainbow is conceived consists both of direct statements from native participants in a culture, and of names for the rainbow, which often provide indirect information about conceptualizations which may have long since become unconscious.

2 Portrayals of the Rainbow

2.1 *The Rainbow Is a Bow (Archer's Weapon)*

The first cultural representation of the rainbow, which is common among speakers of Indo-European languages, treats it as inanimate. This is the notion that the rainbow is an archer's weapon.

2.1.1 Europe

In English we are largely unconscious of the fact that the rainbow was once conceived as an archer's bow, and much the same is true of German *Regenbogen* (rain + bow), Danish, Norwegian *regnbue* (rain + bow) or French *arc-en-ciel* (bow-in-sky). This etymological blindness is perhaps intensified by the fact that the word for 'bow' in languages such as German or French also means 'arc', and this rather than 'bow' could be the primary reference, as it is in Finnish *sateenkaari* (*sateen* 'rain, genitive case' + *kaari* 'arc, arch, curve', literally 'arc of rain', a different word being used for archer's bow).

However, as we go back in time, we find that the rainbow was transparently conceived as the bow of a weather deity, and was not simply a bow in the sky. In Vedic Sanskrit, some 3,000 years ago it was the bow of Indra (*indradhanus*), the Hindu god of thunder, storms and rainfall whose celestial chariot was pulled through the sky by the divine birds called 'garudas'. It seems clear that this transparent reference to the rainbow as the weapon of a sky god preceded the 'bleaching' of the meaning so that for most modern speakers of English, German or French the last part of the word scarcely conjures up the image of a weapon any longer, let alone any association with a sky-god. However, the implicit association of a celestial bow with a deity has re-emerged in some languages. Although Latin *pluvius arcus* 'bow of the rain', lacked a sacred reference, for example, such references have developed in several of its descendants, including Catalan *arc de Sant Martí*, and Rhaeto Romansch *arch San Martin* 'the bow of Saint Martin'.

The ancient Greek term for ‘rainbow’ is etymologically unclear, but Latin *arcus* meant ‘bow’, and, by the first century BCE also ‘arch’. Other Indo-European examples of the rainbow portrayed as an archer’s bow are: Old Irish *túag nime* ‘arch of heaven’, and *fidbocc* ‘bow, archer’s bow; rainbow’, and modern Irish *bogha báistí* (lit. ‘ring of rain’), where *bogha* is said to be from Middle Irish *boga* ‘bow, curve’, itself a loan from Old Norse *bogi* ‘bow’. Baltic languages reportedly use various forms made from the root of Lithuanian *vér̃ti* ‘bend’, and a Common Slavic root meaning ‘arc’, ‘arch’ or ‘bow’ appears in Old Russian *duga*, Czech *duha*, Serbo-Croatian *duga*, and related words in other Slavic languages. Bengali *ramdhanu* ‘bow of Ram (a Hindu deity)’, modern Greek *uranio toxo* (‘bow from the sky’), and Albanian *ylber* < Proto-Albanian *ul(e)na bōra ‘forearm bow’ all show a similar pattern, although the latter has what may be a modern dialectal form *brezi i Perëndise* ‘the belt or girdle of God’, which is cited below.

The same conception underlies Maltese *qausalla* (*da Qaus e Alla*) ‘bow of Allah’ for the rainbow, where ‘Allah’ is the Arabic word for God, but here used in a Christian context (Alinei 1983:50). Finally, Classical Armenian uses the phrases *aleln astowchoy* ‘God’s bow’, and *Aramazday gawti* ‘bow of Aramazda’, the former reportedly of Christian inspiration, and the latter of Iranian inspiration (< *Ahura mazda*, the highest spirit worshipped in the ancient Persian religion of Zoroastrianism), although both of these may overlay an earlier conception in which the bow was present without reference to God.

Other examples are: Russian *rajduga* ‘paradise bow’, Italian *arco baleno* ‘dolphin’s bow’, *arco bevente* ‘drinking bow’, or *arco di Noè* ‘Noah’s bow’, and a Saami (Lappish) expression meaning ‘Tiermes’ bow’, where Tiermes is the god of sky, thunder, lightning, the rainbow, weather and the oceans (Alinei 1983:47).

This image of the rainbow as an archer’s weapon (originally the bow of a weather-god) is thus widespread among speakers of Indo-European languages—the family to which English and most languages of Europe and India belong. It also occurs outside this language family (as in Maltese or Saami), where it is far less common. Other known examples are:

2.1.2 Central and East Asia

Middle Mongolian *qarbu-*, Khalkha Mongol *xarwa-* ‘to shoot with a bow; rainbow’ seem to appeal to a concept like that behind most Indo-European words for the rainbow (Alexander Vovin, p.c., 9/24/17).

In China the rainbow is sometimes portrayed as a bow, especially an emperor’s bow or a god’s bow (Zhou 2001). However, this is rare in comparison with other representations.

2.1.3 North America and Mexico

Among the Catawba of South Carolina the word for 'rainbow' is *uks-itchika*, where *uks* is said to mean 'rain' (derived from *huksoṛé* 'it rains'), and *itchika* 'bow' (Gatschet 1900:547).

In Ofo, a Siouan language once spoken in southern Mississippi, the word for 'rainbow' is *asho'hi akaṇaḡpa'aka*, where the first element means 'rain, to rain', and the second 'bow, semicircle, arc' (Dorsey and Swanton 1912).

2.1.4 Africa

In Classical/Standard Arabic the word for rainbow is *qawsu 'l-nabīy* 'bow of the Prophet' (Baranov 1976).

The Kusaasi, Frafra, and Kasena people of Ghana "all connect the rainbow with the chameleon, which itself is an object of fear, to be avoided.... In Frafra and Kasena the word for 'rainbow' is 'chameleon bow'" (Philip Hewer, p.c., 9/2/82).

In Swahili *upinde wa mvua* 'rainbow' = 'bow for hunting' + 'rain' (Rechenbach 1967). Given the status of Swahili as a trade language among Arabs and east African peoples for centuries the question arises whether this is an indigenous development, or a product of contact, but a similar metaphor in other Bantu languages suggests that this concept is native.

For the Ila people of Zambia and Zimbabwe the rainbow is named *buta bwa Leza* 'the bow of Leza', after a deity (Edwin W. Smith 1920:2:220).

Among the Ba Thonga people of Zambia and Zimbabwe we are told that "In some of the northern clans ... the rainbow is called the Bow of Nyandziyo. Nyandziyo is said to be a man of the olden times who made the rainbow; he dwells in heaven and the rainbow is his bow. He it is who taught men the use of the bow" (Junod 1927:2:312).

Despite this fairly widespread distribution, a little thought will show that the rainbow as an archer's weapon is a poor candidate for how our hypothetical Palaeolithic ancestor probably conceived of the rainbow. Most obvious is the question whether a hunter-gatherer in this time period used a bow rather than a spear as his daily weapon for securing protein. The antiquity of the bow either as a tool in hunting or a weapon in warfare is unclear, but archaeological evidence for the use of spears far antedates that for the use of bows as this can be inferred from the discovery of identifiable artefacts relevant to either type of weapon. So far as is currently known, the earliest unambiguous evidence for use of the bow comes from discovery of bone arrowheads dated to about 61,000 years ago in Sibudu Cave, a rockshelter located in KwaZulu-Natal, on the east coast of South Africa about 25 miles north of Durban (Wadley and Jacobs 2004, Blackwell, d'Errico and Wadley 2008). The use of spears, however,

has been traced back nearly half a million years at the site of Kathu Pan 1, far in the interior of South Africa (Wilkins and Chazan 2012).

This does not rule out the possibility that arrows without bone or stone heads could have been used earlier than stone-tipped arrows. However, in general the history of technology shows a movement from simpler to more complex forms, and the use of spears is simpler than the use of arrows in that they are cast by the human arm rather than by an intermediate form of propulsion. At some point in history, someone must have realized that a miniaturized spear could be hurled farther, with more force, and with less effort by flinging it forward with the springing action of a bowstring than is possible with the human arm alone (the atlatl, or throwing stick, can be seen as a compromise between the two types of propulsion). However, there are also other reasons for reaching this conclusion. The most important of these is the far more common distribution of other alternatives that will be considered below.

2.2 *The Rainbow Is a Scythe, Sword, or Other Weapon of a Deity*

In a number of languages, the rainbow is conceived as the scythe, sword, etc. of a deity. Again, it is associated with divinity, regardless of the nature of the cultural product with which it is compared.

2.2.1 Europe

Estonian *vikerkkaar* is said to be from *vikat* 'scythe' and *kaar* 'arc, bow, curve', from Proto-Finnic **kaari* 'arc, bow, curve'. The exact concept here is somewhat hard to extract from the etymology, but seems closer to 'scythe' than to 'bow' (Guy Smoot, p.c., 9/26/17).

2.2.2 Insular Southeast Asia

Some Toraja peoples of central Sulawesi, Indonesia are said to think of the rainbow as the sword of a deity (Adriani and Kruyt 1950–1951:407).

2.2.3 Africa

The Minyanka of southeast Mali call the rainbow 'the sword of God' (Lucia Brubaker, p.c. from Edmond Dembele, 12/20/82).

To the Malagasy of Madagascar, the rainbow is *antsiben andriamanitra* 'the sword of God' (Richardson 1885, sub *ántsy*).

In both of these languages the characterization of the rainbow may be due to Arabic contact influence. Again, this is a poor candidate for a primordial concept of the rainbow, since it implies a knowledge of metallurgy, something that would not have arrived until far later in human history.

2.3 *The Rainbow Is a Spirit Bridge*

In still other languages the rainbow is seen as a bridge between heaven and earth, and hence as a path for the souls of the dead to follow into the 'other world'.

2.3.1 Europe

In the Icelandic sagas Bifröst is the burning rainbow bridge connecting Midgard (Earth) and Asgard (the realm of the gods), over which the deity Heimdall stands guard, showing the way to Valhalla for the heroes who have earned the right to enter that blessed realm. It is noteworthy that while the rainbow is portrayed as a bridge in the medieval sagas, the name in modern Icelandic and other Germanic languages (Danish, Norwegian *regnbue* = 'rain' + 'bow', German *Regenbogen*, Dutch *regenboog*, English *rainbow*) shows that it was *earlier* conceived as an archer's bow.

"The soul-bridge tradition has been forgotten in Britain, but shreds of holiness and mystery still cling to the rainbow in folk-belief" (Radford and Radford 1975:279).

In classical Greek Iris, the rainbow, was the messenger of the gods, but there appear to have been varying conceptions of this mythological figure, which are reflected in the treatment of her by different poets. According to Smith (1851:400):

Iris appears to have originally been the personification of the rainbow, for this brilliant phenomenon in the skies, which vanishes as quickly as it appears, was regarded as the swift messenger of the gods Some poets describe Iris as the rainbow itself, but other writers represent the rainbow as only the road on which Iris travels, and which therefore appears whenever the goddess wants it, and vanishes when it is no longer needed.

2.3.2 South Asia

In Nepal (ethnic group unspecified) "Traditionally the rainbow is a bridge between Earth and Heaven" (Kirsti Kirjavainen, p.c., 6/9/82, from Harkha Pariyar and Okhal Dhunga).

2.3.3 Central and East Asia

In China the rainbow is sometimes seen as a bridge between humans and supreme beings; only gods/goddesses, or chosen humans such as shamans, sorcerers, or clergy can access it (Zhou 2001).

2.3.4 North America and Mexico

The Tlingit Indians of southern Alaska viewed the rainbow as a road by which the souls of the dead passed to the upper world (Swanton 1908).

Among the Navaho of the American Southwest some say the sun-god “walks on a holy trail of sunbeam or rainbow across the sky” (Matthews 1902:30).

The Catawba in South Carolina call the rainbow ‘the dead people’s road’ (Leach and Fried 1972).

The Yuchi saw the rainbow as a bridge for the souls of the dead to cross to the afterlife (Speck 1909:57).

2.3.5 Central and South America

Among the Inga of Colombia the rainbow is sometimes said to form a bridge to help the Ingas escape from danger (S.H. Levinsohn, p.c., 5/15/82).

Among the Chachi people of Ecuador (formerly called ‘Cayapa’) the rainbow is said by some to be a bridge used by cave and hill spirits, as well as river spirits. When the spirits arrive at their destination their trail or bridge disappears because it is no longer needed. Other speakers say that it is a boa constrictor (Neil Wiebe, p.c. from Alfredo Salazar, 3/16/82).

Note the close resemblance of this idea of a spirit bridge that appears when needed and vanishes later, to the parallel notion in the classical Greek myth of Iris, messenger of the gods. A very similar conception is also described for the Tuaran Dusun of northern Borneo by Evans (1923:52). Each of these cases is clearly stimulated by the transitory nature of the rainbow, which is visible one moment, but gone the next, a fact that must have endlessly puzzled preliterate humans.

2.3.6 Mainland Southeast Asia

According to a British colonial official who spent years among indigenous peoples in Assam, the Sema Naga “call the rainbow *kungumi ’pukhu*, and translated it to me as ‘the Sky Spirit’s leg’, but it could equally well mean ‘the Sky Spirit’s bridge’” (Hutton 1921b: 304, fn. 2 in Mills 1926:304).

2.3.7 Insular Southeast Asia

Among the linguistically and physically distinct Andaman islanders in the Bay of Bengal south of Burma, “the rainbow is believed to have some connection with the spirits of the jungle or of the sea. One very common statement is that it is a bridge of cane that stretches between this world and the world of departed spirits. It is along the rainbow that the spirits travel when they visit the Earth” (Radcliffe-Brown 1922:145 ff.).

The Atayal of northern Taiwan call the rainbow a ‘bridge of the spirits’ (Egerod 1965:281).

The Negritos of Ragay, on the island of Luzon in the northern Philippines, “thought that a rainbow was a kind of bridge over which good spirits walked when they went from one part of the sky to the other” (Garvan 1963:205).

Among other beliefs they have about the rainbow, the Tuaran Dusun in Sabah, North Borneo, have the following, which is said to be from a tale, and reportedly was not necessarily believed by the informant. “Long ago the rainbow was a path for men. Those who lived up-country used the rainbow as a bridge when they wished to go down-country in search of wives” (Evans 1923:51–52).

According to one account, the Balinese call the rainbow *cegcegan dedari* ‘ladder of the fairies’, and say that it can be used to ascend to heaven (Adrian Clynes, p.c., 1982).

Although the commoners have other ideas, the priestly class among several Toraja peoples in central Sulawesi holds that the rainbow is a bridge to heaven for the souls of the dead (Adriani and Kruyt 1950–1951:407).

The Buginese and Makasarese of southwest Sulawesi consider the rainbow a bridge over which the souls of the dead pass to the afterlife (Wilken 1912:3:259).

2.3.8 New Guinea and Satellite Islands

The Papuan-speaking population to the south of the Carstensz range in the high interior of Indonesian New Guinea “believe that the rainbow is a bridge over which the spirits of the dead pass to the other world” (Le Roux 1950:2:610).

The Tawala of southeast New Guinea see the rainbow as “a pathway for the dead, who travel on it to another world” (John Lynch, p.c. from Gouli Tarumuri, 1987).

Among the Yele of Rossel Island, southeast of New Guinea, there were various views of the rainbow. One of these maintained that it was “some sort of bridge between the good and bad” (Susan Warkentin, p.c., 1983).

2.3.9 Pacific Islands

The Arosi of San Cristobal Island in the southeast Solomons say the rainbow is “the great road of the spirits of the sea; if people saw a rainbow they thought there was a spirit coming towards them along it, and this is why they were afraid of it. Even now when they see a rainbow they all run into their houses” (Fox 1924:133).

In ancient Hawai‘i the rainbow was sometimes conceived as a bridge between heaven and earth. (Beckwith 1976:248, 527).

2.3.10 Africa

To the Wolamo people of Ethiopia the rainbow is a bridge used by evil spirits who break out of their quarters at its foot (Haberland 1963:592).

Again, although a belief in the rainbow bridge is extremely widespread, its antiquity in human thinking is doubtful, since it could only have been conceived once bridges of some kind were known. The earliest of these probably would have been suspension bridges made of vines and wooden slats, and there is virtually no way the history of such technology can be known, since the materials used in construction would have been perishable. Even earlier than the use of suspension bridges, simple logs across small streams may have served as primitive bridges, but these are unlikely models for a rainbow bridge to heaven. Most conceptions of the rainbow as a bridge see it as existing for the souls of the dead to cross to the afterworld. Other ideas about the uses of a rainbow bridge, such as that of the Tuaran Dusun, are clearly later developments. In several cultures the concept of a bridge between Heaven and Earth is only one of several ideas that individual speakers offer about the nature of the rainbow.

2.4 *The Rainbow Is a Belt, Scarf, Loincloth, Etc. of a Spirit*

2.4.1 Europe

In Lithuanian the rainbow is called *laumės juosta* 'fairy belt/girdle', departing from the usual Indo-European pattern in which the rainbow is an archer's weapon (Piesarskas and Sveciavičius 1994).

Although the rainbow goes by other names in standard Italian, in the Piemonte, Ticino region of northern Italy it is called 'dragon's belt' (Alinei 1983:52).

In Albanian it is *brezi i Perëndise* 'the belt or girdle of God', again straying from the widespread Indo-European tendency to view it as an archer's bow (Drizari 1957).

2.4.2 Central and East Asia

The Samoyed of central and western Siberia call the rainbow 'the hem of the sun god's coat' (Voegelin 1972:922).

In China the rainbow is sometimes said to resemble the colorful sleeves or belts used by women as accessories (Zhou 2001).

2.4.3 Central and South America

The Amuesha people on the eastern slopes of the Andes in Peru, say that the rainbow is the boa snake's belt (Martha Tripp, p.c., 4/82).

2.4.4 Insular Southeast Asia

Among the Bontok of northern Luzon, Philippines, the rainbow is viewed as the loincloth of a spirit. This may be because Bontok loincloths are made of lengths of material that is woven in striped patterns, creating a superficial similarity to the rainbow. "Its appearance is a bad omen, and results in the delay or extension of any rituals that are taking place when it appears. It sucks up the substance of rice in the fields or granaries over which it hovers. The rice is still there, but the value has gone from it. You'll still be hungry after eating it" (Lawrence A. Reid, p.c., 3/10/2000).

The Tuaran Dusun of Sabah (North Borneo) say that the rainbow is the fighting scarf of Kinharangan (a deity), with which he stops the rain (Evans 1923:15).

Among the Sasak, on Lombok Island just east of Bali, the rainbow is called *sabuk Déwa* 'belt/girdle of the gods' (Goris 1938:257).

Some Toraja peoples in central Sulawesi regard the rainbow as the scarf of a deity (Adriani and Kruyt 1950–1951:407).

The Ngadha and other Austronesian-speaking groups on the island of Flores in eastern Indonesia say the rainbow is the shawl of the Earth Spirits, put out to dry (Bader 1971:948).

Among the Luang of the Sermata archipelago just east of Timor in eastern Indonesia the rainbow is considered to be a flag of people who live up above (Mark Taber, p.c., 1994).

2.4.5 Pacific Islands

The Bariai of west New Britain in the Bismarck Archipelago east of New Guinea see the rainbow as the loincloth of a spirit or deity (Lafeber 1914:275).

Among the Polynesians of Mangaia in the northern Cook Islands the rainbow is regarded as "the girdle of the god Tangaroa, which he loosens and allows to hang down until the end reaches to the Earth whenever he wishes to descend" (Gill 1876:44).

2.4.6 Africa

The Galla or Oromo of Ethiopia call the rainbow 'the belt of the Gods' or 'the staff of the Gods' (Haberland 1963:592)

Among the Nuer a rainbow is said to be 'the necklace of God' (Evans-Pritchard 1956:2).

This is quite a variable entry, covering a range of articles of clothing, and attributing them in some cases to a spirit, in others to a deity, in others to people in the sky, and in still others to a dragon or snake. It is unlikely to have great antiquity as a conception of the rainbow, and its secondary nature is particularly clear where it is said to be the belt of a dragon or large snake.

2.5 *The Rainbow Is a Net*

2.5.1 Insular Southeast Asia

The people of the island of Nias, west of Sumatra in Indonesia, reportedly “tremble at the sight of a rainbow, because they think it is a net spread by a powerful spirit to catch their shadows” (Frazer 1920:379).

2.6 *The Rainbow Is a Spirit*

2.6.1 Europe

As noted earlier, in a survey of European folk beliefs about the rainbow, Alinei (1982:52) suggests that the rainbow was traditionally seen “as a daemon, capable of causing diseases and death.”

2.6.2 North America and Mexico

The Mandan Indians of North Dakota say the rainbow is a spirit accompanying the sun (Wallis 1918:371).

2.6.3 Central and South America

To the Carib-speaking Indians of the Guianas and portions of the Caribbean the rainbow (*paramu*) “Is not a sign of peace. On the contrary, so long as it stands in the sky people may not leave their homes, as it is a *yoroka*, an evil spirit that can kill humans. The most colorful part of the bow is the feather crown with which they decorate their heads ...” (Ahlbrinck 1931:361).

To the Kaiwá of the Mato Grosso region of western Brazil, a rainbow is not a bridge or a snake; rather, “It is simply a manifestation of *anháy*—evil spirits” (David Harthan, p.c., 6/2/82).

2.6.4 Mainland Southeast Asia

According to Milne (1924:354), among the Palaung of the Shan states of Burma

When the rainbow makes an arch from horizon to horizon the *kar-nam* (spirits) forming it are called *par-yon*. These are tiny but terrible creatures that have their home in the sky, coming down to the earth to drink. Short rainbows which do not extend in an arch across the sky, are the *ham-ham*. These are also spirits that live in the sky. Both the *par-yon* and the *ham-ham* are worm-like creatures, very brilliant in color and without legs One should avoid drinking at the spring where these spirits have been drinking (if you do, the stomach swells up).

2.6.5 Insular Southeast Asia

The Simalur people on the island of Simeulue, west of northern Sumatra in Indonesia call the rainbow *jumbalarj*, which also refers to a demon (*kobold*) or earth spirit that can harm humans (Kähler 1961:57).

2.6.6 Pacific Islands

Among the Avau people on the south coast of the island of New Britain it is believed that the rainbow is produced by a *marsalai* (spirit) yawning. The Akolet from the same general area have a similar concept, as the name for the rainbow is *tamara mamaunga*, or 'spirit yawning' (Hiroko Sato, p.c., 9/29/17).

The people of Sa'a and Ulawa islands in the southeast Solomons greatly fear the malevolent Sea Spirits. As described by Ivens (1972:201)

A rainbow or a waterspout or a black squall is their inseparable companion. The rainbow is their special sign. They travel on rainbows and slide up and down on them. The appearance of a rainbow in a sunshower at sea or on land is a sure indication of their presence A canoe out catching bonito will give a wide berth to a rainbow or to a waterspout.

2.6.7 Africa

According to the Dida of the Ivory Coast, some people believe that the rainbow "is from the action of a certain (guardian) spirit" (Denis Masson, p.c., from M. Sergui Goston, 12/1/82). This belief may reflect missionary teaching.

The Luo of the southern Sudan consider the rainbow "a type of god (*juog* 'spirit')." (Questionnaire completed anonymously, forwarded by Jon Arensen, 1982).

There is no question that the rainbow is associated with the spirit world in most traditional societies, but as will be shown below, it is typically identified much more specifically with a supernatural serpent—that is, with a spirit-snake.

2.7 *The Rainbow Is the Penis of a Deity*

This unexpected view of the rainbow is found in three widely separated areas, but with minimal information for two of them.

2.7.1 North America and Mexico

The Yurok of northwest California say the rainbow is a penis (Driver 1939:343; information available from checklist only).

2.7.2 Insular Southeast Asia

Hooykaas (1956:301) relates a Balinese myth about the origin of the rainbow in which the god Guru becomes enamored of the goddess Uma, whom he has created to bring him solace:

God Guru looking at Goddess Uma became passionate, (she was) male, not male, female, not female: she had a male member. In his desire for intercourse he clutched her. The god was frightened at the sight of her male sex (organ), snatched it off and threw it into the sky: this is the rainbow.

In this case a mythological context is provided for the idea that the rainbow is a penis, specifically the penis of a hermaphroditic deity.

2.7.3 Pacific Islands

Among the Xârâcùù of south-central New Caledonia in southern Melanesia, the rainbow is said to be the penis of the thunder. No further explanation is given (J.C. Rivierre, p.c., 3/5/85).

2.8 *The Rainbow Is a Gigantic Snake*

By far the most common view of the rainbow, in many diverse cultures around the world, is that it is an enormous supernatural snake, as seen in the following.

2.8.1 Europe

Grimm (1844:695) observed of the Romans that the rainbow was believed to drink water from the earth. This is presumably how it becomes transferred to the sky and falls as rain.

Although most sources on the dragon are silent on this matter, the Italian linguist Mario Alinei, who is responsible for the entry on 'rainbow' in the *Atlas Linguarum Europae*, almost alone, has drawn attention to the presence in Europe of a belief very similar to that of tribal societies in other parts of the world:

There are endless attestations in Latin—from Plautus on—of the rainbow as 'drinking' the water from the earth. But nowhere do we find, in Latin, the full representation of this conception. Only in modern folklore and among modern 'primitive' peoples do we find the total picture. The rainbow is a giant animal, and it is this animal that drinks the water, sometimes everything else, including human beings (Alinei 1982:52).

Elsewhere (Alinei 1985:332) he makes the more specific connection of the drinking rainbow as being that of the rainbow in the form of an enormous serpent:

For Latins, as Plautus already attested, *bibit arcus* (*Curculio* 132) the rainbow “drinks” the water from the earth. There is no trace in Latin literature, however, of the underlying belief that the “drinking rainbow” is actually a snake, a dragon, a gigantic animal, although all of these conceptions are clearly preserved both in the names and in the folklore of the “drinking” rainbow.

In the latter publication Alinei relates the equivalence of the rainbow and the dragon to traces of totemism in modern European folklore, but does not clearly indicate the derivation of the dragon idea from earlier conceptions of the rainbow as the Rainbow Serpent. Similar views were expressed in passing by Grimm (1844:695) for pre-Christian Europe, again without drawing the conclusion that the Rainbow Serpent and the dragon are one and the same entity.

2.8.2 South Asia

The Birhor, a jungle tribe of Chōta Nāgpur, India, hold that the rainbow “is formed by water which the Baṇḍē-lēlē snake gurgles out of its mouth” (Roy 1925:497 ff.).

Among the Kols of Uttar Pradesh in northern India, *Lūrbeng* means both ‘rainbow’ and ‘serpent’ (Crooke 1925:46).

2.8.3 Central and East Asia

According to a folk belief among the Chinese of Lanzhou in Gansu province, the rainbow is a dragon that drinks water from the sea and sprays it out as rain (Lo Chin-tang, p.c., 1990).

In China by analogy to animals’ water-drinking, the image of rainbows became animate, the earliest known record of this dating back to the Shang dynasty (Kuo 2000). The belief that the rainbow drinks water from a spring, a well, or a river, or even from cookware is found in at least Sichuan, Jiangxi, and Qinghai provinces (Zhou 2001).

In Okinawa a rainbow is called *aminumiya* (*ami* = water, *numi* = drink, *ya* = person/thing). *Aminumiya* is a snake (dragon) spotted in red. It was believed that because this snake drank water in the sky, there was no rain (Obayashi 1999, from Hiroko Sato, p.c., 12/16/17).

On Amami Oshima island in the Ryukyus of southern Japan a rainbow is called *tinmagya* (*tin* = ‘sky’, and *nagya* = ‘long insect or worm’), that is, a snake (Obayashi 1999, from Hiroko Sato, p.c., 12/16/17).

2.8.4 North America and Mexico

Among the Amuzgo in southern Mexico, the rainbow is regarded as an enormous snake. If one sees the snake it will not rain—in other words, the rainbow snake is believed to withhold the rain (Cloyd Stewart, p.c., 1982).

The Totonac of southern Mexico believe that the rainbow is associated with a water serpent, or *mazacuate* (Ichon 1969:137).

2.8.5 Central and South America

The Mam of Todos Santos, Guatemala, entertain several conceptions of the rainbow. The two most relevant to this discussion are: 1. the Great Serpent has raised his tail, and it arches back down to come back to his body, and 2. the Great Serpent has come into contact with water, and the resultant steam shoots out into the air in a great chromatic arc (Richard Reimer, p.c., 1982).

As already mentioned in several connections, among the Chortí of Guatemala “Chicchan is the most important of the native deities and is generally thought of as a giant snake, although this form has many modifications The rainbow is the body of a Chicchan stretched across the sky” (Wisdom 1974:392–394). In addition, Wisdom notes that the sky *Chicchans* are fused with several Christian saints—Balthazar in the north, and Gabriel, Raphael, Michael, Peter, Paul and the Angel of Hope in the others, revealing a syncretism of introduced Christian ideology with the indigenous belief system about the spirit world.

The Aguaruna of the Peruvian montaña call the rainbow *págki wajáu*, where *págki* means ‘anaconda’ and *wajáu* is unclear (Larson 1966:51).

The Candoshi in northeast Peru believe the rainbow is a manifestation of water boa (anaconda) spirit power. Others say it is the boa’s hammock. According to some speakers it can take away people’s spirits so that they sicken or die (Wahacha Tsirimpo, p.c., 1982).

Among the Chachi people of Ecuador the rainbow is said by some to be a giant boa constrictor (anaconda). Others consider it a spirit bridge (Neil Wiebe, p.c. from Alfredo Salazar, 1982).

The Inga, in the Putumayo district of southwest Colombia, traditionally considered the rainbow a giant snake. In folklore this snake becomes a powerful shaman, but as noted earlier, it is also thought of as forming a bridge to help the Ingas escape from danger (S.H. Levinsohn, p.c., 4/82).

According to the Lengua Indians of Paraguay, “the rainbow is held by some to be symbolic of some serpent monster. When seen in the west or northwest the Indians will not handle sharp instruments, such as a knife or axe, for fear of being hurt ... generally speaking, his idea of the rainbow is that it is a sign of calamity” (Grubb 1911:141). Loewen (1965:293), who was a missionary to the Lengua Norte (now called Enxet Norte) makes a similar observation: “Another

spirit that is greatly feared is the spirit of serpent. This is the embodiment of all snakes and appears to find its culmination in the rainbow, which is held to be some kind of serpentine monster.”

As reported by Nimuendajú (1946:234), the Eastern Timbira in east-central Brazil say that

The rainbow (‘person of the rain’) has its two ends resting in the open mouths of *sucuriju* snakes, which themselves yield rain. It appears as a sign that the rain has ceased. When the rainbow disappears, two eel-like fish ... rise to the sky, where they drop into a water hole. When there is a heavy rain they again drop back into the terrestrial water. One informant said the snakes ascended to the sky by the rainbow lest there be too many here on earth.

2.8.6 Mainland Southeast Asia

In Khamti, a Southwestern Thai language spoken in Burma (Myanmar) and India, the rainbow is called *huy kin nam* ‘dragon drink water’, and in the dialect of Malay spoken in the state of Selangor on the west side of the Malay peninsula, the rainbow is called *ular minum*, where *ular* = ‘snake’ and *minum* = ‘drinks’. Hence the rainbow is ‘snake drinks’.

Among the Palaung of the Shan states of Burma some people “believe that the rainbow is a *nāga*” [dragon] (Milne 1924:354).

The Kintak Bong and Menik Kaïen Negritos of the interior Malay peninsula say that the rainbow “is two snakes, called *Huyak*, which come to drink” (Evans 1923:155).

In an unspecified Negrito group of the Malay peninsula the rainbow is called ‘Hwē-ā’. It is believed to be the body of a great serpent or python, and the spots where it touches the earth are regarded as very feverish and hard to live near (Skeat and Blagden 1906:2203–204).

Among rural Malays a century ago the rainbow was believed to be “a celestial serpent of enormous size” (Wilkinson 1906:29).

2.8.7 Insular Southeast Asia

The Toba Batak of the interior of northern Sumatra have the expression *halibutongan marsobur* (= ‘rainbow’ + ‘drink, of animals’), implying that the rainbow drinks water from a terrestrial source (Sitor Situmorang, p.c., 8/3/83).

The Minangkabau people of western Sumatra call the rainbow *ula manjan* ‘shining/lustrous snake’.

As noted in Chapter 5, section 3.6 Trait 6, on the horns of the dragon, Javanese folk belief holds that the rainbow is an enormous supernatural snake

arching over the island of Java, and “ending in two heads of deer or cows, one of which drinks the water from the Java-sea, the other from the Indian Ocean. When satiated they vomit the water as rain on the earth” (Hooykaas 1956:291).

Similarly, among the Maumere on the island of Flores in eastern Indonesia, the rainbow is regarded as “a snake that drinks up the rain” (Bader 1971:950).

Among the Kaidipang of northern Sulawesi, Indonesia, “The rainbow is associated with a subterranean snake that controls water” (Hunggu Tajuddin Usup, p.c., 1981).

The Kédang people on the island of Lembata in eastern Indonesia, believe that the village spring of Léuwajang, represents the life waters of the community. A very large snake is the owner of these waters, and “A rainbow seen near the spring is this snake” (Barnes 1974:62).

Whether or not contemporary speakers of these languages believe that the rainbow is a gigantic snake that is drinking from a terrestrial water source is irrelevant. Just as most modern English speakers see no connection between the *-bow* of ‘rainbow’ and an archer’s weapon despite the history of this word, most modern Khamti or Selangor Malay speakers probably see no connection between their word for the rainbow and a snake drinking, but the evidence that this belief once existed is preserved in language, and is richly supported by ethnographic evidence that will be examined in the following chapter.

2.8.8 New Guinea and Satellite Islands

Shortly after the British social anthropologist A.R. Radcliffe-Brown described the Rainbow Serpent myth as common to most of the Australian continent, the American social anthropologist Margaret Mead (1933) suggested that a ‘Rainbow Serpent Complex’ also exists among some New Guinea peoples. In general, she referred to these serpents as *marsalais* (‘bush spirits’). More particularly, as she observed among the Mountain Arapesh, “The rainbow (*alut*) itself is said to be made by two *marsalais*, an enormous *lahowhin* (a poisonous snake), and an enormous *shemaun* (dugong). To the *lahowhin marsalai* is attributed the rainbow over the land, to the dugong the rainbow over the sea” (Mead 1933:37).

According to Brumbaugh (1987:25–26) The Feranmin and Mountain Ok of New Guinea tell of an alien being in the wild bush

Under its shifting disguises, this creature whose public names include *Magalim* and *Anangkayaak* is recognizable as a local version of the Rainbow Serpent The rainbow (*wepal*) is said to be the sign of *Magalim*. Its many colors reveal the colors of his skin, which shimmers like the rainbow.

Unlike the situation in many other places, Magalim is not opposed to thunder or lightning, but rather “lightning is sometimes said to be the flashing yellow of Magalim’s skin as thunder is the pounding of his tail” (Brumbaugh 1987:26).

The Malaeng people of the Madang district, Papua New Guinea say that when they see a rainbow they think of a snake, and the place where the rainbow starts is where the snake lives. A double rainbow symbolizes that the snake has changed its position (John Verhaar, p.c., 4/20/86).

Among the Tambul-Korika west of Mount Hagen in the Western Highlands Province of Papua New Guinea “It is commonly understood that the rainbow is the appearance of a snake” (John Lynch, p.c., 1987).

2.8.9 Australia

As noted already, the Rainbow Serpent belief is virtually universal over the Australian continent in those areas where ethnography has been done. Many of the traditional cultures of southeast Australia and Tasmania disappeared before information on this matter was recorded, so little is known about them. The following is a small selection from a much larger number of distinct ethnolinguistic groups that could be mentioned.

To the Tiwi of Melville and Bathurst islands north of the Australian mainland, the Rainbow Serpents, which are called ‘Maratji’, are lizard-like (Mountford 1958:155).

Among the Kakadu/Gaagudju of Arnhem Land in northern Australia, “The rainbow is supposed ... to be the *Iwaiyu* (spirit) of a *Numereji* snake. When the latter spits, he makes rain and says ... “up above, *Iwaiyu*, go spittle, my *Iwaiyu*.” It does so in the form of a rainbow which is supposed to stop the rain” (Baldwin 1914:326).

As reported by Radcliffe-Brown (1926:20), beliefs about the rainbow in the Kabi tribe of the Queensland coast “are somewhat similar to those at Brisbane Dhakkan or Takkan, the rainbow, was regarded as being in form a combination of fish and snake, and lived in the deepest water-holes. When visible as a rainbow he was supposed to be passing from one water-hole to another.” Compare the parallel Creek belief in the American Southeast, that the tie-snake can make it rain in order to move from one river to another, although in the North American context the horned water serpent has been conceptually separated from its origin in the rainbow.

2.8.10 Africa

The Chokosi or Anufo in northern Ghana say that the rainbow “is connected with the python (the same word is used for both)” (Dean L. Jordan, p.c., 9/2/82).

The Yoruba have a belief about the rainbow that is similar to that of the Chokosi: "The great snake of the underworld is the rainbow god of the Yoruba. It comes up at times to drink water from the sky. A variety of the python is the messenger of this god" (Ellis 1966:81).

Among the Hausa of northern Nigeria "*Gajjimare* (the rainbow) is in shape something like a snake, but it is hermaphrodite, or at least double gendered, the male part being red, the female blue" (Tremearne 1968:340).

At least one speaker of Andoni or Obolo of the southeastern Niger delta in Nigeria said that

Among very small children the rainbow is thought to be a python, but eventually the elders teach the children that the rainbow is the rain and the sun struggling with one another. The children are then taught the song 'The leopard has delivered a child at the foot of the *ako* tree' (a tall hardwood tree that grows in the bush). This song is sung by the children whenever they see a rainbow from that time onward (Clinton Utong, p.c., 1982).

Since this group has been exposed to Western contact for over a century this sounds suspiciously like the native belief is now attributed only to small children, and the Western explanation has been substituted for what once was general to the populace at large.

The Nso'/Lamnso' of northwest Cameroon "believe that the rainbow proceeds from a snake's mouth. However, it is not a known snake, but an unknown giant snake" (Karl Grebe, p.c. from Patrick Sligatan and Francis Taata, 1982).

Among the Bamileke of western Cameroon "the rainbow is a snake which ends in a river. Each river is associated with the leader of a different totemic group. The appearance of the rainbow is a sign of impending evil. Its negative influence will be experienced by the group in whose river it alights" (Jan Voorhoeve, p.c., 1982).

For the Moru of South Sudan "The rainbow is associated with big snakes that are found in bamboo forests. Moru people believe rainbows originate from the forests" (Darius K. Jonathan, p.c., 1985).

Among many Bantu speakers across central and west Africa the rainbow is seen as "the celestial union of two serpents, male and female, who live in two different rivers. These multicolored creatures stop rain from falling; according to others they cause rain to fall" (de Heusch 1982:35).

The Nyakyusa of southern Tanzania say "When it rains a snake emerges from the earth to drink in the sky. The rainbow is its shimmering underside as it turns on its back" (Tom Cook, p.c., 4/21/80).

As noted at the beginning of this chapter, the Zulu of southern Africa, “feared the rainbow, which they associated with snakes. It was said to live with a snake, or at least, one always appeared whenever the bow was visible. When it was seen with its end touching the earth, it was believed to be drinking from a pool” (Hole 1983:2333).

Sometimes the association of the rainbow with a giant snake is indirect, and the rainbow is not the snake itself, but the breath, or shadow of the snake.

2.9 *The Rainbow Is the Shadow or Reflection of a Giant Snake*

2.9.1 Insular Southeast Asia

Among the Behrang Sakai or Senoi of the Malayan jungles, the rainbow is a dragon. More exactly, the rainbow is the shadow which arises from the body of a great snake which lives in the earth. The red of the rainbow is its body, the green its liver, and the yellow its stomach (Evans 1923:208).

2.9.2 Central and South America

A speaker of Muinane in the Amazonas province of southern Colombia “volunteered that the rainbow is a ‘spirit boa’, or possibly the ‘reflection’ of the mythological boa snake” (James W. Walton, p.c., from Andres Paky, 4/82).

The Canelos or Canelos-Quichua Indians and some other tribes in eastern Ecuador “fancy that he (the rainbow) is nothing but a huge anaconda in the air, or, as they generally express it, the rainbow is the ‘shadow of the anaconda’” (Karsten 1926:360–361).

2.9.3 Africa

The Ikwerre of Nigeria say that the rainbow is “a giant snake in the water with its reflection in the sky (thought to be a bad omen foretelling the death of a very important person)” (Kay Williamson, p.c., from J.T.N. Wali, 1982)

“It is worth noting that the Kikuyu say the rainbow in the water [the spray from a waterfall] and the sky is not the animal itself, but its picture, because in a very distant region of West Africa the Ewe (in Togo) say the same thing: the rainbow is the reflection of the snake in the clouds” (Werner 1933:232).

2.10 *The Rainbow Is the Breath of a Spirit or Giant Snake*

2.10.1 South Asia

Hindus in northern India think that the rainbow “is the fume of a great serpent hidden in the ground, who, himself invisible, vomits the fume through a hole in the ground” (Crooke 1925:46).

