



Honey flows through fertile valleys

The cognitive and evolutionary foundations of paradise representations



Department of Comparative Religion
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The cognitive and evolutionary foundations of paradise representations

Jani Närhi

ACADEMIC DISSERTATION

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Abbreviations

BCE Before Current/Common/Christian Era (before year 0)
CE Current/Common/Christian Era (in and after year 0)
ESV The Holy Bible, English standard version
NIV The Holy Bible, New International version
NLV The Holy Bible, New Living translation
UFO Unidentified flying object

Ezek. Ezekiel
Gen. Genesis
Hos. Hosea
Isa. Isaiah
Judg. Judges
Lev. Leviticus
Rev. Revelation
Zech. Zechariah

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Abstract

The aim of the study is to explain how paradise beliefs are born from the viewpoint of mental functions of the human mind. The focus is on the observation that paradise beliefs across the world are mutually more similar than dissimilar. By using recent theories and results from the cognitive and evolutionary study of religion as well as from studies of environmental preferences, I suggest that this is because pan-human unconscious motivations, the architecture of mind, and the way the human mind processes information constrain the possible repertoire of paradise beliefs.

The study is divided into two parts, theoretical and empirical. The arguments in the theoretical part are tested with data in the empirical part with two data sets. The first data set was collected using an Internet survey. The second data set was derived from literary sources. The first data test the assumption that intuitive conceptions of an “environment of dreams” generally follow the outlines set by evolved environmental preferences, but that they can be tweaked by modifying the presence of desirable elements. The second data test the assumption that familiarity is a dominant factor determining the content of paradise beliefs.

The results of the study show that in addition to the widely studied belief in supernatural agents, belief in supernatural environments wells from the natural functioning of the human mind attesting the view that religious thinking and ideas are natural for human species and are produced by the same mental mechanisms as other cultural information. The results also help us to understand that the mental structures behind the belief in the supernatural have a wider scope than has been previously acknowledged.

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I have been working with the idea presented in this work for about eight years now, first as an undergraduate student and then as a graduate student. Such a long time has passed that I cannot recall the exact time the idea of explaining the emergence of paradises in evolutionary and cognitive terms came to my mind for the first time. However, I know it has been there since, troubling me with varying intensity. Thus, it should be not surprising that I feel highly relieved now that I am finally able to release this project from my hands.

Naturally, no such work could be prepared alone. Even though a doctoral dissertation is, in principle, the enterprise of an individual, it always needs mentors, colleagues, and friends around it. So it is in this case as well: People without number have contributed, either directly or indirectly, to this work by commenting, criticizing, showing interest, and encouraging me during the years.

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Helsinki,
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Part I – Theoretical foundations

1 Introduction

Paradise beliefs exist in virtually every religious tradition. The religions of the Near East, Chinese Taoism, the religion of the Aztecs of Central America, of African tribes, Aboriginals of Australia, or of the Saamzi of Northern Scandinavia all have their own views about paradisiacal circumstances. Many contemporary traditions have also adopted the idea of a paradise. The Melanesian Cargo Cults and Western UFO religions, for example, hold their own unique beliefs about life in better realms.

Not only are paradises constituents of many religious traditions, many of them are also central to a tradition. Whole religious systems from ancient Egypt to Christianity have been built around the idea of resurrection in which the idea of a paradisiacal afterlife has been central. Moreover, a belief that there is a paradise reserved for the righteous as a reward for good acts in this life is typical of most religious traditions.

Despite the apparent universality of such beliefs, the reasons behind their universality have not been widely studied. In fact, it is surprising how little interest scholars of religion have shown in this topic. It is recognized that belief in an ideal afterlife, or in the perfect original abodes of men are significant building blocks of religious traditions. Yet studies focused strictly on paradises are difficult to find and often their focus is not on the paradises themselves but, for example, on the language used to describe paradisiacal worlds.

To fill this gap, I aim in this work to study the reasons behind the emergence and persistence of paradise beliefs and to explain their recurrence in the world's religious traditions. This work builds on an argument that typifies the cognitive science of religion; the observed invariance in religious representations across cultures is best explained by the regularities in mental functions. More specifically, I will present a hypothesis that the foundations of paradise beliefs are of mental origin and ultimately products of our intuitive information processing guided by evolutionary objectives. I also adopt the view of many scholars and scientists in the field of cognitive science of culture who argue that the human mind has predispositions that constrain the kinds of information that can be acquired and how this information is processed and transmitted. I will examine if, and to what extent, the universality of the nature of paradise beliefs can be explained along these lines.

Moreover, I adopt the view that the mind has evolved to respond to certain types of tasks and stimuli better than to others. In other words, the repertoire of cultural representations is best explained by understanding that the architecture of the mind is an evolved whole adapted to respond to problems primarily related to survival. My aim is to show, by theorizing and by examining empirical and historical materials, that the mind works in a similar manner and under similar constraints with regard to representations of supernatural environments as it works with regard to supernatural agents. In other words, the cognitive processing of the elements of paradise representations is in essence similar

to the more researched agent detection albeit it is more complex: The cognitive processing of paradise representations is based on finding and identifying objects in the environment and on responding to them in an appropriate manner.

This task has not been conceivable for long. Indeed, I am fortunate enough to have access to scientific knowledge that scholars of religion have not had the opportunity to utilize until very recently. The cognitive science of religion, a young and still maturing discipline that emerged during the 1990s, provides a theoretical framework that has helped to enhance our understanding of religion as a natural psychological phenomenon. Moreover, the theoretical framework of the cognitive science of religion connects the relevant research problems of comparative religion with other disciplines which study the human mind: The advancements of several disciplines, namely those of cognitive science, neurobiology, evolutionary biology, and environmental psychology constitute both the cognitive science of religion and my task here. Thus, some twenty years ago formulating the hypothesis I here present would not have been possible, or at least finding an answer would have been an unattainable task for an individual scholar in any reasonable period of time. That said, I feel that I am merely standing on the shoulders of giants and by doing so I, hopefully, will manage to add my tiny bit of information to the top of the pyramid of scientific knowledge.

To gain an understanding of the structural features of the mind affecting the making of paradise representations, we must examine how cognitive constraints shape paradise representations guided by the unconscious environmental preferences that make some type of representations in general more attractive than others. The correspondence between our basic needs and the features and traits of paradises must be analysed in order to understand the inner motivations that construct representations about paradises such as we know them. While paradises may seem very different from each other, the differences between them can be explained by the frames of reference set by the local settings and histories.

This work is divided into two parts, theoretical and empirical. In the theoretical part, I will first review the previous scholarly explanations for the invariance of myths in general and explain how the new findings can help us investigate this old problem from a new viewpoint. In chapter 3, I will review different paradises of world's religions to show that the apparent variance between paradises is in fact largely superficial. Then, in chapter 4, I will present my hypothesis on how the invariance can be explained from the cognitive and evolutionary viewpoint.

The empirical part consists of two studies with two different types of research material. My aim is both to address the (in many cases justified) criticism of not testing evolutionary or cognitive theories with data and to test the main aspects of my hypothesis with material to see if, and to what extent, the arguments of the hypothesis are correct or if they should be revised. In addition to testing, I also try to use the data to facilitate a deeper understanding of my hypothesis.

The aim of the first study is to test what kind of environments are spontaneously considered ideal and how the typical properties of paradise representations are spontaneously preferred. The second study examines the role of surrounding environments in paradise imagery, that is, how much actual circumstances can predict the content of paradises. As the data of the second study is derived from literary sources, it should have passed

a “theological filter”. Therefore, they should be theologically correct images of paradise. Thus, in addition to testing the hypothesis, the studies also allow a comparison between intuitive and theologically correct ideas of paradisiacal circumstances.

The data of the first study was collected by an Internet questionnaire implemented in 2007. The data of the second study is collected from literary sources of Christianity and from the writings of various UFO religions. The material is therefore ranging from the second millennium BCE to today.

Thus, two materials of a different kind are used to test the different aspects of the hypothesis. The purpose of these studies is to offer empirical evidence for those aspects not previously discussed in the context of the cognitive science of religion. Whilst especially the data derived from the Bible in the second study is probably familiar to most scholars of religion, my aim is, along with the primary purpose of the analysis, to offer new insights into the construction of biblical texts describing paradises.

The final chapter is dedicated to the summary and conclusions. In that chapter, I will summarize the findings of this work and discuss the perspectives the results and this type of approach in general may open up for future study.

