PREFACE TO THE DESTINY OF WYSAN

Interactions between species of humans were important in shaping the evolution of man. This story is about one of those possible encounters. An important factor in understanding evolution is interspecies hybridization. Though it is commonly thought that separate species cannot interbreed, closely related species actually can in many cases. For species closely related to *Homo sapiens*, called hominins, it has been estimated that species separated by more than two million years may produce viable offspring, but genetic studies suggest that there may be gene incompatibilities between individual gene pools that complicate this picture.

Another important factor to take into consideration is the branching nature of speciation, the process by which new species evolve. Typically, an entire species will not evolve into another, but rather a subset population of a species will give rise to (or branch off) another. This means that there will be the possibility of hybridization of the two species after they diverge. When this happens the introduction of distantly related DNA of one species into a gene pool of another species is referred to as admixing. Additionally, it should be understood that all populations of a given species do not experience evolutionary change to the same degree over a given span of time. This is why *Homo sapiens* and archaic species such as *Homo erectus* existed concurrently.

Interestingly, genetic studies suggest that admixing took place between *Homo sapiens* and both Neanderthals and Denisovans. The story "Clan of the Cave Bear" concerns itself with interactions between *Homo sapiens* and Neanderthals in Europe, including interbreeding. Of relevance to this story, a genetic study suggests that admixing took place about 35,000 years ago between Sub-Saharan *Homo sapiens*, including the San, and an archaic hominin population that diverged from the archaic ancestors of modern humans about 700,000 years ago. Still other genetic studies suggest that similar admixing took place over 40,000 years ago, with a divergence point of 1.2 to 1.3 million years ago. Although it has not yet been determined what these archaic admixed species were, *Homo erectus* and *Homo heidelbergensis* are likely candidates.

It is believed by some that *Homo sapiens* evolved directly from *Homo heidelbergensis.* The earliest evidence for this species date back only to 600,000 years ago, about which time it is believed to have evolved from *Homo erectus*. The earliest fossil evidence for *Homo erectus* is dated to 1.8 million years ago, and the most recent evidence, from Indonesia, is dated to 53,000 years ago. It is possible that the admixed archaic hominins remained largely unchanged through to the time when they interbreed with *Homo sapiens*, in which case they may have been *Homo erectus,* or that they had evolved into less archaic hominins such as *Homo heidelbergensis.* It should also be mentioned that other instances of interbreeding of *Homo sapiens* with archaic hominins may have occurred that have not yet been uncovered by genetic analysis, and that the descendants of some instances of interbreeding have died out and are consequently not represented in the human genome of our age. Given the possibility that the admixed species was *Homo erectus* and the fossil evidence for its existence as recently as

53,000 years ago, I think it quite possible that the quintessential apeman was present in Sub-Saharan Africa some 70,000 years ago. This possibility lends the story, which involves apemen, an essential believability.

Regarding the evolution of the species of *Homo sapiens* itself, what are referred to as archaic or premodern *Homo sapiens* (*Homo sapiens archaic*) first appeared as far back as 200,000 years ago in Africa. About 115,000 years ago modern *Homo sapiens* (*Homo sapiens modern*) first appeared in Africa, as well. Where the transitions took place, they occurred at different times in different places and not all populations survived. Probably not coincidentally, there was a proliferation of new tool use as evidenced by the archeological record as early as 90,000 years ago in Africa. This period marks the earliest stages of what is known as the Upper Paleolithic Tool Culture. Of particular interest for this story, possible evidence for the first bow and arrow have been dated at 64,000 and 71,000 years at locations in South Africa. This possible evidence is another essential element for the believability for the story as it involves the invention of the bow and arrow.

Perhaps also not coincidentally, genetic studies suggest that modern *Homo sapiens* migrated out of Africa around 70,000 years ago to give rise to all of the populations of modern humans outside of Sub-Saharan Africa. As a basis for a sequel to this story the genetic studies also suggest that all living non-Sub-Saharan Africans can trace their genetic lineage to a particular living gene pool of *Homo sapiens,* which is thought to be that of the San or closely related peoples. Possible evidence for the existence of the San culture in the form of rock art has been located in the northern Botswana's Tsodilo Hills region and date back over 70,000 years. This evidence supports another element of believability for the story because the main characters are San tribesmen.

With regard to the preferred habitats of the two species portrayed in this story, I imagine that a sub-species of *Homo erectus* adapted to life on the savannas dominated the human niches of those habitats, while certain tribes of the San that inhabited the same regions consequently favored forests for their territories. With the advent of the bow and arrow and the advantages it provided, the San in the story were better able to wage war with the apeman of the savannas. It is quite probable that the bow and arrow gave the San and other modern humans advantages that allowed them to drive archaic hominins to extinction across the Old World through both conflict and more general competition for resources.