2.10.2 North America and Mexico

The Sierra Popoluca of the state of Vera Cruz in Mexico believe “that the rainbow is the path of a giant snake en route to see another snake, while others hold that it is merely the breath of a giant serpent, and that it presages rain” (Foster 1945:187).

Among the Coatlan Mixe of Oaxaca, Mexico, the rainbow is believed to be the breath of a mythological serpent rather than the serpent itself. Children are told not to open their mouths when looking at the rainbow (Searle Hoogshagen, p.c., 1982).

2.10.3 Central and South America

The Guahibo in eastern Colombia and western Venezuela, believe that the rainbow is the breath of a lizard going from hole to hole. No further information could be obtained about the type of lizard it represents (Riena Kondo p.c., from Marcelino Sosa, 4/82).

The Panare of Venezuela say the rainbow is the breath of a huge snake (Vicente Diaz, p.c., 4/82).

2.10.4 Mainland Southeast Asia

Among the Rengma Nagas of Assam in eastern India “A rainbow ... is believed to rise from wet places and to be spirits’ breath” (Mills 1979:245).

2.10.5 Insular Southeast Asia

To the Woisika of the island of Alor in eastern Indonesia the rainbow is steam from a gargantuan snake or eel that drinks from the river and then yawns and exudes vapor into the sky (Wim Stokhof, p.c., 1983).

2.10.6 New Guinea and Satellite Islands

As already noted above, the Mountain Arapesh of New Guinea say “the rainbow, *alut* is made by the giant *marsalais* (bush spirits), by a *shemaun* (dugong) from the sea, and a *lahowhin* (viper) from the land. The *marsalai* opens its mouth and the rainbow is the sun shining through its sprayed breath” (Mead 1940:392).

2.10.7 Africa

Among the Wobe of the Ivory Coast the rainbow is said to be “the breath of a toad named *tuo kpooɔ*” (Verena Hofe, p.c., 12/82, from Bozou Paul, Tohoun Benoit, and Fae Sae Abossolo).

The Deg of west-central Ghana believe “that the rainbow represents the mouth of a large python, with smoke coming out which produces the rainbow

colors. You should not attempt to go near the rainbow, or the python will eat you” (Philip Hewer, p.c., 9/2/82).

2.11 *The Rainbow Is the Tongue of a Huge Snake*

2.11.1 Central and East Asia

Among the Yukaghir of northeast Siberia in Russia “The rainbow is regarded as the Sun’s tongue; therefore, they call it *pu’gud-onorā*’, that is, of the sun the tongue” (Jochelson 1910:144).

2.11.2 Insular Southeast Asia

On the island of Flores in eastern Indonesia some Ngadha people say the rainbow is the tongue of a huge snake (Bader 1971:950).

2.11.3 Africa

The Kulere of the northern Nigerian plateau say that “the rainbow is the tongue of a great serpent; when the serpent puts out its tongue the rain stops” (Neiers 1979:54, via Tom Cook, 4/21/80).

2.12 *Other Depictions of the Rainbow*

2.12.1 Central and East Asia

In Ket and Yugh along the Yenisei River in Siberia the word for ‘rainbow’ reflects Proto-Ket-Yugh *ekjanna qo’t, which consists in turn of *ekjan ‘thunder (plural)’ + na (animate plural possessor) + qo’t ‘path’, a term that can be translated as ‘Thunder Way’. “The Kets believed there were seven Thunderers (animate beings in the sky, basically known as ‘voices’). The word for thunder appears to derive from a word that also means ‘voice’ or ‘name’” (Edward Vajda, p.c., 8/10/18).

In Nivkh/Gilyak, spoken on Sakhalin island just north of Hokkaido in the Russian Far East, there are two expressions for the rainbow, one of which is unanalyzable, and the other of which is *līy petr*, lit. ‘thunder ornament’ (Alexander Vovin, p.c., 9/24/17).

Modern Korean *mujige*, and Middle Korean *mūcikey* < *mūr* ‘water’ + *cikey* ‘yoke’, referring to the rainbow, both have the literal meaning ‘A-frame’, a device for carrying buckets of water and other things (Alexander Vovin, p.c., 9/24/17).

2.12.2 North America and Mexico

According to the pioneering fieldwork of the American linguist Edward Sapir, the Wishram of southern Oregon believed that “If a rainbow appears, truly (it signifies) that a woman will give birth to a child” (Bright 1990:217).

Similarly, the Tolowa of northern California say that the rainbow is a sign of childbirth somewhere (Driver 1939, checklist only).

As will be noted again later, Lévi-Strauss (1981:243) made much of this feature, which appears to be restricted to a small number of ethnolinguistic groups on or near the coastal Oregon-California border. A similar idea is found among the Suau of southeast New Guinea where, however, it is specifically a *double rainbow* that carries this signification.

The Yurok call the rainbow *wonewslepah*, from *wonew(s)* 'above, overhead, in the mountains', and *lepah(tep)* 'to stretch; crawl along', hence 'that which stretches or crawls along overhead' (Robins 1958:265).

According to the Tulare Lake Yokuts of central California, "The rainbow ... is made of flowers. It has four stripes: purple-red, blue, yellow, orange, each made of different kinds of flowers. These flowers are all edible except *wata'gu* (the orange one). A rainbow forecast a plentiful food supply, but it had no supernatural significance" (Gayton 1948:24).

The Tümpisa, or Panamint Shoshone of the Great Basin call the rainbow *ümatünna poton* = 'rain staff, rain cane (for walking)' (Dayley 1989:220, 370).

Among the Potawatomi, traditionally occupying much of the territory between Lakes Michigan and Huron, the word *jigwe-myew* 'rainbow' apparently means 'thunder road' (Hockett 1939:44).

2.12.3 Central and South America

To the Botocudo of eastern Brazil "The rainbow is the shadow of the sun" (Métraux 1963a: 540).

2.12.4 Mainland Southeast Asia

Mills (1926:304) states that among the Ao Nagas of Assam in eastern India

rainbows are just accepted without any attempt at explanation and are in some way symbolical of wealth. A bamboo arc, representing a rainbow is in many villages set up in front of the corpse-platform of a rich man. Nobody seems to know why...; a rainbow is also connected with rain and so with the prosperity emanating from the trophies of war and sacrifice.

2.12.5 Insular Southeast Asia

Among the people of Great Andaman Island in the Bay of Bengal south of Burma the rainbow reportedly is regarded as the dancing board of a certain sky spirit (Man 1932:86).

The Nage of the island of Flores in eastern Indonesia say that the rainbow is the club of the evil spirit *Noa* with which he strikes men and animals (*Der Regenbogen ist die Keule des bösen Geistes Noa, mit der er menschen und Tieren trifft*) (Bader 1971:952).

2.12.6 Africa

With regard to the rainbow, the Rendille of northern Kenya say that “children playfully point at it and say that it is father’s beads” (Mr. and Mrs. N. Swanepoel, p.c., 1982).

3 Distributional Summary

To allow ready comparison of frequencies, the following are the portrayals of the rainbow covered in the preceding pages, followed by relevant ethnolinguistic groups:

- 1) **bow:** 1. English, 2. German, 3. Danish, 4. Norwegian, 5. French, 6. Sanskrit, 7. Catalan, 8. Rhaeto-Romansch, 9. Latin, 10. Old/Modern Irish, 11. Old/Modern Russian, 12. Czech, 13. Serbo-Croatian, 14. Bengali, 15. Modern Greek, 16. Albanian, 17. Maltese, 18. Classical Armenian, 19. Italian, 20. Saami, 21. Middle Mongolian, 22. Khalkha Mongol, 23. Chinese, 24. Catawba, 25. Ofo, 26. Classical Arabic, 27. Kusaasi, 28. Swahili, 29. Ila, 30. Ba Thonga.
- 2) **scythe/sword:** 1. Estonian, 2. Toraja, 3. Minyanka, 4. Malagasy.
- 3) **bridge/path:** 1. Icelandic, 2. Classical Greek, 3. Nepal, 4. Chinese, 5. Tlingit, 6. Navaho, 7. Catawba, 8. Yuchi, 9. Chachi, 10. Sema Naga, 11. Andamanese, 12. Atayal, 13. Ragay Negritos, 14. Tuaran Dusun, 15. Balinese, 16. Toraja, 17. Buginese-Makasarese, 18. Papuans south of Carstensz range, 19. Tawala, 20. Yele, 21. Arosi, 22. Hawaiian, 23. Wolamo.
- 4) **belt/scarf/loincloth:** 1. Lithuanian, 2. Italian dialects, 3. Albanian, 4. Samoed, 5. Chinese, 6. Amuesha, 7. Bontok, 8. Tuaran Dusun, 9. Sasak, 10. Toraja, 11. Ngadha, 12. Luang, 13. Bariai, 14. Mangaian, 15. Galla/Oromo, 16. Nuer.
- 5) **net:** 1. Nias.
- 6) **spirit:** 1. Mandan, 2. Caribs, 3. Palaung, 4. Simalur, 5. Avau, 6. Sa’a/Ulawa, 7. Dida, 8. Luo.
- 7) **enormous snake:** 1. Khamti, 2. Selangor Malay, 3. Toba Batak, 4. Birhor, 5. Chinese (Lanzhou), 6. Okinawa, 7. Amuzgo, 8. Totonac, 9. Mam, 10. Chortí, 11. Aguaruna, 12. Candoshi, 13. Chachi, 14. Inga, 15. Lengua, 16. Eastern Timbira, 17. Palaung, 18. Kintak Bong, 19. Minangkabau, 20. Javanese,

21. Maumere, 22. Kaidipang, 23. Kédang, 24. Malaeng, 25. Tambul-Korika, 26. Tiwi, 27. Kakadu, 28. Kabi, 29. Chokosi, 30. Yoruba, 31. Hausa, 32. Obolo, 33. Nso', 34. Bamileke, 35. Moru, 36. Nyakusa, 37. Zulu, 38. Behrang Sakai, 39. Muinane, 40. Canelos, 41. Ikwerre, 42. Kikuyu, 43. Ewe, 44. Sierra Popoluca, 45. Coatlan Mixe, 46. Guahibo, 47. Panare, 48. Rengma Naga, 49. Woisika, 50. Mountain Arapesh, 51. Wobe, 52. Deg, 53. Ngadha, 54. Kulere.

This chapter has shown that the rainbow is conceived in various ways by peoples around the world. Some of these conceptions are rare, as 5) 'net', and others common, as 1) 'bow', 3) bridge/path, or 7) enormous snake. It is the last of these that particularly stands out. In counting cases one must not overlook 'Galton's Problem' (Levinson and Malone 1980:14), namely the need to ensure the historical independence of the units of comparison. Whereas many ethno-linguistic groups regard the rainbow as the weapon of an archer, 19 of the 30 cases cited here, or 63 %) are from speakers of Indo-European languages, representing the continuation of a single ethnolinguistic group from some 6,000 years ago, rather than a number of historically independent traditions. By contrast, the conception of the rainbow as a giant snake appears in many cultures, without reference to historical connection insofar as this can be inferred from linguistic relationship. Importantly, as will be stressed later, even in written traditions in which the dragon and Rainbow Serpent are clearly separated, as in Europe, the ancient Near East, India or China, the *folk* tradition resembles that of tribal peoples more closely than it resembles the literary tradition in its own culture. This is shown with particular clarity by Alinei (1982, 1983, 1985), who has noted such intriguing differences as Standard German *Regenboog* (rain + bow) vs. Germanic dialects of northern Italy *Regenwurm* (rain + worm) 'rainbow', as well as references, dating as early as the Roman dramatist Plautus in the third century BCE, to the rainbow as 'drinking' water from the earth.

We are brought back to the thought experiment proposed at the beginning of this chapter. Faced with something both visually and cognitively not just stunning, but also mysterious—since it can be in the sky one minute and gone the next, how would humans with fully modern brains beginning perhaps as early as 150,000–200,000 years ago have explained the striking phenomenon of the rainbow? Recall that the *brain* is produced by nature, but the *mind* is produced by culture. The brains of modern 'primitives', regardless of their level of material culture, are no different in inherent cognitive capacity than ours, and this would have been true as long as anatomically modern humans have existed. Keeping this in mind, it is clear that certain questions would inevitably have arisen, that answers had to be provided for them, and that this thought process must have been very similar to the following:

Q: What is it?

A: An enormous spirit snake.

Q: What is it doing up there?

A: Drinking water from the earth and spewing it out to make the rain/drinking up the rain and making it stop.

Q: Where does it stay when not in the sky?

A: In the springs, waterholes, lakes, rivers, etc. from which it drinks.

Q: What does it do when it is there?

A: It guards the water.

In short, the distributional evidence reported here is most plausibly explained by assuming that in the remote human past the rainbow was conceived as an enormous spirit snake that drank water from a terrestrial source and spewed it out to make the rain, or that drank the rain and made it stop, since it naturally appears only at that tipping point between when fire and water are, so to speak, competing for control of the sky. When it was not in the sky it rested in those places from which it drew water to make the rain, hence in springs, lakes or rivers. From the beginning, then, the Rainbow Serpent must have had a dual identity as the rainbow and the serpent guardian of terrestrial water sources. In some parts of the world, as Australia, these two manifestations of the rainbow are still transparent *alter egos*, while in other regions, as Europe, or aboriginal North America, they have become separated to the point of unrecognizability. In still other areas, as China, these two incarnations of the rainbow are separate in the 'high' (imperial) tradition, but are still transparently related in the 'low' (folk) tradition.

This interpretation has inescapable consequences for the common treatment of the so-called 'Rainbow Serpent myth' as a phenomenon peculiar to aboriginal Australians. Since essentially the same concept has been documented in all of the twelve zones treated in this book except the ancient Near East (for which information is limited), and the Pacific islands (many of which lack snakes), it is difficult to see why it should not be treated as a culture universal, inherited from tens of thousands of years in the past, or reinvented repeatedly throughout human history. Yet the fixed idea that the Rainbow Serpent is a uniquely Australian phenomenon persists to the present, as anyone can see by checking the entry for 'Rainbow Serpent' in Wikipedia, where the reader is told "This article is about an Australian Aboriginal religious figure," and nothing is said about the fact that essentially the same belief is found in many other parts of the world.

In a society dominated by animistic thinking there would be nothing unusual about regarding the rainbow as a gigantic spirit snake, as much of nature was thought to be activated by spirit presences (Tylor 1871). The alternative conceptions of the rainbow as a bow, scythe/sword, bridge/path, belt/scarf/loincloth or net are almost certainly later inventions that replaced or were superimposed upon the primary conception of the rainbow as the Rainbow Serpent. In some cases this is obvious, since scythes or swords have existed only since the advent of metallurgy, the period when humans first struck upon the idea of a bridge is unclear, but not ancient, and the bow, whatever its antiquity, is unknown in areas such as Australia or much of Africa, and almost certainly evolved from the prior use of spears. Once this is understood many attributes of the dragon fall into place as expected consequences of its origin as the Rainbow Serpent.

With this background in mind, it is time now to review the ethnology of the rainbow, much as we reviewed the ethnology of the dragon in Chapter 5.

The Ethnology of the Rainbow

In a book devoted to explaining why the dragon idea is universal one might reasonably suppose that the most important chapter would be Chapter 5, ‘The ethnology of the dragon’. However, this is not the case. Rather, the most important chapter is concerned with the ethnology of the rainbow, as it is through an understanding of this belief-complex that the dragon idea emerges as a natural consequence of the efforts of preliterate people to explain the features of the natural environment to which all humans have been exposed during the lifetime of our species as thinking beings. And it is precisely the neglect of this approach through more than 130 years of writing about dragons that has led to such a proliferation of often wildly speculative views about why a belief in dragons exists around the world.

The goal of this chapter is to provide a cross-cultural overview of ideas about the rainbow on a global scale, highlighting those views that are widely-shared, and hence likely to be motivated by common psychological responses to the natural environment. Because of the complexity of the subject matter, it is divided into four subparts: 1. How the dragon was born, 2. Mysteries of the rainbow, 3. Sunshowers, and 4. The Rainbow Taboo. The last of these topics is so important and independent that it has been treated in a separate publication (Blust 2021), but is mentioned briefly here, since it is a key element of the ethnology of the rainbow.

Sect. 1. draws together traits of the rainbow that have an uncontroversial observational basis, and shows how these were inherited by the dragon, where their origin is far more obscure. It thus closely follows the overview of ideas in Chapter 5, covering as nearly as possible the list of traits attributed to dragons there in order to highlight similarities or differences between the culturally-mediated perception of the mythic creature, and the natural phenomenon. For ease of comparison each universal trait of the rainbow is matched with the corresponding trait of the dragon. As already seen in Chapter 5, it is difficult to describe the dragon in some parts of the world without invoking the rainbow. While this was a problem in discussing the ethnology of the dragon in isolation, there is now no need to distinguish the two, so the parallels will be discussed openly. In this way the impressionistic, fragmentary, and often highly speculative approach of most earlier attempts to understand the universality of the dragon idea is replaced by an objective, replicable documentation of beliefs about the rain-

bow, which in the end will prove to be indistinguishable from beliefs about the Rainbow Serpent, and then the dragon.

Sect. 2. continues the ethnology of the rainbow with globally distributed beliefs that do not have a clear observational basis, whether they match traits of the dragon or not. The reason that some of these beliefs are universal is very hard to grasp, as they appear to be arbitrary, yet are found in widely separated parts of the world. However, where they agree with similar beliefs about the dragon, they offer powerful additional support for the view that the dragon idea originated from the Rainbow Serpent, and hence from preliterate attempts to explain the rainbow.

Sect. 3. singles out a special facet of the ethnology of the rainbow, beliefs about sunshowers (rain when the sun is shining), a phenomenon that is closely associated with the rainbow, but is distinguished from it in many cultures, and which has its own set of globally distributed traits, as previously discussed in Blust (1999a).

Sect. 4. briefly documents the universality of the Rainbow Taboo (RT), and sketches the minimal outlines of an explanation for why it exists.

Finally, it cannot be stressed too strongly that the material I have collected for the ethnology of the rainbow is limited by my sources. Published sources on the dragon, and beliefs about the rainbow have proven invaluable, but without the use of questionnaires I would have found far less data on certain topics. I have no doubt that the material I have collected here barely scratches the surface of what is 'out there' among the world's endlessly fascinating peoples. I also have little doubt that much of the lingering animistic mindset that I was still able to tap into some forty years ago is fast disappearing in many places as a result of the ever-increasing pace of globalization and adaptation to a high-tech world.

1 How the Dragon Was Born

The ethnology of the rainbow is a complex topic that has never been properly explored either in cultural anthropology or in folklore. Parts of this topic are directly relevant to the origin of the dragon idea, while others are not. This first section highlights those globally distributed beliefs about the rainbow that closely parallel similarly distributed beliefs about the dragon. In both cases the trait distribution cannot plausibly be explained as a product of diffusion, and so must be due either to ancient inheritance or to repeated independent invention as a result of similar responses to the natural environment.

1.1 *Trait 1: The Rainbow Is a Giver/Withholder Of Rain*

1.1.1 A Giver of Rain

1.1.1.1 *Europe*

Among multiple terms for 'rainbow' in Irish is *tuar ceatha*, where *tuar* = 'to augur, forebode, presage; sign, omen' and *ceatha* = genitive of *cith* 'shower', hence 'shower prophecy or sign/omen of rain shower'.

Grimm (1844:695) observed of the Romans that the rainbow was believed to drink water from the Earth. This is presumably how it becomes transferred to the sky and falls as rain.

In Russian folklore the rainbow drinks water from lakes, rivers and seas, which then is shed as rain. Sometimes it swallows up fish and frogs with water, and so they also fall from the sky. This resembles the more archaic belief that the rainbow is a giant snake that drinks water from a terrestrial source and spews it out as rain, but the serpent has been eliminated, as throughout the region where Indo-European languages are now spoken rainbow and dragon are rigidly distinguished (Timothy Barnes, p.c., 9/30/17).

1.1.1.2 *South Asia*

In Nepal (ethnic group not specified), one traditional view of the rainbow is that "it has come to bring the river to the land, to water it, and more rain will come" (Glenys Walker, p.c., 6/9/82, from Chakra Bdr. Shahi).

1.1.1.3 *North America and Mexico*

The Tolowa of northwest California consider the rainbow a sign of coming rain (Driver 1939:343).

Some Sierra Popoloca of the state of Vera Cruz in Mexico believe "that the rainbow is merely the breath of a giant serpent, and that it presages rain" (Foster 1945:187).

1.1.1.4 *Central and South America*

The Panare of Venezuela believe that the rainbow causes it to rain (Vicente Diaz, p.c., 4/82).

1.1.1.5 *Insular Southeast Asia*

Some speakers of Tagalog say that "when a rainbow appears it means rain is coming" (Demetrio 1991:2:380).

The Bare'e of central Sulawesi in Indonesia say the rainbow calls up rain (*De regenboog roept regen, zegt men*) (Adriani and Kruyt 1950–1951:405).

1.1.1.6 *Pacific Islands*

The Kwamera people of Tanna Island in southern Vanuatu say that the rainbow is a sign that it will rain (Lamont Lindstrom, p.c., 7/20/85).

1.1.1.7 *Africa*

Among many Bantu-speaking groups across central and west Africa the rainbow is thought to be formed from male and female intertwining snakes which “stop rain from falling; according to others they cause rain to fall” (de Heusch 1982:35).

The Nyabwa of the Ivory Coast explicitly say of the rainbow that “when it disappears the rain comes (so it precedes the rain)” (Julie Bentinck, p.c., 7/8/82).

Among several names given to the rainbow, the Galla or Oromo of Ethiopia call it ‘a sign of rain’ (Haberland 1963:592).

In some ways this interpretation is hard to process, since rain clearly is needed *before* a rainbow can appear, which makes it difficult to see it as a sign that rain will come, unless it is a sign that *more* rain will come. Nonetheless, this view is reported for a number of indigenous peoples.

1.1.2 *A Withholder of Rain*1.1.2.1 *South Asia*

The Muria of Andhra Pradesh state in eastern India, say that “The rainbow is the great snake, Bhumtaras, that rises from its ant-hill to stop the rain” (Elwin 1947:262).

1.1.2.2 *Central and East Asia*

In Okinawa the rainbow was traditionally believed to be a snake or dragon, and because this snake drank water in the sky, there was no rain (Obayashi 1999, from Hiroko Sato, p.c., 12/16/17).

1.1.2.3 *North America and Mexico*

Among the Ahtna of southern Alaska the rainbow is called *sabiite*, lit. ‘sun snare’, from the lexical base *biit* ‘snare for large game’ (Kari 1990:107); an alternative name is *tuslahdzaey ggaal*, lit. ‘spider’s snare’, from the lexical base *ggaal* ‘snare’ (Kari 1990:190).

The Lower Karok of Northwest California say the rainbow is a sign of dry weather (Driver 1939:343).

Among the Maricopa of the Gila River in southern Arizona “The appearance of a rainbow (*kwálice’rc*) indicated the end of rain” (Spier 1978:150).

The Naskapi of eastern Quebec and Labrador say the rainbow holds back the rain (Speck 1977:64).

To the Assiniboiné, located at earliest contact between Lake Superior and Hudson Bay in southern Canada, “the rainbow is called the rain-trap” (native term not provided; Lowie 1909:56). The same idea of the rainbow as trapping or stopping the rain seems to be found among the closely-related Dakota (or Lakota), where *wihmunke* is said to mean ‘rainbow; trap’ (Williamson 1902:164).

In many Ojibwe-speaking communities, traditionally spread across northern Minnesota and adjacent parts of Canada north of the Great Lakes, the word ‘rainbow’ contains the morpheme for ‘snare’, as in ‘thunder snare’, implying that it captures the rain and prevents it from reaching earth (Valentine 1994:822).

The Yuchi of the American southeast believed that “when the rainbow stretches across the sky the rain is prevented from falling through. This stops the rain and brings dry weather” (Speck 1909:110).

To the Muskogee or Creek Indians, who were located at the time of first European contact in what is now Georgia, the rainbow “was believed ... to be a great snake called *Oskin-tatcā* (“the cutter off of the rain”)” (Grantham 2002:34).

The Tzotzil of southern Mexico say the rainbow is “a cold Chamula female devil that steals corn’s soul ... prevents rain from passing by it, and causes stomach ache. To prevent the rainbow from following a person it is considered effective to spread chewing tobacco around, urinate or exhibit oneself to it” (Laughlin 1975:232).

1.1.2.4 *Central and South America*

According to the Piapoco on tributaries of the upper Orinoco River along the Colombia-Venezuela border, “A jungle demon makes the rainbow from smoke; it moves unseen, as the wind moves. The rainbow can take the rain prisoner so that it won’t rain, and in some cases this activity can be initiated by the intervention of a shaman” (Jim Klumpp, p.c., 4/15/82).

The Eastern Timbira in east-central Brazil say that “The rainbow (‘person of the rain’) has its two ends resting in the open mouths of *sucuriju* snakes, which themselves yield rain. It appears as a sign that the rain has ceased” (Nimuen-dajú 1946:234).

Like the Ahtna, Ojibwe, and Assiniboiné of North America, the Sirionó of eastern Bolivia also use the metaphor rainbow = snare (Schermaier 1957a: 103, 1957b: 118, 204, noted in Holmer 1966:76, fn. 102). Although the conceptual basis of this expression is not completely clear, the comparison of the rainbow to a snare in several North American Indian languages and in Sirionó at least suggests an ancient New World belief that the rainbow ‘snare’ the rain and thus

prevents it from falling. Given this highly distinctive association, which is so far known only in the Americas, we must ask whether this could be an indication of historical continuity from a single ethnolinguistic community ancestral to all native Americans, including the Nadene.

1.1.2.5 *Insular Southeast Asia*

Speakers of Cebuano Bisayan, of the central Philippines, say that "It will not rain any more if there is a rainbow" (Wolff 1972, sub *baláṅaw* 'rainbow').

The Tuaran Dusun of Sabah say that the rainbow is the fighting scarf of the deity Kinharangan with which he stops the rain (Evans 1923:15).

In the traditions of the Toba Batak people of northern Sumatra the rainbow drinks up the rain, and is a herald of the coming dry season (Sitor Situmorang, p.c., 8/3/83).

The Nage of Flores, in the Lesser Sunda islands of eastern Indonesia, believe that the rainbow lies crosswise in front of the rain and obstructs it so that it can come no further (*Der Regenbogen legt sich quer vor den Regen und hindert ihn so, weiterzukommen*; Bader 1971:952).

Among the Luang people of the Sermata archipelago, just east of Timor in eastern Indonesia, the rainbow "is considered to be a sign that there will be no more rain that day. So, if someone sees a rainbow, they are free to go out without fear of rain" (Mark Taber, p.c., 1994).

1.1.2.6 *New Guinea and Satellite Islands*

According to the Iatmul a rainbow is a sign that the rain will not continue to come the same day (Susan Warkentin, p.c. from Joe Mencindimi, 1983).

Among the Duo of the Wewak district, mainland Papua New Guinea, the traditional belief is that the rainbow stops the rain from falling (Richard Sikani, p.c., 1985).

To the Sinasina of interior New Guinea the rainbow indicates that the rain will stop (Malcolm D. Ross, p.c., 6/25/82).

The Yele people on Rossel Island in the Louisiade archipelago to the south-east of New Guinea say that the rainbow is a sign that the rain has finished (Susan Warkentin, p.c., 1983).

1.1.2.7 *Australia*

As already noted, to the Kakadu/Gaagudju of Arnhem Land in northern Australia, "The rainbow is supposed ... to be the *Iwaiyu* (spirit) of a *Numereji* snake. When the latter spits he makes rain and says ... "up above, *Iwaiyu*, go spittle, my *Iwaiyu*." It does so in the form of a rainbow which is supposed to stop the rain" (Baldwin 1914:326).

"The natives of the Pennefeather River, North Queensland, regard the rainbow as a very brightly coloured snake that comes up to stop the rain that has been wilfully made by their enemies; the name both of the rainbow and the snake is *Andrénjinyi*" (Radcliffe-Brown 1926:19).

1.1.2.8 *Africa*

The Minyanka of Mali believe that when the rainbow appears it will not rain any more (Lucia Brubaker, p.c., from Edmond Dembele, 12/20/82).

The Ijo of Nigeria say that "If a rainbow appears during a shower, it is believed that the rains will soon cease" (Timitimi 1971:34).

According to one speaker of Kalabari in Nigeria "traditionally we assumed that when the rainbow appears the rainy season is going to end" (Kay Williamson, p.c., from S. Owiye, 1982).

The Hausa of northern Nigeria say that "the rainbow arises from a well of salt, and enters an ant-hill. It drinks up the rain, thus preventing any more from falling" (Tremearne 1968:218).

Among the Izon of Nigeria "The traditional view of the rainbow, whenever it appears, means the dry season" (Kay Williamson, from R.A. Freemann; 1982).

To the Yoruba of southern Nigeria "the 'great snake of the underneath' is the rainbow god. It comes up at times to drink water from the sky. A variety of the python is the messenger of this god" (Ellis 1966:81).

The Barotse of northern Nigeria claim that "Pointing a pestle at brilliant rainbows to prevent rain from falling may be practiced by any individual" (Reynolds 1963:128).

The Mofu-Gudur or South Mofu of northern Nigeria tell children that "the rainbow occurs when the ancestors exit the termite holes/nests to go up to the sky/heaven to keep the rain away because someone has asked them to go up and do sacrifices against someone on earth and do something bad to them, i.e. stop the rain" (K. Hollingsworth, p.c. from Abdias Galla, 4/16/82).

Among the Kulere of the northern Nigerian plateau it is said that "the rainbow is the tongue of a great serpent; when the serpent puts out its tongue the rain stops" (Neiers 1979:54, via Tom Cook).

To the Ikwerre of Nigeria the appearance of a rainbow is thought "to be the sign of the ceasing of rain at a time, and the approaching of the dry season" (J.T.N. Wali, p.c., 1982).

The Mündü of the southern Sudan, say that the rainbow is "a giant snake which lives in a hole in the ground, and comes out to chase heavy rain away (drink the rain?)" (Jon Arensen, p.c., 1982).

The Kusaasi of Ghana connect the rainbow with a chameleon, and "believe that the chameleon is driving the rain away, and it will not rain" (Philip Hewer, p.c., 9/2/82).

The Zulgo people in the far north of Cameroon say that "the rainbow stops further rains at the time it appears" (Beat Haller, p.c., 1982).

There is a belief among the Ila of Zambia and Zimbabwe that they can drive off the rainbow by magic, and thereby release the desired rains:

When the bow is very brilliant, they take a pestle (*munsha*) and point it to the bow, without speaking, to drive it away, for they think it prevents rain from falling (Edwin W. Smith 1920:2:220).

Commenting on the same people, Werner (1933:232) says "They point at the rainbow to drive it away, not with the finger, but with the pestle used for pounding grain. They call it the bow of Leza (God), but none the less credit it with preventing the fall of rain."

Among many Bantu-speaking groups across equatorial Africa the rainbow is thought to be formed from male and female intertwining snakes which "stop rain from falling; according to others they cause rain to fall" (de Heusch 1982:35). Note the similarity between this statement and the description of Ayida Wedo, the rainbow, and her consort Damballah, the serpent, in the vodoun pilgrimage to the Saut d'eau waterfall in Haiti mentioned in Chapter 3, supporting the view that the Haitian ritual is a carry-over of a West African tradition. This interpretation will receive conclusive support under Trait 21.

These parallels between attributes of the dragon and attributes of the rainbow can hardly be accidental. Various sources report that the dragon is a *giver* of rain in India, East Asia, North America, and Central America, while the same trait is attributed to the rainbow in Europe, Mexico, Insular Southeast Asia and Africa. Likewise, various reports state that the dragon *withholds* rain in Europe, the ancient Near East, East Asia and Central America, while the same trait is attributed to the rainbow in India, Okinawa, North America and Mexico, South America, insular Southeast Asia, New Guinea, and Africa. In both cases there is a marked ambivalence, some societies seeing the dragon/rainbow as producing rain, while others believe that it obstructs rainfall. Occasionally, closely-related peoples differ in whether they adopt one of these perspectives or the other, where the rain-giver is generally seen as positive and the rain-blocker as negative. Attitudes toward the rainbow are thus inescapably contradictory, since either position regarding its role in rainfall can be adopted with equally persuasive arguments.

Initially the presence of ambivalent beliefs about the dragon appears arbitrary—why would an invented creature be surrounded with both positive and negative associations? Considered from the standpoint of the rainbow,

however, the matter is totally different, since as a giver of rain it has positive associations in many cultures, where rain is necessary for the growth of life-supporting crops, but as a withholder of rain the associations are negative. I cannot stress the point too strongly, but this ambivalence is natural in observations of the rainbow, and has no basis with a purely imaginary dragon. However, if the dragon originated as the Rainbow Serpent its ambivalent character as a giver or withholder of rain finds a straightforward explanation.

1.2 *Trait 2: The Rainbow Is a Guardian of Pools or Springs*

1.2.1 North America and Mexico

The Totonac Indians of the Mexican states of Vera Cruz and Puebla describe the double rainbow as 'white' (the biggest arc), and 'thin' (the second arc). Both are associated with a water serpent, and are described as 'disastrous', as they suck out the soul of anyone who ventures near their well or pool, especially children. One can recapture the soul by making an offering to the rainbow (Ichon 1969:137).

1.2.2 Central and South America

The Tucuna Indians of the Brazil-Peru-Columbian frontier believe in creatures called *dyë'vaë*, which are described as "monsters in the form of gigantic snakes or catfish, which cause treacherous currents. Some are multicolored like the rainbow, which is nothing but one of these demons. One *dyë'vaë* owns the fish in the Solimões River, and appears as the eastern rainbow" (Nimuendajú 1952:119–120).

In the mythology of the Toba, Mataco and Lengua Indians of the Paraguayan Chaco four different cataclysms destroyed the world. In one of these a flood was caused by a menstruating girl who approached a spring to fetch water and thus offended a water python (rainbow) (Métraux 1946:29).

1.2.3 Insular Southeast Asia

Among the Kaidipang people of northern Sulawesi, Indonesia, "The rainbow is associated with a subterranean snake that controls water" (Hunggu Tajuddin Usup, p.c., 1981). Whether it is the rainbow or the snake that controls water seems irrelevant here, as any number of accounts cited in this chapter show that these are celestial and terrestrial manifestations of the same phenomenon.

In the belief of the Kédang people on the island of Lembata in eastern Indonesia, the village spring of Léuwajang, represents the life waters of the community:

No snake near the spring may be killed. This is because it may be the guardian spirit of the spring, *wei nimon* or *wei murun*—both phrases conveying the meaning of the proprietor or protector of the water ... It is not poisonous, but very large.... A rainbow seen near the spring is this snake (Barnes 1974:62).

1.2.4 New Guinea and Satellite Islands

The Feranmin and Mountain Ok at the headwaters of the Sepik River in New Guinea, hold that *Magalim*, the Rainbow Serpent “is present in ponds of standing water. When he rises the water rises (thus, a victim swallowed by *Magalim* may appear simply to be drowned)” (Brumbaugh 1987:26).

1.2.5 Australia

Among the Tiwi of Melville and Bathurst islands north of the Australian mainland it is believed that the Rainbow Serpents, which are lizard-like, and called ‘Maratji’

live, in one form or another in most of the important water-holes; they are associated with water, the rainbow, lightning, and thunder These serpents are usually highly colored (like the rainbow), and have a mane and beard. The aborigines claim that they are dangerous to all strangers who approach the water holes, and even to local aborigines who do not perform the proper rituals before drinking.... Should any unauthorized person interfere with their waterholes, the Maratji become annoyed. They roar loudly, make the water bubble up ... and send a waterspout into the air which, falling as torrential rain, floods the countryside. One of the Maratjis then changes himself into the rainbow and travels over the land seeking to injure the offender or anyone else in his path (Mountford 1958:155).

The Wik Mungkan of the Cape York peninsula in northeast Australia view the rainbow as “A snake that inhabits some waterholes and freshwater streams, and punishes anyone who ventures into them, especially women with young children, and pregnant women” (Chris Kilham, p.c., 11/13/83).

As stated by Frazer (1932, vol. 2:156) in relation to another part of the same continent “Some of the natives of western Australia fear to approach large pools, supposing them to be inhabited by a great serpent, who would kill them if they dared to drink or draw water there by night.”

1.2.6 Africa

Among the Uduk of the Sudan, the python is “associated ambivalently with the Rainbow; the python is an earth-creature in its movement and its normal habit, until in the guise of a Rainbow it leaps into the air, or sleeps like a swamp-snake in the watery pools” (James 1988:33).

The Sabaot or Mt. Elgon Maasai say that “A rainbow ends in a river, and then it is very dangerous to come near the river. If you do, you will be eaten by the rainbow, or become sick. One person said he tried it once, but the rainbow moved away. The direction of the moving rainbow is significant—it follows the direction of the rain” (Iver Lerun, p.c., 1982).

The Kikuyu of East Africa say the rainbow “is a ‘wicked animal’ which lives in the water, comes out at night, eats goats and cattle, and has even been known to eat people” (Werner 1933:232).

Among the Zande of Zaire

Ngambue is a big snake. Its skin is covered with white powdery substance, and it possesses a beard. This creature, which has a poisonous bite, may live in any waters. The well at Yambio is said to harbor such a snake. The rainbow *wangu* lives in bogs, or in cracks and holes near to streams. It is like a snake (Hambly 1931:42).

In the hills near Lake Victoria the local (presumably Bantu-speaking) people believed there were “snakes guarding the wells. Human beings might approach only after making offerings to these guardian snakes.” Similarly, the Bagesu of Uganda “say that there is a snake living in springs where he will attack anyone who goes to draw water” (Hambly 1931:40).

As noted already in Chapter 6, among the Zulu of southern Africa the rainbow in its terrestrial form is said to live with or always be present with a snake, and to reside in waterholes or pools:

When it was seen with its end touching the earth, it was believed to be drinking from a pool. Sometimes it lived in a large pool, and men were afraid to bathe in such waters, for fear that the rainbow might seize and eat them. On dry land it poisoned any man it met, or afflicted him with disease (Hole 1983:2333).

In parts of the world where the dragon and rainbow are clearly separated, as Europe, India, China, or North America, water sources such as springs or wells are guarded by a dragon. In parts of the world where this separation is more tenuous, statements in the literature are relatively indifferent as to whether a

spring is said to be guarded by a water snake or a rainbow, as these are regarded as different expressions of the same thing. In each of the above cases a water source is said to be guarded by a snake which *is* the rainbow, so it seems best to treat them as part of the ethnology of the rainbow. The important point in this survey, of course, is that springs and other water sources are guarded by *both* dragons and rainbows in different cultural traditions, and that this would be absurd if the rainbow were not conceived as an animate being capable of harming humans.

This takes us back to the logic of an animistic view of nature. The rainbow is a transient thing, which may remain for seconds, minutes, or sometimes longer as a visible arc in the sky, but it is not a *permanent* fixture of the heavens. Pre-literate peoples may not have understood the physical basis for the appearance of rainbows, but once they conceived of them as spirit snakes it became necessary to explain where they were when not in the sky, and the most straightforward explanation is that they reside in the pools, lakes or rivers from which they drink water to create the rain. There they stay during the dry season, and for much of their time during the wet season, and while there they guard the precious water from human intruders.

1.3 *Trait 3: The Rainbow Lives in Caves*

1.3.1 Central and South America

Among the Chachi or Cayapa of Ecuador the rainbow is said by some to be a bridge used by cave and hill spirits, as well as river spirits (Neil Wiebe, p.c. from Alfredo Salazar, 1982). Here the rainbow itself is not said to live in a cave, but it connects with caves to allow nature spirits that live there to travel to other locations.

1.3.2 Africa

While studying the Uduk people of the Sudan, the anthropologist Wendy James was taken to a place called 'Silak', where she visited "quite an impressive cave and waterfall where a rainbow was said to live It was a hungry meat-eating Rainbow" (James 1988:276).

Among the Murle of the Sudan "The rainbow is a large dragon-like snake which sleeps in a cave when not flying in the sky" (Jon Arensen, p.c., 1982).

As with the widespread belief that dragons live in caves, the connection of rainbows with caves is probably due to the association of rainbows with waterfalls, and therefore with the caves that commonly form at the base of the cascade through natural hydraulic erosion of the rock.

1.4 *Trait 4: The Rainbow Can Fly*

Although the dragon's ability to fly certainly merits comment, it may seem unnecessary to discuss the similar ability for the rainbow, which to most modern readers, only exists when it is in the sky. Again, however it would be a mistake to let ethnocentric preconceptions restrict our access to the thinking processes of preliterate peoples. If the rainbow resides in terrestrial water sources in the form of a serpent when it is not in the sky, then it *must* fly up to the heavens during a rain shower. How the rain can fall when there is no rainbow in the sky is a question that native peoples seem to have left unanswered.