2 The study of recurrence of myths – a new approach to an old problem

In theory, myths should exhibit infinite variation. In practice, however, myths across the world are strikingly similar. Mythical narratives from ancient Greece do not differ much from those of Native Americans. The creation myths of different religious traditions resemble each other closely. Myths about heroes follow a similar outline irrespective of time and space. The myth of the great flood described in the Bible, for instance, has been known in a practically similar form from New Zealand to the Americas well before a single European explorer with his holy book had set foot in those regions (see Feldman & Richardson 1972; Puhvel 1988; Stark 2007). Wherever one looks, one comes across similar myths, heroes, and mythical realms. It thus seems that unconnected peoples tend to build their mythical imagery in a very similar manner by following some unwritten rules. It does not really matter where people live; they seem to share very similar ideas of how the universe came into existence, how life was in the beginning, and how mythical events determine the present world order.

The invariance of myths and religious beliefs across the world has been recognized at least since the 17th century, when exploratory expeditions brought mythologies of different cultures to the awareness of European philosophers and writers. Several types of myths familiar to Europeans, such as the Oedipus tales or Orpheus myths, were repeated in almost identical form in the New World (Puhvel 1988: 3). It was soon realized that the invariance of myths could not be the result of cultural interaction, instead some kind of universal capacity to produce such myths must be involved (see Feldman & Richardson 1972).

Since then, several attempts to explain the invariance scientifically have been made. In fact, the most notable achievements of early comparative religion were made in the area of mythology (Sharpe 1994: 47) and many of the early scholars of religion were interested in classifying and categorizing traits of religious traditions in order to find the essence of religion. Also, the evolutionary anthropology that flourished in Europe during the 19th and early 20th century tried to construct evolutionary pathways that might explain the development and transformation of beliefs and traditions from the “lowest” to the “highest” form (see Sharpe 1994). Thus, myths and the problem of recurrence have been a subject of interest to scholars from the very beginning of comparative religion.

The first scholarly theories of myth as a human universal can be traced back to the time when evolutionism shaped the cultural sciences. Evolutionism, which was based on the idea of a progressive evolution of humankind, penetrated anthropology in the late 19th century. It was strongly influenced by the evolutionary theories of Charles Darwin (1882; 1897) and Jean-Baptiste Lamarck (1907 [1809]). Nevertheless, evolutionism was not truly evolutionary in modern terms. Evolutionary anthropologists simply combined Darwin’s

theory of natural selection with Lamarck's theory of the heritability of acquired properties and added the then prevailing ideas of progressive cultural and mental development and the universality of elementary ideas presented by theorists such as Georg Hegel, Bernard Le Bovier de Fontenelle, Charles de Brosses, and Adolf Bastian (see Bolle 2005; Pyysiäinen 2009; Waller 2005) into the mix.

While several evolutionist theories were about society and the development of humanity, the most notable theoretical insights of evolutionary anthropology regarding myths were those of Edward Tylor. He formulated one of the first theories (but see Bolle 2005 for de Brosses) of the original form of religion called animism in which a soul was projected into inanimate objects. This, according to Tylor, was the most primitive form of religion from which all religions have progressively developed towards "higher" forms (Tylor 1970 [1871]). Tylor also argued that believing in myths was an expression of a level of thinking typical of "less developed men" or "savages". As mental evolution progressed, belief in myths was gradually replaced by scientific thinking and knowledge characteristic of "civilized men". Thus, for Tylor, myths were simply explanatory like science with regard to goals, that is, they explained the causalities of the world but were inferior to scientific explanations (Segal 1999: 10).

In Tylor's theory, the universality of myths was therefore explained as a culturally universal step preceding "higher" forms of mental abilities. Myths were explanations of the world formulated by the "lowest savages" in contrast to modern Western men whose scientific knowledge represented the "highest" forms of knowledge and mental abilities. However, Tylor also argued that even the most advanced civilizations had passed through the mythical phase in the past. Thus, as all cultures followed a similar progressive pattern, the beliefs (or myths) were expected to be similar due to species-specific progressive mental evolution (see Tylor 1970 [1871]).

As myth provided an explanation of the world, there would always be, according to Tylor, some similarities between myths due to similarities in actual circumstances. Thus, Tylor recognized religion as a phenomenon that can be reduced to human psychological abilities although his arguments were otherwise clearly erroneous. In retrospect, even though Tylor may not have meant it, he actually recognized the importance of both psychological and environmental factors in shaping myths, albeit his theory of mental development was rejected with good reasons decades ago.

The weaknesses of evolutionism became apparent by the early 20th century when its incompatibility with Darwinian evolution was gradually revealed and the nature of social evolutionist theories in general were questioned by many scholars (for a review, see Kuper 1988). As Adam Kuper (1988) notes, both the dichotomy between primitive and developed and the idea of the progressive evolution of societies are based on a complete (and possibly intentional) misunderstanding of the theory of Darwin. Darwinian evolution is neither mechanistic nor progressive. Evolutionary processes always depend on actual circumstances and selective pressures that are dependent on time and space. As a consequence, the evolutionary process does not produce predictable outcomes irrespective of external variables. Furthermore, there are no "savages" or "modern" men as social evolutionists argued. Indeed, from the modern viewpoint, evolutionary anthropology comes close to racism.

The first theories of the invariance of myths were developed within evolutionary anthropology, which was not merely limited to the study of religion. The first large-scale

research programme solely concentrated on explaining the varieties and similarities of religious beliefs was the phenomenology of religion, generally understood as the general cross-cultural comparative study of religion, although the definition is not that settled. Instead of purely comparative research based on anthropological data, finding the alleged essence of religion was a goal of many phenomenologists. They were usually not as interested in comparative studies as they were in a subjective understanding of religion. On the other hand, many of the early scholars of religion did not consider themselves phenomenologists even though their work was primarily comparative by nature. Thus, although there were basically two types of phenomenological study, descriptive and hermeneutic-existential, this type of classification of early phenomenologists is created retrospectively. The boundaries of the field were not generally that well defined (Jensen 2003: 28-30).

While the phenomenologists of different schools produced a number of comparative studies and thus data about religious traditions and beliefs, the theoretical foundations of the phenomenology of religion remained vague because metaphysical and theological interests often outweighed scientific analytical approaches and historical study (Sand 1999). Due to the lack of theoretical formulations, it is also difficult to put forward testable hypotheses within the phenomenology of religion (Jensen 1993; 2003; Penner 1989: 41-66; Pyysiäinen 2004b). This is not to say that theoretical openings have been completely absent in the phenomenology of religion, however. Several attempts have been made, but as Jeppe Jensen (1993; 2003) points out, they all suffer from obscurity and subjectivity and fail to establish sound theoretical or methodological foundations.

Despite theoretical ambiguity and metaphysical interests, there are some examples of theoretical efforts. Mircea Eliade, for instance, formulated a simple yet complex theory of hierophanies, that is, manifestations of the holy. The fundamental argument is simple: according to Eliade (1983), all elements of myths can be categorized either as “sacred” or “profane”. The sacred, says Eliade, has several modalities and it is essential to all myths and religious beliefs alike. Thus, the essence of religion can be returned to the hierophanies that separate the sacred from the secular.

The complexity of this approach lies in the obscurity of the category of the sacred. For Eliade, the sacred can express itself in almost anything, like trees or stones, for example. However, by following Eliade’s definition we soon arrive at an impasse. The concepts themselves remain vague as basically anything can be labelled sacred without any precise criteria of sacredness. Eliade fails to create definitions and categories which could be systematically applied to religious beliefs. This is a recurrent problem in the phenomenology of religion; either theoretical formulations are subject to circular arguments or they are logically ambiguous (Jensen 2003: 66-71). Definitional problems are therefore a major reason for the failure of the phenomenology of religion to establish sound, scientifically plausible explanations for the apparent invariance of religious beliefs and myths. The attempt to find one essence has, ironically, led to dissolutions rather than convergence (see Jensen 1993; 2003; King 1984).

Another type of approach to explain the invariance of myths is the structural analysis formulated by Claude Lévi-Strauss (1963: 206-231). Lévi-Strauss based his theory on the philological theories that have largely influenced structuralism in general, applying the theory to myths (see Lévi-Strauss 1963: 67-80). The fundamental argument of Lévi-Strauss is that the structures of cultural phenomena correspond with the structures of the mind

and these structures manifest themselves in human cultures. When this approach is applied to myths, the reason for the invariance of myths, for Lévi-Strauss, is essentially a logical one. In his theory, the actual elements of myths are not as important as the relationships between the individual elements of myths. Myths share structural traits that relate to each other in a similar manner irrespective of the actual content. For example, the actions of mythical heroes follow a similar underlying formula which can be revealed by deconstructing the relationships of actions into parts and comparing the relationships between the parts with each other.