1.5 *Traits 5–8: The Rainbow Is a Fusion of Fire and Water, Hot and Cold*

One other observation about how various properties of the dragon derive from its origin as the Rainbow Serpent is that dragons are chimerical, combining the scaly body of a reptile with the horns and hair of mammals, or the feathers of birds. Even though rainbows normally have none of these properties, they can only exist by combining the opposites of fire and water, a theme that is described with particular clarity by de Heusch (1982) for a range of Bantu-speaking societies in central Africa. Across this range of related cultures, the mythic cycle of the eternal conflict between lightning and rainbow is reiterated with numerous variations, where lightning represents thunderstorms, rain, and hence water, while the rainbow represents the cessation of rain that is 'burned up' by the fire of the sun. The rainbow is thus a blend of hot and cold, and the dragon mirrors this in its animistic fusion of cold-blooded and warm-blooded animals.

There is no need to repeat material that has already been mentioned in support of this statement. The concept of the rainbow in Java as a serpent terminating in the heads of mammals that drink from two different seas clearly shows the rainbow (not the dragon) as a chimera, and the same is true of the Uduk conception of the rainbow as described by James, where the body is that of a python, but with the ears and mouth of a camel, yet the identification is with the rainbow. The Rainbow Serpent of Australia is no different. In the western deserts of central Australia, for example, the Rainbow Serpent (*wonambi*) is conceived as "a huge, many-colored creature with a mane and beard" (Mountford 1958:154).

1.6 *Trait 9: The Rainbow Is Opposed to Thunder/Lightning or the Sun*

In Chapter 4 we saw that the dragon is the mortal enemy of thunder and lightning, a fact repeated in different contexts in Europe, the ancient Near East, India, China, and North America. The natural basis for this belief is that a rainbow cannot appear in a thunderstorm, any more than it can appear in a sunny

sky without rain. In animistic terms thunderstorms are thus the enemy of the rainbow because they prevent rainbows from forming, or drive them from the sky when the sun is obscured.

1.6.1 Central and South America

The Selk'nam of Tierra del Fuego place the rainbow in opposition to thunder and lightning: "In contrast to lightning and thunder stands the rainbow Čálpe as against Akáinik as a personality in the imaginary world of our Indians" (Gusinde 1931:682–683).

1.6.2 Africa

Among the Mang'anja of southern Malawi, a mythical animal called 'Mbona' appears to be a water serpent, but one of a special character that links it to a mythic cycle found over much of Bantu-speaking central Africa: "What makes Mbona different from other Bantu deities symbolized by a water serpent? This mythical animal forms one of the great themes of Bantu mythology, namely the eternal conflict of the lightning and the rainbow" (Schoffeleers 1992:155).

Throughout central Africa the rainbow and lightning are antagonists associated respectively with the dry and wet seasons. The anthropologist Luc de Heusch (1982) devotes some 40 pages to describing in detail the mythic struggle between lightning, representing the onset of rainfall, and the rainbow, representing its end. The rainbow is personified in this drama as essentially the Rainbow-Serpent, and the lightning as its mortal enemy.

The essence of this mythic cycle is an unending conflict between the lightning, representing the wet season and the fertilizing rains, and the rainbow, representing the dry season, a time of drought and reduced nourishment for the crops. As in other regions where a feature of the natural environment has been interpreted through an animistic worldview, the lightning and the rainbow in this shared myth cycle have names, no doubt to facilitate reference in a narrative context or instructive tales. At least in its general form, de Heusch's account of this perennial conflict could easily be an account of the conflict of the Thunderbird and horned water serpent in North America, even though the latter is rarely, if ever identified with the rainbow. Placed in a wider comparative context, however, it is clear that the horned water serpent is a regional variant of the dragon, and hence the terrestrial representative of the rainbow. Its conflict with the Thunderbird is thus no different in essence than the struggle between the rain-bringing thunderstorms and the rain-stopping rainbow in the mythic cycle that has been perpetuated for an unknown number of generations among many Bantu-speaking peoples in west and central Africa.

1.7 *Trait 10: The Rainbow Is Bisexual*

As seen in Chapter 5, the dragon is conceived as bisexual in at least European alchemy, Taoist metaphysics in China, and classic and contemporary Mesoamerica. While this is startling enough for those who have not examined the ethnology of the dragon in detail, initially it seems absurd to consider the possibility that the rainbow could also have a double-gendered identity.

Undoubtedly the leading proponent of the view that many themes in myth and folklore were inspired by properties of the natural world was the nineteenth century philologist and scholar of comparative religion Friedrich Max Müller. As he put it in his 1891 book, *Physical Religion*:

It was in these very phenomena of nature that ancient man perceived for the first time something that startled him out of his animal torpor, and that made him ask ‘What is it? What does it all mean? Whence does it all come?’—that forced him to look behind the drama of nature for actors and agents ... whom in his language he called superhuman, and, in the end, divine (Max Müller 1891:335).

Max Müller did not write specifically about the rainbow, but he would surely have been pleased to see the correspondence between the physical properties of this phenomenon, the striking cross-cultural agreement in how these physical properties have been given an animistic interpretation, and how this interpretation explains one of the most mystifying traits of dragons, namely their description in radically different cultures as being simultaneously male and female (Blust 2019).

The rainbow naturally occurs as a double arc in which the color sequence of one arc is reversed in the other. Europeans and some others are accustomed to assigning sexes to the sun and moon (Lévi-Strauss 1976a), but the rainbow is generally excluded from gender assignment. This is not true in all cultures. To the Navaho of the American Southwest, for example, “Lightning and rainbow are regarded as allied phenomena; but the lightning, being active, noisy, and destructive, is considered as the male, while the rainbow, being gentle, silent, and harmless, is considered as the female” (Matthews 1902:52).

However, in many parts of the world the rainbow, being double, cannot have a single sex. Rather, the two arcs are called ‘male’ and ‘female’, with cross-cultural variation in whether the male arc is the brighter (lower) one, or the fainter (upper) one.

1.7.1 Central and East Asia

In Chinese folk belief a double rainbow is both male and female, the more colorful inner arc being male, and the fainter outer arc female (Zhou 2001). Although it seldom appears in the literature, this feature of Chinese conceptions of the rainbow was mentioned nearly ninety years ago by Hopkins (1931:609), and over a half century before him by Schlegel (1875:455–456).

1.7.2 North America and Mexico

As already noted of the Tarahumara Indians of the Mexican state of Chihuahua, the bottom arc of a double rainbow is said to be “the woman of the one above” (Thord-Gray 1955:960).

The Totonac Indians of the Mexican states of Vera Cruz and Puebla describe the rainbow as simultaneously male and female (Ichon 1969:137).

The Chontal Indians of Oaxaca, Mexico say that “The full rainbow is a man, whereas a half rainbow is a woman, and very evil. If you show a red cloth to this female rainbow, as to a bull, she comes close to you” (Carrasco 1960:107).

1.7.3 Central and South America

As noted in chapter 3, the Vodoun religion of Haiti features an annual pilgrimage to the Saut d'Eau waterfall on the La Tombe river. While there, believers seek the blessings of the waters watched over by Ayida Wedo, the rainbow, who spans the falls intertwined with her consort Damballah, the serpent. Here the identity of rainbow and dragon is represented as a conjunction of male and female elements in separate, but intertwined bodies (Métraux 1959:329 ff., Davis 1985:170–185).

To the Cuna Indians of the San Blas islands off the east coast of Panama, “When there are two rainbows the brighter one is looked upon as a man and the other one as a woman” (Nordenskiöld 1938:394).

Among the Inga of southwest Colombia, the two bows of a double rainbow are called the male bow and the female bow (S.H. Levinsohn, p.c., 5/15/82).

In discussing the ascribed sex of celestial bodies among the Panare Indians of Venezuela, Dumont (1976:105) noted that the sun is male, the moon female, and the stars and Milky Way are neither. In contrast, the rainbow was consistently described as both male and female, thus manifesting not an ambiguity, but a dynamic ambivalence, represented in terms of the responses he received from informants as follows (where *aye* = yes, and *cika* = no):

	Male	Female
sun	aye	cika
moon	cika	aye
stars	cika	cika
Milky Way	cika	cika
rainbow	aye	aye

Although he initially thought the double-gender assignment of the rainbow must have been due to miscommunication, he eventually realized that it was intended by the Panare who answered his questions. Dumont’s further analysis of what might be called ‘astrosexuality’ involves a convoluted Lévi-Straussian exploration of possible symbolic associations that—as often happens in the work of Lévi-Strauss himself—arguably crosses the line between science and art. Remarkably, however, it says nothing about the double rainbow and its likely significance for the issue in question, even though the Panare very likely assign separate genders to the two arcs, like many other indigenous peoples.

1.7.4 Mainland Southeast Asia

The Karen of peninsular Burma and Thailand regard *Hkü Te* as the lord of the region of death. He is occasionally to be seen as a rainbow in the west, and his wife *Teu Kweh* as a rainbow in the east. “When two rainbows appear in the east, the upper and larger one is her husband, who is visiting with her” (Marshall 1922:228).

1.7.5 Insular Southeast Asia

In Malay a single rainbow is called *pelangi*, but a double rainbow is *pelangi sekelamin*, where *se-* is a prefix meaning ‘one’ and *kelamin* is ‘family’ (etymologically meaning husband, wife and any children residing in a single house). To traditional Malays, then, the double rainbow was a married pair, male and female (Skeat 1900:15, fn. 2).

The Balinese myth of the origin of the rainbow was described in Chapter 6 under Section 2.7. In this story the goddess Uma was irresistibly beautiful, but hermaphroditic, and when God Guru snatched off her penis it became the rainbow (Hooykaas 1956:301).

1.7.6 Australia

Among the Tiwi on Melville and Bathurst Islands, the *Maratjis* are serpents that guard waterholes. "The rainbow, as a *Maratji* ... is universally feared, the aborigines believing that the primary bow is the *imunka* (spirit) of a male, and the secondary bow, that of a female *Maratji*" (Mountford 1958:156).

As first reported by W.E.H. Stanner, the Murrinh-Patha of the Northern Territory in Australia say that "the Rainbow Snake is either bisexual or a woman. Sometimes he is described as a male but is portrayed with female breasts" (Mercatante 1988:546).

With specific reference to the Kunwinjku/Gunwinggu people of western Arnhem Land, Taylor (1990:330) observes that a number of scholars working independently "have all drawn attention to the themes of androgyny that pervade the mythology of the rainbow in this region of Arnhem Land." Needless to say, this has led to both psychoanalytic and Structuralist (Lévi-Straussian) interpretations of some speculative complexity, without any stated awareness of the natural basis for considering the rainbow androgynous.

1.7.7 Pacific Islands

Among the people of Palau in western Micronesia "the clear arc in a double rainbow is female; the indistinct one is male" (Sandra Chung, from Roy Ngirichol, p.c., 2/23/82).

To the Mortlockese of Pakin atoll in the eastern Caroline islands, Micronesia, a double rainbow consists of a female inner band and a male outer band (Emerson Odango, p.c., 9/8/13).

The Maori of New Zealand regard the upper arc of a double rainbow as male and the lower arc as female (Best 1922:58).

1.7.8 Africa

The Hausa of northern Nigeria say that "*Gajjimare* (the rainbow) is in shape something like a snake, but it is hermaphrodite, or at least double gendered, the male part being red, the female blue" (Tremearne 1968:340).

To many Bantu-speakers across central and west Africa, "The rainbow effectively embodies a contradiction: at once male and female, it unites fire and water, high and low" (de Heusch 1982:37).

Surprising as it may appear at first, then, in widely separated regions of the Earth the rainbow is culturally conceived as both male and female because of the natural fact that it normally appears double, and contrasting/complementary genders are assigned to the two arcs in many animistic cultures. From this universally available natural feature the bisexuality of the dragon emerges as a simple consequence of its origin as the Rainbow Serpent.

Other beliefs about double rainbows have no clear connection with the dragon idea, but these are almost always restricted to a single culture or culture area. For example, the Suau of Milne Bay province on the island of New Guinea say that a double rainbow portends the birth of a baby (John Lynch, p.c., from Michael Morauta, 1987), and the Wishram of southern Oregon saw the double rainbow as a sign of twins (Bright 1990:219).

1.8 *Trait 11: The Rainbow Is Colorful/Red*

1.8.1 Central and East Asia

From attested words for the rainbow in modern Japonic (Japanese-Ryukyuan) languages Martin (1987:498) reconstructed Proto-Japonic *ni-m(u)si ‘red/beautiful snake’. However, Alexander Vovin (p.c., 9/24/17) points out that *-musi* is ‘insect’, not ‘snake’. This may be similar to the ‘worm’ or ‘insect’ radical in the Chinese character for ‘rainbow’. In any case, the color ‘red’ appears to be unambiguous in this word.

1.8.2 North America and Mexico

The Yuki of northern California “regarded the rainbow as composed of three colors, white, blue and red: The red was caused by the menstrual blood of all the women in the world, and the rainbow formed a path to heaven of girls who died during their first menstruation” (Foster 1941:208).

1.8.3 Central and South America

Among the Arecuna of northeast South America, dragon and rainbow cannot easily be separated. However, in describing the rainbow in its serpent form, we are told that “*Keyeme*, the rainbow, when it appears is thought of as a large multi-colored snake that lives in the high waterfalls” (Koch-Grünberg 1924:15).

In a general statement about the Arawakan-speaking Indians of the Guianas, Roth (1915:268) says that “The Arawaks speak of the Rainbow as *Yawarri* (*Didelphys* sp.), the reddish color of its fur bearing some fancied resemblance to the coloration of the bow.” Here the dominant color of the rainbow is compared with the color of opossum fur.

1.8.4 Insular Southeast Asia

Among the Bunun of Taiwan it is said that the red color of the rainbow is blood (Chen 1991:66).

The Mamanwa Negritos of northeast Mindanao say that “a very red rainbow foretells death, and is generally considered a bad omen” (Maceda 1964:115).

Some of the Manobo peoples of Mindanao in the southern Philippines say "If red predominates among the rainbow's colors, the mightier war spirits are engaged in hand-to-hand combat; if the colors are dark it is a sign of slaughter." (Garvan 1941:224).

In Iban of southern Sarawak, Malaysian Borneo, *neraja* has the double meaning 'red, inflamed' (as skin with measles), and 'rainbow' (Richards 1981:228).

To the Bare'e of central Sulawesi "The most feared sign was when a rainbow settled down around one and the colors did not maintain their coherence, but spread out, a phenomenon called *daa sawu* 'scattered blood'" (Adriani and Kruyt 1950-1951:3406).

Among the Maumere of the island of Flores in eastern Indonesia, the rainbow is a spirit snake that lives in the earth and comes out in heavy rains; it is said to be "striped yellow/green/blue, but its basic color is red" (Bader 1971:950).

1.8.5 New Guinea and Satellite Islands

The Bukawa of the north coast of New Guinea say that the rainbow (*gasibueb*) is the blood of those slaughtered in battle that rises to the heavens from the forest or the beach (Lehner 1911:3431).

Among the Kewabi of the southern highlands of New Guinea, "The rainbow is regarded as a mixture of the blood of people slaughtered in tribal warfare" (James Yoko, p.c., 4/20/86).

1.8.6 Australia

Given its identity with the rainbow, the Rainbow Serpent of Australia must be a multi-colored creature. This is indicated explicitly in some cases, as where Mountford (1958:154) states that in the western deserts of central Australia "The snake (*wonambi*) is a huge, many-colored creature with a mane and beard" (Mountford 1958:154).

1.8.7 Pacific Islands

According to Fox (1955:73), among the Nggela of Florida island in the central Solomons the rainbow is called *langi gambu* ('sky' + 'blood' = 'bloody sky').

1.8.8 Africa

The Uduk of the Sudan-Ethiopian frontier say that "if a rainbow is very near you, you will only see a great redness. It transforms the place and people's bodies; everyone's bodies, and you too become coloured like the Rainbow ..." (James 1988:297).

It is not entirely clear how the widespread belief in the basic redness of the rainbow, and the likely association of this color with blood, relates to beliefs about the color of the dragon. As seen in Chapter 5, the latter is sometimes described as red, but is more often described simply as ‘colorful’ or ‘multicolored’, either of which could apply equally to the rainbow. Nonetheless, both with the dragon and the rainbow, we see a repeated emphasis on red as the basic or most dominant color. In the case of the rainbow this may well be due to associations with blood, associations that were then passed on from the Rainbow Serpent to the dragon.

1.9 *Traits 12–13: The Rainbow Points To A Treasure*

European dragons, from classical Greece to the mythologies of northern Europe, have always guarded treasures. Similar themes are found with the Indian *nāga*, the Chinese *lóng*, and indirectly with the *dracontias*, or forehead gems of European dragons, and the horns of the North American horned water serpent. One of the first things that English-speaking children learn about the rainbow is that if one can only reach the ever-retreating end he will be rewarded with a pot of gold. This connection of treasure with the end of the rainbow is not limited to European traditions, but is found scattered over much of the world.

1.9.1 Europe

“In Ireland it is said that if anyone can find the place where the bow ends and touches the ground, he would discover a pot of gold at its foot” (Radford and Radford 1975:279).

German and Polish speakers in Silesia say that the angels put gold at the end of the rainbow, and that only a nude man can obtain it (Voegelin 1972:922).

1.9.2 Central and South America

The Mam of Todos Santos, Guatemala, say that when a rainbow appears, the god of a particular mountain is pointing down to where gold is hidden under the earth (Richard Reimer, p.c., 1982).

1.9.3 Insular Southeast Asia

To the Malays of Perak “an untold treasure lies at the foot of the rainbow” (Skeat 1900:15).

The Maumere people of Flores, Indonesia, say that a treasure lies hidden where the rainbow touches the Earth (Bader 1971:954).

Among the Kédang of Léuwajang village on the island of Lembata in eastern Indonesia, the village spring is associated with serpents, the rainbow and gold.

As stated by Barnes (1974:62)

A rainbow (*nado-tado*) seen near the spring is this snake. Rainbows are particularly associated with gold, and are one of the forms which may be taken by the snake-like guardian spirit within gold. Therefore, the golden pot at the source of the spring is an origin of rainbows.

1.9.4 Africa

The Nyabwa of the Ivory Coast say the end of the rainbow is a place of happiness; gold there marks the end of the year (Julie Bentinck, p.c. from Sely Keipo Marcel, 7/8/82).

Among the Anyi Sanvi of the Ivory Coast and adjacent parts of Ghana,

The rainbow is called *nyanngondon*. Some say that it is a symbol for a genie or powerful spirit who takes the form of a snake. Some associate it with the spirit of gold. It is thought that it comes out of a termite hill accompanied by smoke. When it comes out the gold in that place disappears (Jonathan Burmeister, p.c. from Aka Amalan, 11/24/82).

A similar association of gold with the rainbow in its serpent (terrestrial) form is found among the Murle of the Sudan, who say

The rainbow is a large snake (dragon-like) which sleeps in a cave when not flying in the sky. It is a bad thing which kills people by means of lightning (the Murle word *borɔi* includes the rainbow, thunder and lightning), and it has a gold stool which it uses for sleeping in its cave. There are many rainbows that live in various areas and have their own caves (Jon Arensen, p.c., 1982).

Probably also connected with the notion of an elusive treasure at the rainbow's end is the common belief in tropical South America that the end of the rainbow marks the place where the best potter's clay is found (Lévi-Strauss 1970:247), and the Ewe tradition that the valuable 'Aggrey beads' also appear in this location (Werner 1933:233).

No one has ever found a treasure at the elusive end of the rainbow, so why would this belief be so widespread, and in particular, why should the treasure be gold? One possibility takes us back to the animistic thinking of preliterate peoples. The rainbow is believed to drink water from a terrestrial source in order to produce rain. The end of the rainbow must therefore touch down in a river or other water source. As noted in Blust (2000a: 532)

Unlike most metals, gold is commonly found in small amounts in alluvial river washings, where it can easily be seen with the naked eye. For this reason, there can be little doubt that gold was the first precious metal known to early man long before the advent of metallurgy, a fact which may partially account for its peculiar salience in myth and psychology. Since the rainbow touches down in a spring or river, its end covers a place where gold is found. And since the rainbow is a giant serpent which guards springs and rivers when it does not appear in the sky, it guards the gold found there.

1.10 *Trait 14: The Rainbow Lives In Waterfalls*

This point requires no explanation, except to say that falls with a small water volume are less likely to have a resident dragon than major falls like Niagara or Iguazu, which produce a constant rising mist that functions like rain in generating rainbows when the sun shines through.

Among examples that have not yet been mentioned, Mead (1933:39) noted that for the Mountain Arapesh of New Guinea, *marsalais* (bush spirits) include the rainbow, and places inhabited by these spirit beings “are almost all dangerous declivities, waterfalls, quicksands, bogs, or waterholes to which the approach is hazardous.”

Likewise, in east Africa the Kikuyu believe in a rainbow monster that lives in lakes and waterfalls:

At night it comes out to eat goats and cattle, but its tail always remains in the water. Some Masai warriors made their spears hot, then proceeded to attack the rainbow, which is identified with the snake guardian of the water. According to a legend, these warriors speared the rainbow in the neck, which is the only vulnerable part, whereupon it fell dead (Hambly 1931:41).

Finally, in his survey of the Rainbow Serpent myth over most of Australia, the British social anthropologist A.R. Radcliffe-Brown (1930–1931:343) noted that although the Rainbow Serpent is typically found in deep lagoons and waterholes, “In the New England tableland it is particularly associated with waterfalls, possibly because at such places rainbows may frequently be seen.”

1.11 *Trait 15: The Rainbow Is Circular*

As will be seen in greater detail in chapter 8, certain atmospheric phenomena resemble circular rainbows, and, given a pre-existing conception of the rain-

bow as the Rainbow Serpent this could conceivably have provided a natural model for the *ouroboros*—that is, the dragon biting its own tail or encircling the Earth.

2 Mysteries of the Rainbow

All 15 culturally-assigned traits of the rainbow reviewed in 7.1. match similar traits of the dragon in widely separated regions (Chapter 5, where traits 12 and 13 are combined in considering the rainbow). Importantly, in each case there is an observational basis for the beliefs about rainbows which shows why a similar belief is found with dragons, where it may initially appear arbitrary. These can therefore confidently be called ‘empirically well-grounded’ traits of the dragon.

By contrast, the 31 beliefs about the rainbow in this section show that there are other, globally distributed rainbow traits for which an observational basis is yet to be established, and which are therefore in some sense ‘mysterious’. Despite their unknown motivation, traits 16–27 also closely match those recorded for the dragon, further strengthening the argument that the dragon idea in its classic form (as in Europe or China) evolved from an earlier belief in the Rainbow Serpent. The combination of these two categories yields 27 universal traits of dragons that are inherited from the Rainbow Serpent, fifteen of them plausibly motivated by observation of the natural world, and twelve not. This section reviews these twelve cases, together with 19 other widely distributed beliefs about the rainbow that have no known connection with the Rainbow Serpent/dragon.

2.1 *Trait 16: The Rainbow Terrifies Women/Can Impregnate Them With a Demonic Child*

2.1.1 North America and Mexico

Among the Southwestern Pomo in the region of Clear Lake, California, it was taboo for young girls, though not boys, to look at a rainbow (Gifford 1967:45).

2.1.2 Central and South America

Among the Tucuna Indians of the Brazil-Peru-Colombia frontier

potter’s clay is accorded a certain respect, since its patron is an aquatic monster, *dyë’vaë* (= ‘owner of the clay’), which sometimes presents itself in the form of the western rainbow. It is considered dangerous for a pregnant woman to go to the riverbank to fetch clay, and the clay itself

is considered useless for potting if a pregnant woman touches or even approaches it (Nimuendajú 1952:119–120).

The Canelos Indians of eastern Ecuador, a group of uncertain linguistic affiliation, since not long after European contact they gave up their native language for Quechua, say that the rainbow is particularly dangerous to young women. “When the rainbow appears, a woman who is in her menstrual period ought not to go out lest the *cuichi supai* (rainbow demon) should make her pregnant, in which case she will give birth to a demoniacal child” (Karsten 1926:360–361).

2.1.3 Insular Southeast Asia

The Ngadha of western Flores say that the rainbow may make an innocent woman pregnant. This is vividly illustrated in a bizarre myth related by Bader (1971:949):

There was once an orphan girl named Gena, who was both beautiful and of good breeding. After the death of her parents, she was raised by her neighbors. Although she rejected all marriage proposals, one day she nonetheless found herself pregnant, not knowing how this happened. When she went out a powerful storm arose, and it rained frightfully. However, she gave birth not to a child, but only to fruit peelings. When she heard no birth cry of an infant Gena’s foster mother tore the fruit peelings to bits, and the water sprayed in a curve to the sky.... Shortly thereafter Gena died, and the storm ceased. The rainbow appeared, and it was hot and dry. Everyone then knew that Gena was not impregnated by a man, but rather by the rainbow spirit. Since that time the rainbow in this region has been called *bole ne Gena* ‘fruit peelings of Gena’.

As already noted more than once, in the Kédang village of Léuwajang on the island of Lembata in eastern Indonesia various prohibitions govern the use of the local spring, which is a physical and spiritual focus of village life. The guardian spirit of this spring is a large snake similar to a python. According to Barnes (1974:62)

A woman must remove all jewellery, bracelets, and similar external decoration before bathing there, and above all she may not get her hair wet. In this regard a woman stands in marked contrast to the man, for there is no restriction on a man washing his hair there. Should a woman do so she stands in danger of being married by the spirit of the spring and therefore being driven insane.

2.1.4 New Guinea and Satellite Islands

The Feranmin and closely-related peoples of the upper Sepik basin in New Guinea believe that

All smells connected with women and child-bearing bring danger from *Magalim* [the Rainbow Serpent]. He may make women pregnant, eat an unborn child and leave one of his own, or come unseen between a couple having intercourse in the bush to give his child instead: it may then be a contest between the power of the man and the power of *Magalim* that determines the form of the child (Brumbaugh 1987:27).

2.1.5 Australia

The Burarra of western Arnhem Land say "Women and children can't go to the foot of the rainbow, lest the rainbow kill them; only men and old people can do this" (Kathy Glasgow, p.c., 11/13/83).

The Wik Mungkan of the Cape York peninsula in northeast Australia view the rainbow as "A snake that inhabits some waterholes and freshwater streams, and punishes anyone who ventures into them, especially women with young children, and pregnant women" (Chris Kilham, p.c., 11/13/83).

2.1.6 Africa

In the nineteenth century Fon-speaking kingdom of Dahomey in what is now Benin, the rainbow snake was a huge python that guarded water sources. In addition to its other traits

the python appeared in terrifying form to some of the most beautiful girls. They were then obliged to enter the service of the python temple. The people (*Saracolais*) of Senegambia have a legend to the effect that the prosperity of their country at one time depended on the sacrifice of the most beautiful and accomplished girl to a snake monster. On one occasion the victim had been led to the water hole where the serpent was wont to appear, for it was his custom to drag the sacrifice under the water. At the critical moment, when the sad fate of the girl seemed inevitable, a youth dashed up on horseback and claimed the girl for himself after cutting the snake monster in two (Hambly 1931:37).

The mythology of the Pygmy peoples of central Africa expresses a very similar idea about the rainbow. Among the Bambuti of the Ituri Forest "The rainbow, visualized as a 'celestial serpent', plays an important role, not only in the mythology of African Pygmies, but also in their entire religious life. It is

regarded as the magical, terror-inspiring, man-murdering snake monster that devours human beings and brings about catastrophes" (Schebesta 1950:156).

As is true elsewhere, young girls must avoid water sources where the rainbow may be lurking in the form of a jealous serpent. In one Bambuti myth

Some girls were out cutting wood. They crossed a stream by a fallen tree. But really the tree was the bad water animal called *Klima*, the Rainbow. When returning they all crossed except the slowest of the girls, and a man who waited for her. As these two were half-way across, the dead tree which was really a rainbow which was really a water animal suddenly dived down into the water, carrying them with it. Later on, the couple were seen sitting on a rock in the middle of the stream, but never again after that (Turnbull 1959:56).

The predatory nature of the dragon with regard to attacks on young women is a notorious part of European mythology. One of the most common themes of European paintings of dragons shows them pierced by the lance of a gallant knight as they are about to ravish a young woman. Given the common portrayal of the dragon as a monster in the European tradition this behavior is not entirely unexpected. But no one raised with this way of thinking could imagine the rainbow, an inanimate thing of beauty or divine promise, as a similar predatory monster. Yet, in the traditions of many preliterate peoples the behavior of rainbows toward vulnerable young women is no different than that of dragons. Needless to say, the fact that both dragons and rainbows are said to have the power to impregnate a young woman with a demonic child if she should intrude into the water source they guard, is powerful evidence of their common origin.

2.2 *Trait 17: The Rainbow Is Offended By Menstruation*

One of the most puzzling features of the ethnology of the rainbow is that it is offended by menstruation, and is particularly dangerous to young girls during their menarche. If this belief were restricted to one geographical area or one group of linguistically related people it would not pose such an explanatory challenge, but it is found in several widely separated regions, implying that it is motivated by some external stimulus.

2.2.1 North America and Mexico

The Klamath-Modoc of Tule Lake in northern California and both the Western and Eastern Achumawi in extreme northeast California say that a rainbow is a sign that suckers (kind of fish) are "calling clouds to make it rain, because a

girl just after she has had her first menstruation, is walking close to a river or spring 'where she ought not to go'. After the clouds leave the rainbow appears" (Voegelin 1942:236).

Among the Modoc, if a menstruant dreams of the rainbow, it is an evil sign that a spirit is trying to get her (Voegelin 1942:236–237).

Slightly different is the belief of the McCloud River Wintu that if a mother dreams of a rainbow after giving birth, it is a sign that she will die (Voegelin 1942:237).

As noted earlier, according to Foster (1941:208) the Yuki Indians of northern California

regarded the rainbow as composed of three colors, white, blue and red: The red was caused by the menstrual blood of all the women in the world, and the rainbow formed a path to heaven of girls who died during their first menstruation Menstrual blood was the deadliest of all poisons, so even at the great distance of the rainbow it might well have the bad effects described (Foster 1941:208).

To the Foothill, Mountain and Southern Nisenan of central California, "If the end of the rainbow falls near a village, this is a sign that a girl there has recently menstruated for the first time" (Voegelin 1942:236).

The Tulare Lake Yokuts of central California say that "The rainbow is the sister of Pokoh (the Creator), and her breast is covered with flowers. However, some think that a rainbow marks the first menses of a maiden" (Gayton 1948:24, fn. 56).

Although it has been most robustly documented in California, this belief is also found in other parts of North America: "For some southeastern tribes a rainbow means that a girl is menstruating for the first time, or that something evil is about to happen" (Gill and Sullivan 1992:252).

The Shawnee myth about how a horned water serpent was overcome by the deliberate act of men sending a menstruating girl into his watery lair has already been related. Most other accounts suggest that a menstruating girl or woman is in danger if seen by the rainbow, but the Shawnee story reverses the power axis (Gatschet 1899:256–257).

2.2.2 Central and South America

As already mentioned, the Canelos Indians of eastern Ecuador believe that the rainbow is an evil spirit that is especially dangerous to a woman who is in her menstrual period. A similar idea is found among the Toba Indians of the Gran Chaco in Paraguay, in whose mythology a young girl was impregnated by a ser-

pent while bathing in a spring it guarded, and then gave birth to a brood of snakes (recall the dragon of Niagara). According to Karsten (1964:54) "When girls have their first menstruation, they must be careful to cover their bodies well, because evil spirits are trying to enter them through their genitals in the form of snakes, in which case either supernatural conception or disease and death will follow."

As noted earlier, among these same people and the neighboring Mataco and Lengua Indians there is a tradition that the world was destroyed by four disasters, in one of which a menstruating girl visited a spring to fetch water, thus offending a water python (rainbow), and precipitating a massive flood (Métraux 1946:29, also cited by Lévi-Strauss 1970:305). Karsten's account of this belief among the native peoples of the Chaco speaks only of snakes that guard water sources, and not of rainbows, but Métraux, who worked in the same area, made it clear that the snakes in question are identified with the rainbow.

2.2.3 New Guinea and Satellite Islands

With regard to the *marsalai*, or bush spirits (which include the rainbow) among the Mountain Arapesh of New Guinea, Mead (1940:392) says

Menstruating women, men who have approached menstruating women, men or women immediately after sexual intercourse, and pregnant women must not trespass upon a *marsalai* place. The *marsalai* is said to be offended by the body odors involved, and will pursue the trespassers, punishing them or their unborn children with illness, deformity or death.

She later varies this slightly: "all *marsalais* (bush spirits) are hostile to menstruating women, and men and women after intercourse, and the penalties after infringing these taboos are practically standard" (Mead 1940:392).

In a similar spirit, Brumbaugh (1987:25) relates a folktale among the Feranmin of the headwaters of the Sepik River, where "the heroine allowed her menstrual blood to flow near a mountain pool, and the serpent *Magalim* rose from its depths bringing earthquake and thunderstorm; after successive attempts to escape the woman was swallowed by *Magalim*."

2.2.4 Australia

As is generally the case, the Rainbow Serpent of Australia may be treated either as a serpent (dragon), or as the rainbow. The following applies regardless of which interpretation we adopt.

The Tiwi of Melville and Bathurst islands believe that the Rainbow Serpent is offended by menstruation: "menstruating or pregnant women should not cross a river, ride a boat, or walk in the rain. The serpent will smell the blood and harm them. Light is the only protection, so such women carry torches or flashlights to ward off the evil spirit" (R. David Zorc, p.c., 9/22/80).

The Gunwinggu in the Daly River area of northwest Australia say that

a menstruating girl, like a woman who has just borne a child, must be careful not to attract the Rainbow's attention, by staying close to her fire and not going near a billabong; the fire helps to protect her ... The people around and south of the Daly river—Ngulugwongga and Madngala, Wogiman and Nangiomeri, also have this belief: Briefly, a girl at first menstruation is secluded in a special hut (afterward burnt by her mother), observes various food tabus and again must be careful of the Rainbow (Berndt and Berndt 1964:153–154).

The same writers note that among the Gunwinggu a girl's first menstruation is attended by an elaborate ceremony intended to protect both her and the larger community from spirit attacks. She is secluded, made to avoid foods that are associated with water, and her hair and body are covered with red ochre, with a rainbow sometimes also painted between her breasts. Her return to camp is announced by men, especially those of the classificatory category 'father', who beat on sticks and blow the *didjeridoo*. Until the ochre and paint wear off, however

she may not wash in, or drink from, any billabong or stream. If she does so, or if she ever tries to conceal the fact that she is menstruating, she is not the only person who is in danger. The mythology of this region makes much of the power of the Rainbow to swallow or kill people who offend—or attract—it (or her), and babies and young children are especially vulnerable (Berndt and Berndt 1964:154).

Frazer (1922:698 ff.) drew attention to the general restrictions placed on girls at their menarche, and to menstruating women generally:

The motive for the restraints so commonly imposed on girls at puberty is the deeply engrained dread which primitive man universally entertains of menstuous blood. He fears it at all times, but especially at its first appearance; hence the restrictions under which women lie at their first menstruation are usually more stringent than those which they have to

observe at any subsequent recurrence of the mysterious flow The Dieri of central Australia believe that if women at these times were to eat fish or bathe in a river, the fish would all die and the water would dry up. The Arunta of the same region forbid menstruous women to gather the *irri-akura* bulbs, which form a staple article of diet for both men and women. They think that were a woman to break this rule, the supply of bulbs would fail.

The belief that the rainbow is hostile to young women, and especially to girls in their menarche is surprising. Menstrual taboos are, of course, common in the world's cultures, but why would the rainbow be perceived as so easily offended, and so aggressive in its reaction when many other features of the natural world are not? The most likely explanation for this culturally-perceived reaction is the revulsion some humans might feel toward a menstruant woman entering the spring from which drinking water is obtained. Since the spring is guarded by a rainbow in its serpent form, the Rainbow Serpent presumably would react to defend the purity of the water it guards, a possibility that is illustrated by the Shawnee legend cited earlier in which a horned water serpent (not connected by the Shawnee with the rainbow) was overcome by the deliberate tactic of asking a menstruating girl to enter the lake in which it lived in order to enervate and subdue it.

2.2.5 Africa

In a section called 'The rainbow snake', Hambly (1931:40) states with regard to an unspecified ethnolinguistic group or groups near Lake Victoria in east Africa, that there is a python worship in this area, and that the rivers Muzini and Kafu are the abode of sacred snakes.

These are believed to be responsible for sudden rises in the rivers. At Muzini there is a medicine-man in charge of the river and the sacred snakes, to which he makes offerings when people wish to cross No man who has spent the previous night with a woman is allowed to cross the river. A menstruating woman is forbidden to cross.

Given its global distribution, the taboo against a woman entering a water source guarded by a Rainbow Serpent during her menstrual period clearly requires an explanation that is independent of individual cultures or culture-areas. Following many others who incorrectly treat the Rainbow Serpent as a uniquely Australian phenomenon, Knight (1983:21) maintains that "the logic generating the Rainbow Serpent myth—universal in one form or another

throughout Australia—is the cultural logic of menstrual synchrony itself, which undergoes structural inversion through the agency of male rituals of pseudo-procreation re-enacting the myth.” Since this argument depends for its coherence on ‘male rituals of pseudo-procreation’ one must ask why essentially the same taboo exists in many societies which lack such rituals, or for that matter why the taboo is especially emphasized with respect to menarche, where synchronization is out of the question.

2.3 *Trait 18: The Rainbow Is Connected with Hoofed Mammals*

One of the strangest features attributed to the rainbow is that, even though it is commonly viewed as a snake (surely because of its shape and coloration), it is also identified with hoofed mammals in various parts of the world, exactly like the dragon. Recall that the dragon can appear as the nixie, or ‘water-horse’ in Scottish legend. Moreover, the Chinese classics say it has the head of a camel, the horns of a deer and the ears of a cow, and according to an ancient Japanese aphorism cited by Huxley (1979:20) “In heaven a horse is made into a dragon, among men a dragon is made into a horse.” Finally, for the Umatilla Indians of eastern Oregon the ‘water elk’ is the equivalent of the horned water serpent elsewhere in North America, and the Warm Springs Apache of New Mexico describe the horned water serpent as ‘feathered’ and ‘buffalo-like’. This is odd enough for a dragon as usually conceived, but how could such physical descriptions apply to a *rainbow*?

2.3.1 Europe

Among speakers of Komi in the large Zyryan area in what was then the Komi Autonomous Soviet Socialist Republic of northwest Russia, “the rainbow is called ‘one ox and one cow,’” and folkloric traditions explicitly picture these animals as drinking (Alinei 1983:51).

In Slovenian *mavrica* means both ‘black cow’ and ‘rainbow’ (Murko 1833:577).

2.3.2 South Asia

Among the Baiga of Madhya Pradesh, Orissa and West Bengal states in India, the rainbow is called ‘the horse of Bhimsen’, where Bhimsen is a rain god (Elwin 1947:262).

2.3.3 Central and East Asia

“Rainbows, other than being described as a snake (head) in the literature, also appear as a donkey head, as exemplified in Huang Xiufu’s and Zeng Cao’s literary works during the Northern Song dynasty” (Zhou 2001).

2.3.4 Insular Southeast Asia

As seen earlier, Javanese folk tradition holds that the rainbow is an enormous snake arching over the island of Java “ending in two heads of deer or cows, one of which drinks the water from the Java Sea, the other from the Indian Ocean” (Hooykaas 1956:305).

In the Balinese myth about the God Guru the rainbow is the penis of a deity that is severed and falls to earth. From this “Fragrant blood appeared, which was the origin of the buffaloes; the blood was wiped off, and that was the origin of the cows” (Hooykaas 1956:301).

Among the Ngadha of western Flores in eastern Indonesia, some people see the rainbow as a combination rainbow-horse, and among many others Gae Dewa is a high god who rides a rainbow horse carrying the souls of the dead to the afterlife (Bader 1971:950).

2.3.5 Africa

The Nyabwa of the Ivory Coast say that the rainbow is the rain showing his cow, which he will later eat (Julie Bentinck, p.c. from Sely Keipo Marcel, 7/8/82).

As noted earlier, among the Uduk of the Sudan-Ethiopian borderland the rainbow is identified with the python, but has ears and a mouth like a camel (James 1988:297).

The Sabaot of Kenya consider the rainbow to be always moving, and it will always end up in a river. “When it enters the river it bleats like a sheep, so some think it might be a sheep. It drinks from the water in the river, and must not be disturbed” (Iver Lerun, p.c., 1982).

Among the Ila peoples of Zimbabwe “They have the very curious idea that just below where the rainbow touches earth there is a very fierce goat-ram, which burns like fire” (Edwin W. Smith 1920:2:220).

Some Bantu-speaking groups in southern Africa say the rainbow is “an animal as big as a jackal, with a bushy tail. Others say it is like a many-coloured snake, which is more intelligible. Some Zulus say it is a sheep, or lives with a sheep” (Werner 1933:232).

In Zulu the word *-nyama* (*umnyama*) has multiple glosses, one of which is: ‘fabulous animal, said to resemble a sheep, believed to inhabit ponds where the rainbow terminates, and whose fat is said to have the various colors of the rainbow’ (Doke and Vilakazi 1964). The association of a sheep with the rainbow, and the belief that a hoofed animal inhabits ponds should by now be familiar, since the sheep here corresponds to a serpent in many other cultures with strikingly similar beliefs.

Strange as it may seem to people who have not grown up in an animistic society, then, the rainbow *is* sometimes blended with hoofed mammals, just

as the dragon is. The rainbow itself is never shown with scales, horns, hair or feathers, but these properties in the dragon follow as products of its chimerical nature, which combines a basic cold-blooded reptilian body plan with features of warm-blooded mammals or birds. Although it initially appears to lack a natural motivation, then, this shared trait may well stem from the perception that the rainbow (and hence the Rainbow Serpent) is born of the marriage of fire and water, sun and rain, since it appears only when these opposites unite. In any case, the fact that this oddity is shared by dragons and rainbows in widely separated cultures clearly constitutes powerful testimony to their identity.

2.4 *Trait 19: The Rainbow Can Start Fires*

One of the features of dragons that is hardest to explain if it were inspired by a living creature is its fiery breath, a trait that is particularly well-developed in European dragons, but also has a place in the dragon mythology of China. Again, given Western conceptions of the rainbow, we would have no reason to assume that this trait is connected with weather phenomena. However, this reminds us once again of the dangers of ethnocentrism, even among scholars who are trained to avoid it.

2.4.1 North America and Mexico

As noted earlier, the Chontal Indians of Oaxaca, Mexico say that "The full rainbow is a man, whereas a half rainbow is a woman, and very evil. If you show a red cloth to this female rainbow, as to a bull, she comes close to you. She causes fires, but our informant had not heard of the common Mexican belief that it is bad to point toward the rainbow because it will rot your finger, or that it causes tooth decay" (Carrasco 1960:107).

2.4.2 Insular Southeast Asia

According to the Toba Batak of northern Sumatra, wherever the foot of the rainbow touches down it is likely to cause epidemics, fires, etc. (Sitor Situmorang, p.c., 8/3/83).

In the Lore area of central Sulawesi the West Toraja say that "if a rainbow should approach when one is engaged in the construction of a house he immediately breaks off work, as otherwise the dwelling would later be destroyed by fire" (Kruyt 1938:2:359).

2.4.3 Africa

Among certain Bantu-speaking peoples the colors of the rainbow "are sometimes said to be the flow of a destroying fire." The Luyi or Luyia of Uganda say that if a rainbow settles on the trees, it will burn all the leaves (Werner 1933:231).

As noted already with the association of the rainbow and hoofed animals, among the Ila of Zimbabwe it is believed that “just below where the rainbow touches earth there is a very fierce goat-ram, which burns like fire” (Edwin W. Smith 1920:2:220).

Across a range of closely-related Bantu-speaking peoples in the Democratic Republic of Congo who believe the rainbow is formed by male and female serpents who live in different rivers, it is said that “when the two aquatic serpents join together in the sky the fire they emit burns the earth. That this fire adversely affects rain is evident from a saying reported by van Avermaet, according to which the rainbow “burns” (drives away) the rain” (de Heusch 1982:36).

Since rainbows do not start fires it is unclear why this belief exists in at least southern Mexico, two well-separated parts of Indonesia, and across central Africa. Whatever its motivation, the wide distribution of this idea implies a conceptual basis for it. The most likely possibility is that the rainbow appears just when the sun is ‘burning up’ the rain, causing it to stop, and this observation has been transferred from the sun, which is the causal factor, to the rainbow itself, which is a product of the cause. In any case, the fact that this belief is globally distributed suggests that it was part of an ancient Rainbow Serpent culture complex out of which the idea of the dragon evolved, and the fiery end of the rainbow became the fiery mouth of the dragon.

2.5 *Trait 20: The Rainbow Has Fetid or Toxic Breath*

As seen in Chapter 5, when the dragon’s breath is not described as fiery it is sometimes described as fetid or toxic, a trait that has been recorded in Europe, China, North America, and North Africa. Although the Western conception of Nature, again, would not lead us to expect a similar trait for the rainbow, it is found among several widely separated tribal peoples.

2.5.1 North America and Mexico

Among the Achumawi of northeast California “If a rainbow likes a person, it allows him to approach near it; the person finds that the rainbow is bad-smelling” (Voegelin 1942:237).

The Tarahumara Indians of northern Mexico say that the rainbow “smells worse than a skunk” (Bennett and Zingg 1935:325).

2.5.2 Africa

Among the Uduk of the Sudan-Ethiopian borderland the anthropologist Wendy James recorded a story about a character named Nuur, who had an unpleasant confrontation with a rainbow:

Nuur went with his wife when they were newlyweds ... to bring firewood from a place called "Rainbow Hole" They were about to drink water, and according to people ... he said 'Why is this place smelling like a pipe?' From that ... he got sick. Arum (the rainbow) had seized his Genius there. And the rainbow kept his Genius (James 1988:297).

The Lela of the Democratic Republic of Congo say that the rainbow python "lives in a termite mound from which it emerges only in rainy weather; to escape its deadly breath one must make a noise" (de Heusch 1982:38).

This belief is less robustly reported for rainbows than for dragons, but is found in at least northern California, northern Mexico, and central Africa, suggesting that it could be more widespread than the present sample indicates. It is unclear why it exists, since the rainbow emits no odor, although organic materials that have been struck by lightning may emit an unpleasant scent. Until better data is available all that can be said with certainty is that the rainbow is said to produce a stench, and the same trait is attributed to the dragon's breath.

2.6 *Trait 21: The Rainbow Causes Earthquakes*

2.6.1 Mainland Southeast Asia

The Karen of peninsular Burma and Thailand "are stricken with terror when they observe the rainbow arching the western heavens early in the morning, especially if this sign is accompanied by thunder and earthquake" (Marshall 1922:228).

2.6.2 Insular Southeast Asia

Among the Andaman islanders in the Bay of Bengal south of Burma, it was believed that a rainbow causes earthquakes (Radcliffe-Brown 1922:290).

2.6.3 New Guinea and Satellite Islands

As noted earlier, a story told by the Feraimin people of the upper Sepik watershed in New Guinea holds that, when aroused to anger, the Rainbow Serpent Magalim can cause earthquakes and thunderstorms (Brumbaugh 1987:25).

2.6.4 Africa

In the nineteenth century Kingdom of Dahomey, in what is now Benin, the Fon people held that

In the beginning Mawu [a culture hero] was carried in the mouth of Aido Hwedo, the serpent, who existed before the earth did. Wherever the two stayed for the night, mountains appeared from the excrement of Aido

Hwedo, and as they travelled, the body of the snake outlined the rise and fall of the land. There are two of these Aido Hwedo. The female lives in the sky, and on her tail are carried the thunderbolts hurled to the earth. Some say she is the lightning as well as the rainbow. The male lies curled under the earth, bearing the burden of its overlaid surface. When it moves to relieve its position, the earth trembles and quakes (Herskovits and Herskovits 1933:56–57).

Whether earthquakes result from the action of the rainbow or the Rainbow Serpent which is conceptually distinguished from it, is a moot point. One other thing to note here, however, is the clear historical derivation of the Haitian Vodoun cult of Ayida Wedo, the rainbow, and Damballah, the serpent, described in chapter 3, from a Dahomean or very similar West African source. The fact that Ayida Wedo is the rainbow in the Haitian version, but Aido Hwedo is the serpent in Dahomey simply underlines the fact that serpent and rainbow are ultimately the same thing.

With regard to the Ba Thonga people of southern Africa, for unexplained reasons Junod (1927:312) treats beliefs about earthquakes and rainbows together (section 3, Earthquakes and rainbows). However, he does not connect them in any way, and notes that “The *rainbow* is called *shikwangulatilo*, viz., the one which removes the danger from the sky.... No one can say what the danger is that is thus removed; it is probable that the tribe had more precise ideas on the subject in former times, and that these have become obsolete.” However, he later adds (1927:313) that “The two great phenomena that most impress South Africans are lightning and rain,” and he makes it clear that rainfall at the wrong time of the year in this area can prevent the planting of crops and prove disastrous for the community due to food shortages. The danger that the rainbow removes from the sky is thus perhaps the lightning, and hence the heavy rainfall that often accompanies it, since it appears when storms have ended. In broader perspective this recalls the conflict of the rainbow and the lightning in other parts of Africa.

Again, we find a puzzling trait of the rainbow that also is found with dragons since, as noted in Chapter 5, a belief that dragons precipitate earthquakes has been recorded in at least Europe, the American Southwest, Mayan-speaking Central America, and the southern Philippines.

2.7 *Trait 22: The Rainbow Causes Whirlwinds/Storms or Waterspouts*

2.7.1 Insular Southeast Asia

As seen already, the Balinese have a myth in which the rainbow is said to be the severed penis of a hermaphroditic god(dess) Uma. When this organ fell to earth it gave rise to tornados (Hooykaas 1956:301).

2.7.2 New Guinea and Satellite Islands

The Suau of Milne Bay province in southeast New Guinea say that "at the foot of the rainbow are strong whirlwinds" (John Lynch, p.c., from Michael Morauta, 1987).

2.7.3 Australia

The Tiwi of Melville and Bathurst islands believe that the Rainbow Serpents (Maratjis) protect their waterholes from human intruders. If an incautious person violates the sanctity of such a spot

They roar loudly, make the water bubble up ... and send a waterspout into the air which, falling as torrential rain, floods the countryside. One of the Maratjis then changes himself into the rainbow and travels over the land seeking to injure the offender or anyone else in his path (Mountford 1958:155).

With reference to an unspecified aboriginal group or groups in the south-central Kimberley mountains of the far north of Western Australia, Kolig (1981: 315) observes that

Far beyond the normal behaviour of other mythic characters who react angrily when their names are blasphemed or their sites violated, the water snake can send a deluge to threaten the whole world, or spread endemic diseases, or strike down with enormous numinous power Yet it kills also to protect the law.

In illustration, he cites an observed case of an aborigine who had committed murder and fled Mount Anderson station to seek refuge at a site called Malala. The relatives of the victim then persuaded the Rainbow Serpent to pursue the culprit, and it did this "travelling in a terrifying whirlwind that darkened the sky and accompanied by lightning."

2.7.4 Pacific Islands

As seen earlier, the people of Sa'a and Ulawa islands in the southeast Solomons fear the malevolent Sea Spirits: "A rainbow or a waterspout or a black squall is their inseparable companion A canoe out catching bonito will give a wide berth to a rainbow or to a waterspout" (Ivens 1972:201).

The Dehu in the Loyalty Islands near New Caledonia believed that "a rainbow (*lewen*) was considered quite harmless, unless it appeared too frequently; then, indeed, it might be a harbinger either of a famine or of a hurricane." (Hadfield 1920:113).

One of several beliefs about the rainbow among the Maori of New Zealand is that whirlwinds spring from the union of a male and female rainbow (Best 1922:60).

2.8 *Trait 23: The Rainbow Causes Floods*

2.8.1 Central and South America

Among the Inga of southwest Colombia it is believed that a very low rainbow means that “there will be widespread flooding and people drowned” (S.H. Levinsohn, p.c., 5/15/82).

It has already been noted that the Toba, Mataco and Lengua Indians of the Paraguayan Chaco tell how a massive flood was caused by a menstruating girl who went to fetch water and thus offended a water python (rainbow) (Métraux 1946:29).

2.8.2 Mainland Southeast Asia

Among at least some Semang groups in the Malay peninsula, floods are attributed to the activity of the rainbow snake (Maceda 1964:115).

2.8.3 New Guinea and Satellite Islands

According to the Feranmin and Mountain Ok of the upper Sepik basin in New Guinea, the Rainbow Serpent, Magalim “is associated with storm and flood, but also through rain and ground water with fertility and growth” (Brumbaugh 1987:26).

2.8.4 Australia

The Tiwi of Melville and Bathurst islands say the Maratji (Rainbow Serpents) cause waterspouts and floods (Mountford 1958:155).

2.9 *Trait 24: The Rainbow Is a Sign of War*

In many widely separated societies the rainbow is a sign of war, as seen below:

2.9.1 Europe

“To the old Greeks the rainbow seemed stretched down by Jove from Heaven, a purple sign of war and tempest” (Tylor 1958:1:297).

The Roman naturalist Pliny the Elder, who lived in the first century CE “gives a purely naturalistic explanation of the rainbow, denying that it is either wonderful or ominous, yet he admits that it means either war or a fierce winter which will make an end of men’s work and injure the sheep” (Wallis 1918:372).

2.9.2 South Asia

The Sanskrit texts of ancient India indicate that the rainbow was a sign of famine or hostile invasion. If it was seen ahead while on the march it was a premonition of coming defeat (Kern 1913:1:201).

2.9.3 Central and East Asia

Among Chinese in rural Jiangsu province in the 1930s a rainbow in the north was a sign of coming warfare (Hsiang-shun Chang, p.c., 1994).

2.9.4 North America and Mexico

The Tlingit of southern Alaska believed that the rainbow is a bridge for the souls of the dead, especially those who had died in battle (in this respect note the simpler, more frequently cited description given by Swanton (1908) in Chapter 6, Section 2.3):

Those who had been killed in war or who had been murdered went to *kee-wa-kow-anne*, "above people's country", which they reached by means of the rainbow. They were visible to men in the scintillations of the Aurora when the warrior spirits came out to play. This was the highest abode and so greatly to be wished for that the Tlingit had no fear of death in battle (Emmons 1991:289).

2.9.5 Central and South America

Among the Muinane of southwestern Colombia, "a rainbow in the west means evil is on the way; the most widely held view is that it signifies blood, and war or fighting will ensue. It can also precede bad disease" (James W. Walton, p.c., from Andres Paky, 4/82).

According to Grubb (1911:50 ff.), who interpreted the agreements as evidence of contact, the Lengua Indians of the Paraguayan Chaco "greatly fear the rainbow when seen in the west, and the armorial ensign of the Incas was the rainbow." It is unclear what Grubb meant by an 'armorial sign', as the connections with heraldry seem out of place, and the most plausible interpretation is that it was the insignia used on war banners.

Among the Kayapó of Brazil, "a rainbow is a bad or unlucky thing, like a colorful sunset or a red tinge to a cloud. It signifies enemies, wars, killings" (Ruth Thomson, p.c., 6/2/82).

2.9.6 Mainland Southeast Asia

The Sema Nagas of Assam call the rainbow *Milesü*, or *Kungumi-pukhu* (= 'Kungumi's leg'), "and the place where it touches earth is always a spot where

some sacrifice has been made for the fields and crops, but should it fall inside a village, the death in war of one of the inhabitants is imminent and certain" (Hutton 1921b: 195).

2.9.7 Insular Southeast Asia

Among the Manobo peoples on the island of Mindanao in the southern Philippines

The rainbow, according to the general account, in an inexplicable manifestation of the gods of war. At one end of the rainbow there is thought to be a huge tortoise, one fathom broad. The appearance of the rainbow is an indication that the gods of war, with their associate war chiefs and warriors from the land of death, have gone forth in search of blood. If red predominates among the colors of the rainbow, it is thought the mightier war spirits are engaged in hand-to-hand combat; but if the colors are dark it is a sign of slaughter. If the rainbow should seem to approach precautions are taken to defend the house against attack, as it is believed that a real war party is approaching (Garvan 1941:224).

The West Toraja of central Sulawesi, Indonesia maintained that in setting out on a head-hunting expedition one must not leave on the same day a rainbow appears. When the To Napu went to war if they saw an afternoon rainbow (*pinoraa*) before them they were happy, as this was the blood of their enemy; but if they saw a morning rainbow (*pingfke*) behind them they broke off their adventure, for this meant that it was their blood that would flow. With the Koro people a rainbow at any time of day was a bad sign for a war-party, as it meant that much blood would flow, either of the enemy or of the war-party (Kruyt 1938:2:356).

Some of the peoples of Flores Island in eastern Indonesia say that the rainbow arises from the graves of those that have been killed in war or murdered. During a sunshower the blood of these people rises heavenward. It appears white, but in the atmosphere it separates into white-yellow-green. The Ngadha say that a rainbow is formed from a vapor that arises from the corpses of anyone who has died a 'bad death', which includes death away from the village, and death by a weapon (Bader 1971:348).

2.9.8 New Guinea and Satellite Islands

Among the Sentani of Indonesian New Guinea the rainbow was called *ya ha fela ha* (*ya* = 'rain, day' + *ha* 'matter or things related to' + *fela* 'arrow'), which is said to mean that it is a sign for war, disease and suffering. If a rainbow appears

in the north they know that a war will come from that direction, and this means that all adult men must prepare their spears and arrows to be ready; likewise, for a rainbow appearing in any other direction. Traditionally, when a rainbow appeared women and children were put indoors to avoid seeing it or talking about it, because they do not have the natural power to avoid the bad things it might bring (Andreas Deda, p.c., 11/6/06).

2.9.9 Pacific Islands

The Bukaua of the north coast of New Guinea say that the rainbow (*gasibueb*) is the blood of those slaughtered in battle that rises to the heavens from the forest or the beach (Lehner 1911:3:431).

To the Chuukese/Trukese of the eastern Caroline islands in Micronesia, the rainbow was not a pleasant thing, as it was regarded as a sign of death (Bollig 1927:12). Elsewhere we find that "The war-god is Rasim. To him prayers are offered before battle. He hates women. Hence no man may have any intercourse with women in time of war, otherwise he would die a sudden death: Rasim would stab him with his spear" (Frazer 1924:3:126). To this we can add that the word *resiim* is defined as 'rainbow; traditional god of the rainbow (he lives in the sky, and is also god of war and of red ear decorations)' (Goodenough and Sugita 1980).

In Samoan *La'a maomao* 'the great step' is one of the names of the rainbow

which was a representative of a war god of several villages. If, when going to battle, a rainbow sprang up right before them and across the path, or across the course of the canoes at sea, the troops and the fleet would return. The same if the rainbow arch, or long step, of the god was seen behind them. If, however, it was sideways they went on with spirit, thinking the god was marching along with them and encouraging them to advance (Turner 1884:35).

Among the Maori of New Zealand personified forms of the rainbow include *Kahukura*, *Uenuku*, *Haere*, and *Pou-te-aniwaniwa*. The second of these was also called *Uenuku-rangi* and *Uenuku kai tangata*. Among other things, he was employed as a war-god (Best 1922:58). The Maori believed as well that a rainbow seen before a war party signals bad luck, and tells them they should return home (Best 1922:73).

Initially this association appears arbitrary, but it may result from an associative chain: red = blood = war, where red is widely perceived as the basic or most dominant color of the rainbow. In fact, a dominant blaze of red may imply war (through its association with blood), whether in the rainbow, or

in other weather phenomena such as the red clouds at sunset, as seen in the comment by Musters (1969:222) that among the Tehuelche of the Argentine pampas a red sunset signifies coming war. It thus seems safe to attribute the widespread connection of the rainbow with war to a chain of association linking red with blood, and then with physical conflict that leads to bloodshed.

2.10 *Trait 25: The Rainbow Causes Sickness, Disease or Death*

In accordance with its generally negative associations in preliterate societies, it is not surprising that a rainbow is thought to bring sickness. In some cases this idea is particularly associated with things the rainbow has touched (as drinking water), hence with the foot of the rainbow.

2.10.1 Europe

As noted earlier, in a survey of folk beliefs about the rainbow in Europe, Alinei (1982:52) suggests that the rainbow was traditionally seen “as a daemon, capable of causing diseases and death.”

2.10.2 North America and Mexico

The Creek Indians in what is now Georgia, believed that the rainbow is a great snake that cuts off the rain. More broadly, it was one of a class of mythological figures called ‘Thunder Beings’, and in at least the Mikasuki branch of the Creek confederacy it was believed that “all Thunder Beings could cause sickness” (Grantham 2002:34).

2.10.3 Central and South America

To the Cuaiquer Indians of Colombia “It is not good to walk where the ‘foot’ of the rainbow touches earth, since it makes people sick. They have medicines for it” (Vicente Paskal, p.c., 4/22/82).

The Guambiano of highland Colombia say that “where the foot of the rainbow touches the earth or a river it imparts an effect that can cause rashes to anyone who stands in it afterwards” (Ana Leonor de Velasco, p.c., 4/82).

Among the Paez of Colombia “shamans employ chewed tobacco to blow away the rainbow, so that children may not be afflicted with scabies” (Wilbert 1979:24).

As noted previously, the Muinane of southwestern Colombia say “a rainbow in the west means evil is on the way; the most widely held view is that it signifies blood, and war or fighting will ensue. It can also precede bad disease” (James W. Walton, p.c., from Andres Paky, 4/82).

Among the imperial Incas "A rainbow was generally an evil omen, and comets, eclipses, and meteors were especially bad, the latter foretelling the death of the emperor" (Mason 1957:218).

The Aguaruna of the Peruvian montaña say that wherever the rainbow comes to earth people will die (Jeane Grover, p.c., 4/82).

According to Roth (1915:268) the Island Caribs called the rainbow *Joulouca*, the Rainbow Spirit, maintaining that

He is the rainbow which we see: the clouds prevent us from seeing the rest of the body. He makes the Carib ill when it finds nothing to eat above. If this fine Iris appears when they are at sea, they take it as a good omen of a prosperous journey. When it appears to them while they are on land, they hide in their homes and think that it is a strange and masterless spirit which seeks to kill somebody.

Among the Sirionó of eastern Bolivia the appearance of a rainbow "presages an epidemic of colds." According to the principal ethnographer of this group "One of my Casarabe informants, Kénda, told me that the rainbow contained an *abačikwaia* ("evil spirit") which causes sickness of the nose and throat" (Holmberg 1969:120).

2.10.4 Mainland Southeast Asia

As noted previously, according to Milne (1924:354), the Palaung of the Shan states of Burma describe the rainbow as formed from tiny spirit-beings called *par-yon* that live in the sky, but also touch the Earth, where they come in contact with water. In the latter case "One should avoid drinking at the spring where these spirits have been drinking (if you do, the stomach swells up)."

2.10.5 Insular Southeast Asia

Among the Andamanese in the Bay of Bengal south of Burma, "The rainbow is generally regarded as an evil omen, being believed to be a precursor of sickness" (Radcliffe-Brown 1922:146).

As already noted, the Isneg of northern Luzon in the Philippines say that *bunglún* 'the rainbow' is a spirit which can cause sickness, as seen in the derivative word *pagbungbunglúnan* 'to inflict the disease of the rainbow' (Vanoverbergh 1972:182).

The Kankanaey of northern Luzon utter *ngális di áso*, "a superstitious formula, pronounced when seeing a rainbow, lest it eat one's soul, and so one become thin" (Vanoverbergh 1933:317).

A dictionary entry for *léwés* 'rainbow' in Tboli of Mindanao in the southern Philippines, contains a sample sentence which translates 'When there is a rainbow they say someone is murdered' (Awed, Underwood and van Wynen 2004:390).

Among the Koro Toraja of central Sulawesi, Indonesia, it was said that anyone who is touched by a rainbow will become sick (Kruyt 1938:2:358).

The inhabitants of the island of Bali call the rainbow *yanglalah*, where *yang* means 'deity', and *lalah* means 'infectious, of disease'. It is thus conceived as a deity that brings disease (Barber 1979:314, 779).

2.10.6 New Guinea and Satellite Islands

The Sentani of Indonesian New Guinea believe that "the rainbow can be a sign for disease or a curse. This is related to the supernatural power of certain people in the community who have the power to talk to Nature, so that trees, stones, etc. follow their command" (Andreas Deda p.c., 11/6/06).

As noted earlier, the Mountain Arapesh of New Guinea say that if one should offend a *marsalai* (a spirit category that includes the rainbow), it will pursue the offenders and punish either them, or their still unborn children with illness, deformity or death (Mead 1933:43).

2.10.7 Pacific Islands

Among the Lau people of northern Malaita in the southeast Solomon Islands, the word *mae* means 'to die', 'war' and 'rainbow'. The combination *mae sifolia* ('to die' + 'let down') 'death from being touched by a rainbow' states the interconnection of these ideas explicitly (Fox 1974:125).

The peoples on Sa'a and Ulawa islands in the southeast Solomons maintained that among negative omens was the proximity of a rainbow. In a story related by Ivens (1972:197), for example, we hear that "A rainbow was seen to alight on the village, a sure sign of impending trouble".

2.10.8 Africa

Among many of the Bantu-speaking peoples of central and southern Africa the rainbow is feared, because "Anyone who sees it—that is, sees the place where its end seems to rest on the earth—runs away as fast as he can: if he sees you, he will kill you" (Werner 1933:231).

As noted earlier, the Zulus of southern Africa believed of the rainbow that "Sometimes it lived in a large pool, and men were afraid to bathe in such waters, for fear that the rainbow might seize and eat them. On dry land it poisoned any man it met, or afflicted him with disease" (Hole 1995: 2153).

Why the rainbow is associated with sickness is unclear, except perhaps as part of the generally negative attitude toward it in traditional cultures. This trait is not commonly associated with the dragon, although, as noted in Chapter 5, it is reported for the horned water serpent among Iroquoian peoples in North America, as where the dragon of Niagara Falls was responsible for a “mysterious pestilence” that had plagued the Seneca villagers on Cayuga Creek above the falls, and the horned water serpent *Onyare* of the Mohawk brought on sickness through exposure to its breath.

2.11 *Trait 26: The Rainbow May Have Human Traits*

2.11.1 Central and East Asia

In China the rainbow is sometimes portrayed as a beautiful woman, fairy or goddess, a description that can be dated as early as the Han dynasty. It is also sometimes viewed as a man, a belief that came at a much later time, both possibly derived from the image of a double rainbow (Zhou 2001).

2.11.2 North America and Mexico

Among the Thompson Indians of British Columbia “The rainbow is said to have once been a man, a friend of the Thunder, who was in the habit of frequently painting his face with bright colors” (Teit 1900:342).

The Chontal Indians of Oaxaca, Mexico say that “The full rainbow is a man, whereas a half rainbow is a woman, and very evil” (Carrasco 1960:107).

2.11.3 Central and South America

As noted in Chapter 3, the early twentieth century German explorer Theodor Koch-Grünberg (1924:15) reported that the Arecuna of northeast South America call the rainbow *Keyeme*, and see it as a large multi-colored snake that lives in the spray of waterfalls, but as a human being when *Keyeme* sheds his reptilian skin.

2.11.4 New Guinea and Satellite Islands

In her discussion of parallels to the Rainbow Serpent cult of Australia in the New Guinea mainland, where they are called by the Tok Pisin term *marsalai* (‘bush spirit’), Mead (1933:39) noted that

Marsalais are named, and in some cases the name of the *marsalai* is used as a place name for its abode, in others the *marsalai* and its habitat are separately designated. A *marsalai* is conceptualized as a type of greatly powerful anthropomorphic being, able either to take human form or to clothe himself—or herself—under the form of some

animal or reptile species, chiefly those of snakes and lizards, in which it is regarded as typically embodied.

Brumbaugh (1987:26) relates similar stories told by the Feranmin and their neighbors of the upper Sepik River. Among them *Magalim* is a single 'father' representing the Rainbow Serpent in its totality, while

His children are the *magalim* associated with specific localities. Descendants at still further remove are the various snakes known in the area, each displaying some special characteristics of *Magalim* In form *Magalim* most resembles the pythons, but his size is enormous. Like all spirits and clever humans too, *Magalim* can shift form to appear as a man or any animal he pleases. Strange behavior or colors may suggest to people that they are seeing *Magalim* in animal form. But when he drops his disguise and manifests himself, it is in the form of the great serpent.

2.11.5 Australia

The Murrinh-Patha of the Northern Territory of Australia say that

The rainbow represents the Rainbow Serpent, who was originally a man with two children (male and female). When the Bat (also a man at that time) speared him, he took the fire stick out into the ocean with the intent of extinguishing it so that all fire on earth would be finished, but Butcher Bird (a man) was able to get it from him. When he drowned he turned into the Rainbow Serpent, and still appears after showers of rain (Chester Street, p.c. from Gregory Panpawa Mollingin, 11/13/83).

According to Allen (1975:81) "In the northwest region of Port Keats, the Murrinh-Patha people tell of the Rainbow Snake who appeared in the form of the man Kunmanggur. Kunmanggur created the people and taught them to live in peace."

2.12 *Trait 27: The Rainbow Can Be Personified*

The treatment of the rainbow as an animate being gives scope to the idea that it can be personified, that is, identified by an individualizing name, much as a person—or for that matter, a dragon—can. Examples noted in passing include the following:

2.12.1 Australia

Personal names for the Rainbow Serpent across the Australian continent vary with ethnolinguistic group. The following is a sample: Galeru, Julunggul, Kunmanggur, Lungal, Muit, Taipan, Ungur, Wollunqua, Wonambi, Wonungur, Worombi, Yero, and Yurlunggur (Mercatante 1988:546). In each case the name appears to be that of a 'character'—that is, a well-defined personality functioning in a narrative context.

2.12.2 Pacific Islands

Names for the rainbow among the Maori of New Zealand have already been mentioned under Trait 24 in 2.9.9. It is not known how much more widespread this practice is in the Pacific islands, although one would expect other examples from Polynesia.

2.12.3 Africa

The Belgian anthropologist Luc de Heusch provides a rare glimpse into the inner workings of a mythic cycle shared by a number of Bantu-speaking peoples across central Africa, which together form a "pseudohistorical text which constitutes the foundation myth of the State." One of the heroes of this myth "bears the very name of the rainbow, Nkongolo" (de Heusch 1982:35).

Elsewhere the same writer provides an analysis of a myth among the Mayombe of Zaire which "describes the conflict of the rain and the lightning animal." The story, which is titled 'Rainbow and Lightning quarrel', begins as follows

One day Mbumba the Rainbow left his hole beside the water and went up to the sky where he found Nzazi, the Lightning. Together they built a village. Nzazi, who is the master of the sky, wanted to make Mbumba the guard of the village. But Mbumba refused and returned to earth. He threw himself in the water ... (de Heusch 1982:42).

Here we see the personified rainbow returning to Earth from the sky, and becoming a water serpent, after which, in popular belief he returns to the sky by climbing trees. There is, perhaps, nothing mysterious about the personification of the rainbow. Once it is conceived as animate, even if it is a spirit-being, it becomes capable of participating in activities that unfold in narrative texts. This is particularly clear in the mythic cycle of the eternal conflict of the lightning and the rainbow among Bantu-speaking peoples, but it also emerges in less salient form in other parts of the world.

2.13 *Trait 28: The Rainbow Is a Sign of Famine*

2.13.1 South Asia

In classical Indian popular belief, the rainbow signalled famine or hostile invasion (Kern 1913:1:201).

2.13.2 Central and East Asia

Among rural Chinese in northern Jiangsu province in the 1930s it was said that a rainbow in the south would result in the selling of one's children due to famine (Hsiang-shun Chang, p.c., 1994).

An identical belief is also reported for Hebei province (Zhou 2001).

2.13.3 Pacific Islands

As seen in section 22), among the Dehu in the Loyalty Islands of southern Melanesia "A rainbow (*lewen*) was considered quite harmless, unless it appeared too frequently; then, indeed, it might be a harbinger either of a famine or of a hurricane" (Hadfield 1920:113).

2.14 *Trait 29: The Rainbow Is Double-Headed*

2.14.1 Central and East Asia

Since depictions of the rainbow commonly describe it as an enormous snake, this implies a head and a tail. However, in some descriptions the rainbow is a giant snake with heads at both ends. In Shang dynasty China (ca. 1600–1046 BCE), for example, the oracle bone 'script' (ideograph) for *hóng* 'rainbow' is described "as a snake or dragon with two heads" (Eberhard 1968:246). The image shown is that of an arched figure, curved like the rainbow, but with heads at either end, both with wide-open mouths.

2.14.2 North America and Mexico

The Umatilla of eastern Oregon believed in a possibly double-headed serpent that was seen both in lakes and on the land (Ray 1942:255–256).

2.14.3 Central and South America

The name 'Yaya-Mama' has been applied to a religious tradition in the region of Lake Titicaca in highland Bolivia, some 3,500 years ago. A notable feature of this tradition was the carving of stone stelae with interspersed figures of double-headed serpents and male and female human figures. Modern Aymara Indians who were asked to comment on these carvings stated that the double-headed serpents "were really rainbows that united the earth and the sky." They were also called rainbow-rivers, reportedly because there are two rainbows, the one on the male side of the sculpture being the rainbow in the

sky, which brings the rain, and the other being the water that flows from the earth. Stated differently, the second serpent was said to be like a river or a spring, and the entire image was said to be “a prayer for water” (Kolata 1996:93–94).

2.14.4 Insular Southeast Asia

As seen already, to the Javanese of western Indonesia “the rainbow is a giant snake with two heads of deer or cows, one of which drinks from the Indian Ocean, the other from the Java Sea” (Hooykaas 1956:291). Given this description it is clear that each head is found at a different end of the rainbow/snake.

It is unclear what would motivate this representation of the rainbow and, so far as is known, no corresponding figure for the dragon exists—that is, a dragon with heads at both ends of its body. It is possible, however, that the two-headed Rainbow Serpent was conceived as a concise way to represent the belief that the rainbow both drinks water from a terrestrial source, and spews it out in the heavens to cause the rain.

2.15 *Trait 30: The Rainbow Causes Category Reversal*

One striking belief about the rainbow that has no known connection with traits of the dragon is the idea that by passing under a rainbow a person reverses categories. The theme of reversal is seen in three distinct forms: change of sex, change of race, and change of mental state.

2.15.1 Europe

A traditional belief in Romania holds that anyone who drinks water at the end of the rainbow will change sex, while in Serbia it is believed that a similar transformation will occur to anyone who passes under a rainbow (Grimm 1844:421 ff.).

In the Liakkovikia district of rural Macedonia the rainbow is called ‘bow’, “and the belief prevails that if a male child passes beneath it, he turns into a girl; if a girl, she turns into a boy” (Abbott 1903:71).

In Slavic popular belief the appearance of the rainbow forebodes misfortune, and if a person manages to get under the arc a man becomes a woman, and a woman a man (Levkievskaja 2000, via Timothy Barnes, p.c., 9/30/17).

2.15.2 South Asia

Pathāns or Pashtuns in northern Pakistan “think that if you want to change your sex all you have to do is to go and roll underneath a rainbow” (Crooke 1925:46).

2.15.3 Central and South America

In Brazilian folk belief if a man passes under a rainbow he will change to a woman, and a woman to a man (Maria de Lourdes Sampaio, p.c., 1983). This form of category reversal, based on sex, is currently known only among speakers of Indo-European languages, although it is widespread in this language family (Portuguese, Russian, Romanian, Greek, Iranian). However, many Brazilian folk beliefs are of indigenous origin, and it is not known whether that is true in this case. A likely precondition (although not necessarily an explanation) for this shared belief is the conception of the rainbow as being [+male], [+female], because of different gender assignment to the two arcs.

Another variant was reported by Grubb (1914:66–67) for the Lengua of the Paraguayan Chaco: “The Towothlii [Maká, a Matacoan speaking people] are said to have migrated south for some reason or other, and, falling upon bad times, were reduced to great hunger. One day one of their witch-doctors, perceiving a rainbow in the south-west, and not knowing what it was, thought it might be something good to eat. The tribe moved on towards it, and eventually came up with it. They ate a portion of it, and immediately their language became confused, and thereafter they spoke a distinct language from the Lengua-Mascoy” (quote courtesy John Elliott, 12/13/18).

2.15.4 Insular Southeast Asia

A different, but structurally equivalent form of this belief is found in eastern Indonesia, where speakers of Kédang say that if a rainbow is in front of a local person s/he should enter his or her house quickly, or risk becoming a Caucasian. Alternatively, one can call a male dog to make the rainbow disappear (Bader 1971:953). In both this and the Indo-European cases the result is the same: the individual who dares to walk under a rainbow, or experience any close contact with it, undergoes category shift in which one paired member of a category becomes its opposite.

A third variation on the reversal theme involves changes of mental state. The Lio of Flores say that “When it begins to rain the god Guru Giwa mounts his steed and ascends on the bridge of the rainbow. Whoever sees the horse (*jara nitu* = ‘spirit steed’) loses his mind. His relatives must immediately slaughter a red goat, wrap its skin around a banana plant, and lay this under the rainbow for those who are insane. Then they become normal again” (Bader 1971:951).

Finally, as seen previously, the Kédang believe that a woman who dares to wash her hair at the village spring (which is guarded by a rainbow) is in danger of being married by the resident spirit and driven insane (Barnes 1974:62).

2.16 *Trait 31: Nudity Protects*

2.16.1 Europe

Among German and Polish speakers in Silesia it is said that the angels put gold at the end of the rainbow, and that only a nude man can obtain it (Voegelin 1972:922).

2.16.2 Insular Southeast Asia

The Maumere people of the island of Flores in eastern Indonesia say that if one passes under a rainbow he must immediately undress and lie on the ground so that the rainbow shines away from him. Then he will stay healthy: "*Geht jemand unter dem Regenbogen her, muss er sich sofort entkleiden und auf die Erde legen, damit der Regenbogen über ihn hinwegscheint. Dann bleibt er gesund*" (Bader 1971:953).

Among the Kédang in eastern Indonesia, where the spring at the village of Léuwajang is associated with serpents, the rainbow and gold, it is said that "a woman should not wash her hair at the spring or get her clothes wet -- though she may bathe there naked" (Barnes 1974:611).

2.16.3 Pacific Islands

Among the Maori of New Zealand, Best (1922:58) reports that the name "*Imurangi* was applied to some form or forms of celestial glow." He then cites an elderly Maori who stated that "Should the 'red demon' be seen gleaming in the heavens ... know that it is *Imurangi*, and that the folk of the land near where it is seen are threatened by some evil fate. Let some adept at once discard his garments, and proceed to avert the danger." Williams (1971:77) gives *imurangi* as 'sun-dog, fragmentary rainbow'.

Although this notion can be seen as relevant to the ethnology of the rainbow, it is also known from other contexts, as in the belief among some Celtic tribes in Roman times that a warrior who entered battle unclad was believed to be invulnerable to the blows of his enemy (Ross 1986:50).

2.17 *Trait 32: The Rainbow Causes Tooth Decay*

2.17.1 North America and Mexico

It is a common Mexican folk belief that pointing at a rainbow causes tooth decay (Carrasco 1960:107).

2.17.2 Central and South America

The early Peruvian historian Garcilaso de la Vega, born in Cuzco in 1539 as the illegitimate son of a Spanish nobleman and an Inca princess, is best remembered for *The Royal Commentaries of the Inca*, his historical account of the

Inca empire as it was crumbling before the physical and cultural onslaught of the Spanish. In Book 3, 'Regarding the temple cloisters, and the situation of the moon, the stars, thunder, lightning, and the rainbow', he describes the five rooms of the temple complex, noting that

The fourth room was devoted to the rainbow, which they said was descended from the Sun, and which figured on the scutcheon of the Inca kings. It was entirely covered with gold, and the rainbow was painted, in beautiful colors, over the entire surface of one of the walls. They called their rainbow *cuichu* and revered it very specially. When it appeared they immediately put their hands over their mouths through fear, they say, that it might make their teeth decay (de la Vega 1961:77).

The known distribution of this belief is limited to the Americas, but it is found in sufficiently distant locations to make diffusion an improbable explanation.

2.18 *Trait 33: The Rainbow and Shamans*

2.18.1 North America and Mexico

The Modoc and Eastern Shasta of northern California believed that whoever ran through a rainbow became a good doctor (Voegelin 1942:237).

2.18.2 Central and South America

Among the Inga of Colombia, the rainbow is traditionally thought of as a giant snake which takes the form of a powerful witchdoctor (S.H. Levinsohn, p.c., 4/82).

With regard to the Central Arawaks of Guyana, Farabee (1918: 151) stated that giant spirit snakes are believed to inhabit many pools along the Essequibo River, and if any of these should become too troublesome the medicine man may kill it, for presumably only he has the power to do so.

2.18.3 Mainland Southeast Asia

To at least some Negritos of the Malay peninsula "The python who has gone into the sky to bathe himself (the rainbow) is also a *halak* (shaman)" (Evans 1937:206).

2.18.4 Australia

Both Radcliffe-Brown (1930) and Elkin (1930–1931) stress the special relationship of shamans to the Rainbow Serpent in aboriginal Australia. As the former writer puts it (1930:343) "Throughout these tribes there is a belief that

the serpent will devour human beings who approach its home unless they are medicine-men Medicine men derived their power from the rainbow serpent."

Not only are shamans protected from the malevolence of the rainbow, but they are in close spiritual contact with it: "In parts of the Great Victoria Desert the Rainbow is *Wonambi*, living in billabongs and rock pools, and playing a major part in the initiation of native doctors" (Berndt and Berndt 1964:209).