Using this approach, Lévi-Strauss argues, it is possible not only to find the common pattern behind myths but also to argue that myths are not “primitive” compared to scientific thinking (contrary to what Tylor proposed); both “primitive” and scientific thinking are based on the similar logical and structural patterns typical to all humans (Lévi-Strauss 1963: 230). In other words, Lévi-Strauss defends the standpoint that the invariance of myths is primarily due to unconscious universal mental structures, or “universal logic”. Even if myths are publicly communicated, transmitted, and distributed, the true explanation for their similarity is the inner human capacity and tendency to handle such information in a predictable way (see Lévi-Strauss 1963; Sharpe 1994: 217-218).

Like the phenomenology of religion, structuralism has definitional problems. As the interpretation of structures is always that of a scholar, almost any kind of structural comparison becomes possible if only the objects of comparison are defined loosely enough. The object of structural analysis is therefore a result of interpretation rather than observable data (Sperber 1996: 43-47). Moreover, as a theory, structuralism does not manage to explain how structures of a certain kind emerge. Even though structuralism claims to explain the invariance of cultural information as manifestations of the structural features of the mind, it does not clarify what the specific features could be. As a consequence, the assumptions structuralism makes are unverifiable (D’Andrade 1995: 248-249). In other words, structuralism does not really explain though, at best, it does help to clarify what should be explained. Ultimately, it does not manage to investigate the underlying features of the mind that are said to give rise to the cultural data structuralists compare (Sperber 1996: 43-47).

Another attempt to understand the invariance of myths was made by Joseph Campbell (1968; 1973). As Lévi-Strauss, also Campbell considers the causes behind the invariance of myths to be mainly psychological. He proposes that the tendency to make myths is innate and only the content of the myths is determined by environmental factors. Thus, innateness explains the similarities between myths and differences in circumstances and “the imprints of experience” explain differences (Campbell 1973: 21-131). Furthermore, the ultimate meaning of myth is, according to Campbell, universally the same. The ultimate meaning can be revealed when myth is taken psychologically and symbolically. In other words, myths can tell the truth and reveal their essence but only when understood metaphysically.

Campbell also outlined the theory of the monomyth, that is, a basic pattern found in many mythical narratives throughout the world (Campbell 1968). Campbell argues, mostly following the theories of Carl Jung and to some extent of Sigmund Freud, that the monomyth is one of the archetypes of the human subconscious. Thus, the monomyth is the elementary form, or archetype in the Jungian terms used by Campbell, of all mythical narratives and is furthermore an eternal possession that cannot be superseded (for the

opposed view, see Tylor 1970 [1871]).

The issue with Campbell's theories is that they are not really testable (Segal 1987; 1999). Many of Campbell's arguments are contradictory: at one point he emphasizes the unity of myths, but elsewhere he talks about their various oppositions. Methodologically, Campbell takes several liberties and applies other theories when it suits his needs, and even then drops parts without applying a systematic approach. Considering the comparative nature of his quest, Campbell also uses ethnographic data sparingly (Segal 1987). Thus, despite the promising opening remarks of his theory of myths (see Campbell 1973), the theory itself remains scientifically vague. Campbell is enthusiastic about myths but his actual analyses remain ambivalent and contradictory (see Segal 1987: 136-140). On the other hand, he should be credited for taking into account the psychological dimension of myths.

Notably, neither Lévi-Strauss nor Campbell developed their theories from scratch; both were influenced by the theories of Sigmund Freud and Carl Jung, two psychologists who radically advanced the study of subconscious during the early 20th century. While both were physicians seeking to cure mental illness, both also contributed to the psychology of religion and in effect made the theories of Lévi-Strauss and Campbell possible. While Freud mostly concentrated on denigrating religion – for him religion was just a detrimental phenomenon of the human psyche – Jung made significant efforts to create a theoretical approach to the relation between myths and conscious thinking. As a result, Jung phrased a theory of archetypes, or patterns of symbols which belong to what he calls the collective subconscious, which, according to Jung, explains why and how mythical narratives arise from the subconscious (Sharpe 1994: 208). The collective unconscious refers to the mental reservoir of the experiences typical of our species and thus shared by everyone. In other words, according to the Jungian view, myths are invariant and share a universal structure and pattern because they are manifestations of the collective unconscious (Jung & Kerényi 1951, cited in Sharpe 1994: 208).

There are several important insights in the aforementioned theories and views and they sum up the kind of efforts that have made to understand the invariance of myths. Early on Tylor noted the significance of mental processes, although his views of mental levels and progression are hardly in line with today's knowledge. Lévi-Strauss's attempt is notable mainly because of his effort to return invariance to the structures and natural functioning of the human mind. Campbell noted that environmental factors cannot be omitted even though pan-human psychological properties affect the boundaries of myths. Jung's idea that myths are survivals independent of all tradition due to structural elements present in everyone's mind was one of the first serious attempts to explain the psychological background of cultural universals. Lastly, even though Freud disliked religion and saw it as neurotic wish-fulfilment or delusion (e.g., Freud 1959), he was one of the first to seriously locate the religious impulse below the level of the conscious mind (Sharpe 1994: 202).

This discussion shows that myths have been both a subject of interest and also recognized as a part of the human mind long before the most recent research and psychological methods. The shortcoming of the approaches discussed is that they lack an independent theory and data about the mind and mental functions. They simply postulate the mind as a source of myths and state that all humans share a similar architecture when it comes to mental functions. While this is also the starting point for many contemporary scholars, the previous theories do not explain how the mind actually processes information so that output recurrently results in myths of a certain kind that are predictable and typical

of the human species. In other words, all the theories discussed bypass the “manufacturing process” of myths. Moreover, the distribution of myths or other narrative material is largely omitted. Thus, neither the emergence nor persistence of myths can really be explained along any of the proposed lines.

The naturalistic approach to the recurrence of cultural ideas

The earlier theorists indeed managed to pin the source of the invariance down to the mind but at the same time their results remained superficial. That is to say, they were not able to explain what kind of processes of the mind were responsible for the output they studied. Of course, this was for the most part simply impossible, because the modern tools of analysis were not available. Until recently, knowledge about the brain and the mind has been insufficient for making scientifically plausible analyses about the actual functioning of the mind.

The architecture of the mind began to be uncovered only a few decades ago and the exact nature of the mind is still in many ways an open issue. However, recent major leaps in the sciences of the mind have opened up completely new possibilities for the study and understanding of cultural phenomena in general, as well as religious beliefs from the standpoint of the functioning of the mind.

While the debate on whether human behavioural traits result from our biological nature or are a reflection of culture is several millennia old (Geary & Huffman 2002), the most recent and most influential quest for the exploration of the functioning of the mind and cognition did not start until the 1950s. Prior to that, even the most advanced science of the mind was fragmented into incommensurable disciplines, such as neurology and behaviourist psychology (e.g., Varela & al. 1993).

The first theory to point out that the behaviourist stimulus-response model of the mind was implausible was that of linguist Noam Chomsky (1957). In his theory, language was derived from logic that instantiated itself in the brain. Thus, Chomsky’s main argument was that environmental responses cannot explain the acquisition of language. Instead, there must be a set of innate predispositions that make learning possible.

Chomsky extended his argument by formulating a theory of domain-specific cognition, which refers to the idea that the human mind is equipped with a number of innate subsystems specialized in different types of information-processing tasks (Chomsky 1980). The idea has since been developed and refined by many authors (e.g., Fodor 1983; Pinker 1994; Sperber 1985; 1994). In addition to language, many other mechanisms of the mind have been studied from the viewpoint of modularity. It has been suggested, for instance, that basic emotions (Damasio 1999; Ekman 1992), risk evaluation (see Chase & al. 1998; Rode & al. 1999), tool use (Pinker 1997), and predator-prey interactions (Barrett 2005) are innate rather than learned and are based on the modular architecture of the mind.

The modular model proposes that cognition is context-sensitive, and thereby functionally limited by its own architecture. Different modules, while very effective in their own sphere, are ineffective problem-solvers when it comes to information of a type they are not specialized in. Thus, modularity limits the type of information that

is effortlessly processed. For instance, abstractions are difficult for humans because they cannot be connected to any meaningful context the mind is adapted to process (e.g., Barrett & Kurzban 2006; Sperber & al. 1995; Ward 1994).

Some authors (e.g., Burgess & MacDonald 2005; Elman & al. 1996; Uttal 2001) are sceptical about domain-specificity, instead advocating a more versatile domain-general model of cognition in which information processing is less specialized and therefore more capable of processing various types of information. In the domain-general model of cognition, modularity itself is not denied. Instead, the defenders of domain-generality argue that modules cannot be located in specific regions of the brain and that they are not isolated from each other. Thus, the information-processing capabilities of the mind should be more flexible due to interaction between different parts of the mind. According to the domain-general model, this would make cognition more adaptive to different situations and more free from contextual boundaries.

In addition to formulating theories about the structures of thinking, several attempts to physically locate the supposed modules in the brain have been made (for a review, see Geary & Huffman 2002). It is evident that at least some tasks, such as navigational skills (Maguire & al. 2000), processing agency (McNamara 2001), and aspects of social cognition (Lieberman & al. 2002) can be located in the hippocampus, the frontal lobes, and the neocortex respectively, indicating a possible physical location of respective modules. In many cases, however, it is not possible to locate mental processes in well-defined parts of the brain. For example, language activates so many areas in the left hemisphere of the brain that it is exaggerated to speak of a specific region that would in turn indicate the presence of the single language module (Binder & al. 1997; see also Gazzaniga 1995). Moreover, different regions of the brain are generally able to handle tasks of several kinds and evidence has shown that postnatal learning leads to changes in the brain structure suggesting that the brain is prone to dynamic change over time (Geary & Huffman 2002). Furthermore, while many skills can be connected with certain parts of the brain, it is evident that many of its resources are shared by several cognitive processes (see Gazzaniga 1995). Thus, these findings suggest that at least the strictest modular models of cognition may need reconsideration at the physical level although this does not eliminate context-sensitive modularity from information processing itself.

Taking all these findings into account, it is evident that the answer lies in neither extreme proposed, that is, the mind does not consist either of hard-wired physically identifiable modules or of equipotential general processors. Instead, it looks as if the mind has a modular basis from the contextual point of view; while information of a certain kind is evidently processed more easily than another, the actual processing may involve the cooperation of several mental mechanisms or physical parts of the brain (see Barrett & Kurzban 2006; Geary & Huffman 2002; Pyysiäinen 2009). In other words, the predispositions of the mind determine how efficiently and effortlessly given information can be processed. The modules are neither physically nor contextually as strictly encapsulated as some theorists suggest, however. Generally, there is room for flexibility and communication between modular structures and some structures are able to perform several tasks of different kinds. In fact, this is what makes the human mind so special: it is flexible and capable of processing and transmitting information across domains (cf. Mithen 1996; Boyer 1994; 2001; Sperber 1996).

While the debate on the relative roles of domain-specificity and domain-generality

is far from being settled, there is little denial of the fact that not all information is equal. The mind processes certain types of information better than some other and the acquisition of information is guided by several types of functional wholes in the mind. In other words, humans do not acquire information freely but under constraints that also set phenomenological boundaries on cultures. Information compatible with the predispositions of the mind has a better chance to become a part of cultural information than information that requires delicate cognitive efforts to be processed (Sperber & Wilson 1995).

The impact of these considerations on the study of culture has been enormous, though not as enormous as it could be. Nevertheless, unlike only a couple of decades ago, all serious theorists agree today that there are gene-driven constraints on brain development although experience indeed affects the development of both the brain and the mind (Geary & Huffman 2002). The naturalistic view of the mind as an entity equipped with innate predispositions has gradually replaced the old *tabula rasa* idea of the mind as a blank slate filled with information only after birth. While the modular model of the mind is still disputed by some scholars, the accumulating empirical evidence has indeed strengthened the view of cognition as a specialized, context-sensitive information processor. This has also made possible the study of religious beliefs from the cognitive point of view. The idea of inequality of information along with the growing understanding of the functioning of the mind and brain provide new perspectives on religious beliefs. For trying to understand the recurrence of religious beliefs, the accomplishments of cognitive scientists introduce important new insights for scholars of religion.

The rise of the cognitive science of religion

The cognitive mechanisms of the human mind have recently become a promising starting point in the study of religion. Several studies inspired by the work of cognitive scientists and psychologists have suggested that we can best understand the supernatural with reference to how the mind and brain work (for reviews, see Atran 2002; Boyer 2003; Tremblin 2006). In other words, belief in the supernatural can be traced back to the natural functioning of the mind instead of religion being a *sui generis* category, as suggested by earlier scholars (e.g., Eliade 1959; van der Leeuw 1963).

The first steps in the cognitive science of religion were taken by Stewart Guthrie, who proposed that the belief in supernatural agents arises from an error in inductive reasoning caused by the unconscious tendency to attribute humanlike properties to all kinds of environmental cues that suggest the presence of agents (Guthrie 1980; see also Guthrie 1993; 2002). According to Guthrie, the human need for coherence and to reduce ambiguity is so great that it drives the cognitive processes to create representations of invisible humanlike agents in the absence of real agents (cf. Kruglanski 1989). Thus, supernatural anthropomorphic agents were unconsciously created to reduce the feelings of anxiety and fear and to make the uncertain world around us feel more predictable, as humanlike agents are among the entities of the world humans naturally know the best.

Although Guthrie presented his argument in 1980, it was not until the early 1990s

when the cognitive science of religion really started to take off. Many consider the work of E. Thomas Lawson and Robert McCauley (1990) a starting point for the cognitive study of religion. Lawson and McCauley formulated a theory of how cognitive processes shape religious rituals. Their main argument was that the acquisition of symbolic-cultural systems, such as religious rituals, requires little if any explicit instruction from outside (Lawson & McCauley 1990). The foundations of such acquisition must therefore be non-cultural. Even though the argument itself had been presented by linguists before (e.g., Chomsky 1957; 1980), Lawson and McCauley were the first to apply this argument to religious rituals to show that unconscious cognitive processes and intuitions affect religious behaviour and expectations concerning the efficacy of rituals.

Throughout its short history, the focus of the cognitive science of religion has been in the study of supernatural agency and how it is conceptualized, in what has been dubbed as theological correctness, and in the differential distribution of religious ideas (Barrett 2007). Moreover, religious experience (e.g., Pyysiäinen 2001a; 2001b; McCauley 2001; Whitehouse 1995), narratives (e.g., Sjöblom 2004; 2008), and modes of religiosity (e.g., Whitehouse 1995; 2000; 2002) have been studied from the cognitive standpoint.

In addition to Guthrie, the work of Pascal Boyer in particular has had a major impact on the development of the cognitive science of religion. Boyer has shown that religious concepts are generally counterintuitive and violate our ontological intuitions (Boyer 1994; 2001; Boyer & Ramble 2001; see also Pyysiäinen & al. 2003). Boyer argues that the violation of intuitive folk-biological expectations make representations of supernatural agents more memorable and thus more prone to become culturally widespread. In other words, our natural cognitive functioning largely shapes our representations of supernatural agents (Tremblin 2006: 9), that is, the structural features of the human mind organize and shape the repertoire of possible supernatural agent representations.

Boyer's theoretical insights have been further refined and applied to religious beliefs by many authors. It has been shown, for instance, that religions operate on two different levels, theological and intuitive, that are, despite many similarities, fundamentally different from each other from the standpoint of the functioning of the mind (Barrett 1998; 1999; 2000; 2004; Barrett & Keil 1996; Barrett & Nyhof 2001; Pyysiäinen 2004a; see also Tremblin 2006: 172-182). Cognitive structures constrain the cultural spread of religious representations; while some representations remain a property of trained religious specialists alone, others become widespread (cf. Sperber 1996: 140). For instance, the studies of Justin Barrett & al. (Barrett 1998; 1999; 2000; Barrett & Keil 1996; Barrett & Nyhof 2001) show a clear intuitive tendency to anthropomorphize and to remove abstract properties from supernatural agents when their properties must be spontaneously pieced together. This, in turn, restricts the variety of representations of supernatural agents people can mentally hold. Thus, cognitive functioning guides what humans can actually intuitively believe in, regardless of what is offered as a theologically correct doctrine.