2.18.5 Africa

A similar special relationship of the shaman to the Rainbow Serpent in Africa is brought out clearly by James (1988:276) in her description of the Uduk of the Sudan-Ethiopian borderland. Among these people members of the Order of Ebony Diviners fulfill the role of magical protectors of the community, familiar with oracles, divination and the like. As noted earlier, at Jebel Silak there is "quite an impressive cave and waterfall where a rainbow was said to live." New Ebony Diviners are initiated by immersion in the spring at this cave.

But before they enter the water, the meat of a sheep or *gao* is lowered into it; if the meat is consumed in the water, the Rainbow creature is well pleased, its hunger is satisfied, and the novices can safely enter, and acquire knowledge; they "learn everything." However, the water which splashes out from the hole of the Rainbow creature 'kills' the novices. They are then revived with spice.

Elsewhere, James points out that the fear which ordinary people feel toward the rainbow is not unlike that of the fear of dangerous predators; by contrast members of the Order of Ebony Diviners do not hesitate to 'fight' or 'ride' their spiritual tutor and adversary.

2.19 *Trait 34: Rainbows and Urine*

2.19.1 North America and Mexico

Among the Tarahumara of northwest Mexico "A certain yellow stream of water is said to come from the rainbow. Cattle that drink from it drop off in weight and die. Men do not drink it" (Bennett and Zingg 1935:325).

2.19.2 Central and South America

The Inga of Colombia say "It is very bad to bathe when a rainbow is visible, as the rainbow will urinate on you, and you will break out in a rash" (S.H. Levinsohn, p.c., 5/15/82).

According to the Cuaiquer of Colombia there are two rainbows, a small one which shines when it urinates (this one is yellow and very bad), and a large one which also shines when it urinates (Vicente Paskal, p.c., 4/22/82).

The Botocudo of eastern Brazil say that “A great snake is lord of the water, signals to the rain, and makes it fall; the rainbow is called ‘the urine of the great snake’” (Métraux 1963a: 540).

2.19.3 Insular Southeast Asia

Without further explanation or illustration, Isneg *bárong* is given as 1. the urinary bladder, 2. the excrements of the rainbow (Vanoverbergh 1972:145).

During the first half of the twentieth century the Dutch ethnologists Nikolaus Adriani and Albert C. Kruyt collected a wide range of traditional beliefs from individual members of Toraja communities in central Sulawesi, Indonesia. According to them, some people in these communities held the view that the rainbow urinates on the Earth (Adriani and Kruyt 1950–1951:407).

2.19.4 New Guinea and Satellite Islands

Among the Feranmin and closely-related peoples of the upper Sepik basin in New Guinea, rain is called the urine or tears of *Magalim*, the Rainbow Serpent (Brumbaugh 1987:26).

Why this belief is so widespread is unclear. However, given the idea that the rainbow is a giant snake that usually resides underwater on the Earth it is perhaps natural that some animists saw it as needing to excrete when in the sky. This belief may lead inevitably to the next.

2.20 *Trait 35: Rainbows and Feces*

Instead of gold, one sometimes finds excrement at the rainbow's end.

2.20.1 Central and South America

The Toba of the Paraguayan Chaco say that “In the bush there is a black, pink, yellow, or green substance which has the appearance of onions, but is quite soft. The Indians call it Rainbow's excrement. This stuff has magic power and the Indians are eager to collect it in order to carry it in small bags suspended from their necks” (Métraux 1946:38).

2.20.2 Insular Southeast Asia

It has already been noted that in Isneg *bárong* means both the urinary bladder, and the excrements of the rainbow (Vanoverbergh 1972:145).

2.20.3 New Guinea and Satellite Islands

The Keweng of New Guinea say "The rainbow is a mixture of rain and sun, which may leave a heap of excrement at its end" (Malcolm D. Ross, p.c., 6/25/82).

Freud (1961:403) drew attention to the association of gold and feces in psychoanalysis, and maintained that the connection "is also supported by copious evidence from social anthropology." As evidence for this statement, he cites a one-page note ('Gold und Kot') published by B. Dattner in 1913 in the *Internationales Zeitschrift für Psychoanalyse*, a one-page follow-up with the same title published in the same journal two years later by T. Reik, some passing remarks in a publication by Otto Rank, and his own 'Charakter und Analerotik', originally published in 1908. I have been unable to obtain the publications by Dattner and Reik, but find little in either Rank or Freud (1908) to support the claim of "copious evidence from social anthropology." Jung (1956:89, fn. 23) reiterates this claim, citing Freud, and maintaining that the association of dung and gold in folklore is supported by de Gubernatis. A search of de Gubernatis (1968), however, has failed to turn up any relevant information.

Whatever the merits of the wider psychoanalytic claim, attention to the larger complex of ideas reviewed here suggests that the psychoanalytic interpretation of feces as an anal-erotic 'treasure' cannot be unambiguously supported by data from the ethnology of the rainbow. As will be noted, the end of the rainbow is a locus of powerful spiritual forces able to cause reversals of nature such as changes of sex, race, or sanity. In this context it is perhaps not surprising that gold and waste material also fluctuate in an unstable relationship.

2.21 *Trait 36: The Rainbow as a Sign of Blessing, or Good Luck*

Although it is rare cross-culturally, the rainbow is sometimes seen as a sign of blessing or good luck. This can perhaps be interpreted to include those cases where a treasure is found at the rainbow's end, but since this trait is treated separately under traits 12–13) it is excluded here.

2.21.1 North America and Mexico

To the Gabriellino Indians of southern California it is said that a rainbow conferred good luck (Bean and Smith 1978:548).

The Ute of the southern Rocky Mountains in Utah say the rainbow "is a heavenly spirit; it is a good one that is always up there, but manifests itself only sometimes" (Talmy Givón, p.c., 1983).

2.21.2 Central and South America

As noted earlier, among the Island Carib in the Lesser Antilles islands there was a curious idea that if a rainbow “appears when they are at sea, they take it as a good omen of a prosperous journey. When it appears to them while they are on land, they hide in their homes and think it is a strange and masterless spirit which seeks to kill somebody” (Roth 1915:268).

2.21.3 New Guinea and Satellite Islands

Among the Tehit people in the Bird’s Head peninsula of Indonesian New Guinea, the rainbow is regarded as a sign of spiritual blessing. It reportedly has no association with a serpent (Don A.L. Flassy, p.c., 1982). This may be a product of missionary teaching.

A similar idea appears among the Imbonggu of New Guinea, who say that “when someone is sick the rainbow is an indicator of supernatural sympathy” (Malcolm D. Ross, p.c., 6/25/82).

2.21.4 Pacific Islands

Among the Palauans of western Micronesia “It is supposed to be good luck if you can touch the rainbow, but, of course, that’s not possible” (Sandra Chung, from Roy Ngirchechol, p.c., 2/23/82).

2.22 *Trait 37: The Rainbow as a Sign of the Death of an Important Person*

2.22.1 Insular Southeast Asia

The Malays of Perak in the Malay peninsula say “a broken rainbow in the west means the impending death of a *raja* (prince, king)” (Skeat 1900:15).

Of various beliefs current about the rainbow among the Javanese in western Indonesia, one is that a rainbow is a sign of the death of an important person (Sriyoso, p.c., 3/80).

Among the West Toraja of Sulawesi in central Indonesia, “A rainbow in the morning means that a prince or shaman shall die” (Kruyt 1938:2:359).

2.22.2 Pacific Islands

In Hawai’i the rainbow was seen as the sign of a high chief (Beckwith 1976: 152, 209, 366, etc.). More specifically “The rainbow (*Ānuenue*), sister of Kane and Kanaloa, acts as their messenger, or hovers over the child of godlike rank” (Beckwith 1976:521). In this sense it resembles the classical Greek Iris, female messenger of the gods.

2.22.3 Africa

Among the Baoule of the Ivory Coast the appearance of a rainbow is a sign that a great man (chief, king) will soon disappear (Denys Creissels, p.c., 11/20/81).

The Ikwerre of Nigeria consider the rainbow “a bad omen foretelling the death of a very important person” (Kay Williamson, p.c. from J.T.N. Wali; 1982).

To speakers of Khana, in Rivers State, Nigeria “The general belief (in fact the only known one) in my area about the rainbow is that it is a sign that a great man, a hero, is dead or dying somewhere” (Nwinee B. Williamson, p.c., 1982).

The Mundani of Cameroon say “A broken rainbow means that an important man, as a chief, is going to die” (Julie Kuperus, p.c., 4/82).

Other unusual celestial events are also associated with the death of an important figure. The most common of these is the appearance of comets or meteorites (‘shooting stars’), either of which may be seen as the passing of something brilliant into darkness, and easily transferred to the human realm, a globally distributed folk belief captured memorably in Shakespeare’s Julius Caesar (II, ii: 30–31), where he says:

When beggars die, there are no comets seen;
The heavens themselves blaze forth the death of princes.

Why a rainbow would have the same signification is less clear.

2.23 *Trait 38: The Rainbow and Work*

2.23.1 Mainland Southeast Asia

As pointed out earlier, the Karen of peninsular Burma and Thailand “are stricken with terror when they observe the rainbow arching the western heavens early in the morning, especially if this sign is accompanied by thunder and earthquake. Under such circumstances they will not go to their work, for it is tabu” (Marshall 1922:228).

2.23.2 Insular Southeast Asia

The Isneg of northern Luzon in the Philippines have the derived word *ma-bunglún-ān* ‘to die shortly after a rainbow has surrounded a house under construction. Said of the owner of the house in question’ (Vanoverbergh 1972:182).

Among the Bontok of the mountains of northern Luzon in the Philippines

The appearance of a rainbow during certain ceremonies, particularly those which precede the harvesting of rice, and which usually require a ritual three-day abstention from work for all the village, results in an extension of the “holiday” by one day. I was told of one case where people were not allowed to go to work for nine days, because of the daily appear-

ance of rainbows. I have also seen the extension called when a rainbow appeared during the “holiday” for the funeral rituals of a person who had been killed and returned to the village for burial (Lawrence A. Reid, p.c., 4/7/2000).

“A general belief among all West Torajas is: if a rainbow appears break off all work in the fields immediately. If one continues working nothing will come of the crops later: they shall be destroyed by all sorts of animals.” In the Lore area people say “if a rainbow should approach when one is engaged in the construction of a house he immediately breaks off work, as otherwise the dwelling would later be destroyed by fire” (Kruyt 1938:2:359).

For the Napu Toraja of the same Lore area “If a rainbow should appear while bark cloth is being pounded one must continue with the work or the bast will become dried out and unsuitable for further working” (Kruyt 1938:2:360).

The Lio of Flores in eastern Indonesia say that on a day when the rainbow appears one must not work in the fields, as one’s labor would be in vain (Bader 1971:953).

2.23.3 Africa

Among the Anyi Sanvi of the Ivory Coast, “Most people agree that the appearance of a rainbow is a bad omen. Some believe that it indicates that a genie in the form of a snake has appeared in the direction where the rainbow is seen. They will not go to the fields in that area for one day” (Jonathan Burmeister, p.c. from Aka Amalan, 11/24/82).

2.24 *Trait 39: White Rainbows*

2.24.1 Insular Southeast Asia

According to the Maumere people of the island of Flores in eastern Indonesia, the rainbow emerges from the graves of those who have died in war or been murdered. When it rains lightly and the sun is also shining, the blood of these people rises upward. It appears white, but in the atmosphere it separates and becomes white-yellow-green (Bader 1971:947).

2.24.2 North America and Mexico

In his painstakingly detailed description of the Navaho ceremony of the night chant, Matthews (1902:208) relates an account of a journey through Navaho country in which the travellers encountered a deity “who dwelt among the rocks in a cave. Inside of his home was a white rainbow.” There is no further context or explanation, leaving the reader to wonder what significance this observation might have to the Navaho people.

The Totonac of the Mexican states of Vera Cruz and Puebla describe the brighter arc of the double rainbow as 'white' (Ichon 1969:137).

2.24.3 Central and East Asia

In Chinese folk belief a white rainbow is a fainter or lighter shade; usually above the fog; all the way up to the sky. White rainbows are rare. They are signs of blood and wars, which could mean good or bad (Zhou 2001).

Without further explanation, the author of a Japanese novel that has been translated into English refers to an experience in which he saw a "white rainbow"

I told the manager and the factory hands about the white rainbow I'd seen on my way to Kai. "Well—so you've seen one too!" exclaimed the manager, giving the table a great thump. "I saw one too when I was in Tokyo, on the day before the February 6 Incident. A white rainbow, mark you." His rainbow, like mine, had crossed the sun horizontally (Ibuse 1979:292).

In some cases, as in this Japanese literary example the reference appears to be a solar or lunar halo or a sun dog rather than a rainbow as such, hence the absence of the expected chromatism.

2.25 *Trait 40: Broken Rainbows*

2.25.1 Europe

In various parts of the British Isles "The broken parts of rainbows seen in a cloudy sky, sometimes called 'Wind-dogs' or 'Weather-galls', denote stormy, blustery weather to come" (Radford and Radford 1975:279).

2.25.2 Central and South America

The Kaiwá of the Brazil-Argentina-Paraguay border region do not consider a broken rainbow a 'rainbow'. Instead, they say that "It is a more generalized appearance of the spirit carriers of evil" (David Harthan, p.c., 6/2/82).

2.25.3 Insular Southeast Asia

As noted earlier, the Malays of the state of Perak in the Malay peninsula say "a broken rainbow in the west means the impending death of a *raja* (prince, king)" (Skeat 1900:15).

Among the Malays of coastal Pahang, a broken rainbow is a sign that an important person will die, or that the country will soon be in turmoil (James T. Collins, p.c., 6/12/82).

The Bare'e of central Sulawesi say that a broken rainbow is a sign that a priestess will die (Adriani and Kruyt 1950:406).

Among the Nage of the island of Flores in eastern Indonesia it is believed that a broken rainbow is very dangerous for children and dogs. Therefore, one calls them home when it appears (Bader 1971:952).

2.25.4 New Guinea and Satellite Islands

The Tawala of southeast New Guinea, believe that the rainbow is a bridge to the afterlife, and that a broken rainbow "is a sign that the person who died was a bad person, and thus has an inadequate bridge to the world of the dead" (Brian Ezard, p.c., from Yailo Robert; 1982).

2.25.5 Pacific Islands

According to the people of Eddystone or Mandegusu island in the Solomons, epidemic disease is due to the *Ave*, a type of being "whose coming is indicated by the presence of broken rainbows, shooting stars, red clouds, and showers of fine rain while the sun is shining. The symptoms of the disease usually produced by the *Ave* are fever, headache and cough" (Rivers 1924:47).

To the Maori of New Zealand a broken or pale rainbow was an evil omen (Best 1922:72).

2.25.6 Africa

As noted in section 37), the Mundani of Cameroon say that "A broken rainbow means that an important man, as a chief, is going to die" (Julie Kuperus, p.c., 4/82).

2.26 *Trait 41: The Rainbow Drinks Water from the Earth or the Sky*

2.26.1 Europe

Because much of the data relevant to this trait was already mentioned in chapter 6 the treatment here will be abbreviated.

Grimm (1844:695) observed of the Romans that the rainbow was believed to drink water from the earth.

In Russian folklore the rainbow drinks water from lakes, rivers and seas, which then is shed as rain. (Timothy Barnes, p.c., 9/30/17).

2.26.2 South Asia

The Birhor, a jungle tribe of Chōta Nāgpur, India, hold that the rainbow "is formed by water which the Baṇḍē-lēlē snake gurgles out of its mouth" (Roy 1925:497 ff.).

2.26.3 Insular Southeast Asia

As already noted, to the Javanese “the rainbow is a giant snake with two heads of deer or cows, one of which drinks from the Indian Ocean, the other from the Java Sea” (Hooykaas 1956:291).

2.26.4 Africa

To the Yoruba of southern Nigeria “the ‘great snake of the underneath’ is the rainbow god. It comes up at times to drink water from the sky. A variety of the python is the messenger of this god” (Ellis 1966:81).

2.27 *Trait 42: The End, or Foot of the Rainbow*

The end of the rainbow is often associated with unexpected and sometimes bizarre objects, beings, or events. Some of these beliefs are widespread, and so are given separate treatment. Others are more idiosyncratic in their details, but exhibit a common feature: the end of the rainbow is a place of powerful spiritual imbalance, which gives rise to monstrosities of natural form, reversals of nature, and strong physical forces which may rage out of control. There is more than one way to explain this conception. One interpretation is simply that contact with the rainbow is spiritually dangerous, and the end of the rainbow is the only place where contact can occur. Another is that the end of the rainbow is the point where the fundamentally different natures of heaven and earth, the sacred and the profane, meet one another. As such it is a kind of spiritual synapse across which powerful energies may leap and swirl.

2.27.1 North America and Mexico

The Shoshone of the Great Basin in the western United States feared the rainbow. They would say “Someone lost his knife and it is underground. Where the rainbow touches the ground, there is the knife. Don’t point your finger towards it or the rainbow will cut off your finger” (Lowie 1924:293).

2.27.2 Central and South America

As noted already, the Cuaiquer of Colombia consider it unsafe to walk where the rainbow has touched the earth, as this can cause sickness (Vicente Paskal, p.c., 4/22/82).

The Guambiano of Colombia say that whoever stands at a place where the rainbow has recently touched the Earth will get rashes (Ana Leonor de Velasco, p.c., 4/82).

Among the Candoshi of northern Peru it is believed that if a person goes to the end of the rainbow his scalp and skin will become scruffy or rot away, a ref-

erence to skin diseases, which are widely believed in other contexts to result from spirit attacks (Wahacha Tsirimpo, p.c., 1982).

2.27.3 Mainland Southeast Asia

In Nepal (ethnolinguistic group not specified) if the foot of a rainbow touches a house, it is said that someone in that house will die (Kirsti Kirjavainen, p.c. from Harkha Pariyar; 1982).

A British colonial official who lived among the Angami Nagas of Assam in eastern India for some years noted that “The Angami’s belief that whoever approaches the foot of the rainbow will die is explained by them by the statement that the spirit of the rainbow will kill the rash person” (Hutton 1921a: 251).

2.27.4 Insular Southeast Asia

The danger associated with the foot of the rainbow is also seen in a belief of the Bontok of northern Luzon, who hold that “When it settles on a river it kills the crabs in the river. The collecting of crabs is a ritual activity during certain ceremonies, and is referred to in some of the ritual prayers, so I suppose the death of crabs interferes with the successful completion of the ceremonies” (Lawrence A. Reid, p.c., 4/7/2000).

As already seen under traits 12–13, the Malays of Perak state say that “an untold treasure lies at the foot of the rainbow” (Skeat 1900:15).

Also noted earlier, it is the belief of the Toba Batak of northern Sumatra in Indonesia that where the foot of the rainbow touches there will be epidemics, fires, etc. (Sitor Situmorang, p.c., 8/3/83).

Among the West Toraja of central Sulawesi, Indonesia, it is

a very bad sign if the foot of the rainbow comes to rest in a village, buffalo pen, pasture or field. If it should come to rest in a village people formerly believed that the enemy would come and murder them all ... If the foot of the rainbow comes to rest in a buffalo pen or pasture the buffalos will sicken. If in a field, the Koro Toraja say that the owner may no longer eat the produce ... Anyone who is touched by a rainbow will become sick (Kruyt 1938:2:358).

The same people say that in addition to the general sickness caused by contact with a rainbow, if someone steps on the foot of the rainbow “his leg would swell up. The same would happen for a buffalo” (Kruyt 1938:2:358).

Moreover, in some Toraja groups the end of the rainbow is a place of animal teratogenesis: here one finds buffalos with horns on both the head

and hindquarters, strange sorts of snakes, pigs and other beasts (Adriani and Kruyt 1950–1951:3406).

Further south, the Manggarai people of western Flores Island say that where the rainbow has touched the earth people should avoid washing or combing their hair, or it will fall out (Bader 1971:955).

2.27.5 New Guinea and Satellite Islands

The Iatmul claim one is likely to find snakes, crocodiles, and sometimes if one is lucky, small birds and birds' eggs at the end of the rainbow (Susan Warkentin, p.c. from Joe Mencindimi; 1983).

The Bukaua of the north coast of New Guinea say that the place where a rainbow rises from the Earth holds a man's gall, which is sprayed upward, coloring the air (Lehner 1911:431).

As noted earlier, the Suau of southeast New Guinea believe that whirlwinds are found at the end of the rainbow (John Lynch, p.c., from Michael Morauta; 1987).

2.27.6 Australia

The Burarra in Arnhem Land say "women and children can't go to the foot of the rainbow. Only men and old people can do this, lest the rainbow hit (kill) the women and children" (Kathy Glasgow, from Katy Cooper, Margaret Garnyita, and Michael Bururbuma, p.c., 11/13/83).

2.27.7 Pacific Islands

The Likum people of western Manus Island in the Bismarck archipelago say "If the foot of a rainbow touches a house, someone in that house will die" (Malcolm D. Ross, p.c., 6/25/82).

Among the Telei of Bougainville Island in Papua New Guinea it is said that "If the foot of a rainbow touches a village, someone will die there" (Malcolm D. Ross, p.c., 6/25/82).

2.27.8 Africa

The Dida of the Ivory Coast hold that thunderbolts occur at the end of the rainbow (Denis Masson, p.c. from M. Sergui Goston; 1982).

Among the Moru of South Sudan it is believed that the foot of the rainbow causes patches of pigmentation on the skin of people who pass it, or whose house the rainbow covers (Darius K. Jonathan, p.c., 1985).

The Mandari of the southern Sudan believe that contact with the end of the rainbow, sometimes provoked by the mediation of a witch, is regarded as a cause of insanity or serious convulsions (Buxton 1973:37).

As noted several times already, among the Ila of Zimbabwe it is believed that “just below where the rainbow touches earth there is a very fierce goat-ram, which burns like fire” (Edwin W. Smith 1920:2:220).

Among various Bantu-speaking peoples of southern Africa, anyone who sees the rainbow “that is, sees the place where its end comes to rest on the earth—runs away as fast as he can: if he sees you he will kill you” (Werner 1933:231).

2.28 *Trait 43: The Rainbow in the Morning/Afternoon*

2.28.1 Europe

In the British Isles people read weather signs from the jingle ‘A rainbow in the morning is the shepherd’s warning ... but a rainbow at night, the rain is gone quite’. “This is often true, because, as weather normally travels from west to east, a morning bow shows rain coming up from the west, and an evening one shows that the rain has passed away” (Radford and Radford 1975:279).

2.28.2 Mainland Southeast Asia

As noted already, the Karen of peninsular Burma and Thailand “are stricken with terror when they observe the rainbow arching the western heavens early in the morning, especially if this sign is accompanied by thunder and earthquake” (Marshall 1922:228).

2.28.3 Insular Southeast Asia

To the West Toraja of Sulawesi in central Indonesia, “A rainbow in the morning means that a prince or shaman shall die” (Kruyt 1938:2:359).

In general, the Toraja fear the rainbow. However, among some groups only the rainbow in the morning is ‘bad’; the others have no significance (Kruyt 1938:2:356).

As mentioned in another context, when the To Napu Toraja of central Sulawesi, Indonesia went to war and saw an afternoon rainbow (*pinoraa*) before them they were happy, as this was the blood of their enemy; but if they saw a morning rainbow (*pingfke*) behind them they broke off their adventure, for this meant that it was their blood that would flow (Kruyt 1938:2:356).

2.28.4 New Guinea and Satellite Islands

The Imbonggu people of the Western Highlands Province, Papua New Guinea, say that a rainbow in the afternoon presages frost (Malcolm D. Ross, p.c., 6/25/82).

2.28.5 Pacific Islands

Among the Palauans of western Micronesia a rainbow in the morning is considered a sign of good weather, or a successful day when one can go fishing. If the rainbow is out in the afternoon, then it is a warning: you cannot go out fishing (Sandra Chung, from Roy Ngirchechol, p.c., 2/23/82).

2.29 *Trait 44: The Rainbow in the East/West/North/South*

2.29.1 Europe

Among Roman folk beliefs that were recorded by classical writers, Seneca "tells us that a rainbow in the south portends a heavy fall of rain; one in the west, a dew or light rain" (Wallis 1918:372).

2.29.2 Central and East Asia

The ancient Chinese poem 'Di-dong' ('Rainbow in the East'), composed about 700 B.C., and included in the Shijing ('Book of Odes') contains the line "The rainbow is in the east. No one dares to point at it" (Karlgrén 1950:33).

Among rural Chinese in northern Jiangsu province in the 1930s the following associations were connected with the appearance of a rainbow in any of the four cardinal directions: rainbow in the east = upcoming fog, rainbow in the west = coming rain, rainbow in the south = selling of children (due to famine), rainbow in the north = warfare (Hsiang-shun Chang, p.c., 1994).

In Shandong province it is said that the emperor will be killed when there is a rainbow in the north.

In Hebei province there will be riots if there is a rainbow in the north, and one has to sell one's children (due to famine) when there is a rainbow in the south (Zhou 2001).

In Shaanxi province people say if there is a rainbow in the south heavy rain or hailstorms destructive to crops are coming. In Ningxia province if there is a rainbow either in the south or the north one must sell one's children (due to coming famine). In Qinghai province a rainbow in the south is a sign of coming harm (Zhou 2001).

2.29.3 Central and South America

As noted earlier, to the Muinane of southwestern Colombia, "a rainbow in the west means evil is on the way; the most widely held view is that it signifies blood, and war or fighting will ensue. It can also precede bad disease" (James W. Walton, p.c., from Andres Paky; 4/82).

To the Inga, also in southwest Colombia, a rainbow in the east indicates the coming of the rainy season, and a rainbow in the west the beginning of the dry season (S.H. Levinsohn, p.c., 5/15/82).

For the Kaiwá of the Mato Grosso region of Brazil, a rainbow in the west is an omen that someone is about to die (David Harthan, p.c., 6/2/82).

The Selk'nam of Tierra del Fuego in southern South America say that "When a rainbow appears in the east bad weather follows; if it appears in the west not only is good weather to be expected, but also the instantaneous storms (typical of this region) almost disappear" (Gusinde 1931:686).

The Lengua Indians of the Paraguayan Chaco "greatly fear the rainbow when seen in the west" (Grubb 1911:50 ff.).

2.29.4 Mainland Southeast Asia

The Karen of peninsula Burma and Thailand say that

Hkü Te is the lord of the region of death, the king of hades Hkü Te is to be seen as a rainbow in the west occasionally. At such times, according to one version of the legend, he is lowering a tube through which to drink the liquor provided at wedding feasts.... The people say of the rainbow in the east that at the time Teu Kweh, wife of Hkü Te, became the bow of promise in the sky [as] she was pregnant, and, being now separated from the earth, she is seen from time to time in the east going to draw water for herself. The souls of women who die with child are supposed to have no other means of obtaining drink, except from the rainbow divinity (Marshall 1922:227–228).

2.29.5 Insular Southeast Asia

Among the Toraja peoples of central Sulawesi, Indonesia, a rainbow in the west is feared, as it is a sign of imminent death (Adriani and Kruyt 1950–1951:405).

2.29.6 Pacific Islands

The Suau of Milne Bay province in the tail end of New Guinea say that if a rainbow "appears in the East then there are bad times ahead. If it appears in the West then it seems that fine weather is coming" (John Lynch, p.c., from Michael Morauta.; 1987).

2.29.7 Africa

To the Mundani of Cameroon "A rainbow in the west means that someone will die in this village; a rainbow in the east means that someone will die in another area" (Julie Kuperus, p.c., 4/82).

It is noteworthy that in many cultures the rainbow has a different significance depending upon its direction relative to the observer. However, there seems to be little cross-cultural agreement in these associations. Note, more-

over, that by its nature a rainbow in the west must be a rainbow in the morning, and a rainbow in the east must be a rainbow in the afternoon or early evening. Rainbows along the north-south axis depend on local conditions of topography and rainfall.

2.30 *Trait 45: Cutting the Rainbow*

This may seem an odd idea, but it is widespread. The notion evidently is that cutting the rainbow is an effective way either to stop excess rainfall, or to release the rain from the rainbow's hold. Most citations given here support the first interpretation, but the quotation from Wrigley indicates the opposite intent.

2.30.1 Central and East Asia

In parts of mainland Japan it was traditionally said you should pretend to cut a rainbow with a hand or an ax. Otherwise, the rainbow would chase you (Obayashi 1999, from Hiroko Sato, p.c., 12/16/17).

2.30.2 North America and Mexico

Speaking of one of their Tarahumara informants in northern Mexico, Bennett and Zingg (1935:325) say that the rainbow "sometimes approaches very close, indeed. Lorenzo once tried to cut one with his knife, but it escaped."

The Sierra Popoluca of the state of Vera Cruz in Mexico say that when seeing a rainbow "If rain is not desired a person can make seven cutting motions with his hand and the rainbow should disappear, but his arm will ache for the rest of the day" (Foster 1945:187).

2.30.3 Central and South America

A somewhat different, but perhaps related idea, is found among the Inga of southwest Colombia, who say that "One can protect oneself from the rainbow by making a cross with a machete. This will make the rainbow go away" (S.H. Levinsohn, p.c., 5/15/82). Needless to say, whatever the original indigenous belief was (cutting the rainbow with a machete?), it has now undergone syncretism with Christian elements.

2.30.4 Insular Southeast Asia

Among the Bare'e of central Sulawesi, Indonesia, there is a belief that if a rainbow appears to someone who is travelling it is a sign that the rain will come. To prevent this from happening he hacks at the rainbow several times with his knife, saying "Strike it machete so that the rainbow dies." After this the rainbow will disappear, and with it the danger of rain (Adriani and Kruyt 1950–1951:3:405–406).

2.30.5 Australia

According to Howitt (1996:398) in the now extinct Turrbal tribe, which lived in the vicinity of Brisbane, Australia

when a rainbow was seen at the river, the medicine-man went to the place to 'cut the rainbow off where its stem held it down to the river bottom.' There was only one part of the Brisbane River where this was done, and each medicine man had his own part of the river where he could do this when a rainbow placed itself in a favorable position.

2.30.6 Pacific Islands

Among the Mota and closely related peoples of the Banks islands in northern Vanuatu "Children ... when a rainbow is seen, play at cutting off its end, *toto gasiosio*; if they can cut it short there will be no more rain" (Codrington 1972:341).

2.30.7 Africa

The Chaga of northern Tanzania tell a story which relates "how a needy Dorobo set out from his home to ask *Iruwa* (rainbow deity) for cattle He came to the end of the rainbow and uttered his prayer. It wasn't answered, so in anger he drew his sword and cut the rainbow in two" (Werner 1933:233).

In a general statement about the ethnology of the rainbow and its relation-ship to lightning in African societies, Wrigley (1988:372) writes

The point about the lightning and the rainbow is that, since the primeval separation, they have been the only surviving links between earth and heaven. Both are highly ambiguous powers. Lightning brings the life-giving rains but is himself a killer. Rainbow, in African thought, is a great snake which lives in water, but when it rears into the sky it holds apart the waters of earth and the waters of heaven, and must therefore be severed, beheaded, to release the rains.

Once again, these divergent interpretations illustrate the inherent ambiguity of the rainbow: does it bring, or obstruct the rain? Early humans clearly were undecided about which choice to make. Most importantly, as shown in Chapter 5, exactly the same attribute is given to the Chinese dragon, which has evolved to the point that it no longer has an explicit connection with the rainbow in the mainstream (courtly) tradition, but must have had such a connection in the past, and still does in at least some regional folk traditions.

2.31 *Trait 46: The Rainbow Arises from or Enters an Anthill or Termite Mound*

Surprisingly, in at least tribal India, Mexico, the Paraguayan-Argentinian frontier in South America, Insular Southeast Asia, and much of Africa, the rainbow is believed to rise from or descend into an anthill or termite mound.

2.31.1 South Asia

The tribal Muria of Andhra Pradesh state in eastern India, say that "The rainbow is the great snake, Bhumtaras, that rises from its ant-hill to stop the rain" (Elwin 1947:262).

2.31.2 North America and Mexico

Among the Otomí people of east-central Mexico "rainbows originate from the red ant's anthill. This is the thing we see that has many beautiful colors." The author of this passage includes a line drawing with the caption 'rainbow originates from the red ant's anthill' (Pedraza 1978:1185).

2.31.3 Central and South America

The Nivaklé Indians of the Argentinian-Paraguayan Chaco, have a story of how the rainbow was formed by a spirit snake:

The rainbow has a master, who is a snake. The rainbow comes out of an anthill which is round and very high. Inside there is a snake with luminous eyes and mouth. Inside the anthill there is humidity. The snake puts that humidity out into the air. And then, on the other side, another snake takes it up. This one, called *Tokloklók*, has red ribs and chest, and its back is white and black. It has a large head and a tail of the same thickness, but it is not known where the tail is. This snake takes the humidity that comes out of the anthill, and in that way an arch is formed. *Tokloklók* is a spirit (Wilbert and Simoneau 1987:80).

2.31.4 Insular Southeast Asia

The Dutch colonial anthropologists Nikolaus Adriani and Albert C. Kruyt observed that the Toraja peoples of central Sulawesi, Indonesia "have fantasized much about the rainbow." Some individual Torajas reportedly believe that the rainbow emerges from a rotten tree trunk and spreads out over the heavens from there, while others say that it arises from the ground in a spot where the *onti lei*, a large kind of red ant with a vicious bite comes out of its nest (Adriani and Kruyt 1950-1951:407).

2.31.5 Africa

The Mandinka and Wolof people of Senegal say that the rainbow arises from a termity (Denys Creissels, p.c., 11/20/81).

As noted earlier, among the Anyi Sanvi of the Ivory Coast and adjacent parts of Ghana

The rainbow is called *nyanngonndon*. Some say that it is a symbol for a genie or powerful spirit who takes the form of a snake. Some associate the rainbow with the genie or spirit of gold. It is thought that it comes out of a termite hill accompanied by smoke. When it comes out the gold in that place disappears (Jonathan Burmeister, p.c. from Aka Amalan, 11/24/82).

In west Africa this belief appears to be fairly common. For the Hausa two separate reports confirm its presence. According to Tremearne (1968:218) "The rainbow arises from a well of salt, and enters an ant-hill. It drinks up the rain, thus preventing any more from falling," while Bargery (1934) gives *gajimari* 1. rainbow, 2. a spirit supposed to live in old wells, large dead trees, certain ants' nests, etc., and to come out in the form of the rainbow.

The Mofu or Gudur of northern Nigeria say "The rainbow occurs when the ancestors exit the termite nests to go up to the sky to keep the rain away" (K. Hollingsworth, p.c. from Abdias Galla, 4/16/82).

The Lela of the Democratic Republic of Congo hold that the rainbow python "lives in a termite mound from which it emerges only in rainy weather; to escape its deadly breath one must make a noise" (de Heusch 1982:38).

A similar tradition is found among the Luba-Hemba: "The rainbow is really the vapor or smoke which comes out of the mouth of a great red serpent called Kongolo. The same black smoke sometimes comes out of termite mounds, takes the form of a cloud, and kills anyone in its path" (de Heusch 1982:38).

Werner (1933:231) notes a similar belief among Bantu-speaking peoples in southern Africa without, however, an explicit indication of the ethnic group intended. "Among a number of Bantu-speaking peoples in southern Africa the rainbow is curiously associated with ant-heaps, in which it is supposed to live" (Werner 1933:231).

The most extensive discussion of this unexpected connection is found in de Heusch (1982:54 ff.), who observes that for the Zela and other closely-related peoples of the Democratic Republic of the Congo, the rainbow, Nkongolo

appears in a double epiphany: as rainbow, arising from the terrestrial waters to burn the rain, and as serpent, emerging from the termite mounds to threaten men For the Zela, the serpent Nkongolo only

shows himself, like the rainbow, during the rains. The deadly breath he produces directly affects the rain, according to a belief of the Luba of Kasai, who make a precise equation between the rainbow and the breath of the serpent *nkongolo*. This colored breath becomes black smoke among the Luba-Hemba, who say that when the Nkongolo spirit is abroad people see a dense and somber vapor moving about, ravaging everything it touches. One might take this belief to refer to whirlwinds, except that Colle, to whom we owe this information, reports that the same smoke is sometimes exhaled by termite mounds. This "dangerous vapor" rising from the ground toward the sky can hardly be other than the nuptial swarm leaving the termite mound at the beginning of the wet season.

Without this insightful passage the connection between rainbows and termite mounds in at least five widely separated parts of the Earth would remain a total mystery. But, with it we can see that both the appearance of rainbows and the rise of nuptial swarms from termite mounds coincide with the onset of the rainy season in the tropics, and that in some cultures the two are connected in a causal relationship. Most importantly, once again we see a physical explanation for globally distributed beliefs about the rainbow that at first appear arbitrary, and we are forcefully reminded that the long-discredited views expressed nearly 130 years ago by Friedrich Max Müller in his 1891 book, *Physical Religion*, cannot be dismissed out of hand as having no valid applications. Like anyone else, Max Müller may have made mistakes that caused later, overly zealous critics, to dismiss his entire body of work as misguided. But ethnological puzzles that he never considered, or apparently was even aware of, such as the perceived connection between the rainbow and termite mounds in widely separated cultures, now can be explained by adopting an approach very similar to that which he advocated so insistently, namely, one that sees many mythic themes as reflections of preliterate man's attempts to explain events in the natural environment.

2.32 *Summary of the Ethnology of the Rainbow*

These multifarious views of the rainbow clearly differ greatly from the conception of the rainbow in Western cultures, where it is seen as an object of beauty (often with a pot of gold at the elusive end), or in the Biblical account, as marking a new covenant between God and man following the flood that (temporarily) cleansed the world of evil. Rather than embracing the rainbow as an inanimate symbol of hope or beauty, most traditional people fear it as something that is animate, inherently evil, and often capable of attacking and harming humans.

This view of the rainbow as a malevolent supernatural is clearly an ancient idea, and it almost certainly was present in much the same form in the mind of our hypothetical Paleolithic observer who was asking "What is it?". To him or her it must have been an awe-inspiring presence demanding respect, and given the preliterate human tendency to animate nature it was interpreted as a giant spirit snake that spends part of its time in watery realms on earth, and part in the sky.

Despite the amount of material that has been collected here relevant to the ethnology of the rainbow it is likely that I have barely scratched the surface. In many areas little ethnographically focused work has been done, and in others the intrusions of outsiders have been resisted by native people. The richly detailed work of de Heusch on a range of Bantu-speaking peoples in central Africa gives some idea of how much may have been overlooked in reports of beliefs about the rainbow in other parts of the world, most of which are extremely short and sketchy. He begins his 42-page chapter 'The Rainbow and the Lightning' with the matter-of-fact, and certainly true statement that "Bantu cosmogonic thought has rarely been the object of scientific inquiry, either because it has appeared impoverished to hasty observers, or because it has been concealed in initiatory teachings barred to ethnography." This is surely true of other parts of the Earth as well.

In short, what de Heusch has shown convincingly is that the conflict between the lightning and the rainbow among Bantu-speaking populations in central Africa expresses a total worldview that is central to the mental lives of these people, and not just a random folk belief or two without further connections. These two natural phenomena clash, the lightning representing the wet season and the coming of the life-giving rains, and the rainbow the dry season and a tendency to hold back the rain. The conflict between these celestial adversaries is reflected in myth and folklore, and—most importantly—it is strikingly parallel to the conflict between the Thunderbird (= lightning) and the horned water serpent (= rainbow) among native peoples in North America who do not associate their version of the dragon with the rainbow, strongly suggesting a common underlying belief system that has been transformed from rainbow to Rainbow Serpent to dragon.

In one of the most comprehensive attempts to understand the Rainbow Serpent myth, Løwenstein (1961) briefly surveyed beliefs about the rainbow in several parts of the world, including the Negritos of the Malay peninsula and Andaman Islands, and the native peoples of Australia, Africa and South America. Although he did not discuss the dragon as such, he noted the striking association of rainbows with serpents in widely separated regions, and sought to find an explanation for why humans had independently struck upon this cor-

relation again and again. His conclusion was that the association of rainbows with snakes happens only in those parts of the world where the largest snakes are found:

Myths of a giant rainbow-serpent are common among tribes inhabiting the tropics. Outside the tropical belt the rainbow-serpent concept is hardly to be found. This points to the fact that the myth must be intimately connected with the occurrence and geographic distribution of a particular family of snakes, the *Boidae*, which includes the largest specimens in existence, namely the Pythons and the Boas (Løwenstein 1961:37).

In the latter category he includes the *Python reticulatus*, extending from eastern India to the Malay peninsula and much of insular Southeast Asia, the *Python spilotes* of New Guinea and Australia, the *Python amethystinus* of northern Australia, the *Python sebae* or Rock Python of the African continent, and the anaconda or *Eunectes murinus*, of northern South America. From this point on Løwenstein's argument simply loses control, as he believes that the Rainbow Serpent complex was inspired by the sight of exceptionally large snakes, which were compared with the rainbow because of their colorful skin. Rather than arising from a desire to understand the nature of the rainbow, then, to him the Rainbow Serpent complex arose from serpent worship, and this could only have happened in tropical areas where large snakes abound. To account for the global distribution of the Rainbow Serpent complex he was then forced into a radical diffusionist argument:

However, zoological evidence alone cannot explain the almost worldwide distribution of the rainbow-serpent myth. In fact, it seems most improbable that this myth, which shows common traits everywhere, should have originated independently in widely separated parts of the tropical world. There is thus ground for believing that this concept was diffused in very early times by Negro and negroid peoples, to whom alone it seems to be truly indigenous (Løwenstein 1961:38).