So far, many of the scholars working in the field of the cognitive science of religion have concentrated on the theoretical formulations instead of experimentally testing the predictions of their theories (Barrett 2008). The empirical testing of hypotheses is only gradually becoming a part of the cognitive science of religion. For instance, Boyer's main arguments about counterintuitiveness have been recently affirmed by several experimental studies (Atran & Norenzayan 2004; Barrett & Nyhof 2001; Boyer & Ramble 2001; Gonce & al. 2006; Pyysiäinen & al. 2003; Slone & al. 2007) indicating that most

religious concepts are indeed inconsistent with intuition-based knowledge, though not randomly. Moreover, the results show that context-sensitivity affects the memorability of religious concepts (Gonce & al. 2006; Slone & al. 2007) indicating that contextual effects may have greater importance than mere counterintuitiveness. Thus, while experimental studies have succeeded in showing that the theoretical foundations of the cognitive science of religion are fair, they have also opened up new issues that further theoretical and empirical work should address. Consequently, more work is necessary in the future to test the theoretical assumptions of the cognitive science of religion. For example, the role of emotions and motivational aspects in religious conversion is one of the open issues yet to be experimentally addressed.

Even with such limited, if growing, empirical material available, the major contribution of the cognitive science of religion is having managed to show how the belief in the supernatural can be understood in terms of the natural mind functioning and that religion is natural and part of being human (see Barrett 2004). Additionally, the cognitive science of religion has managed to show that not all religious conceptions are made equal which is in line with the findings of cognitive science about cultural information in general. Instead, representations of a certain kind are more likely to become a part of religious beliefs and traditions than some others. Theological abstractions have little chance of becoming intuitively accepted and thus a part of the religious doctrine people hold in their everyday life. A religious belief can only survive if it fits in with the architecture of the mind and manages to utilize the ordinary information processing of the mind. Basically, this is what many previous authors such as Freud, Jung, and Lévi-Strauss have already proposed, albeit in different terms. However, the cognitive science of religion entails the theoretical framework that is both scientifically plausible and testable. The cognitive science of religion provides a very promising tool kit for solving what kind of information processing actually takes place in the mind and brain, and why it works as it works.

Despite several methodological and conceptual differences compared with more traditional approaches, the cognitive science of religion has focused mainly on traditional subjects other than myths. However, the theoretical foundations of the cognitive science of religion offer a starting point for the study of myths when we keep in mind that myths are narratives that consist of representations similar to supernatural agents. The cognitive science of religion can be applied to explain aspects of mythology to the extent that myths include counterintuitive representations. Understanding religiosity from the viewpoints of the architecture and functioning of the mind is essential to the study of belief in the supernatural in general. Thus, the question to pose is not what the cognitive science of religion has done to explain the invariance of myths but what it can do and how the new theories can change our view of this very topic.

Evolutionary approaches in the study of culture and religion

Before proceeding, one more important approach in the study of the human mind must be briefly outlined as the standpoint adopted in this work relates to it. This evolutionary approach may be the most debated, the most controversial, and emotionally the most

difficult of all the approaches used in the study of culture. Scholars who have approached culture from this perspective have been accused of supporting racism, or even worse (see Hagen 2005). For some reason, applying evolutionary theory to cultural phenomena is difficult to accept for many scholars. For many, culture should be treated as a unique whole that separates humans from other animals. Likewise, as evolutionary theories are designed to explain the behaviour of animals, it cannot be applied to human behaviour in any way. This is by no means true. While the evolutionary approach (in true Darwinian terms) has traditionally been applied only to the behaviour of non-human species, there are no reasons to exclude humans from the potential topics of research.

The motivation to study human culture from an evolutionary perspective stems from the functional aspect of an organism, that is, all organisms must function to procure energy in order to survive and reproduce (Eldredge 1986). Humans are, among other things, organisms with the urge to survive and reproduce and therefore they are a feasible subject of evolutionary study. To reveal the underlying naturally selected patterns and physically evolved structures of humans, evolutionary perspective must therefore always be considered when studying culture.

The first to suggest the use of Darwinian evolutionary theory in the study of human culture was in fact Charles Darwin himself (see Darwin 1965 [1872]). However, the scholar who started the current debate around the topic was Edward O. Wilson with his book *Sociobiology* (1975). Wilson argued, mostly by drawing from the then very current theories of ethology (e.g., Hamilton 1964; Lorenz 1966; Trivers 1971) aimed at explaining animal behaviour, that human culture is dependent on the genetically inherited traits and that all human behaviour serves evolutionary purposes to advance one's reproductive success. Since then, much of the discussion around evolutionary psychology and neighbouring disciplines has concentrated on the extent to which evolutionary history and natural selection can explain human behaviour, thinking, and culture. While most scholars today admit that Wilson's deterministic view needs at least a serious revision, it is still unclear how many human behavioural traits can be explained in evolutionary terms.

In addition to sociobiology, several types of approaches, such as memetics, gene-culture coevolution, and evolutionary psychology (see Laland & Brown 2002) have been developed to expose the role of evolution in human behaviour. Behavioural ecology, for example, assumes that human behaviour consists of adaptive tradeoffs that occur in behaviour but that behaviour is more flexible than sociobiologists suggest. Moreover, the history of selection has endowed humans with a tendency to respond to environments by weighing up costs and benefits of adopting particular strategies (Laland & Brown 2002: 114-115), thus treating human behaviour as analogous to animal behaviour.

While behavioural ecologists criticized the sociobiological approach for its inflexibility, it has been, in turn, criticized by evolutionary psychologists, perhaps the most influential school of scholars advocating the evolutionary study of culture, for not taking the functioning of the mind into account (Laland & Brown 2002). Evolutionary psychologists, the most eager spokesmen of domain-specificity and the modular model of cognition, developed their models from the viewpoint that the evolved architecture of the mind best explains cultural phenomena. They based their theories on the assumption that the human mind consists of a number of modules adapted to solve the problems of a past environment in which hominids evolved. Due to the slow pace of evolution, it is likely that the same adaptations still shape human cognition and hence culture, meaning that

cultural universals and constraints can be explained by studying the functioning of the context-specific modules of the mind.

While this assumption is most likely largely true based on what is known about evolutionary processes, it is pointed out that the knowledge about the past environments is often insufficient. Thus, it becomes very hard to prove that any given mechanism of the mind has evolved due to selective pressures of a certain type of environment (cf. Buller 2005; Panksepp & Panksepp 2000). In other words, the role of evolution is often difficult to pinpoint. Moreover, some critics feel that the role of genes in human evolution is overestimated at the expense of other processes, especially cultural evolution, and that the role of adaptiveness is overemphasized (see Buller 2005; Laland & Brown 2002; Panksepp & Panksepp 2000; for an earlier critique of adaptationism in general, see Gould & Lewontin 1979). Moreover, evolutionary psychologists often overlook the evolutionary history of pre-human species. Many evolved mechanisms of the mind are probably older than the human species. Previous steps in hominid evolution have possibly shaped our mental functioning more than any given Pleistocene environment (Buller 2005; Panksepp & Panksepp 2000; Panksepp & al. 2002). This does not make the importance of evolutionary processes obsolete in any way, however.

When it comes to the scientific plausibility of methods used by evolutionary psychologists, a considerable number of the critiques of the evolutionary approach are based on emotional opinions and unjustified accusations of genetic determinism rather than well-formulated counterarguments (Hagen 2005). However, it is also true that far too many propositions concerning how evolutionary history has shaped humans have been scientifically dubious, even fallacious (Laland & Brown 2002). The evolutionary studies of human behaviour have often been “just-so” stories, in which an evolutionary explanation is simply postulated for some cultural phenomenon without testing the hypothesis with data or considering to what extent evolutionary theory can provide explanations for the subject. For this reason, wider arrays of data, a wider range of methods, and further specification and testing of supposed evolved functions must be employed in order to test evolutionary hypotheses (Simpson & Campbell 2005). However, when used correctly and by following the standards of good research, the evolutionary approach offers insights no scholar should bypass simply on account of habit or personal arrogance. It is a fact that humans are evolved organisms. Therefore, how evolutionary history still affects humans is an issue that should always be considered in the study of culture.

So far, the evolutionary approach has not been widely used in the study of religion, although it is becoming an increasingly discussed topic (see Bulbulia & al. 2008; Sjöblom 2007). However, taking the cognitive standpoint means the evolutionary tone will always be present in research due to the importance of evolutionary considerations for the background theories: The human mind is understood as an evolved whole which is rooted in the evolutionary history of the human species. Consequently, the functional aspect of the architecture of the mind needs to be considered as the architecture of the mind is a result of natural selection and must therefore have responded to problems of survival more effectively in the course of time than alternative architectures.