The chain of inference then deteriorates rapidly, as Løwenstein is forced to assume that Southeast Asian Negritos spread their ideas about serpent worship into Australia, and the western Pacific. He refrains from suggesting that a Negrito foraging population could have crossed the Pacific Ocean to introduce the Rainbow Serpent complex into South America, but here he is saved by Africa, if one is willing to follow an even more contorted trail of reasoning:

As far as the rainbow-serpent myths of the New World tropics are concerned, there is nothing to show that these tales are truly indigenous to the South American Indians. On the contrary, the strange mixture with Christian and other beliefs and the striking affinities to myths recorded in Africa and elsewhere suggest a foreign origin. Moreover, it is well known that the South American Indians have all to some degree crossed with other races and that many of them have Negro blood. It thus appears that serpent beliefs were borrowed from Negro ideology at the time of the slave traffic with West Africa, which began in the second half of the 16th century and continued until after the middle of the 19th century (Løwenstein 1961:40).

Although there is undeniable scholarly merit in this article, its argument is tortured, and in the end falls back on baseless assertions (e.g., that the Rainbow Serpent complex in South America was borrowed from imported African slaves). I do not want to suggest that nothing can be salvaged from it, although it clearly leaves us unable to account for any of the traits of rainbows discussed in this chapter, and never broaches the topic of dragons.

There is no question that the Rainbow Serpent myth is more transparent in tropical areas, probably because exposure to large snakes reinforces an association between the rainbow and a gigantic spirit-snake. It may even be that the Rainbow Serpent idea first originated in our early human ancestors before leaving the tropical cradle of humanity in Africa. But to suggest that the same association never existed in other areas is a fundamental mistake, since wherever dragons are found they must have evolved from the Rainbow Serpent, as already shown in detail, and as will be further summarized in Chapter 9. Løwenstein's major contribution may have been to show that the separation of the rainbow from the mythical serpent that was born from it has happened more readily and more completely in areas outside the tropics (which he never mentions) than within the tropics. But because the rise of literacy happened earlier in non-tropical areas than in the tropics, many areas of the world with large snakes (pythons, anacondas) tended to remain preliterate until the past century or two, making it difficult to separate factors of the physical or biotic environment from factors of culture. In any case, scientific theories stand or fall depending only on their ability to explain observations, and Løwenstein's theory of the origin of the Rainbow Serpent complex leaves a host of relevant observations (e.g., most of those in this chapter) with no explanation.

Despite these obvious shortcomings, a very similar idea is found right up to the present in Wikipedia, where we read that "four snakes may have served as inspiration for the Rainbow Serpent. These include the Scrub or Amethystine

Python, the taipan, and the file snake, each of which possesses a characteristic that was associated with the Rainbow Serpent, however the most likely inspiration for the Rainbow Serpent is speculated to be the Water Python (*Liasis Fuscus*).” Again in this passage we see a reversal of cause and effect. Animistic thinking ascribes spirit beings or properties to features of the natural world—it does not ascribe features of the natural world to spirit beings. The ethnology of the rainbow shows that across nearly all cultures the rainbow is seen as a spirit being, and no matter how much snakes are feared or revered, they are features of the natural world, not spirit beings.

The error here needs to be emphasized, since it is repeated in different sources. Rather than seeing the self-evident need of preliterate humans to explain the nature of the rainbow, and the choice of a locally available snake as a physical model for this explanation, the writer of this piece offers an inverted argument in which the Rainbow Serpent concept arose because snakes were thought to be like rainbows, rather than rainbows being like snakes. If this reversed causation were correct, why would Rainbow Serpents (and dragons) be controllers of the weather, inhabit waterfalls, be at odds with thunder and lightning in widely-separated regions, or be bisexual, to choose only some of the traits of dragons and Rainbow Serpents that have been discussed so far? These are clearly beliefs about rainbows, not about snakes. Or, to choose the Water Python, which, it is speculated, inspired the fear of aboriginal Australians to approach waterholes, how can the similar fear of approaching ‘dragon springs’ in rural Macedonia early in the twentieth century (trait 2 in Chapter 5), of dragon-haunted wells in China (which are man-made, and clearly free of actual snakes), or of lakes or rivers guarded by the horned water serpent in North America be explained? Or should the detailed similarities in these beliefs around the world just be treated as a massive coincidence?

Two other comparative studies which touch on the Rainbow Serpent idea can be mentioned briefly.

In the first of these Hopkins (1931) discusses the same ideograph in an oracle bone inscription from Shang dynasty China that was mentioned in earlier chapters as having the shape of a rainbow with heads of animals at either end (cf. Hentze 1966 and Eberhard 1968). Hopkins observes correctly that this graphic symbol links the rainbow with the dragon in a way that is far more obvious than in later periods of Chinese history when the writing system had largely lost its connection with pictorial representation, but rather than pursuing a lead that could have been truly enlightening, he spends the rest of this article arguing for the superiority of his interpretation of the double-headed rainbow over that of a Japanese scholar whose views differ from his. In the end, nothing is concluded except that the rainbow and dragon were linked some 3,600 years

ago in Shang dynasty China. There is no attempt to explain why this was the case, and none of the traits needed to complete the story of how the dragon evolved from the rainbow receive any further mention.

In the second study Ivanov and Toporov (1970) provide a Lévi-Straussian interpretation of some Lithuanian and Byelorussian myths of the thunder god and his relationship to the serpent in a kind of dualistic upper-world vs. lower-world relationship. In the course of proposing an analysis of these myths they recognize such curiosities as the transformation between the serpent and humans, horses or cattle (1970:1190, 1193), and parallels between the serpent myths of Indo-European speaking peoples and African traditions (1970:1201), but at no point do they propose a theory relating the dragon idea to an evolution from the Rainbow Serpent.

Surprisingly, even experienced scholars have failed to do more than make a tentative beginning in understanding the ethnology of the rainbow. With regard to the indigenous peoples of southern Oregon and northern California, for example, Claude Lévi-Strauss maintained on the basis of myth analysis and the scattered association of the rainbow with birth that "All the tribes in this area that attribute a sinister nature to parahelia would seem to consider them as being in opposition to the rainbow, which connotes life" (Lévi-Strauss 1981:243). However, this conclusion is hardly consistent with the picture one has from the results of the University of California Culture Element Distribution surveys that were conducted over much of the same area in the 1940s, where the rainbow is widely reported as a menace to young women, particularly if they are menstruating (Essene 1942, Voegelin 1942), or as an evil sign (Voegelin 1942 for the Modoc, Western Achumawi or Achumawi Proper, Eastern Achumawi or Hammawi, McCloud River Wintu, Sacramento River Wintu, Foothill Nisenan). Similarly, his remarks on beliefs about the rainbow in South America appear fragmentary and incomplete, as where he says (1970:246) "In South America the rainbow has a double meaning. On the one hand, as elsewhere, it announces the end of rain; on the other hand, it is considered to be responsible for diseases and various natural disasters." As should be clear by now, and as Lévi-Strauss partially recognized, neither of these ideas is confined to South America, and there are other meanings than these that are widely associated with the rainbow in South America and elsewhere.

In short, the appearance of a rainbow clearly mystified early man, since its causality was obscure. Most things in nature behave according to regular, predictable patterns, and so have been accepted since time immemorial as simply the way the natural world works. Those that break this pattern and challenge the wits of ordinary people became the stuff of the spirit world. This is as true of

plants or animals as it is of physical phenomena. Why are mushrooms, which—unlike any other type of plant—appear suddenly overnight, often connected with the realm of spirits? Could it be because their atypical growth pattern baffled the minds of preliterate humans? (Blust 2000b). In much the same way, the sudden appearance (and disappearance) of rainbows challenged the understanding of prescientific minds. Unlike much of what has been written about dragons, this is not empty speculation, but can be documented by informant statements. Walker (1980:71–72), for example, points out that among the Lakota of the northern plains, certain things are considered *wakan* (sacred/mysterious), and that

They have power over men and things. They are *wo wakan* (belong to the mysterious). They are *taku wakan* (things mysterious). The *wakinyan* (Thunderbird) is one The sun, the moon, the morning star, the evening star, the north star, the seven stars, the six stars, the rainbow—these are all *wakan*.

A similar idea was expressed to the writer in a personal communication from a Hopi man who belonged to a traditional faction of the tribe. He related that as a child he had been warned against pointing at the rainbow, but that he and his playmates had just laughed about it. However, on reaching adulthood, he said, he had begun to see the need to “respect” something “special” like the rainbow.

3 Sunshowers

Sunshowers (rain while the sun is shining) are naturally associated with rainbows, since it is exactly this combination that is needed for a rainbow to appear. However, sunshowers are commonly distinguished from rainbows, since they may occur without chromatic visual effects, and so stand somewhat apart from the other phenomena considered here. In effect a sunshower is an event that typically occurs when a rainbow appears, but in which the focus of attention is on the contact of rain with the human body, rather than on the spectacular colors produced by the contact of the rain with sunbeams overhead.

So far as is currently known, there are two belief systems associated with sunshowers. The first concerns the danger to humans, and especially to children, of being touched by the raindrops in a sunshower. The second is a more widely distributed and puzzling belief that during a sunshower a catlike or doglike animal is getting “married” or is giving birth (Blust 1999a).

3.1 *Sunshowers as 'Hot Rain'*

Over much of insular Southeast Asia, and at least parts of the mainland, a sunshower is called 'hot rain' (Malay *hujan panas*), where 'hot' (*panas*) has a double significance. First, it describes the fact that rain is falling while the sun continues to shine, and second it refers to the symbolic hot/cool contrast in which 'hot' marks persons, things or situations which are ritually or spiritually out of balance, and thus unsafe to contact until a ritual or spiritual balance has been re-established by ceremonies of 'cooling' (James J. Fox 1972:108, Sather 1993:85). During sunshowers people are advised to stay indoors and avoid contact with the 'hot rain', and this applies especially to young children, who are perhaps more likely to be outside playing despite the weather. The reason for this belief evidently is that evil spirits are thought to be about in this time of abnormality (sun and rain together), and the raindrops are therefore supernaturally charged with malevolent power. Given the menacing attributes imputed to the rainbow by many traditional peoples this attitude toward sunshowers is perhaps not surprising. The following is a selection of references to sunshowers taken from my larger corpus of beliefs about the rainbow.

3.1.1 Mainland Southeast Asia

Among the Kintak Bong and Menik Kaien Negritos "expectant women must not go out during "hot rain" (i.e., rain when the sun is shining), which is much feared" (Evans 1923:208).

The Jehai Negritos of the Malay peninsula "Believe in Hurā, the rainbow snake, which sometimes scatters the water from its bath and causes "hot rain", which must be avoided" (Evans 1937:167).

Other unspecified Negritos of the Malay peninsula say with reference to the thunder god *Kari* that

under the heaven called *Tasig*, beneath *Kari's* seat, begins the gigantic body of the rainbow snake, *Ikub Huyā* or *Hoyā*, which extends to the regions of hell. It lets water from the nether deep through to the earth at *Ple's* (chief deity) command for the Semang to drink by pushing its head through the flat earth-crust, and thus causing springs of water ... to rise. The light drizzling rain that falls when a rainbow is visible is the sweat of the reptile, and if it happens to fall on anyone who is not wearing a particular kind of armband, it causes the sickness called 'lininka' (Evans 1937:206).

3.1.2 Insular Southeast Asia

Among the Manobo of Mindanao in the southern Philippines, "When it is a sunny day and it rains, one should not go out because the evil spirits are roaming around. One can, however, get rid of such evil spirits by tying his hair with a strand of *cogon* grass (*Imperata cylindrica*) to scare them off" (Demetrio 1991:2:379, item 6811).

The Tempasuk Dusun of North Borneo dislike and fear 'hot rain':

The general idea, both in Malaya and among the Dusuns, is that evil spirits are much in evidence and particularly virulent during showers of this kind If 'hot rain' comes on, people take pieces of grass, *lalang* grass (*Imperata cylindrica*) being preferred if any can be obtained, and set them in the front of their sun-hats or head-dresses. The spirits, seeing the grass, say that the persons wearing it have marks on them and therefore must not be touched. A shrub called *patai manok* ('kill bird') is equally as efficient as *lalang* grass. (Evans 1953:189).

The Enggano in the Barrier islands west of Sumatra, Indonesia have a story which makes the point that "When people go walking while the sun is shining and rain is falling, they will become ill. They make the demon (of the rainbow/sunshower) responsible for their illness (fever, headache)" (Kähler 1975:122).

Among the Alune of Seram in the Moluccas of eastern Indonesia, sunshowers (*ulane* 'abalane') are considered to bear illness—flu-like symptoms. "Young children are strongly discouraged from going out or playing in sunshowers. A piece of ginger may be attached to the child's clothes to protect him/her" (Margaret Florey, p.c., 2/12/98).

3.1.3 New Guinea and Satellite Islands

The Tambul-Korika of the central highlands believe that "at such times when it rains while the sun shines it is something wonderful, happiness; people enjoy that moment" (John Lynch, p.c., 1987).

The Dedua of the Finschhafen area say that "during a sunshower children must be hurried indoors lest the rain bring sickness to them" (Metone Wamma, p.c.).

Among the Tawala of southeast New Guinea, during a sunshower "It is believed that a person will die, and people, especially babies, should not be exposed to the weather" (John Lynch, p.c. from Gouli Tarumuri 1987).

The Suau of Milne Bay province in New Guinea say with reference to sunshowers that "For children, it is bad for such rain to touch them. It is

believed that such rain brings sickness and illness to the children” (John Lynch, p.c. from Michael Morauta, 1987).

3.1.4 Pacific Islands

Among the Arosi of San Cristobal (Makira) island in the Southeast Solomons a sunshower is called *utaora*, where *uta* = ‘rain’ and *ora* = ‘be possessed of a foul ghost, of man or stone’, reflecting the negative ideas the people have about this phenomenon. An alternative term is *arito* ‘a sunshower; to shine in rainy weather; to clear up, of the weather (people keep indoors at such times for fear of ghosts)’ (Fox 1970).

In Gilbertese of eastern Micronesia, both *ririŋa ni moan atu* ‘morning sun between two showers’, and *ririŋa ni moan wae* ‘evening sun between two showers’, are signs of death (Sabatier 1971:320).

To the Chuukese of eastern Micronesia “A sunshower is a bad omen. It is a sign that someone important will die. If the rain from a sunshower touches a pregnant woman she may miscarry, as it is a malevolent spirit trying to kill her unborn child” (John Sound, p.c., 1985).

The known distribution of this belief complex is limited to speakers of Austronesian languages in insular Southeast Asia and the Pacific islands, to Austroasiatic-speaking Negritos that have been in prolonged contact with Malays, and to one Papuan-speaking population (Dedua in the Finschhafen region of New Guinea, where it may have been borrowed from an Austronesian-speaking group). It is likely to have a wider distribution, but this is yet to be determined. The general pattern is clearly negative, and associated with behavioral taboos, although the belief among the Tambul-Korika (a Papuan-speaking group that is not in touch with Austronesian speakers) stands sharply apart from the others.

3.2 *Sunshowers as a Sign of Bestial Parturition*

3.2.1 Europe

Alinei (1983) provides an invaluable collection of terms for the rainbow in European languages, including many normally inaccessible dialect forms. In a section discussing the use of animal names for the rainbow, he notes the occurrence of ‘fox’s belt’, ‘fox’s clothes’, and ‘fox’s wedding’ in Bulgaria and the Ukraine, and of the first and last of these terms in a border area between Spain and Portugal. He then adds (1983:52) “As is known, ‘Fox’s wedding’ is an extremely common name for the ‘rain with sunshine.’ Lack of space prevents us from dwelling on this quite interesting semantic association.”

Although he briefly notes a lexical connection between ‘fox’ and ‘rainbow’ in one Caucasian language (Khvarsh), given the geographical domain with

which he is otherwise concerned, Alinei's aborted reference to the equation sunshower = fox's wedding as being "extremely common" presumably relates to other parts of Europe. What he does not mention is that a virtually identical belief is found throughout Japan: from Hokkaido to the Ryukyus a sunshower is called by the expression *kitsuno no yomeiri*, 'the fox's wedding' (Kakuko Shoji, p.c., 2000).

There is a strong temptation to attribute this agreement to diffusion, despite the great distances involved. It is at least conceivable that the equation 'sunshower = fox's wedding' is common to many parts of central Asia and the Near East, but has simply not been reported. What undermines the credibility of diffusion in this case is the discovery that the fox's wedding is but one of several closely similar beliefs over a wider area which connect a feline or canine animal, usually in the act of giving birth, with a sunshower.

3.2.2 The Near East

As noted by Vaux (1998), a sunshower is called 'the fox's wedding' in Armenian.

3.2.3 South Asia

Over much of India a sunshower is called 'the jackal's wedding' (Kuusi 1957).

3.2.4 Central and East Asia

In Korea a sunshower is said to signal that the tiger is taking a bride, although in some districts the fox's wedding is also reported (Min-Sun Song, p.c., 1999).

The Japanese tradition of the 'fox's wedding' has been presented cinematically in a particularly memorable form in the opening scenes of Akira Kurosawa's film, 'Dreams' (1990). A young boy is playing in a sunshower, and in great concern his mother hurries him indoors to safety. From there they listen, as a faint sound of festive music comes drifting through the forest, growing ever louder. In a few minutes, accompanied by his retinue the fox appears through the trees, dressed in splendid finery for his wedding. As the startled and incredulous boy watches in wonder, the procession continues past his house until it fades into the distance. The viewer is left believing that this is pure art created by a masterful filmmaker, but as already seen above, it draws on a folk tradition of unknown antiquity.

3.2.5 Mainland Southeast Asia

Evans (1923:208) reports a distinct, but similar belief among the Austroasiatic-speaking Malayan aborigines: "According to the Sakai of Jeram Kawan (Sungkai) ... when there comes a shower followed by sunshine, the rainbow springs from a place where a tiger has been sick."

3.2.6 Insular Southeast Asia

During a sunshower the Toba Batak of northern Sumatra simply say that tigers are roaming about, but the Sundanese of west Java say either that a sunshower is caused by a tiger coming out of the jungle to dry himself in the sun (presumably by shaking his fur) after being dampened by the rain, or that a tiger has given birth (Dudu Prawiraatmaja, p.c., 1983).

In Balinese the expression *udan ai* 'sun rain' is said to be a time when evil spirits that inhabit rivers and quiet places are giving birth (Adrian Clynes, p.c., 1998).

3.2.7 Africa

Speakers of Rif and Kabyle Berber in Algeria reportedly call a sunshower 'the jackal's wedding' (Kuusi 1957:233).

According to Philip Hewer (p.c., 1982), the Northern Chumburu of Ghana consider the appropriate comment on seeing a rainbow to be "the elephant has given birth." Here "on seeing a rainbow" presumably means "during a sunshower."

Closely similar is the belief among the Ijo of Nigeria that during a sunshower a leopard is giving birth in the forest (Kay Williamson, p.c., 1982).

During sunshowers the Moru of South Sudan say a hyena is giving birth (Darius Jonathan p.c., 1985).

The Haya of the western edge of Lake Victoria in Tanzania believe that during a sunshower a lion is giving birth (Abdul Khamisi, p.c., 1998).

A variant of the connection between sunshowers and animals is found among the Ngaju Dayak of southeast Borneo, where a sunshower is said to be a time when *binatang purba* (animals from the ancient past) wander about the Earth (Durdje Durasid, p.c., 1983).

3.3 *Summary of the Ethnology of Sunshowers*

Kuusi (1957) lists no fewer than 145 beliefs associated with sunshowers around the world, and orders them by frequency (cf. Blust 1999a: 496–498 for a detailed summary). The most common of these, which is widespread in the rural southern United States, is 'the Devil is beating his wife', although this is reported only in Europe and among European-derived populations in the Americas. The fox's wedding ranks fifth of the 145 variants in Kuusi's list, but has a far wider distribution. Other beliefs about sunshowers that seem clearly related to 'the fox's wedding' are 'the jackal's wedding', attested in India and North Africa, and a number of other variants given by Vaux (1998), including 'the mouse's wedding' in Finland, 'the bear's wedding' in Bulgaria, 'the rat's wedding' in Lebanon and Syria, 'the wolf's wedding' among Aramaic speakers in Iran, 'the monkey's

wedding' in Zulu, Afrikaans and South African English, 'the hyena is giving birth' among Amharic speakers in Ethiopia, and 'the fox is giving birth' among Tigrinya speakers in Ethiopia.

The distribution of this apparently arbitrary association raises basic questions about origin. Since it appears to be absent among indigenous peoples in New Guinea, Australia, or the Americas, there is a temptation to assume that its presence over much of the Eurasian landmass is due to diffusion. However, since 'the fox's wedding' occurs from Japan in the east to Finland and Portugal in the west, and extends in a somewhat different form into Southeast Asia and over much of Africa, diffusion alone appears improbable. Folklorists have been willing to assume diffusion for the widespread occurrence of some folktales (Dorson 1968), but these have entertainment value, which presumably would make them easier to borrow, whereas 'the fox's wedding' in popular belief appears to be nothing more than a statement about sunshowers.

There is an intriguing pattern to this belief. In general it appears to involve animal parturition in connection with sunshowers as distinct from rainbows, and the association is with a cat-like or dog-like animal (the hyena is neither, but is common perceived as canine; the mouse or elephant are simply aberrations, but have a restricted distribution). In Europe, the Near East and East Asia we see what in comparative perspective appears to be an ameliorative reinterpretation: the notion of parturition is shifted to that of conjugal union, and hence the reference is elevated from an act of nature (giving birth) to a human cultural construct (marriage). Rather than taking all instances of this surprising agreement as evidence for diffusion, then, the 'wedding' variants can more plausibly be seen as parallel reinterpretations of an ancient belief that has survived in more vestigial form in preliterate cultures. But serious unanswered questions remain: how old would such a belief be, and why would it have arisen in the first place?

4 **The Rainbow Taboo**

As explained in the Preface, the 'Rainbow Taboo' (RT) is a globally distributed belief that one should not point at a rainbow with the extended index finger, lest the finger become permanently bent, rot, be supernaturally severed, or just fall off. The reader will recall that I discovered the RT in Indonesia by accident, and it was my efforts to understand the motivation for this belief that led in time to a search for the origin of dragons.

Some scholars have recognized the distribution of the RT on a continental scale. Commenting specifically on the Cherokee Indians, whose homeland

was the Great Smoky Mountains of Tennessee and adjacent areas in North Carolina, the anthropologist James Mooney (1970:442), for example, observed that not only do the Cherokee have the RT, but “For some unexplained reason the dread of pointing at the rainbow, on penalty of having the finger wither or become misshapen, is found among most of the tribes, even to the Pacific coast. The author first heard of it from a Puyallup boy of Puget Sound, Washington.” The book from which this quotation is taken was originally published in 1900, and it is to Mooney’s credit that he recognized the wide distribution of the RT among the native peoples of North America. However, he appears to have been unaware that the same belief is found in many other areas, including Europe, and he made no attempt to explain why it exists. Other well-known references to the RT are Thompson (1955–1958:1, C843.1), who gives only “Tabu: pointing at rainbow”, *Fb, “regnbue”, which appears to draw entirely on Feilberg (1886–1914), and hence is limited to Europe, Leach and Fried (1972:922–923), who note that the RT is found among various North American Indians, and appears as Thompson’s folktale motif C843.1, but draw no further conclusions, and Hole (1995:2155), who states more broadly, but non-specifically that “A common tradition, found in many regions, is that it is extremely unlucky to point directly at a rainbow, as indeed it is to point at the sun, the moon, or any star.” None of these statements makes any attempt at explanation.

Because it is a true culture universal, it is important that the RT be documented on a global scale, and that was done in Blust (2021). However, because it is only marginally related to the origin of the dragon idea the treatment here will be limited to providing minimal evidence that it is a culture universal, and to presenting the main outlines of why it exists at all.

Before citing specific cases a word about culture universals will be helpful. Culture universals need not be found in all cultures. Over the past half century linguists have perhaps given more thought to the question of universals than scholars in other social sciences, and the consensus is that a language universal is found with a distribution that cannot readily be explained by chance, contact (borrowing), or common origin from an identifiable ancestral community (Greenberg 1978). Once these potential explanations of a trait distribution are eliminated the only remaining alternative is independent invention, and when this occurs on a massive scale it implies a common cause in the psychological make-up of human beings.

Although my files for the RT are much more extensive, the following data provides minimal evidence that this trait must either have arisen independently countless times in human societies, or that it continues a similar taboo from the beginnings of human reactions to the rainbow with the earliest *Homo sapiens* some 150,000–200,000 years ago:

4.1 *Europe*

In Denmark a little over a century ago the rainbow taboo was still alive and well, as we learn from (Feilberg 1886–1914:2:800), who observed that “Among the country folk of the Jutland peninsula it is said that one should not point at a rainbow, at lightning or at a lunar or solar eclipse with a single finger, or it will become infected and swollen. One may, however, point with the entire hand.”

In eighteenth century Germany the common people held that “It is forbidden to point at a rainbow, for it is regarded as the visage of an angel.” An admonition to this effect appeared in 1754 in the edicts of the city of Braunschweig in Lower Saxony (Grimm 1844:695).

In the nineteenth century speakers of Czech still believed that “If one should point at the rainbow with the finger or the hand it thunders at once, or the finger falls from the hand” (Gaidoz and Rolland 1884–1893:2:16).

4.2 *Central and East Asia*

The classical Chinese text, the *Shijing* (‘Book of Odes’) from the eleventh to sixth century BCE, states that it was forbidden to point at a rainbow in the East lest the hand be instantly ulcerated (Grimm 1844:695, Gaidoz and Rolland 1884–1893:216).

In Okinawa and some parts of mainland Japan “it was traditionally believed that you shouldn’t point your finger at rainbows. Otherwise, that finger would get bad and fall off” (Obayashi 1999, from Hiroko Sato, p.c., 12/16/17).

4.3 *North America and Mexico*

The Thompson Indians of British Columbia “were afraid to point at the rainbow, because, if they did, their fingers would become covered with sores. If they wished to point at it, they wet their little finger in their mouth, or spat on it” (Teit 1900:346).

The Shasta of the California-Oregon border region say that “After painting, the sun sometimes threw out his wash water, which made the rainbow. Should one point at it, his finger would be crooked like the rainbow” (Holt 1946:327).

The Teton Lakota of the northern plains of the United States say that people are “afraid to point at a rainbow with the index finger, though they can point at it with the lips or the elbow. Should one forget and point with the index finger, the bystanders laugh at him, saying “By and by, O friend, when your finger becomes large and round, let us have it for a ball bat”” (Dorsey 1889:137).

Among the Hopi of northeast Arizona children are told that if they point at a rainbow their index finger will fall off, although they may gesture instead

with the lips. If someone forgets and points, he bites the finger to expel the curse (communication from an anonymous staff member of *Techqua Ikachi*, a newsletter distributed by the traditional faction of the Hopi nation, at Hotevilla, Arizona).

For the Navaho "It is thought unlucky ... to point at a rainbow with any digit but the thumb. If you point with one of the fingers, they say that you will get a felon [whitlow] on it" (Matthews 1902:314.).

According to Mexican folk belief "It is bad to point toward the rainbow, because it will rot your finger or cause tooth decay" (Carrasco 1960:107).

The Otomí of Hidalgo, south-central Mexico say that "Anyone who points out a rainbow will get warts on his hands" (Pedraza 1978:1184).

For the Tzotzil of Chiapas, southern Mexico, "A child should not point at the rainbow lest his finger rot away, nor should he stare at it, lest his belly button rot away" (Laughlin 1975:232).

4.4 *Central and South America*

Among the Mam of Todos Santos, Guatemala "Children are told not to point at a rainbow with the index finger, as this could cause the finger to become diseased, or could even cause their death. They may, however, gesture toward it with the lips" (Richard Reimer, p.c., 1982).

The Inga of western Colombia warn children not to point at a rainbow, lest their finger rot. "They may, however, gesture with impunity if they use the lips or chin, the normal way of pointing at anything" (S.H. Levinsohn, p.c., 4/82).

In Brazilian folk culture it is said that one should not point at a rainbow with the index finger, or a wart will appear on it. It is nonetheless permissible to point with the hand, or by a gesture of the lips (Maria de Lourdes Sampaio, p.c., 1983).

The Toba in the Gran Chaco of Paraguay say "Never point at a rainbow, lest your finger remain crooked" (Métraux 1946:39), and in the same area the Enxet Sur (Lengua) say "pointing at the rainbow can cause your finger to burn up or fall off" (John Elliott, p.c., 12/13/18).

4.5 *Mainland Southeast Asia*

The Lakher on the Burma-Assam border say "It is unlucky to point at a rainbow, and it is believed that a finger that points at a rainbow will get chopped off accidentally by a *dao* (= machete) or a sharp bamboo. To prevent such an unfortunate eventuality, if a Lakher boy inadvertently points his finger at a rainbow he must put it up his anus; there is no other remedy" Parry (1932:499).

According to many Thai speakers "If you point at a rainbow your finger will be cut off, or the like. If a child should unthinkingly point he/she should stick the offending finger in a heap of carabao dung or, according to some people, up his or her anus" (Lertdow Sayankena, p.c., 1986).

Among the Karen of peninsular Burma and Thailand, "if one should point at ... a rainbow, he would at once thrust his finger into his navel in order to avoid the loss of the offending member" (Marshall 1922:228).

Among peninsular Malays of Pahang "One may not point at a rainbow with the index finger, lest the offending hand rot or fall off, although it is permissible to gesture toward it with the lips or eyes. If one forgets and points, he must spit on his index finger to prevent possible harm" (James T. Collins, p.c., 1983).

4.6 *Insular Southeast Asia*

Among Ilokano and Tagalog speakers of northern and central Luzon, Philippines "One must not point at the rainbow or one's index finger will be permanently bent" (Priscilia Reid, p.c., 1986).

Likewise, the Manobo of Mindanao in the southern Philippines hold that "On no account must the finger be pointed at the rainbow, as it might become curved" (Garvan 1941:224).

The Tboli on the same island warn children "Don't point at a rainbow, as your finger might swell. But if you forget and point, put your finger in your mouth" (Forsberg and Lindquist 1955:49).

The Toba Batak people of northern Sumatra in Indonesia say that it is "bad" to point at a rainbow with the extended finger, although this is possible if the index finger is bent back at the second joint (Sitor Situmorang, p.c., 8/3/83).

The Sundanese of west Java, Indonesia, warn children not to point at a rainbow, or the finger in question will be supernaturally infected by a maggot (Sundanese: *hileud-en*, from *hileud* 'maggot'), and swell up (Dudu Prawiraatmaja, p.c., 1981).

Among the Javanese of central Java there is (or was) a belief "that to point at a rainbow would cause a bent finger, but it was actually a joke, because nothing ever happened. To counter the effect, you should poke the finger in buffalo dung" (Stuart Robson, p.c., 6/29/83).

Among the Wolio on the island of Buton south of Sulawesi "It is forbidden to point at a rainbow with the index finger, but no harm will result if the finger is doubled back at the middle joint while pointing" (J.C. Anceaux, p.c., 1983).

The Manggarai of western Flores, in the Lesser Sunda islands of eastern Indonesia say "Whoever has inadvertently pointed at a rainbow must immediately thrust the finger up his anus so that it does not become permanently rigid, or fall off altogether" (Ndanu of Nekang, in Bader 1971:953).

Among the Kédang of eastern Lembata island in eastern Indonesia, there is a “fear of pointing at a *nado-tado*, that is a rainbow or any other rising effulgence of a spirit. If one does point, one runs the risk that one’s finger will be permanently bent” (Barnes 1974:216).

To the Buli of southeast Halmahera in the northern Moluccas of Indonesia “The rainbow, *rai* is charged with magical power. If one points at it, his finger will wither” (Maan 1940:92).

4.7 *New Guinea and Satellite Islands*

Among the Biak of the Bird’s Head region of New Guinea it is said that one should not point at a rainbow lest his finger become bent (Johsz Mansoben, p.c., 1986).

According to the Imbonggu people of the Western Highlands province, Papua New Guinea, people are told not to point at a rainbow, or their hand will be chopped off. If a young child were to commit this offense its mother’s breast would be chopped off (Malcolm D. Ross, 6/25/82).

Among the Kalam of the upper Kaironk Valley in the Schrader Mountains of New Guinea, “Children are told not to point at a rainbow, or their mother will get a sore on the breast” (Saem Majnep, p.c., 1986).

According to the Tambul-Korika people west of Mount Hagen in the Western Highlands Province of New Guinea, “Children are told not to point at a rainbow, or their index finger will become bent and twisted, or will be cut off” (John Lynch, p.c., 1987).

Among the Keweng or Kewieng of the Finisterre range in New Guinea “Children are told not to point at a rainbow with the index finger, since this may prevent the growth of plants in the garden. One can point with impunity in any other way” (Malcolm D. Ross, p.c., 6/25/82).

The Suau of Milne Bay in extreme southeast New Guinea warn children not to point at a rainbow, or the offending finger will be shortened by accidentally chopping it off, or by illness. If one does point, he must suck his finger to avoid the consequences. It is possible to point at a rainbow with impunity, provided the index finger is not used (John Lynch, p.c. from Michael Morauta; 1987).

Among the Telei of the Solomon Islands “Children are told not to point at a rainbow, or their finger will twist. It is permissible to indicate a rainbow verbally or by a gesture of the head” (Malcolm D. Ross, p.c., 6/25/82). Another source indicates that “Children are told not to point at a rainbow or their mother’s breasts will swell up. It is permissible to point at a rainbow by screwing up the nose in the desired direction, or by looking askance at it” (Susan Warkentin, p.c., 1983).

4.8 *Australia*

Among the Burarra in Arnhem Land, northern Australia "If anyone points at a rainbow with the outstretched index finger, the finger will become permanently crooked or the end joint may fall off. However, it is permissible to point with the middle joint of the bent index finger" (Kathy Glasgow, p.c. from Katy Cooper, Margaret Garrnyita, and Michael Bururbuma, 11/13/83).

According to the now extinct Wotjobaluk of northwestern Victoria

the rainbow causes a person's fingers to become crooked or contracted if he points at it with a straight finger. This would prevent him from using his hand for making the markings with which the possum rugs are ornamented. Therefore, when pointing to a rainbow, the fingers must be turned over each other, the second over the first, the third over the second, and the little finger over the third, by which the evil is avoided (Howitt 1996:431).

4.9 *Pacific Islands*

Among the Babatana on Choiseul Island in the western Solomons "Children are told not to point at a rainbow, or the offending finger will be supernaturally cut off. It is, however, permissible to point using the elbow. If a child forgets and points, he may be slapped by an adult" (Malcolm D. Ross, p.c., 6/25/82).

Among the people of Sa'a and Ulawa islands in the southeast Solomons it is said that "a rainbow must not be pointed at lest the finger shrivel" (Ivens 1927:201).

Among the Gilbertese (I-Kiribati) in eastern Micronesia "Children are told not to point at a rainbow, or their finger will become crooked" (Timeon Ioane, p.c., 1987).

The people of Pohnpei in the eastern Caroline Islands of Micronesia, say "If you point at a rainbow, your finger will ulcerate" (Rehg and Sohl 1979:55; cited under the conditional marker *ma* 'if').

The Marshallese say that whoever points at a rainbow gets a bent finger (Erdland 1914:340).

Among the Dehu people of Lifu in the Loyalty Islands, near New Caledonia in southern Melanesia, "Children were strictly forbidden to point at a rainbow, lest by doing so they should cause the death of their mother, as in the case of a falling star" (Hadfield 1920:113).

In Fiji it is said that "If a person points at a rainbow his hand will turn white like a leper's. In the event that he has already inadvertently pointed, he should spit on the index finger or stick it into his mouth to avoid the consequences" (Paul Geraghty, p.c., 1983).

4.10 *Africa*

The Adele of the Volta region of northern Ghana say that you should not point at a rainbow. "If you do so it is believed that your hand will become crippled. There is no acceptable way of pointing at it with any other body part" (Philip Hewer, p.c., Sept. 2, 1982).

Among the Moru of South Sudan children are warned not to point at a rainbow with the index finger, or the finger will rot off, as with leprosy. If someone does point, he must interlace his fingers (pinky over ring finger, ring finger over middle finger, etc.) and point a second time to undo the offense. One can point with impunity using the chin (Darius K. Jonathan, p.c., 1985).

To the Mündü of South Sudan "The rainbow is a giant snake which lives in a hole in the ground, and comes out to chase heavy rain away (drink the rain?). Children are told not to point at it with the index finger, or the finger will turn red. However, this can be washed off. It is permitted to point at a rainbow with the lower lip, or with a bent index finger" (Jon Arensen, p.c., 1982).

The Baganda of Uganda say that "if you point at a rainbow your finger will become stiff" (Werner 1933:232).

Among the Luo of Kenya and adjacent parts of the Sudan, "Children are told not to point at a rainbow with the index finger, or the rainbow will come and get them. It is permissible, however, to point with a closed fist" (Jon Arensen, p.c., 1982).

Since most arbitrary features of culture are likely to undergo change and disappear within a few thousand years, it appears likely that the RT has been reinvented time and time again because it is *not* arbitrary. To see this, we need to consider attitudes toward 1. the rainbow, and 2. pointing.

As already established, in all major geographical regions the rainbow is associated with the 'other world', and hence is greeted with that mixture of fear, awe and reverence generally accorded to spiritual things. In general, attitudes toward the rainbow appear to involve a degree of negative emotional intensity which correlates with such features as 1. degree of urbanization, 2. participation in a major world religion and, of course, 3. understanding of the natural processes which give rise to rainbows. In the more urbanized societies of Europe and Asia the RT may survive, but it is less prominent than in most tribal societies. In African societies which have been Islamized the RT has either disappeared or has been diluted of its spiritual potency, a process which evidently also happened during the Christianization of Europe (Grimm 1844:695, Alinei 1983, 1985). Finally, in a few areas (such as Tuvalu in Polynesia) the RT seems to be entirely absent, although reported negative cases must always be treated with caution.

Wherever explicit information is available the RT applies specifically and emphatically to the index finger, and a number of alternative means for indicating the rainbow have been recorded. In most cases these are nothing more than the customary way to indicate anything gesturally in the culture in question, usually by a thrust of the lips, a slight rise of the chin or some combination of the two.

In other cases, however, alternative means of pointing appear to involve what might be called 'avoidance deixis', a form of gesture reserved for situations in which the index finger may not be used because it would be culturally unacceptable. Forms of avoidance deixis include: 1. pointing with the elbow, 2. pointing with the right index finger grasped in the left fist, 3. pointing with the right index finger doubled back at the middle joint, 4. pointing with the tongue protruding between the teeth, 5. gesturing with the eyes, 6. gesturing with the head, 7. gesturing with the nose wrinkled up, 8. pointing with the thumb, 9. pointing with the entire hand, or 10. pointing with the closed fist.

Undoubtedly the most remarkable manifestation of avoidance deixis noted to date is found among the Moru of South Sudan and the extinct Wotjobaluk of southeast Australia, where it is explicitly stated that the rainbow may be indicated by the right hand if each finger is crossed over the one to its left, forming an intertwined unit of four digits. There can be no question that this highly specific agreement, startling as it initially appears, is a product of independent invention.

Although sporadic comments on cross-cultural differences in pointing were noted as early as Sherzer (1973), it was not until the 1990s that a major groundswell of interest in the psychology and etiology of pointing appeared among anthropologists, linguists, psychologists and others. However, it is striking that the major studies produced to date, such as Kita (2003) or Enfield and Levinson (2006), both of which grew out of a Gesture Project hosted by the Max Planck Institute for Psycholinguistics in Nijmegen, Holland, say almost nothing about pointing at people as an act of physical aggression, even though this is strongly discouraged in nearly all cultures. The only reference I can find in the former volume which explicitly mentions that pointing at people at close range is confined to contexts of anger or accusation, is in Kendon and Versante (2003:110), who briefly mention a discussion of this usage in Calbris (1990:128). As a consequence, although the papers in these volumes cover a wide range of topics, including the ontogeny of pointing gestures in young children and their relationship to the development of language, differences between humans and apes in the ability to use pointing gestures meaningfully, and ways of using pointing gestures to indicate objects in a field of reference, none of the participants who contributed to these volumes speaks of 'avoidance deixis', appar-

ently assuming that when this occurs it is always an extension of the unmarked means of pointing (with lips, chin, etc.) rather than a substitute for finger pointing. To be sure, the normal means of pointing to indicate objects, directions, etc. in many cultures is by a gesture of the lips or chin with a slight uptilt of the head, but this does not mean that pointing an index finger at another person never occurs, particularly where anger or accusation is involved. Rather, the data I have collected shows that to avoid any suggestion of aggression various substitutes are used for pointing an index finger toward others at close quarters, although these are not needed when pointing toward people at a distance.

Why should the RT apply specifically to pointing with the index finger? Remarkably, virtually no information on the subject is available in the description of individual societies. Although admonitions about pointing are mentioned in practical guides to cross-cultural conduct, such as Peace Corps manuals, even the most detailed ethnographies pass over this topic in silence. In effect, human beings appear to share a tacit understanding that pointing at other people with the index finger is tolerated only in contexts of anger and accusation, and the subject is consequently treated as unstated background knowledge.

To summarize, the RT has arisen repeatedly in human societies, since 1. pointing at other people is considered aggressive, and 2. the rainbow is regarded as sacred. If it is forbidden to point at other people because it is considered an act of aggression, then surely one may not point at a supernatural power without divine retribution. It should also be clear from the previous discussion that the taboo against pointing at a rainbow has nothing to do with the rainbow *per se*. Rather, it has to do with the rainbow as part of a class of phenomena which must be respected because they are associated with the realm of spirits, and hence of dangerous spiritual power. Other details, such as variation in the form of the RT, are treated in Blust (2021).

A Glimpse of the Glory

The rainbow has a closely-guarded secret known to only a few. During my first flight on a commercial aircraft in 1961, at the age of 21, it was revealed to me in all its glory.

I was on a 400-mile trip from San Francisco to Long Beach, California, and the plane was nearly empty (something that was possible in those days). Despite the brevity of the flight, which didn't last much more than an hour, it was punctuated by two memorable events. In the first of these the passengers were served drinks, which they proceeded to imbibe. Mine was in my hand at one moment, and at the next I found myself spilling it all over my clothes. For a few seconds I didn't know why this had happened, and then I realized (partly with the help of a message from the captain) that we had hit an air pocket and the plane had suddenly fallen several hundred feet. My drink had separated from the cup that held it, and then it followed gravity downward to my lap.

Spectacular as an encounter with an air pocket can be in a commercial flight, the second event was far more dramatic. There probably were fewer than fifty passengers in an aircraft capable of seating over 200. As a result, I was able to move about rather freely from my assigned seat, and I took advantage of this to look out the windows of the plane, first on one side and then the other. I don't recall how long this was going on before in the early evening I saw something that totally startled and absorbed me outside the landward side of the plane as we flew south. At a distance of perhaps 100 yards (it may have been considerably further, but distances were not easy to estimate under the circumstances) what appeared to be a circular rainbow was moving through the clouds, appearing to jump from one cloud to the other. Most remarkably, in the middle of this circle was a perfect silhouette of the plane, shadowing us like a UFO as we flew. It was otherworldly. I had to blink to believe what I was seeing, but it continued like this for some minutes, and there was no denying what my eyes were reporting to me.

I had no idea what was causing this rare and beautiful spectacle, and I naturally had no name for it. It was only years later that a chemist friend who worked in spectroscopy told me it is an optical phenomenon that has been known, but not well understood, for many years. He called it the 'glory effect', but subsequent research has taught me that it is commonly known simply as 'the glory'.

Since that first magical experience I have seen the glory twice while in flight, once in a long flight from Holland to Indonesia, where it appeared somewhere

over the skies of Southeast Asia, and most recently in a flight from Baltimore to Honolulu, where it appeared near Phoenix, Arizona in a different form. This time, instead of following us a hundred yards or more off our right wingtip, it appeared in a 'here again gone again' pattern on the tops of the clouds *below* us. All of this naturally depends on the position of the sun relative to the plane, and on the necessary ice crystals or water droplets in the air to act as miniature prisms for the sun to shine through. There is no need to enter into details regarding the complex physical conditions needed for the glory to appear, but a few general remarks should not be out of order.

The most important point for the physicist is perhaps that the conditions necessary to produce a rainbow, are somewhat different from those needed to produce a glory. For anyone else what probably matters most is that a rainbow can be seen from almost any location, while a glory usually requires an elevated sighting position:

Although it offers a display hardly less impressive than the rainbow, the glory has remained a considerably more recondite phenomenon, ever since its first reported observation in 1735. Its sighting ... requires locating the antisolar point, usually through the shadow of some object on the clouds (most often an airplane) (Nussenzveig 1979:1073).

The last part of this quotation may suggest that the glory could not possibly have any connection with beliefs about the rainbow and related phenomena by preliterate humans, since they could never have been in a position to view it. However, the fact that the glory was first reported in 1735 indicates otherwise. As noted by Sassen, Arnott, Barnett, and Aulenbach (1998:1428) "The unique backscattering response of small (relative to visible wavelengths) cloud droplets to create the glory was rarely appreciated, and mostly by early mountain climbers, until the advent of frequent air transportation."

Regardless of how the physics of the rainbow and the glory may differ in producing the visible effect of a prismatic ring, to the layman what the glory appears to be is a circular rainbow, and this is visible from any elevated location. Quite apart from seeing the combination rainbow plus silhouette while in flight I have since seen the glory without an enclosed silhouette from the seventeenth floor of an apartment building in Honolulu, where during a light rain shower one hovered below me over the asphalt backdrop of a parking lot in front of an adjacent church.

What does this have to do with dragons? While most dragons appear uncoiled, serpents that form a circle by swallowing their own tail are found in several cultural traditions, including the following:

1 Europe

In Europe the dragon swallowing its own tail appears as a symbol of unity or totality within the medieval tradition of alchemy (Jung 1970:223).

According to Allen and Griffiths (1979:66), "The alchemical dragon was often expressed as the Ouroboros, the circular serpent-dragon which bites its own tail, a symbol of unity and of the *prima materia* of the universe which is far older than alchemy and which may have had its origins in Egypt as Apophis, the encircler of the earth."

A similar theme appears in the Midgard Serpent, described in the Icelandic sagas as a colossal dragon that encircled the planet in one enormous coil, much of which was under water and consequently unseen, although its movements were said to cause tidal waves and other violent events at sea.

2 Ancient Near East

With regard to ancient Egyptian mythology, we are told that "Another creature ... is the divine serpent Sito, reputed to encircle the world with its immense coils and also represented in several other mythologies. Sito is often merely depicted in the form of a circle, holding its tail in its mouth" (Hogarth and Cleary 1979:19).

It is hard to know how much traditional peoples knew about the glory. They would certainly have seen lunar, and sometimes solar halos which resemble a circular rainbow. However, whether they would have been associated with dragons in the same way that ordinary rainbows are is an open question. In addition, the *ouroboros* appears to have been a concept of the priestly class in Egypt, and the Midgard Serpent appears to have been more a creation of the *literati* who composed the Icelandic Eddas than of the common people, so the idea of a supernatural serpent biting its own tail to form a circle may not have been readily available to the common people anywhere on the planet, especially among tribal people. The distribution of this idea is also relatively restricted, being limited so far as is currently known to ancient Egypt, the Icelandic sagas and medieval alchemy, hence to Egypt and Europe, with no known cases in India, the Far East, the Americas, New Guinea, Australia, the Pacific Islands or sub-Saharan Africa.

Nonetheless, since rainbows *were* Rainbow Serpents, and therefore dragons to most preliterate peoples, what appeared to them to be a circular rainbow might well have been viewed as a dragon swallowing its own tail. Moreover, seeing it encircling heavenly bodies such as the sun or moon would have

provided a model for mythological dragons that encircle the Earth. At least provisionally, then, we can suggest that the concept of the *ouroboros*, no less than the dragon idea itself, could have arisen from observations of the natural world.

PART 3

Summing Up



Connecting the Dots

We have now seen enough data to draw some firm conclusions. Chapters 5 and 7 can each stand alone as studies of particular phenomena—in one case the globally distributed dragon idea, and in the other, globally distributed beliefs about the rainbow. The purpose of this chapter is to align the two sets of observations to show that many of the traits that are attributed to dragons in widely separated parts of the Earth are also attributed to rainbows, and that the number of such correspondences clearly eliminates chance as an explanation for the agreements.

In some cases, these traits have a transparent physical explanation, as where both dragons and rainbows are considered to be controllers of the weather, while in others they do not, as where both are considered to be offended by menstruation. However, where agreement exists it is evidence of common origin, whether the trait has a transparent physical explanation or not. Moreover, many of these traits are shared not only in cultures in which the dragon and the rainbow are all but indistinguishable (as in aboriginal Australia, parts of Southeast Asia and South America, and much of Africa), but also in cultures (as those of Europe, India, China or aboriginal North America) in which the dragon has no generally accepted connection with the rainbow. In many ways this is reminiscent of Tylor's long-abandoned, but certainly not useless theory of 'survivals'—that is, cultural practices which no longer have a conceptual underpinning, but once did. Like many of the examples Tylor cited in defense of his proposal, dragons show their heritage through the presence of traits that can only plausibly be derived from earlier beliefs about the rainbow, regardless of the present state of the cultures, and in this sense, they may be seen as survivals from a time when dragons were universally conceived as the Rainbow Serpent (Blust 2023 to appear). Finally, because of their inherent interest, the ethnology of the rainbow in Chapter 7 also included traits that have no known connection to the dragon, but for obvious reasons these are ignored here.

This book begins with two primary divisions for a reason. Most readers will come from cultures in which the connection between the dragon and the rainbow is far from obvious. The dragon is a creature of folklore and mythology—to those of European cultural ancestry it is an abhorrent beast that preys on the human community, especially young women, and so must be killed, while to those of East Asian cultural ancestry it is a beneficent creature that brings the fertilizing rains, although sometimes only under compulsion, and that com-

manded sufficient respect to become a symbol of the emperor of China. The rainbow, on the other hand, is real rather than mythological, a thing of beauty suitable for a place in poetry or a symbol of divine promise rather than a monster to be avoided or destroyed. From this perspective few things could be more different. But once we incorporate attitudes about the rainbow from a wide sample of the world's peoples, we see a very different picture.

To some readers it may be apparent that I have found it difficult to keep Parts I and II separate. While it is possible to discuss the dragon without reference to the rainbow in Europe, the Near East, North America, and to a large extent in the Pacific, and Central and East Asia, it is much more difficult to do this in mainland and island Southeast Asia, New Guinea, Central and South America, Africa, and particularly Australia, where the two blend into one so often that a distinction between them seems pointless. That others have had a similar problem can be seen in e.g. Benedict (1975:274), where a single entry is given for 'dragon' and 'rainbow'.

Table 2 (on facing page) summarizes agreements between globally distributed traits of dragons, and similar traits attributed to rainbows. In the interest of systematic presentation I adhere to the outline in Chapters 5 and 7, using numbers to indicate the areas where the trait is documented, as follows: 1. Europe, 2. the ancient Near East, 3. South Asia, 4. Central and East Asia, 5. North America and Mexico, 6. Central and South America, 7. Mainland Southeast Asia, 8. Insular Southeast Asia, 9. New Guinea and satellite islands, 10. Australia, 11. The Pacific islands, starting with the Solomons, 12. Africa.

What does Table 2 tell us? Most fundamentally, it tells us that many traits that have been widely reported for dragons are also reported for rainbows, and there is no plausible way to explain these multiple agreements as a product of chance. The simplest explanation for the correspondences in Table 2 is that at some point in the history of the dragon idea what is unambiguously considered a dragon today must have been a Rainbow Serpent, and hence a rainbow. The second thing that Table 2 tells us is that about half of the traits of dragons that appear to be whimsical inventions by myth-makers are transparently derived from attempts to explain the causality and nature of the rainbow. Although they have already been discussed separately in Chapters 5 and 7, traits 1–26 will now be considered together to show that many traits of the dragon that have puzzled scholars for over a century must be due to its origin as the Rainbow Serpent.

1. Controller of rainfall. As already shown, the idea that dragons have the power to give or withhold rain is found in at least the folk traditions of Europe, the ancient Near East, India, East Asia, and Central and South America, with

TABLE 2 Aligning the traits of dragons and rainbows

	Dragon	Rainbow (serpent)
1. controller of rainfall	1, 2, 3, 4, 5?, 6	1, 3, 4, 5, 8, 11, 12
2. guardian of water sources	1, 3, 4, 5, 6	5, 6, 8, 10, 12
3. found in waterfalls	5, 6, 8, 12	(all major falls)
4. lives in caves	1, 2, 4, 5, 6	6, 12
5. is capable of flight	1, 2, 3, 4, 6	(all, by its nature)
6–9. combines hot/cold, fire/water	(all areas)	(all, by its nature)
10. is opposed to thunder/lightning or sun	1, 2, 3, 4?, 5, 6	6, 12
11. is androgynous	1, 4, 6	4, 5, 6, 7, 8, 10, 11, 12
12. is colorful/red	1, 2, 4, 5	4, 5, 8, 9, 11, 12 (red)
13. guards a treasure	1, 3, 4, (5), (6)	1, 6, 8, 12
14. preys on young women	1, 4, 5	5, 6, 8, 10, 12
15. is offended by menstruation	5, 6	5, 6, 9?, 10
16. is connected with hoofed mammals	1, 4, 5	1, 3, 4, 8, 12
17. has fiery breath	1, 3, 4, 5?	5, 8, 12
18. has fetid or toxic breath	1, 4, 5, 12	5, 12
19. causes earthquakes	1, 5, 6	7, 8, 12?
20. causes whirlwinds/storms	1, 4, 5	8, 9, 10, 11
21. causes floods	1, 2, 4, 5, 6	6, 10
22. is a sign of war	1	1, 3, 4, 6, 7, 8, 9, 11
23. causes sickness, disease or trouble	1, 5, 6	5, 6, 8, 11, 12
24. may have human traits	1, 2, 3, 4, 5, 6	4, 5, 6, 12
25. can be personified	1, 3	10, 11, 12
26. encircles the world	1, 12	(the glory)

one questionable case from North America. If this trait were arbitrary, why would it be so widespread? And if the dragon was inspired by living creatures, mammalian memories from the Age of dinosaurs, line dancing, breaking into burial mounds, or other clever but unenlightening proposals, why would it include the ability to control rainfall?

The answer to this question is found in Table 2: rainbows appear only at that tipping point when the rain is about to stop, but hasn't yet done so. They can thus be visualized as either bringing the rain because they cannot appear until it falls, or as preventing the rain because they cannot appear until the sun breaks through the clouds. For this reason the rainbow is widely seen as a giant snake that either drinks water from a terrestrial source and sprays it out to make

the rain, or that drinks the rain from the sky and makes it stop. The ambivalent attitude toward the rainbow in relation to rainfall, even among closely-related peoples, is thus easily understood, and at the same time provides a ready explanation for the often-mentioned ambivalence of the dragon as a force of good or evil.

2. Guardian of water sources. The second thing shown in Table 2 is that the dragon is regarded as a guardian of springs, waterholes, rivers, lakes and the like virtually everywhere that it is found, except in the arid regions of the Middle East (since data on this area is limited, this may change if further information becomes available). Here, the idea of a real water reptile may initially seem to carry more weight than it does as a controller of rainfall. However, the best candidate for such a dragon model is the crocodile, or water python, neither of which is present in Europe, most of North America, including Mexico, the Chaco of South America, or the Australian continent apart from the far north. Moreover, dragons guard wells in Europe and China, and these are not places where one would expect to find a crocodile or water python.

Again, the connection of dragons and rainbows here is readily understandable. Preliterate humans had to explain where rainbows went when they were not in the sky. Since rainbows had to drink from a terrestrial source to produce rain, it is hardly surprising that in their terrestrial form as giant snakes or dragons they would be guardians of these water sources.

3. Found in waterfalls. As seen in Table 2, dragons have been reported as residing in waterfalls in North and South America (multiple locations in the latter case), insular Southeast Asia and Africa. In fact, as noted earlier, every major waterfall for which it has been possible to collect folkloric information has its resident dragon. So far as is known, this unexpected association is limited to waterfalls with a significant water volume. Slender falls with little splash presumably have no dragon, but cataracts that produce spray which rises high into the air are, in effect, creating reverse rainfall, and hence the conditions for producing rainbows when the sun shines through the spray. This is clear at Niagara, where one of several cataracts by which the Niagara River plummets to the water below is called 'Rainbow Falls', since the rising mist is filled with fleeting rainbows that come and go at the whim of the sun. It is not unexpected, then, that the Seneca Indians whose territory included the falls, believed that a horned water serpent inhabited Cayuga Creek, which flows into the Niagara River. It is, moreover, noteworthy that in this case the local version of a dragon resided *above* the falls, rather than in a cave at the base, since this is where the rainbows appear—high above the cascade that generates them.

The British social anthropologist A.R. Radcliffe-Brown (1930–1931:343) noted that the Rainbow Serpent of Australia is particularly associated with waterfalls in the New England tableland because of the prevalence of rainbows seen there. In this case the connection of the local version of a dragon with a waterfall is almost superfluous, since the Rainbow Serpent is already seen as a rainbow. But in cases like the dragon of Niagara the association of the horned water serpent with a waterfall must reflect an earlier belief that this mythical creature was a Rainbow Serpent that, for whatever reason, lost its connection with the rainbow.

4. Lives in caves. Although it is not a fixed feature of the dragon idea, the use of caves as dragon dens is fairly common. As seen in Table 2, this feature appears everywhere that unambiguous dragons (i.e., dragons that have no explicit connection with rainbows) are found, except (so far) in India. Caves may, of course, be either wet or dry, and the connection with dragons does not distinguish between them, but the basis for this belief can again be traced to the association of dragons with waterfalls, since natural hydraulic erosion of the cliff base produces caves at many major waterfalls, and rainbows may appear in front of them.

5. Is capable of flight. Why dragons should be capable of flight when they are basically giant snakes is unexplained by any theory that has been proposed to date. But as descendants of the Rainbow Serpent their association with the sky needs no explanation. Rainbows naturally do not fly, but they appear suddenly in the sky and then as quickly disappear, and to the minds of preliterate humans this must have been because they travelled between their watery homes on earth and the realm of the clouds. This is expressed in some traditional societies, as the Murle of the Sudan, who say that the rainbow is a large dragon-like snake which sleeps in a cave when not flying in the sky. We can therefore assume that all rainbows ‘fly’.

Dragons, on the other hand, seem to vary in this trait. Although there is some evidence that the dragons of each of the above geographical regions can fly, there are differences in how robustly attested this trait is. As seen earlier, in Mesoamerica there is debate about whether the plumed serpent is capable of flight, since it has feathers but no wings. In Europe dragons are sometimes portrayed in the air, but far more commonly on the ground (despite their wings). In the ancient Near East the evidence for flight is limited, but persuasive. In India the *nāga* is normally portrayed as residing in underwater splendor within bejeweled palaces, but there are distinct types of *nāgas*, and some of these are said to fly. In China and the largely derivative dragon tradition in Japan the

dragon is generally seen flying among the clouds, making it the most airborne of all dragons, despite the absence of wings. The one area where flying dragons have not been found is North America, as here the horned water serpent is normally confined to rivers and lakes, and no longer has a clear association with the rainbow. Once the association with their natural source was lost, the need to see dragons as capable of flight could have vanished, although this did not happen everywhere.

6–9. Combines hot/cold, fire/water. As noted many times already, what makes a dragon distinct from all other creatures, both real and imaginary, is its bodily form, which fuses the trunk of a cold-blooded reptile with various embellishments from mammals or birds. In addition to the scales of a reptile this includes horns, hair or feathers, depending on the region in which the dragon is found.

There is an inherent contradiction in this combination of traits, since it could not happen in the real world. However, once again we are reminded that seemingly arbitrary traits of dragons that appear in widely-separated areas must have some natural basis or they could not have a global distribution. This basis is, of course, the nature of the rainbow, which is universally seen as a fusion of hot and cold, or fire and water, since neither the sun alone nor the rain alone can produce it, but when these combine the rainbow appears. Pre-literate people may not have had the powerful tools of science that have become available in recent centuries, but they made accurate observations about the natural world, and this is one that was made everywhere.

10. Is opposed to thunder/lightning or the sun. Despite the lack of any obvious reason why dragons should be opposed to thunder/lightning or the sun, Table 2 shows that this belief is found almost everywhere that dragons exist, often taking the specific form of the dragon being slain by a thunderbolt hurled at it by a celestial deity. Again, other theories of the dragon are silent on this trait, as they are on most of the preceding ones. But, given its distribution over several continents, it cannot be ignored.

If dragons were modelled on real creatures, why would they be opposed to thunder and lightning, or in some cases even to the sun? Moreover, if any other theory claims to explain the universality of the dragon idea, how could this well-established feature of its nature be accounted for? Again, once we recognize that the dragon idea has evolved at different rates in different parts of the world from the Rainbow Serpent, and that the latter is almost certainly the first human attempt to understand the nature of the rainbow, everything falls into place. Rainbows simply cannot occur during thunderstorms, since these

drown out sunlight; nor can they occur during sunny days with no rain. All over North America the conflict of the horned water serpent with the Thunderbird figures prominently in mythology and folklore, and here the reason has been lost because of the nearly universal separation of the dragon idea from the idea of the Rainbow Serpent, although in some parts of Mexico the connection is still made. In Bantu-speaking central Africa, however, the conflict between the lightning and the rainbow, both of which are usually represented simply as weather phenomena (although the rainbow's alter ego is the water serpent), is completely transparent, as described in detail by de Heusch (1982).

11. Is androgynous. Virtually no one who has ventured a theory about the origin of dragons seems to be aware that dragons are regarded as androgynous in widely separated cultures. In Europe this is understandable, since the dual gender of the dragon appears only in the tradition of medieval alchemy, although in that context it is robustly attested. But the same trait surfaces again in the Taoist metaphysics of ancient China and in modern Chinese folk tradition, as well as with the plumed serpent of Mesoamerica. No biological model can explain this feature, and in most theories it is simply not mentioned.

Once again, however, we are led back to the rainbow to explain an imputed trait of dragons that otherwise seems completely mysterious. Rainbows naturally occur double (physical treatises on the rainbow speak of n -order rainbows, where n can be up to ten, although most of these are imperceptible to human vision). Given the pan-human tendency in preliterate societies to animate nearly every unusual feature of the natural environment, it is not surprising that people have struck upon the same interpretation independently in widely-separated parts of the Earth, namely that one of the bows is male and the other female. If rainbows are simultaneously male and female, and if dragons evolved from the Rainbow Serpent (which is androgynous in much of Aboriginal Australia), the recurrent theme of double gender for the dragon is seen to have a natural basis.

12. Is colorful/red. There is no reason why dragons should be colorful, or in some reports, red. Yet this trait is reported from Europe and the ancient Near East (where some sources report the dragon as 'red'), and in China, and North America (where the dragon is described as 'colorful', 'multi-colored', or 'colored like the rainbow'). That dragons are sometimes described as 'multicolored', or even as showing the colors of the rainbow, should not come as a surprise, if they are derived from the Rainbow Serpent.

The rainbow is, by its nature, 'colorful' or 'multi-colored', but in Table 2 I have indicated only those areas where the primary color of the rainbow is reported

to be red. In most of these cases there is a specific reference to the redness of the rainbow being due to the blood of humans that has risen skyward. While the latter reference is not known to apply to dragons, the red color of dragons in some reports, and the occasional heavy emphasis on red as the basic color of the rainbow provides an additional tie linking independent dragons in places like Europe or North America, with the Rainbow Serpents from which they evolved.

13. Guards a treasure/has a jewel in head. European dragons are particularly known for guarding hoard of gold or other treasure, but they are not unique in this respect. The Indian *nāga*, or at least some types of *nāgas*, guard collections of precious jewels, the Chinese dragon is often depicted as pursuing a round object that has been interpreted as a pearl, and both European dragons and North American horned water serpents are sometimes described as carrying a jewel in their foreheads.

At the same time, cultural traditions in at least Europe, Central America, insular Southeast Asia, and Africa maintain that there is a treasure at the end of the rainbow. Although the nature of this treasure varies somewhat for the dragon, the treasure at the end of the rainbow is almost always gold. As noted earlier, there may be a natural basis for this association, since gold particles are commonly found in river sands, and are visible because of their lustre. Since it is widely believed that the rainbow ends in a water source from which the Rainbow Serpent drinks, the association of a treasure, and in particular of gold, both with the end of the rainbow, and with the dragon that guards terrestrial water sources, is arguably one and the same thing.

14. Preys on young women. It does not need to be emphasized that the dragon in Europe is seen as a menace to young women, as this theme is common in the history of Western art. In China the same trait is expressed more subtly, as in the passage from the Chinese classics that describes a naked woman used to manipulate a dragon into producing rain. In North America the horned water serpent also preys on young women, and can cause demonic pregnancies.

It is remarkable that the rainbow has a similar menacing role in relation to young women. While in most parts of the world this is clearly the rainbow *qua* Rainbow Serpent, in North America the horned water serpent and rainbow are generally seen as distinct entities, yet both menace young women. A psychoanalytic interpretation has been proposed for this trait of the Rainbow Serpent (Tuschman 2008), but what matters here is that it is found in *both* dragons and rainbows.

15. Is offended by menstruation. In some ways, traits 14 and 15 can be combined, although they are clearly separate in some parts of the world. The theme of menstruation as an irritant in relation to both the dragon and the rainbow is very robust in North and South America, and Australia, with some reports also from New Guinea, and Africa, but it is unattested elsewhere. In both the Americas and Australia a girl in her menarche must be especially careful to avoid drinking from, or especially bathing in springs that are guarded by a serpent. In North America this is the horned water serpent, with no connection to the rainbow. In both South America and Australia, it is the Rainbow Serpent, and hence the rainbow. Once again, then, whether or not a natural basis for the behavior can be found, the dragon and the rainbow are virtually indistinguishable.

16. Is connected with hoofed mammals. Dragons are chimeras that combine a basic reptilian body form with additional traits derived from mammals, or less commonly, birds (specifically the Central American *quetzal*). While the general fusion of a cold-blooded and warm-blooded animal is readily intelligible since the rainbow needs both fire and water to exist, the specific association of dragons with hoofed mammals, and in particular with horses, is puzzling.

Surprising as this connection may seem, it is considerably more surprising to see that rainbows have a similar connection, even in areas where they are sharply distinguished from dragons, as in Europe, India or China. And when we read that the Uduk of the Sudan talk about a “hungry, meat-eating rainbow” that lives in a cave, and has ears and a mouth like a camel (recall that in one of the Chinese classics the dragon is said to have the head of a camel) the line between rainbow and dragon is erased completely.

17. Has fiery breath. Dragons breathe fire. In Europe it is the fire of blast furnaces, while in China it is different from ordinary fire. Why such a trait should be attributed to a mythical animal that is modeled on real reptiles has never been explained, and much the same shortcoming is found in virtually all other theories of the dragon. Did the ‘dragons of Eden’ (Sagan 1977) breathe fire? Was this trait simply imagined by people who conceived of dragons while line-dancing?

In Mexico, Indonesia and Africa the end of a rainbow is said to start fires where it touches earth. The basis for this belief may be that the rainbow ‘burns up’ the rain and makes it stop (as seen earlier, this belief occurs among Bantu speakers, where the rainbow is seen as antagonistic to the desired rainfall, and is thus associated with the dry season). Since the end of the rainbow corresponds to the head of the Rainbow Serpent, which must drink from the Earth

to cause the rain, the idea that fire proceeds from the end of the rainbow provides a ready transition into the dragon breathing fire.

18. Has fetid or toxic breath. In North America the horned water serpent normally does not breathe fire. However, it is often said to have toxic breath, and a similar trait has been noted in Europe, China and Africa. Why the dragon should be maligned in this way is not immediately clear, but the wide distribution of the belief suggests that it has a natural basis. Again, we find the same trait in the rainbow, even where it is not associated with a Rainbow Serpent, as in northern California or northern Mexico. Because rainbows produce no odor, we can only speculate that this association might be connected instead with lighting strikes, since organic materials that have been struck by lightning may have unusual smells. Once again, however, it must be stressed that even without evidence of a natural basis for this trait, its connection with both dragons and rainbows further strengthens the argument that dragons began as Rainbow Serpents.

19. Causes earthquakes. In Europe, North America and Mesoamerica dragons are said to sometimes produce earthquakes. Dragons are often portrayed as large, heavy animals, so it might be imagined that by lumbering over the Earth they would create vibrations strong enough to trigger an earthquake. However, the same trait is attributed to rainbows in mainland and insular Southeast Asia (including the long-isolated Andaman Islands), and in at least some parts of Africa. Since the rainbow is a celestial phenomenon and the earthquake a terrestrial one, it is hard to see why the appearance of a rainbow should trigger an earthquake. The only connection that readily comes to mind is that the end of the rainbow is thought in various places to be spiritually highly-charged, and since it is thought to cause other disturbances, it might also cause earthquakes.

20. Causes whirlwinds/storms. Both dragons and rainbows are said to cause whirlwinds, waterspouts and the like. The first of these associations has been reported in Europe, China, Japan, and western North America. Given the mythology of the dragon as a large and somewhat violent creature that can rise skyward from its watery haunts on earth at the beginning of the rainy season, the belief that its flight might precipitate whirlwinds or storms is perhaps not surprising. However, it is hard to say this for rainbows, which share the same feature. The reasons that are given for rainbows starting whirlwinds or waterspouts, however, are quite varied. In the Balinese myth of the origin of the rainbow seen earlier, it is the severed penis of the hermaphroditic goddess

Uma that fell to earth which causes whirlwinds, among the Suau of southeast New Guinea it is simply the spiritually-charged end of the rainbow that has the same effect, and among the Maori of New Zealand, it is the union of a male and female rainbow that triggers this natural disturbance.

21. Causes floods. There is no need to enter into detail in connection with this trait, since it is very similar to traits 19 and 20. Again, it is not clear why dragons should trigger floods, although this is reported almost everywhere they are found, and the same trait is associated with the rainbow or Rainbow Serpent in South America, mainland Southeast Asia, New Guinea and Australia.

22. Is a sign of war. I have taken some liberties here. So far as is presently known the dragon is a sign of war only in Europe where, as noted previously, the army of the later Roman Empire used a *draco* (dragon) as the standard of a cohort (about 500 men), and later carved dragon heads figured prominently on the prows of Viking ships when they struck out on expeditions of rapine and pillage. Ingersoll (1928:129) mentions that some Indo-European speaking peoples in the Near East, such as the Persians, Scythians and Parthians also had dragon standards that they carried into war, and that this was also true of the Semitic-speaking Assyrians. However, given the geographical contiguity of these groups, the Assyrians may have acquired this trait by contact.

While this association with dragons is not known in other parts of the world, the rainbow has been recorded as a sign of war everywhere except the ancient Near East, North America, Australia and Africa. Whatever the basis for associating the rainbow with war (red = blood = bloodshed?), the fact that this association is widely shared by the dragon and the rainbow must be counted as further evidence for their ultimate unity.

23. Causes sickness, disease or trouble. Dragons are not dangerous just because of their aggressive behavior, but they may also cause sickness through their toxic breath, or for other reasons. Among indigenous people in southern Canada and Paraguay land serpents or water serpents could sicken people, in some cases just by being seen. The same trait is associated with the rainbow in Europe, North and South America, mainland and insular Southeast Asia, New Guinea, the Pacific islands, and various parts of Africa.

24. May have human traits. Since dragons are usually opposed to humans, it is surprising to see them regarded as having human traits, or as interbreeding with humans virtually everywhere they are found. To forge one more link with the Rainbow Serpent, the same trait is described for the rainbow in

China, British Columbia, southern Mexico, Guatemala and in at least the Northern Territory of Australia.

25. Can be personified. Closely related to the preceding is the tendency to personify dragons and rainbows by giving them individual names in myths or tales. In Europe this is a feature of the mythology of classical Greece and the Germanic epics, in the ancient Near East it is done in the Babylonian creation epic, and in India it appears in the *jātakas*—stories of the many incarnations of the Buddha. However, it has never been reported for the Chinese dragon or the North American horned water serpent. In the latter case the story of the dragon of Niagara is instructive, as the keeper of the thunderbolts (Hi'no), who kills the horned water serpent, is named, and hence personified, while the serpent is only referred to as a “monster”, even when it has human traits.

26. Encircles the world. This last connection is provisional, but nonetheless worth noting. As already pointed out, in ancient Egypt, Norse mythology, and European alchemy a dragon forming a circle to bite its own tail figures as a prominent symbol, the *ouroboros*. The earliest known manifestation of this idea is from Egypt, where the dragon appears “as Sito, a serpent-god who encircles the world, either with many coils, or with its tail in its mouth, or walking—with legs provided!” (Clark 1959:239–240).

As seen in Chapter 9, circular rainbows or rainbow-like atmospheric phenomena exist, and could have been seen by people at any time in the past provided they were at a sufficient height looking downward, and it is perhaps this type of observation that gave rise to the *ouroboros*.

This chapter lists 26 traits of the dragon (22 if we combine 6–9 and 14–15), all but one of which (its use as a sign of war) are widely distributed in the world's cultures, and which align closely with traits of the Rainbow Serpent. The probability that this agreement is fortuitous is too small to take seriously. Rather, the simplest conclusion is that the dragon idea arose from earlier conceptions of the rainbow as the Rainbow Serpent.

Although descriptions of the Rainbow Serpent in standard compendiums of world mythology and folklore treat it as a uniquely Australian phenomenon, it should be evident from the preceding documentation that this is not true. Essentially the same idea must have once been the common property of all humanity. In culturally conservative areas, such as Aboriginal Australia, parts of South America and sub-Saharan Africa, the view of the rainbow as a gigantic serpent has remained largely intact, while in culturally more innovative areas, where agriculture, urbanization and literacy began, the Rainbow Serpent has divided conceptually into the dragon and the rainbow.

The preceding point cannot be emphasized too strongly. It is known that species and languages change over time, so why wouldn't cultures? If the dragon began as an attempt to explain the causality and nature of the rainbow, its earliest form would have been that of the Rainbow Serpent—not that of the ancient Near Eastern dragons, as some writers, who confuse documentary history with culture history, have claimed. For much the same reason, the useful paper by Taçon, Wilson, and Chippendale (1996), which implies that the Rainbow Serpent in Australia was first conceived some 6,000 years ago in Arnhem Land because that is where it makes its first known appearance in rock art, must be viewed through a critical lens.

The evidence considered here suggests instead that the Rainbow Serpent entered Australia with the first human settlers some 60,000 years ago, and preceded the dragon everywhere on the planet by tens of thousands of years. In culturally conservative areas it changed only in details over countless generations, while in culturally innovative areas such as Europe, the ancient Near East, India and China, it experienced major transformations. In short, like any biological species, the dragon has had an evolutionary history, but one mediated by culture, not by genes. In considering the antiquity of the dragon idea in human history, it is important to remember that the *brain* is produced by nature, but the *mind* is produced by culture. The archaeologist Paul Mellars (1996:366) states the problem nicely in relation to inferences about the possible use of symbols by Neanderthal populations:

There is an obvious danger of making simplistic equations between 'simplicity of behavior' and 'simplicity of mind' which somehow short-circuits scientific analysis, and effectively assumes what one should be attempting to find out. Obviously, the less complex patterns of technological or economic behavior of modern communities such as Australian Aborigines, Bushmen, or sixteenth century Europeans in no sense imply that they had an inherently inferior intelligence or simpler cognitive capacities than those of modern industrial societies.

While the point Mellars makes is concerned with inferences about the cognitive capacities of different species of the same genus, its general import is that wherever evidence of biological development is fundamentally similar we have no right to assume that mental abilities were radically different in the past, no matter how distant that past is. Reasoning from the uniformitarian principle that the present is our best guide to the past tells us that as long as our ancestors had brains equivalent to ours, their thinking processes probably would have been similar, and the mystery of the rainbow would likely have triggered the

same reaction it still does in what remains of the animistic world. This means that the Rainbow Serpent could well have a history that began with the appearance of modern humans, making it the oldest symbol in the mental life of our species, and discourse about it Man's oldest story.

The universality of the dragon idea raises at least one other important question, namely, was it unique to us? Based on skeletal evidence, most current views are that modern humans appeared some 150,000–200,000 years ago (Fagan 2010:83 ff.) making it unlikely, or even highly unlikely, that their thinking processes would have been fundamentally different from those of hunter-gatherers in the recent past. In the absence of definitive evidence, then, it is reasonable to assume that the Rainbow Serpent complex was already taking shape with the appearance of anatomically modern humans. However, when we look back beyond about 30,000 years ago, we find not one human species, but at least two: *Homo sapiens*, and *Homo neanderthalensis* (with the still poorly understood Denisovan population of central Asia possibly representing a third).

Papagianni and Morse (2013:80 ff.) bring the Neanderthal story up to date by revising a number of earlier misconceptions about differences between these close relatives and our own genetic line (which diverged from the Neanderthals some 500,000 years ago). Among the misconceptions that they revise is the idea that Neanderthals lacked the cognitive capabilities and forward-planning abilities of modern humans because the archaeological record shows little use of symbolic systems such as art. However, a remarkable animal kill site (La Cotte de St Brelade) on the island of Jersey in the Channel Islands between Britain and France, suggests a very different story. This site, dated to before 130,000 years ago, shows unmistakable evidence of a method of hunting that was still practiced by Plains Indians in North America until the horse was accidentally reintroduced to them by Spanish explorers in the sixteenth century. This was a method whereby herd animals were tempted to follow a human leader (in the Native American case one dressed in a buffalo robe) toward a cliff. Other humans, concealed behind converging mounds on either side of the herd then began to shout, shake animal skins, and otherwise try to panic the animals in the rear to move forward, forcing the entire herd toward the brink. At the base of the cliff the animals that still lived after the fall were dispatched by hunters who awaited them.

Needless to say, this type of hunting requires considerable forward-planning, coordination among individuals with different roles, and—unmistakably—language. If nothing else were known about the cognitive capabilities of Neanderthals, the evidence for such animal drives would strongly suggest that their brains worked in ways not very different in most respects from those of *Homo*

sapiens. And if this were the case, we must ask ourselves, how would they have responded when seeing a rainbow? Almost certainly they would have asked the same questions as early *Homo sapiens*: ‘What is it?’, ‘How did it get there?’, ‘Where does it stay when it isn’t in the sky?’ The only factor that might have caused a difference would have been a lack of familiarity with snakes, which could not survive in Ice Age Europe, but may well have been familiar to them during the warmer interglacials.

In summary, the Rainbow Serpent concept, which gave rise to the dragon idea after the advent of agriculture, urbanization and literacy, could have arisen independently in both of the two major hominid lines that co-existed in Europe and the Middle East until the past 30,000 years. Although we may never be able to test this supposition, it is at least plausible, provided that the physical environment was similar enough for both species to envision the rainbow as a gigantic spirit snake.

Conclusions

Once we begin to seriously investigate the ethnology of the rainbow, the truth about the dragon is seen to lie all around us, like a field of newly fallen snow, immaculate and clear. Yet, everywhere we see it trampled into an unrecognizable slush by the ceaseless traffic of baseless speculation. This has been the story of the dragon for well over a century. To state once more the only conclusion that can possibly be supported by the evidence considered in this book, let me end on the words with which I began:

Dragons evolved from rainbows

This pronouncement should not appear as outrageous now as when first seen by the reader. Once it is understood that the Western concept of the rainbow is not typical of traditional cultures, and that many otherwise obscure traits of the dragon have a natural explanation if the dragon is a relic of the Rainbow Serpent, many things that were puzzling become surprisingly clear.

First, it is now clear that the Rainbow Serpent—long believed, and still commonly treated, as a phenomenon *sui generis* to aboriginal Australians—is globally distributed, appearing in locally different but easily recognizable forms around the world, except where the serpent and rainbow have separated and become dragon and rainbow. This pattern provides another insight, namely that mythological creatures evolve over time as a result of culture change: the Rainbow Serpent in Australia may show many local variations, but no one could confuse it with the dragon in Europe, the ancient Near East, South Asia, the Central or East Asia, or North America. Rather, what must be described as cultural stasis in geographically isolated regions like Australia, has resulted in the preservation of the most ancient forms of the Rainbow Serpent complex, with only minor change over tens of thousands of years, while highly evolved cultures such as that of China, transformed the same original idea into a dragon tradition of extraordinary richness and complexity.

Why has it taken so long for anyone to come to this realization? This is undoubtedly the most vexing question about the history of scholarship on dragons, and it probably is best for me to leave the search for a definitive answer to historians of science. But it would be inappropriate for me to pass silently over this subject at the end of a book which has amassed more relevant data on why the dragon idea is universal than any previous work, and which has

argued for a specific approach to the problem—an approach that for unknown reasons no one has previously chosen to follow.

One reason that can be offered for the failure of previous scholarship to come to grips with the problem of the dragon is the virtual abandonment of basic scientific method in all earlier proposals, even by seasoned scientists. In any branch of science, the first step in addressing a question of interest is to collect all observations that are relevant to answering it (in this case the widespread *traits* of dragons listed in Table 1 and discussed in later chapters). The second step is to propose a hypothesis which accounts in a straightforward manner for as many of these observations as possible, while making the fewest possible assumptions. The last step is to compare this hypothesis with its competitors to determine whether it is truly better able than them to explain the data.