A new approach – some conceptual framework

We have now reviewed different theories of the invariance of myths and religious beliefs in general. We have also noted how most of the theories locate the origin of myths in the human mind and in some cases add environmental factors as determinants of the actual content. We have also noted how the cognitive science of religion could offer important insights to explain the invariance of myths. It can help us explain the invariance of paradises more precisely than before as it links contemporary brain and mind research to research problems relevant to comparative religion. This notion will form a basis from which the formulations of this work will be developed. With this approach, I believe, it is possible to achieve a deeper understanding of the question at hand than has been possible with the previous theoretical considerations.

However, before moving on, some of the key concepts need a closer examination. The main concepts are summarized in Table 2.1. Nevertheless, some more detailed evaluation about the key concepts is also necessary. I will discuss these concepts in the following paragraphs.

First of all, we must define what is meant by paradise. Understood from a Western point of view, paradise is usually a synonym for the Garden of Eden as described in the first chapter of Genesis in the Bible. In this work, paradise covers a much wider range of supernatural worlds, however. Paradise should be understood as a place where the dead live after their death, or alternatively as the original abode of the human species. Thus, the term “paradise” does not refer here to any specific paradise, such as The Garden of Eden or Sukhāvātī (the paradise of Pure Land Buddhists), for example. “Paradise” should instead be understood as a common name for any representation of a supernatural environment which is considered desirable. Thus, paradise can also refer to a nostalgic golden age, in which case returning to paradise is usually seen as the ultimate goal of human life (cf. Eliade 1971; Partin 2005).

When we talk about paradise representations, we should also be careful what we mean by representations. Despite its wide use, representation is not necessarily an unequivocal concept. In this work, I follow Dan Sperber’s definition that is both theoretically plausible and rigorous. At a general level, a representation, says Sperber, involves a relationship between three terms: an object is a representation of something for something (Sperber 1996: 61). Sperber’s definition does not contain a presupposition of the nature of that something or the nature of the object the representation is for. For our purposes here it is enough to bear in mind that only representations for humans are considered. Thus, paradise representations are representations of environmental circumstances humans hold either mentally or, when transmitted to other humans, publically.

The supernatural, for its part, separates paradises from utopias, another type of desirable environment. By following Ruth Eaton’s definition, utopian environments are ideal environments that are intended to be realized through human effort without supernatural assistance (Eaton 2002: 16). Paradises, in turn, are always established by a supernatural force. Thus, even though utopias and paradises may closely resemble each other, they are fundamentally different concepts when it comes to the emergence of a utopian or paradisiacal world.

Naturally, one could ask if paradises are myths in themselves. After all, myth, narrowly

defined, describes a story about gods and other superhuman beings. Myths report realities and events from the origin of the world that remain the basis and purpose of all there is (Bolle 2005; see also Eliade 1963: 1-20). Paradises, in turn, are descriptions of a place in wider narratives. However, it should be noted that paradises always represent mythical realities and are therefore myths as such, because they represent realities considered sacred (see Bolle 2005). Furthermore, many paradise myths, such as that of the Garden of Eden, are also comprehensive narratives. Many paradises are also the original abodes of men and are essential elements in explanations of how men, among other things, came to be. Although paradises are not illustrations of the present, they sketch the ideal of how the present world should be and will be in the afterlife.

Table 2.1 – Key concepts defined.

Concept	Details
Paradise	A common name for any representation of a supernatural environment which is considered desirable.
Representation	A private (mental) or public (culturally transmitted) presentation of an object, or set of objects. A representation involves a relationship between three terms: an object is a representation of something for something. (a)
Innate, innateness	Refers to a trait or a predisposition that exists in the mind of an individual at birth and is therefore gene-based instead of post-natally learned.
Counterintuitive, counterintuitiveness	A property of concepts and representations that violates intuitive expectations related to ontological categories.
Module	An innate cognitive structure specialized in processing certain types of information (e.g., that of other agents or objects).
Domain-specificity	The model of cognition that presents the human mind as a set of specialized, presumably evolved, devices specialized in processing information of a certain kind.

(a) after Sperber 1996: 61.

Summary

As already noted, paradises have not usually been studied outside the mythical context as independent representations. When beliefs about various kinds of afterworlds have been studied, the viewpoint has usually been theological, historical, or linguistic (e.g., Auffarth 1999; Barr 1993; Benjamins 1999; Wallace 1985). In comparative religion, scholars have usually approached afterlife beliefs from the phenomenological point of view (e.g., Brandon 1962; Eliade 1978; 1982; van der Leeuw 1963). Yet the efforts to understand the reasons behind the spectrum of paradise beliefs have been quite modest despite the wide interest in myths.

As discussed above, several theoretical and methodological openings to solve the invariance of myths have been made. Nevertheless, they have not proven to be suitable to gain a more profound understanding of the architectural elements of the mind behind the invariance of myths and paradises. However, a new theoretical framework, the cognitive science of religion, provides insights for studying how religious beliefs have emerged and are held in general. Despite the differences in the object of study, the theoretical framework of the cognitive science of religion should be highly applicable for the study of paradise representations as representations of paradises are cultural information about the supernatural and should therefore be created similarly in the mind as the representations of supernatural agents.

That said, by using the general theory of the emergence and persistence of supernatural concepts we should be able to study paradise representations from a cognitive viewpoint. Even though there are no previous attempts to explain the invariance of paradise representations in this way, the insights of the cognitive science of religion and evolutionary understanding of cultural phenomena suggest that this approach is the most promising so far. The key is to learn which kind of information processing takes place in the mind with regard to paradise representations.

3 Recurrence in paradise representations¹

Just as there are recurrent themes in myths in general, there are recurrent themes in paradise representations as well. Similarly, even if in theory there are no limitations to what paradises are like, in practice this is not the case. Patterns similar to those found in myths can be found in paradise representations. In this chapter, I will review paradise representations of several major traditions to show how paradises resemble each other. I will indicate where there are differences, and why this is an interesting issue that is in need of explanation.

Before going any further, a critical distinction needs to be made, however. I will use the terms “real world” and “imaginary world” to refer to the two classes of representations of environments. “Real world” refers to the world about which we can make empirical observations. Thus a real, or empirically observable world refers to the environments that can be seen, heard, or sensed in ordinary ways. “Imaginary world”, for its part, refers to environments that cannot be directly observed but about which we can hold beliefs and have mental representations similar to those of the real world. This is not in itself an ontological claim about the non-existence of paradises, however.

As questions concerning the origin of humans and especially their fate after death are crucial to religions, it is not surprising that the nature of paradise has caught the attention of many theologians. Especially the problem of the afterlife has been addressed in many ways. In most cases, however, the desired state of an afterlife has been described in rather abstract terms. For instance, Christian theologians have made great efforts to explain the ultimate fate of man. The desired afterlife is usually described as living in union with God with no references to environmental circumstances. For example, the *Catechism of the Catholic Church* (CCC) states that the desired afterlife is an everlasting, purified communion with Christ and God. At the same time, CCC portrays the emotional nature of the afterlife: it is the ultimate end and fulfilment of the deepest human longings, the state of supreme and definitive happiness (CCC, Part I, Section 2, Chapter 3, Article 12, 1023).

Similar explanations that link one’s ultimate fate with ideas of union and fulfilment are found in most major religious traditions. *The Talmud* and *Midrash*, the holy scriptures of Judaism, for instance, declare that at the end we arrive at the world to come, where the righteous will sit in glory and enjoy the splendour of the Divine Presence in a world of purely spiritual bliss (e.g., Berenbaum & Skolnik 2007). The ultimate goal of Buddhists, Nirvāna, is, for its part, described as an escape from the world of suffering, as cessation, or as the absence of delusion (e.g., Kasulis 2005). The same is true of Hinduism and various schools of Tao (henceforth Taoism), two other major Asian traditions. Both emphasize

¹ This chapter is based on Närhi (2008).

that the ultimate goal of humans is not a specific place but rather a state in which a person unites with the universe (i.e., Bráhman or Tao) and all suffering ceases to exist (e.g., Heesterman 2005; Kohn 2005).

While theological viewpoints are usually presented by the theologians of major religious traditions, even some newly arisen sects have formulated similar conceptions. For example, the Urantia Foundation, that was established in 1950 under the influence of the then current UFO phenomenon, has a complex description of paradise. According to *The Urantia Book*, which contains the teachings of the group, paradise is “the eternal center of the universe of universes and the abiding place of the Universal Father, the Eternal Son, the Infinite Spirit, and their divine co-ordinates and associates. This central Isle is the most gigantic organized body of cosmic reality in all the master universe. Paradise is a material sphere as well as a spiritual abode” (The Urantia Book, Part I, Paper 11).

Despite the existence of such conceptions, this level of explanation seems generally to be restricted to traditions which have developed serious theological explanations, a process that has often taken centuries. What is even more notable is that even if such conceptions are theologically accepted as orthodox, the very same traditions regularly hold concurrent ideas of paradise that are very different from abstract delineations. Moreover, these concurrent ideas represent a far more common type of paradise beliefs if we take a closer look at a wider range of religious traditions.

If theological conceptions are not satisfactory for the majority of believers, what are more intuitive paradises then like? Simply put, they are physical environments with very concrete features. Paradises are fruitful valleys, oases, distant islands, and gardens, for example. Instead of complex abstractions, representative examples of the constituents of paradise representations consist of natural elements, such as water or fruit trees, culturally valued elements such as towers and palaces decorated with jewels, gold, and a lack of all threats. In short, paradises would be ideal places to live.

Of course, this is not to say that paradises are just idealized mirrors of the real world. Many of their properties are modified in such a way that they violate our intuitive expectations about natural regularities or are vastly exaggerated. Things such as talking animals or people who live forever or can transform themselves into animals are not found in the real world. Nor are there rivers of honey and wine or an unlimited supply of the finest food.

Nevertheless, the way these paradises resemble this world is quite striking. Paradises are not strange randomly generated realms where invisible five-headed myriapods float in the air while the bluish quantarees (whatever they may be) dance happily around the singing clouds. Nor are they vague in terms of environmental elements. Instead, they are real-world-like environments populated by familiar objects, such as rivers, trees, buildings, animals, and humans. Paradise representations can actually be called simplified representations of cultural-ecological systems. They provide the necessary resources for living as well as shelter in one form or another (e.g., by removing dangerous beasts, providing safe places to rest etc.). In this respect, descriptions of geographically and demographically distributed paradise representations from various traditions repeat the same formula: Their elements form an environment which provides everything necessary for living.

In Table 3.1 I have summarized the contents of different paradise representations. Although some aspects seem to make the representations very different, the differences are in fact relatively trivial and can be explained with reference to local differences in the

natural and cultural environment.

Table 3.1 – Paradise representations of various traditions.

Tradition (paradise(s) known as)	Geographical origin	Contents of paradise
Christianity, Judaism (Gan 'eden, Pairidaeza)	The Near East	A fertile oasis or garden which supplies everything its inhabitants need for nutrition and ease of life. It is also the source of the sweet waters of the world. The birds and animals of paradise are under the mastery of humans, and thus harmless (even to each other). Sexual tension does not exist between a man and a woman. (a)
Islam (al-Jannah)	The Near East	Paradise is a pure, perfect, and eternally fruitful garden that provides eternal shelter and a place to rest for its inhabitants. Paradise is filled with ease, joy, laughter, and amenities. Endless supplies of food and drink are available. Four delightful rivers of honey, milk, water, and wine flow in paradise. Spotless, amorous virgins are reserved for men as spouses. Sins, sorrow, and death are unknown. (b)
Taoism (e.g., K'un-lun Shan, P'èng-lai Shan)	China	On the shore of The Lake of Gems grow the trees of Old Age Peach, The Tree of Pearls, and the Jadestone Tree. The fruits of these trees all ensure immortality. The inhabitants enjoy perpetual leisure and happiness and they live life filled with ease and pleasure. (K'un-lun Shan) The towers and terraces are made of gold and jade, the beasts and birds are white. Trees of pearl grow densely, and they flower and bear fruits which are always luscious. Those who eat the fruits will never grow old or die. (P'eng-lai Shan) (c)

Tradition (paradise(s) known as)	Geographical origin	Contents of paradise
Pure Land Buddhism (Sukhāvati)	India, China, Tibet	The inhabitants of paradise live happily forever and all their wishes come true. Paradise is full of ponds with gold-sanded bottoms surrounded by trees. Lotus flowers rain from the sky and the air is filled with beautiful music. Paradise is decorated with gold, silver, emerald, and crystal and is bounded by banana and palm trees. (d)
Hinduism (e.g., Vyoman, Anand-loka, Svar-loka)	Southern Asia, India	Said to be located north of the Himalayas, paradise is a place of sensual pleasures for all the senses. Music enchants the ear, and fruits, sweetmeats, and ambrosial dishes entice the palate. Delightful perfumes charm the sense of smell. Paradise is also populated with jewelled palaces, golden pathways, green acres, and bowers of fragrant flowers. The heavenly companions (nymphs) ensure the happiness of those who ascend to the heavenly spheres. (e)
Egyptian ancient religion (Sekhet Aaru)	Egypt	In paradise life continues similar to this life but is effortless: fields always produce a profuse crop, hunting is easy, and hunger or thirst are unknown. The dead can live in any form they like. (f)
Ancient Scandinavian religions (Valhöll/Valhalla)	Scandinavia	The home of Odin, reserved for those died in battle. Paradise is a great golden hall with 540 doors, from which the dead warriors sally forth every day to fight against one another. After the day they feast on the flesh of the mythical boar and drink the mead produced by the mythical goat. The inhabitants are served by valkyries (nymphs). (g)

Tradition (paradise(s) known as)	Geographical origin	Contents of paradise
Saami (Sáiva)	Northern Scandinavia, Lapland	A mirror-world that is a parallel but happier realm of the deceased, situated either inside an arctic hill or a mountain, or below the lower bottom of a double-bottomed lake. The most significant differences between paradise and the real world are that in paradise well-being is guaranteed and working is unnecessary. Even the reindeer are bigger than in this world. The lakes that set this world and paradise apart are also known to be the abodes of fat and large fish (especially lavaret, perch, and salmon), which often live between the two bottoms of the lakes, hence being difficult to catch. (h)
Celts (Síd)	Ireland	Paradise is characterized as a spacious festive hall, a distant island, or a burial mound. It possesses a never-failing supply of the choicest food and drink. Most notably, there is an inexhaustible supply of pork, which was highly valued among the Celts. Life in paradise is a continuous feast. People live without toil and in eternal peace without strife. Death and diseases are unknown, and even the colours are brighter than in this world. (i)
North American Indians, especially Plains Indians (Name varies depending on tribe)	North America	Life continues similar to this life except that everything becomes easier: hunting buffalo involves no risks and is always successful. The souls of the dead live in their tepees, dancing and celebrating. (j)

Tradition (paradise(s) known as)	Geographical origin	Contents of paradise
Aztecs (Tlalocan, also several “lesser” paradises)	Central America	Paradise is a fortunate land with lakes, rivers, cacao trees, and eternal summer. There life is a pleasant existence in the middle of flowers and trees. An abundance of fruit, corn, and beans is notable. The inhabitants of paradise feel no sorrow. If they wish, they can also transform themselves into a butterfly and fly back to the world of the living. (j)
Aboriginal tribal religions (Name varies depending on tribe)	Australia	Paradise is a fertile land with abundant resources of water and easily hunted game. Life in paradise is comparable to this life but is without its difficulties. Paradise is usually located in the sky or a distant island in the west (where the sun sets). (k)
African tribal religions (Name varies depending on tribe)	Africa	In paradise life is effortless and without risk. Its inhabitants can enjoy without labour all the fruits of the trees and the fields and all their wishes come true. Misery, suffering, and toil, as well as sickness and death are unknown. Even hunting involves no risk and effort, for the animals do not fear or flee their hunters. (l)
Cargo Cults (Name varies depending on the “school”)	Melanesia	Paradise is characterized by equality between the races, and by lack of poverty and hunger. Life is happy and wars and violence are unknown. Material welfare and the abundance of Western commodities are central. (m)
UFO cults (Name varies depending on cult)	Western countries, especially the United States	Paradise is a utopian realm usually located in outer space in which all contemporary problems are solved. Ecological and sociological crises cease to exist and all weapons are destroyed or neutralized. The inhabitants of paradise either live thousands of years or are immortal. Reincarnation is possible for nearly all. Earthlings can have an eternal soul that survives a physical death. War, poverty, and suffering are unknown. (n)

Lettering of names and the descriptions of paradises in Table 3.1 are based on ethnographic and encyclopedic sources: (a) Bamberger 1978 [1972]; Partin 2005; (b) Glassé 1989; (c) Werner 1961; (d) Gomez 1996; Kötatsu 1987; (e) Walker 1968; (f) Lewis 1994; (g) Dronke 1997; Lindow 2001; (h) Laestadius 1997; Pentikäinen 1995; Pulkkinen 2005; (i) Carey 1982; O’Cathasaigh 1978; O’Rahilly 1946; (j) Hultkrantz 1980; (k) Berndt & Berndt 1988; Charlesworth & al. 1984; (l) Baumann 1936; Ray 1976; (m) Steinbauer 1979 [1971]; (n) Grünschoß 1998; 2003; 2004; Wojcik 2003.