Up to the time of this writing standard compendia of mythology and folklore treat the rainbow, Rainbow Serpent and dragon as separate entries with no cross-referencing, or any indication that the latter two are different evolutionary stages of the same mythic creature. Some critics have said in private that these relationships are obvious, and there is thus no need to state them plainly, but if that is the case, why has this never been presented explicitly before? To cite an example of this mentality, a reader of a paper on the origin of the dragon that I submitted for publication, wrote twenty years ago “Unfortunately this essay does not appeal to a broad international audience, and does not contribute to present-day scholarship.” Among reasons given for this bizarre conclusion was that “The author gleaned a rather large sample from their contexts to prove his claim that the dragon is really the rainbow (as both fact and fiction) that does not seem an earthshaking discovery.” Yet in the same set of remarks this reader suggested that it would be worthwhile to consider the psychoanalytic argument in Roheim (1940) as an alternative hypothesis, and it was stated that the radical diffusionist argument in Hentze (1966) “is a must.” For anyone seriously interested in the data, however, one must ask whether either of these papers even addresses the trait distributions that form the substance of this book, let alone offers an explanation for them.

Another reason that previous treatments have fallen short is due to an ‘either/or’ mentality in the sociology of science. When nineteenth century evolutionary anthropology was rejected by field-oriented scholars it was abandoned *wholesale*. This meant that, for whatever emotional reasons, earlier work was treated as having *no* value, a reaction that is obviously unjustified. As has been mentioned repeatedly, Tylor’s 1871 theory of animism remains as solidly grounded today as it was when he proposed it nearly 150 years ago. Later writers criticized Tylor for putting Europeans at the top of the world hierar-

chy of cultures, but in the late nineteenth century, by any measurable material or economic standard, Europeans *were* at the top of this hierarchy. Tylor never claimed that Europeans are inherently superior to others—on the contrary, he was at pains to show that many features of European cultures that no longer have a clear explanation are survivals from a time when Europeans lived more like the tribal peoples he compared them with. Tylor's idea of a 'survival' (1958.1:70–111) was the key element in his argument that Europeans had once been more like 'primitive' people. To anyone with curiosity and an open mind, it should be apparent that many of the traits of dragons discussed here are arguably survivals from a time when the dragon was the Rainbow Serpent. Why are dragons controllers of rainfall? Why do they guard springs, wells, lakes and the like? Why have they been reported as residents of virtually all major waterfalls where ethnographic data is available? Why do they live in caves or fly? Why are they opposed to thunder and lightning in widely-separated cultures? To refuse to see these and other examples as survivals in Tylor's sense because one believes that all of Tylor's ideas are 'old-fashioned' is an inexcusable intellectual prejudice. The notion of cultural survivals has its utility, and there is no reason to reject it out of hand when it can provide insights that are otherwise unavailable.

Much the same can be said for the work of Friedrich Max Müller. Yes, his 'solar theory' went too far, and he made other mistakes, as any scholar does today. But how does that justify refusing to even consider his central thesis, that many myths, at least at their first formulation, are disguised attempts to explain the workings of nature? A basic thesis present here is that the universal dragon idea was not a whimsical creation, but satisfied a basic need to explain the workings of nature in relation to the critically important factor of rainfall. If the preliminary explorations of comparative anthropology in the nineteenth century had been refined, extended, and respected, instead of being largely rejected in their entirety, someone surely would have addressed the ethnology of the rainbow a century ago. And if that had happened, the true nature of the dragon would have been understood far earlier, and much spilt ink used to support baseless speculations about why the dragon idea is universal could have been saved.

Yet another reason that the dragon has so long eluded the net of scientific inquiry is simple confusion on the part of researchers who tried to generalize on the basis of an inadequate database. Smith's radical diffusionist theory starts with the questionable assumption that humans are fundamentally un inventive, and the observation that the earliest historical records of dragons are from Egypt and Mesopotamia. Since dragons are connected in some way with water, and these arid regions depend critically on rainfall for life, the idea of

dragons *must* have started in the ancient Near East—or so the thinking goes. However, there is no logical transition here: just because the earliest written records describing the dragon idea are from Egypt and Mesopotamia hardly means that the dragon idea does not have a longer history. Add to that the fact that control of rainfall is important in most parts of the world, and the whole fabric of Smith's argument unravels. Similarly, Løwenstein (1961) provided a valuable survey of the worldwide association of rainbows with water serpents, but he then reversed the basic logic of animism to argue that the Rainbow Serpent complex used the rainbow to represent large and psychologically impressive snakes, rather than using the latter to explain the rainbow. In all of these varied accounts the most basic questions that anyone should ask were simply ignored: how would preliterate humans explain the appearance of a rainbow? How would they represent the fact that it appears only when sun and rain are competing for control of the sky? How would they account for where it is when it is not visible in the heavens?

Finally, one other reason that scholars have failed to use available resources to draw the conclusion that dragons evolved from Rainbow Serpents, is the widespread adoption of the philosophical position of radical inductivism. Basically, what this means is that all comparison must begin 'from the bottom up', starting with understanding the interrelations of the smallest and most closely-related units before moving to the next larger ones, and so on. To such scholars the idea of comparing more distantly related data points before all intermediate ones have been thoroughly analyzed is anathema.

Standard handbooks of mythology, legend and folklore have entries for the dragon, Rainbow Serpent, and rainbow, but these are treated as distinct because it is *possible* to treat them separately, not because they are inherently unrelated. In what was perhaps the first attempt to understand the universality of the dragon idea, Charles Gould (1886:163–164) had the following to say:

The dragon appears in the mythological history and legendary poetry of almost every nation as the emblem of the destructive and anarchical principle No one has attempted to collate the vast bulk of material shrouded in the stories of all lands. If this were perfectly effected a diagnosis of the real nature of the dragon might perhaps be made, and the chapter of its characteristics, alliances and habits completed like that of any other well-established species.

This statement was made over 130 years ago, and until now the research program that Gould envisaged had not been undertaken. Some have come to the brink of recognition, but stopped short, apparently because they felt ill-

equipped for the task. To choose one prominent example, A.R. Radcliffe-Brown, one of the leading cultural anthropologists of his generation, saw connections between the Rainbow Serpent of Australia and the dragon in other parts of the world that he did not dare to explore. In his words:

I do not propose to enter into the vast and difficult subject of the relation of the Australian myth to the similar myths of other cultures—the dragon of China, for example, with its positioning as representing the principle of moisture and its connection with the pearl. My belief is that such comparisons can only lead to valid conclusions after intensive study of the belief or custom in each culture-area separately. A good deal of further study of the Australian myth and its relations to other elements of Australian culture is necessary before we can really be sure of understanding it sufficiently to make it the subject of a comparative study (Radcliffe-Brown 1926:25).

Over half a century later a similar position was expressed by Mountford (1978: 92–93) who surveyed the Rainbow Serpent myths in Australia, and concluded somewhat more insightfully:

The rainbow-serpent myths of Australia are an extension of the universal serpent myths which permeate the beliefs of all peoples, past and present. Mythical creatures having characteristics similar to those of the rainbow-serpents of Australia are recorded in many countries: in the myths of the dragons of China, of the *nāga* of India, of the *taniwah* of New Zealand; in the many half-submerged myths of Europe and the ancient world of Greece and Egypt; in those of the water serpents of the primitive Bushmen of the Kalahari desert; and in those of the Indonesian and Melanesian islands. But we can enter no further into this vast field of serpent beliefs.

Both writers recognized that many cultures have some kind of serpent myth with generic similarities, but were unwilling to venture further into examining why this should be the case. Mountford was basically a descriptivist focused exclusively on Australian aboriginal cultures, with little concern for general theory, but Radcliffe-Brown was a major figure in cultural anthropology in his time, and his position on this issue was highly influential. Some will insist that this is the only responsible approach: work gradually ‘from the bottom up’, comparing only the most similar cultures first, and once the researcher feels confident that the differences between these cultures have been under-

stood, then move on to the next more inclusive level. However, not everyone shares this 'bottom up' mentality. Opponents will argue that there is no reason to 'put on blinders' and work in this way, ignoring everything else until the time is ripe for comparison between units that have themselves already been securely established from the bottom up. In evaluating the merits of these two points of view, perhaps the first question to ask is whether radical inductivism has always been followed in successful scientific work, and here comparison with the history of scholarship in other social sciences is instructive.

Nineteenth century science is generally credited with two great achievements: 1. the discovery of the Indo-European language family, and 2. Darwin's theory of evolution by natural selection. The scholars in Denmark and Germany who led the way in the decades-long enterprise of establishing the field of historical linguistics, starting in 1816, quickly recognized that the Germanic languages and others of northern Europe, which had 'no history' compared with the classical languages of the Mediterranean and India, are related to them. This insight did not wait for, or require a 'bottom up' comparison of Germanic languages, Slavic languages, or others to determine their immediate common ancestors before comparison with Greek, Latin or Sanskrit. Rather, a 'top down' approach was used from the beginning, and with the remarkable and lasting success that is known by anyone familiar with the history of scholarship in this field. As Greenberg (1957:50) has put it with reference to problems of linguistic reconstruction that are best resolved by taking more distantly related languages into the comparison:

These and many other examples which could be cited are of interest because they refute the common belief that more remote relationships should be ignored, while each distinct subbranch is reconstructed separately and independently. In many cases we cannot choose between alternative reconstructions without taking the wider family into account. In fact, in Indo-European the reconstruction of the protolanguage of the family as a whole progressed far more rapidly than did that of the individual branches. Moreover, Proto-Germanic and other comparable intermediate unities have always been reconstructed with one eye backward to Proto-Indo-European and one eye forward to the contemporary Germanic languages.

Greenberg's remarks in this passage refer to the reconstruction of Proto-Indo-European, but the matter that prompted these remarks was a problem in the reconstruction of Proto-Bantu, and it is easy to show that the same simul-

taneous 'top down/bottom up' approach has been successfully employed in the reconstruction of the ancestral stages of most language families; Dempwolff (1934–1938), for example, reconstructed his version of Proto-Austronesian with no concern about needing to first reconstruct Proto-Polynesian, Proto-Micronesian, etc.

If we take historical linguistics as a model for scientific inquiry in the social sciences, then, it does not support the attitude that the process of inference must begin on the most restricted level of inquiry before expanding to ever wider domains. In fact, most scholars in the physical and biological sciences probably would find this level of intellectual insecurity incomprehensible: why should relevant information be ignored out of fear this might lead to unjustified inferences? It should not have to be emphasized that the possibility of error exists on all levels of comparison, from the closest to the most distant, and the best control in coping with this possibility is the one already outlined above: 1. collect all data relevant to answering the research question at issue, 2. construct a hypothesis that explains the maximum number of relevant observations with the minimum number of assumptions, 3. compare the performance of a favored hypothesis with those of its competitors, and 4. select the winner.

This demonstration that a 'bottom up' approach to drawing inferences is not the only scientifically responsible or productive one is welcome, but is it even necessary? A moment's reflection will show that a strict 'bottom up' approach is *inherently* problematic, as it leads to an infinite regress, since in order to study a complex problem A one must *first* study each subset of A (in Radcliffe-Brown's case perhaps each culture-area within Australia). But in order to understand each subset of A one needs to *first* understand each sub-subset of A (in Radcliffe-Brown's case perhaps each ethnolinguistic group within Australia). And to study each sub-sub-set of A one needs to *first* understand each sub-sub-sub-set of A (in Radcliffe-Brown's case perhaps each local group). If conducting meaningful research requires the adoption of such methodological strictures where does one stop (or begin)?

Radcliffe-Brown's reference to "the Australian myth" implied that there is just one Rainbow Serpent myth across the Australian continent, and that once this belief complex is understood in detail the time may be ripe to move on to a comparison with the dragon idea in China and perhaps elsewhere. However, half a century later Maddock (1978:19) concluded that rather than one Rainbow Serpent, there are many 'rainbow serpents' ---that the Rainbow Serpent concept as it has been presented in the literature is not a discrete category, and that therefore "taking 'the rainbow serpent' as an object of study is likely to be profitless."

That there is variation in the form of the Rainbow Serpent complex within Australia (as there is globally), should hardly come as a surprise. This was noted some nine decades ago by Piddington (1930:352), who noted that the Karadjeri of western Australia

possess a very extensive mythology in which the *bulaiŋ*, a mythical water snake, plays an important part. But one of the many anomalies in Karadjeri culture is that the *bulaiŋ* which apparently corresponds to the Rainbow Serpent elsewhere in Australia, is in no way connected with the rainbow.

Piddington goes on to describe the *bulaiŋ* as “a gigantic snake which lives in waterholes”, and is physically a chimera, as in addition to its large eyes, it has long ears. Despite the absence of an explicit connection with the rainbow, several other traits give away the identity of the Karadjeri *bulaiŋ* as a local variant of the Rainbow Serpent. If it is cooked, for example, it will burst open and flood the countryside with the waters so released. In addition, although the men have a different belief that they keep to themselves, they tell the women that the *bulaiŋ* precipitates rain and storms, further traits of the Rainbow Serpent/dragon in many other regions.

Why should these variations stop anyone from believing that there is one Rainbow Serpent complex in Australia that arose from the same ultimate cause? Even a superficial consideration of the global distribution of this idea shows that it must have enormous antiquity, reaching back to the origins of fully modern brains, and the separation of ethnic groups over time invariably produces change in any aspect of culture. This is particularly obvious for language, and once the Rainbow Serpent existed as a cultural construct, it could be freely used in narrative contexts of all kinds, giving rise to elaborations of character, and the loss of original elements of the belief system or the acquisition of new ones.

Surely, the documentation of a worldwide and ancient belief that has been given in this book shows that what is profitless is the kind of reductionism Mad-dock espouses. What can be gained from treating a plethora of mythic figures, nearly all of which are connected with the rainbow, as though they have no connection with one another just because they are not identical? The Rainbow Serpent concept has been present in Australian aboriginal societies for countless generations. What may well have begun as a simple belief about the character of the natural environment became a mythic being with an imputed personality, allowing it to figure in a wealth of oral traditions over many millennia. To expect a belief system or mythic tradition of this kind to remain

invariant as it is passed from one generation to the next is like expecting a language to show no change under the same conditions—something that is clearly counter to fact. At its worst, the reductionist approach to category membership would deny the existence of such obvious categories as birds. Should finches, penguins and cassowaries be denied membership in a common category just because they differ in size, coloration or ability to fly? Yet only birds have feathers, and few observers have any difficulty deciding what is or is not a bird. For mammals the problems become even more extreme. Biologists tell us that whales, bats, lions, and humans are members of a single order within the animal kingdom: the order *Mammalia*. This is far from obvious to the untrained observer, and in folk classifications cetaceans are commonly grouped with fish rather than with their proper kin. Yet only mammals have hair and mammary glands.

The truth is that a reductionist approach would contribute nothing toward understanding the evolution of the dragon idea. At bottom this approach assumes that variation may not coexist with relationship, an assumption that is contrary to everything we know about classification in science. A sparrow and a penguin are obviously very different, but that does not mean that we ignore their unifying features and treat them as members of completely different categories. If there is a valid category called 'bird' why would there be no valid category called 'Rainbow Serpent'? Needless to say, the problems that reductionism creates carry over to many other cases, among them there is no human race, and most to the present point, there is no dragon.

But there is a dragon, as many writers have recognized since at least Gould (1886), and although it varies in detail from one region of the Earth to another, it shares an overlapping set of traits that distinguish it from any other creature, real or imaginary. In this basic sense the concept of the dragon is as real as the concept of a bird or a human being. Borges (1978) was unduly pessimistic in his claim that "we are as ignorant of the meaning of the dragon as we are of the meaning of the universe." The meaning of the universe may well elude us forever, but the story of the dragon has at last been told.

Ethnic Groups Cited

The following is a complete list of all ethnolinguistic groups cited in the text, together with information on their classification by language family or major subgroup within that family.

- 001. Achumawi: Palaihnihan
- 002. Adele: Niger-Congo (Kwa)
- 003. Aguaruna: Jivaroan
- 004. Ahtna: Nadene (Athapaskan, Tanaina-Ahtna)
- 005. Akolet: Austronesian (Oceanic)
- 006. Albanian: Indo-European (Albanian)
- 007. Alune: Austronesian (Central Malayo-Polynesian)
- 008. Amami Oshima: Japonic (Ryukyuan)
- 009. Amharic: Afroasiatic (Semitic, South, Southeast)
- 010. Amuesha: Arawakan (Maipuran)
- 011. Amuzgo: Otomanguean (Amuzgoan)
- 012. Andamanese: North Andaman
- 013. Andoni/Obolo: Niger-Congo (Benue-Congo)
- 014. Anufo/Chokosi: Niger-Congo (Kwa)
- 015. Anyi Sanvi: Niger-Congo (Kwa)
- 016. Apache: Nadene (Athapaskan, Apachean)
- 017. Arabic: Afroasiatic (Semitic, South, Southwest)
- 018. Aramaic: Afroasiatic (Semitic, Northwest, Canaanite)
- 019. Aranda: Australian (Pama-Nyungan)
- 020. Arapaho: Algonquian (Algonquian, Arapahoan)
- 021. Arapesh: Torricelli (Arapesh)
- 022. Arecuna/Pemon: Carib
- 023. Armenian: Indo-European (Armenian)
- 024. Arosi: Austronesian (Oceanic, Southeast Solomonic)
- 025. Assiniboiné: Siouan-Catawba (Siouan, Mississippi Valley)
- 026. Assyrian: Afroasiatic (East Semitic)
- 027. Atayal: Austronesian (Atayalic)
- 028. Avau: Austronesian (Oceanic)
- 029. Aymara: Jaqi
- 030. Babatana: Austronesian (Oceanic, Northwest Solomonic)
- 031. Babylonian/Akkadian: Afroasiatic (East Semitic)

- 032. Baganda: Niger-Congo (Bantu)
- 033. Bagesu: Niger-Congo (Bantu)
- 034. Baiga: Indo-European (Indo-Iranian, Indic)
- 035. Balinese: Austronesian (Western Malayo-Polynesian)
- 036. Bambuti: Niger-Congo (Bantoid)
- 037. Bamileke: Niger-Congo (Bantu)
- 038. Baoule: Niger-Congo (Kwa)
- 039. Bare'e: Austronesian (Western Malayo-Polynesian, Celebic)
- 040. Bargam/Mugil: Trans New Guinea (Madang-Adelbert Range)
- 041. Bariai: Austronesian (Oceanic, North New Guinea)
- 042. Barotse: Niger-Congo (Bantu)
- 043. Basuto/Basotho: Niger-Congo (Bantu)
- 044. Batak (Simalungun): Austronesian (Western Malayo-Polynesian, Batak-Barrier Islands)
- 045. Batak (Toba): Austronesian (Western Malayo-Polynesian, Batak-Barrier Islands)
- 046. Ba Thonga: Niger-Congo (Bantu)
- 047. Bengali: Indo-European (Indo-Iranian, Indic)
- 048. Berawan: Austronesian (Western Malayo-Polynesian, North Sarawak)
- 049. Berber: Afroasiatic (Berber)
- 050. Biak: Austronesian (South Halmahera-West New Guinea)
- 051. Birhor: Austroasiatic (Munda)
- 052. Blackfoot: Algonquian (Blackfoot)
- 053. Bontok: Austronesian (Western Malayo-Polynesian, Philippine, Northern Luzon)
- 054. Botocudo/Krenak: Ge (Botocudo)
- 055. Buginese: Austronesian (Western Malayo-Polynesian, South Sulawesi)
- 056. Bukaua/Bukawa: Austronesian (Oceanic, North New Guinea Cluster, Huon Gulf Family)
- 057. Bulgarian: Indo-European (Balto-Slavic, Slavic, South Slavic)
- 058. Buli: Austronesian (South Halmahera-West New Guinea)
- 059. Bunun: Austronesian (Bunun)
- 060. Burarra: Australian (Maningrida)
- 061. Byelorussian: Indo-European (Balto-Slavic, Slavic, East Slavic)
- 062. Cahuilla: Uto-Aztecan (Takic, Cupan)
- 063. Canaanite: Afroasiatic (Northwest Semitic)
- 064. Candoshi: Jivaroan
- 065. Canelos: Quechuan
- 066. Catalan: Indo-European (Italic, Romance)
- 067. Catawba: Siouan (Catawban)

- 068. Cebuano Bisayan: Austronesian (Western Malayo-Polynesian, Philippine, Central Philippines)
- 069. Chachi/Cayapa: Paezan
- 070. Chaga: Niger-Congo (Bantu)
- 071. Chemehuevi: Uto-Aztecan (Numic, Southern Numic)
- 072. Cherokee: Iroquoian (Southern)
- 073. Cheyenne: Algonquian (Cheyenne)
- 074. Chilula: Nadene (Athapaskan, Pacific Coast)
- 075. Chontal: Tequistlatecan
- 076. Chortí: Mayan (Greater Tzeltalan)
- 077. Chumburu, Northern Niger-Congo (Kwa)
- 078. Chuukese: Austronesian (Oceanic, Micronesian)
- 079. Cofán: Jivaroan
- 080. Cree: Algonquian, Cree-Montagnais)
- 081. Creek/Muskogee: Muskogean (Central)
- 082. Cuaiquer: Chibchan
- 083. Cuna: Chibchan (Cuna)
- 084. Czech: Indo-European (Balto-Slavic, Slavic, West Slavic)
- 085. Danish: Indo-European (Germanic, North Germanic)
- 086. Dedua: Trans New Guinea (Huon-Finisterre)
- 087. Deg: Niger-Congo (Gur)
- 088. Dehu: Austronesian (Oceanic, Southern Oceanic Linkage)
- 089. Dida: Niger-Congo (Kru)
- 090. Diegueño: Cochimí-Yuman (Yuman, Delta-California)
- 091. Djimini/Southern Senoufo: Niger-Congo (Gur)
- 092. Duo: Papuan
- 093. Eddystone/Mandegusu: Austronesian (Oceanic, Northwest Solomonian)
- 094. Egyptian: Afroasiatic (Egyptian)
- 095. Enggano: Austronesian (Western Malayo-Polynesian)
- 096. English: Indo-European (Germanic, West Germanic)
- 097. Estonian: Uralic-Yukaghir (Uralic, Finno-Ugric, Finnic)
- 098. Ewe: Niger-Congo (Bantu)
- 099. Ferañmin: Trans New Guinea (Oksapmin)
- 100. Fijian: Austronesian (Oceanic, Central Pacific)
- 101. Fon: Niger-Congo (Kwa)
- 102. Frafra: Niger-Congo (Gur)
- 103. French: Indo-European (Italic, Romance, Gallo-Romance)
- 104. Fulani/Fulfulde: Niger-Congo (West Atlantic)
- 105. Gabrielino: Uto-Aztecan (Takic, Serrano-Gabrielino)
- 106. Galla/Oromo: Afroasiatic (Cushitic)

107. German: Indo-European (Germanic, West Germanic)
108. Gilbertese/I-Kiribati: Austronesian (Oceanic, Micronesian)
109. Gilyak/Nivkh: Isolate
110. Gogodala: Trans New Guinea (Central and Western Highlands)
111. Gosiute: Uto-Aztecan (Numic, Southern Numic)
112. Greek: Indo-European (Greek)
113. Gros Ventre/Atsina: Algonquian (Algonquian, Arapahoan)
114. Guahibo: Guahiban
115. Guambiano: Paezan
116. Guarani: Tupi-Guarani
117. Gunwinggu/Kunwinjku: Australian (Gunwingguan)
118. Hakka: Sino-Tibetan (Sinitic)
119. Hausa: Afroasiatic (Chadic)
120. Hawaiian: Austronesian (Oceanic, Central Pacific, Polynesian)
121. Haya: Niger-Congo (Bantu)
122. Hittite: Indo-European (Anatolian)
123. Hopi: Uto-Aztecan (Hopi)
124. Huastec: Mayan (Huastecan)
125. Hupa: Nadene (Athapaskan, Pacific Coast)
126. Iatmul: Sepik-Ramu (Sepik-Ramu, Middle Sepik)
127. Iban: Austronesian (Western Malayo-Polynesian, Malayo-Chamic)
128. Icelandic: Indo-European (Germanic, North Germanic)
129. Igbo: Niger-Congo (Kwa)
130. Ijo: Niger-Congo (Kwa)
131. Ijok Negritos (Austroasiatic, Aslian)
132. Ikwerre: Niger-Congo (Kwa)
133. Ila: Niger-Congo (Bantu)
134. Imbonggu: Trans New Guinea (Eastern Highlands)
135. Inca: Quechuan,
136. Inga: Quechuan
137. Irish: Indo-European (Celtic, Goidelic)
138. Island Carib: Arawakan
139. Isneg: Austronesian (Western Malayo-Polynesian, Philippine, Northern Luzon)
140. Italian: Indo-European (Italic, Romance, Italo-Dalmatian)
141. Izon: Niger-Congo (Kwa)
142. Japanese: Japonic
143. Javanese: Austronesian (Western Malayo-Polynesian)
144. Jehai Negritos: Austroasiatic (Aslian)
145. Kabi: Australian (Pama-Nyungan?)

146. Kabyle: Afroasiatic (Berber)
147. Kaidipang: Austronesian (Western Malayo-Polynesian, Philippine, Minahasan)
148. Kaiwá: Tupian (Tupi-Guarani)
149. Kakadu/Gaagudju: Australian (Gagudju)
150. Kalabari: Niger-Congo (Kwa)
151. Kala Lagaw Ya/Mabuiag: Australian (Pama-Nyungan)
152. Kalam: Trans New Guinea (Eastern Highlands)
153. Kankanaey: Austronesian (Western Malayo-Polynesian, Philippine, Northern Luzon)
154. Karen: Sino-Tibetan (Tibeto-Burman)
155. Karok: Isolate?
156. Kasena: Niger-Congo (Gur)
157. Kato/Cahto: Nadene (Athapaskan, Pacific Coast)
158. Kayapó: Ge
159. Kédang: Austronesian (Central Malayo-Polynesian)
160. Kelabit: Austronesian (Western Malayo-Polynesian, North Sarawak)
161. Kerinci: Austronesian (Western Malayo-Polynesian, Malayo-Chamic)
162. Ket: Yeniseian
163. Kewabi: Papuan
164. Keweng/Kewieng: Trans New Guinea (Central and Western Highlands)
165. Khamti: Kra-Dai (Tai, Southwestern Thai)
166. Khana: Niger-Congo (Benue-Congo)
167. Khmer: Austroasiatic (Mon-Khmer)
168. Khvarsh: North Caucasian (Northeast, Dagestan)
169. K'iche'/Quiché: Mayan (Eastern, Greater Quichean)
170. Kikuyu: Niger-Congo (Bantu)
171. Kintak Bong: Austroasiatic (Aslian)
172. Klamath: Plateau Penutian (Klamath)
173. Kol: Austroasiatic (Munda?)
174. Kongo: Niger-Congo (Bantu)
175. Korean: Koreanic
176. Kovi: Uralic (Finnic)
177. Kuku-Yalanji: Australian (Pama-Nyungan)
178. Kulere: Afroasiatic (Chadic)
179. Kusaasi: Niger-Congo (Gur)
180. Kwaio: Austronesian (Oceanic, Southeast Solomonic)
181. Kwamera: Austronesian (Oceanic, Nuclear Southern Oceanic)
182. Kwará'ae: Austronesian (Oceanic, Southeast Solomonic)
183. Lacandon: Mayan (Yucatecan)

184. Lakher: Sino-Tibetan (Tibeto-Burman, Burmic)
185. Lakota: Siouan-Catawba (Siouan, Mississippi Valley)
186. Lampung: Austronesian (Western Malayo-Polynesian)
187. Lassik: Nadene (Athapaskan, Pacific Coast)
188. Latin: Indo-European (Italic)
189. Lau: Austronesian (Oceanic, Southeast Solomonian)
190. Laura: Austronesian (Central Malayo-Polynesian)
191. Lela: Niger-Congo (Bantu)
192. Lengua/Enxet Sur: Mascoian
193. Likum: Austronesian (Oceanic, Admiralties)
194. Lio: Austronesian (Central Malayo-Polynesian)
195. Lithuanian: Indo-European (Balto-Slavic, Baltic)
196. Luang: Austronesian (Central Malayo-Polynesian)
197. Luba-Hemba: Niger-Congo (Bantu)
198. Luo: (Eastern Sudanic, Nilotic)
199. Lushai: Sino-Tibetan (Tibeto-Burman, Burmic)
200. Luyi/Luyia: Niger-Congo (Bantu)
201. Madngala: Australian (Gunwingguan)
202. Makasarese: Austronesian (Western Malayo-Polynesian, South Sulawesi)
203. Malaeng: Papuan
204. Malagasy: Austronesian (Western Malayo-Polynesian, Southeast Barito)
205. Malay: Austronesian (Western Malayo-Polynesian, Malayo-Chamic)
206. Maltese: Afroasiatic: (Semitic, South, Southwest)
207. Mam: Mayan (Eastern, Mamean)
208. Mamanwa: Austronesian (Western Malayo-Polynesian, Philippine, Central Philippines)
209. Mandan: Siouan-Catawba (Siouan, Mandan)
210. Mandari: (Eastern Sudanic, Nilotic)
211. Mandarin: Sino-Tibetan (Sinitic)
212. Mandinka: Niger-Congo (Mande)
213. Mangaian: Austronesian (Oceanic, Central Pacific, Polynesian)
214. Mang'anja: Niger-Congo (Bantu)
215. Manggarai: Austronesian (Central Malayo-Polynesian)
216. Manobo: Austronesian (Western Malayo-Polynesian, Philippine, Manobo)
217. Maori: Austronesian (Oceanic, Central Pacific, Polynesian)
218. Maricopa: Cochimí-Yuman (Yuman, River)
219. Marshallese: Austronesian (Oceanic, Micronesian)
220. Mataco: Matacoan
221. Mattole: Nadene (Athapaskan, Pacific Coast)

222. Maumere: Austronesian (Central Malayo-Polynesian)
223. Maya: Mayan
224. Mayombe: Niger-Congo (Bantu)
225. Menik Kaien: Austroasiatic (Aslian)
226. Minangkabau: Austronesian (Western Malayo-Polynesian, Malayo-Chamic)
227. Minyanka: Niger-Congo (Gur)
228. Misima: Austronesian (Oceanic, Papuan Tip)
229. Mixe (Western, Coatlan): Mixe -Zoquean
230. Modoc: Plateau Penutian (Klamath)
231. Mofu-Gudur/Southern Mofu: Afroasiatic (Chadic)
232. Mohawk: Iroquoian (Northern)
233. Mongol, Khalkha (Mongolian)
234. Mortlockese: Austronesian (Oceanic, Micronesian)
235. Moru: Sudanic (Central Sudanic, Moru-Madi)
236. Mota: Austronesian (Oceanic, Northern Vanuatu)
237. Muinane: Witotoan (Boran)
238. Mundani: Niger-Congo (Bantu)
239. Mündü: Niger-Congo (Adamawa-Ubangi)
240. Muria: Dravidian
241. Murle: Eastern Sudanic
242. Murrinh-Patha: Australian (Garaman)
243. Naga (Angami, Ao, Rengma, Sema): Sino-Tibetan (Tibeto-Burman, Burmic)
244. Nage: Austronesian (Central Malayo-Polynesian)
245. Nakanai/Lakalai: Austronesian (Oceanic, Meso-Melanesian)
246. Nangiomeri: Australian (Gunwingguan)
247. Naskapi: Algic (Algonquian, Eastern),
248. Navaho: Nadene (Athapaskan, Apachean)
249. Negritos of Ragay: Austronesian (Western Malayo-Polynesian, Philippine)
250. Nembe: Niger-Congo (Kwa)
251. Ngadha: Austronesian (Central Malayo-Polynesian),
252. Ngaju Dayak: Austronesian (Western Malayo-Polynesian, Barito)
253. Nggela: Austronesian (Oceanic, Southeast Solomonian)
254. Ngulugwongga: Australian (Gunwingguan)
255. Nias: Austronesian (Western Malayo-Polynesian, Batak-Barrier Islands)
256. Nisenan: Maiduan
257. Nivaklé/Ashluslay/Chulupí: Matacoan
258. Norwegian: Indo-European (Germanic, North Germanic)
259. Nouni: Niger-Congo (Gur)

- 260. Nso'/Lamso': Niger-Congo (Benue-Congo)
- 261. Nuer: (Eastern Sudanic, Nilotic)
- 262. Nyabwa: Niger-Congo (Kru)
- 263. Nyakyusa: Niger-Congo (Bantu)
- 264. Ofo: Siouan (Ohio Valley/Southeastern)
- 265. Ojibway/Ojibwe/Chippewa: Algonquian, Ojibwayan
- 266. Ok, Mountain: Trans New Guinea (Oksapmin)
- 267. Okinawan: Japonic (Ryukyuan)
- 268. Otomí: Otomanguean (Otopamean)
- 269. Oyampi/Wayampi: Tupi-Guarani
- 270. Paez: Paezan
- 271. Paici: Austronesian (Oceanic, Southern Oceanic Linkage)
- 272. Paiute: Uto-Aztecan (Numic, Southern Numic)
- 273. Palauan: Austronesian (Malayo-Polynesian, Palauan)
- 274. Palaung: Austroasiatic (Northern)
- 275. Panare: Carib (Northern)
- 276. Pashtun/Pathān: Indo-European (Indo-Iranian, Iranian)
- 277. Piapoco: Arawakan (Maipuran)
- 278. Pohnpeian: Austronesian (Oceanic, Micronesian)
- 279. Polish: Indo-European (Balto-Slavic, Slavic, West Slavic)
- 280. Pomo, Southwestern: Pomoan
- 281. Popoluca, Sierra: Mixe -Zoquean
- 282. Portuguese: Indo-European (Italic, Romance, Ibero-Romance)
- 283. Potawatomi: Algonquian, Ojibwayan
- 284. Puyallup: Salishan (Central)
- 285. Rejang: Austronesian (Western Malayo-Polynesian)
- 286. Rendille: Afroasiatic (Cushitic)
- 287. Rhaeto-Romansch: Indo-European (Italic, Romance, Gallo Romance)
- 288. Rif: Afroasiatic (Berber)
- 289. Romanian: Italic (Romance, Balkan Romance)
- 290. Russian: Indo-European (Balto-Slavic, Slavic, East Slavic)
- 291. Sa'a: Austronesian (Oceanic, Southeast Solomonian)
- 292. Saami/Lappish: Uralic-Yukaghir (Uralic, Finno-Ugric, Finnic)
- 293. Sabaot/Mount Elgon Maasai: Sudanic (Eastern Sudanic, Nilotic)
- 294. Sakai (Behrang, Jeram Kawan): Austroasiatic (Aslian)
- 295. Samoan: Austronesian (Oceanic, Central Pacific, Polynesian)
- 296. Samoyed: Uralic-Yukaghir (Uralic, Samoyed)
- 297. Sanskrit: Indo-European (Indo-Iranian, Indic)
- 298. Sasak: Austronesian (Western Malayo-Polynesian)
- 299. Scottish: Indo-European (Celtic, Goidelic)

300. Selk'nam: Chon
301. Semang: Austroasiatic (Aslian)
302. Seneca: Iroquoian (Northern)
303. Sentani: Trans-New Guinea (Sentani)
304. Serbo-Croatian: Indo-European (Balto-Slavic, Slavic, South Slavic)
305. Shasta: Shastan
306. Shawnee: Algonquian (Shawnee)
307. Shoshone: Uto-Aztecan (Numic, Central Numic)
308. Shuswap: Salishan (Interior)
309. Simalur: Austronesian (Western Malayo-Polynesian, Batak-Barrier Islands)
310. Sinasina: Trans New Guinea (Eastern Highlands)
311. Sinkyone: Nadene (Athapaskan, Pacific Coast)
312. Sirionó: Tupian (Tupi-Guarani)
313. Slovenian: Indo-European (Balto-Slavic, Slavic, South Slavic)
314. Suau: Austronesian (Oceanic, Papuan Tip)
315. Sumerian: Isolate
316. Sumo/Sumu: Misumalpan
317. Sundanese: Austronesian (Western Malayo-Polynesian)
318. Swahili: Niger-Congo (Bantu)
319. Tabare: Papuan
320. Tagalog: Austronesian (Western Malayo-Polynesian, Philippine, Central Philippines)
321. Tambul-Korika: Papuan
322. Tarahumara: Uto-Aztecan (Taracahitan, Tarahumaran)
323. Taulipang/Pemon: Carib
324. Tawala: Austronesian (Oceanic, Papuan Tip)
325. Tboli: Austronesian (Western Malayo-Polynesian, Philippine, Bilic)
326. Tehit: Trans New Guinea (West Papuan)
327. Telei: East Papuan
328. Thai: Kra-Dai (Tai)
329. Thompson: Salishan (Interior)
330. Tigrinya: Afroasiatic (Semitic, South, Southeast)
331. Timbira (Eastern): Ge
332. Tiwi: Isolate
333. Tlingit: Nadene (Tlingit)
334. Toba: Guaicuruan
335. Tolai: Austronesian (Oceanic, Meso-Melanesian)
336. Tolowa: Nadene (Athapaskan, Pacific Coast)
337. Toltec (unknown)

338. Toraja (generic for interior Sulawesi): Austronesian (Western Malayo-Polynesian, Celebic)
339. Totonac: Totonacan
340. Toulour/Tondano: Austronesian (Western Malayo-Polynesian, Philippine, Minahasan)
341. Tuaran Dusun: Austronesian (Western Malayo-Polynesian, Sabahan)
342. Tucuna/Tukuna/Ticuna: Isolate
343. Turrbal: Australian (Pama-Nyungan)
344. Tuyuca: Tucanoan
345. Tzotzil: Mayan (Greater Tzeltalan)
346. Uduk: Komuz (Nilo-Saharan)
347. Ukrainian: Indo-European (Balto-Slavic, Slavic, East Slavic)
348. Ulawa: Austronesian (Oceanic, Southeast Solomonic)
349. Umatilla: Plateau Penutian (Sahaptian)
350. Ute: Uto-Aztecan (Numic, Southern Numic)
351. Waorani/Auca: Isolate
352. Wik Mungkan: Australian (Pama-Nyungan)
353. Wintu, McCloud River: Wintuan
354. Wishram: Chinookan (Kiksht)
355. Wobe: Niger-Congo (Kru)
356. Wogiman: Australian (Gunwinguan)
357. Woisika: Trans New Guinea (Timor-Alor-Pantar)
358. Wolamo: Afroasiatic (Omotic)
359. Wolio: Austronesian (Western Malayo-Polynesian, Wolio-Wotu)
360. Wolof: Niger-Congo (West Atlantic)
361. Wotjobaluk: Australian (Pama-Nyungan)
362. Xârâcùù: Austronesian (Oceanic, Southern Oceanic Linkage)
363. Yaqui: Uto-Aztecan (Taracahitan, Cahitan)
364. Yele/Yeletne: East Papuan (Yele-Solomons)
365. Yindjibarndi: Australian (Pama-Nyungan)
366. Yokuts (Tulare Lake): Yokutsan
367. Yolngu-Matha: Australian (Pama-Nyungan)
368. Yoruba: Niger-Congo (Kwa)
369. Yuchi: Isolate
370. Yugh: Yeniseian
371. Yukaghir: Uralic-Yukaghir (Yukaghir)
372. Yuki: Yukian
373. Yurok: Algic (Algonquian, Ritwan)
374. Zande: Niger-Congo (Adamawa-Ubangi)
375. Zela: Niger-Congo (Bantu)

- 376. Zulgo: Afroasiatic (Chadic)
- 377. Zulu: Niger-Congo (Bantu)
- 378. Zuni: Isolate.¹

¹ Ethnolinguistic groups cited by the author but missing from this list (courtesy of Eline van der Veken):

- Arunta/Arrernte: Australian (Pama-Nyungan)
- Bushmen (San): Khoisan
- Dieri: Australian (Pama-Nyungan)
- Ilokano/Ilocano: Austronesian (Western Malayo-Polynesian, Philippine, Luzon)
- Karadjeri/Garadjari: Australian (Pama-Nyungan)
- Kekchi/Q'eqchi': Mayan
- Tehuelche: Chonan (Argentina)
- Tempasuk Dusun: Austronesian (Malayo-Polynesian)
- Wintu, McCloud River/Sacramento River: Wintuan?

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Modernization and conversion to world religions are threatening the survival of traditional belief systems, leaving behind only mysterious traces of their existence. This book, based upon extensive research conducted over a period of nearly four decades, brings scientific rigor to one of the questions that have always attracted human curiosity: that of the origin of the dragon.

The author demonstrates that both dragons and rainbows are cultural universals, that many of the traits that are attributed to dragons in widely separated parts of the planet are also attributed to rainbows, and that the number and antiquity of such shared traits cannot be attributed to chance or common inheritance, but rather to common cognitive pathways by which human psychology has responded to the natural environment in a wide array of cultures around the world.

ROBERT BLUST (1940–2022) was a Professor of Linguistics at University of Hawai‘i at Mānoa. He was, and continues to be, the preeminent scholar of Austronesian comparative linguistics. An enormously prolific scholar, Blust had nearly 300 publications. In addition to being a world-famous linguist, he was also an avid writer of poetry.

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