The main purpose of the descriptions provided in Table 3.1 is not to itemize the smallest items of detail (this will be done in study 2 for some of the representations presented here, see chapter 6) of different representations but to illustrate the scope of variance and invariance among traditions, and to show how geographically and temporally widespread is the belief in this type of paradise and afterlife. Except for the last two (Cargo Cults and UFO cults), all the representations derive from premodern times, before aeroplanes and global real-time cultural exchange of information. Taking into account their wide geographical dispersion, it should be clear that cultural interaction cannot explain all of the invariance in paradise representations. Undoubtedly, historical contacts between the Near Eastern traditions can at least partly explain their mutual similarity. However, cultural exchange is hardly an adequate explanation for the fact that the paradise of the Aztecs is not very different from that of the Aboriginals of Australia or the Saami of Northern Scandinavia. We must therefore look for a different explanation.

In addition to invariance, there is also variation that needs to be explained. Flora and fauna differ from paradise to paradise, and so do such cultural elements as the presence or absence of palaces and temples. Evidently, cultural variation can explain this to a certain extent. For example, the lack of huge buildings in the paradises of tribal religions is explained by the fact that these peoples did not build or even know of any such constructions. Thus, because there is no real-world parallel, the supernatural version does not exist either.

The same logic holds for the palaces and temples when they are present in a paradise. We do not find temples made of jade in the Near East. While jade was known, there were many other materials of greater importance. Instead, jade is one of the materials of Chinese (Taoist) paradises (see Werner 1961: 234, 372) as it was highly valued in China. Similarly, in the biblical imagery of the New Jerusalem, palaces are made of gold and diamonds. It is obvious that culturally valued elements tend to find themselves in paradises, but only in cases where they have a real-world parallel.

Flora and fauna perhaps offer even more salient examples, since their local variation is more unique than that of the cultural elements. By looking at the paradise representations in Table 3.1, we see that most of them actually present paradise as a natural environment. Animal and plant species and the scenery represented vary from paradise to paradise. For example, hummingbirds are as unique to the paradise of the Aztecs as reindeer and specific fish to the Saami paradise. American bison are mentioned in the North American Indians’ paradise representations, but not in the Near East, where this animal was unknown. Thus, typical local fauna is usually found in paradise, especially if it is somehow relevant (such as game).

In the case of flora, the presence of plant species seems to depend on their natural distribution in a similar manner. For example, the lotus, a typical plant of paradise in East

Asia is not found elsewhere. Bananas, cacao trees, and palms serve as further examples of local specialities, although they are more widespread. Again, this is because these plants have a real-world counterpart in these parts of the world. We do not expect to find them in Scandinavian paradise representations, however.

It also seems that the location of paradise can be predicted by examining the general attributes of the environment where the belief in a certain paradise is held. The geographical location of paradises varies from a distant island or a lake to mountain tops and valleys. The connection between these locations is that they all represent the idea of a paradise situated beyond an unreachable natural formation or element (e.g., the sea or mountains) and that the elements in question play some role in the environment of the culture. The location of paradise depends on the kind of geographical elements available in different regions. Locating paradise in a distant island is therefore quite logical to people such as the Celts, who lived by the sea. Similarly, paradise as a fertile oasis in the desert is natural for the people of the Near East. For the Saami, the salience of lakes, arctic hills, and mountains in their living habitats make them natural locations for paradise. In short, paradises are generally located in places that are ultimately unreachable and yet familiar.

Again, paradises do not strictly reflect the actual environments; they are exaggerated and stretched in many ways. The ratio between favourable and harmful species is unbalanced, for example. While favourable species, like those that are hunted, indeed form one of the most important animate natural elements of paradise representations, harmful or threatening species are either absent or their dangerous nature has been modified to a harmless form. The fruitful properties of nature are greatly emphasized while real-world harshness is marginalized. All these things are located in a mysterious place at the edge of the world familiar to the creators of the representation.

Therefore, and regardless of certain variation, paradises clearly follow certain pattern. While paradises in general represent an ideal place to live, their properties are limited to those that are observable in the actual environment of the creators of the representations. Therefore, the nature of a paradise can be predicted by observing the natural and cultural environment of the creators of the representations.

If the pattern discussed is universal and independent of cultural contacts, a need to explain its emergence and durability becomes evident. It seems that there are predictable rules linked to our evolutionary needs and evolutionary history which explain how paradise representations are so uniform. I argue that this predictability arises because the human mind has been optimized by natural selection to favour mental representations of a certain kind, and that this makes these representations enduring and widespread. Paradise representations seem to emphasize those elements in our environment which are considered relevant or desirable.

To learn how and why this is so, we must examine the way our mind processes and values information acquired from the environment and whether any universal preference patterns can be found. Moreover, we must explore what cognitive predispositions involve in the construction process of paradise representations. In the next chapter, I will formulate the theory of emergence and durability of paradise representations from the cognitive point of view.

4 The cognitive and evolutionary foundations of paradise representations²

In order to understand how paradise representations emerge and survive in the competition of cultural ideas, we must examine three different but interwoven aspects of cognitive information processing. First, we must understand why humans prefer certain environments and how this preference is linked to paradise representations. In other words, the impact of natural selection and the relative roles of unconscious and conscious information processing must be analysed. Coping with threats and possibilities provided by the environment requires abilities of a certain kind that, according to my argument, have their effect on the content of the representations created in the mind.

Next, we must probe what kind of mental processing and mental capabilities are necessary for producing paradise representations and how they shape the repertoire of paradise representations. In other words, we must analyse how the architecture of the mind makes paradise representations possible. Third, we should learn why this happens, that is, what kinds of motivations promote representations of paradises even if they can never be reached in the real world. Obviously, there must some other reason to hold a belief in representations of this kind.

My argument is based on the distinction between unconscious and conscious information processing; their relative roles in human information processing largely determine the outcomes that can be communicated to others and thus have the chance of becoming a part of culture. I argue that it is the unconscious level that determines what is possible to process on the conscious level. In other words, the unconscious shapes representations that can be presented consciously.

By unconscious processes, I refer to thought processes that are spontaneous, rapid, and intuitive. They form the cognitive system that produces a continuous, unreflective stream of consciousness. This automatic system is responsible for perception and inference in everyday tasks. Conscious processing, on the other hand, refers to a rule-based, analytical, reflective system that makes inferences and rearranges information in the mind. It is responsible for tasks such as logical thinking and formal analysis (see Pyysiäinen 2004a).

Paradises and environmental preferences

The unconscious, intuitive system is the default system used to process incoming (via sensor systems) information; the reflective system is relatively slow and inefficient (e.g.,

2 *This chapter is based on Närhi (2008).*

Lewicki & al. 1992). This is understandable because the amount of stimuli in any normal environment is enormous and not all of it can be processed on the conscious level. Instead, when most of the information processing happens on the unconscious level, the conscious level can be reserved for more demanding and complex tasks (cf. Orians & Heerwagen 1992). Consequently, conscious processing is dependent on the information filtered by unconscious processes. The evaluation of different elements of environmental scenes is a typical example of such unconscious processing.

Environmental preferences refer to the outcome of the evaluation process of environmental scenes. Preference, high or low, is a sum of the evaluation of different elements of a scene and it is closely linked to habitat selection which in turn refers to a hierarchical process of behavioural responses that may result in the disproportionate use of habitats to influence the survival and fitness of individuals (after Jones 2001). Environmental preferences affect not only behavioural responses but also the emotional reactions that determine the outcome of the evaluation process (see Korpela & al 2002).³

In humans, inferences and the initial affective reactions based on environmental cues are primarily unconscious (Zajonc 1980). Due to this, according to several authors, human environmental preferences are a result of natural selection, the preference pattern having been shaped by the challenges met by our ancestors. Intuitive, rapid processing is understood as an adaptation that serves as an effective tool for increasing the probability of survival. One who is able to automatically filter and sort out the relevant pieces of information from the cacophony of signals always has a selection advantage over those lacking that ability (Kaplan 1987; 1992; Orians & Heerwagen 1992; Silverman & Choi 2005).

Indeed, several studies show that human responses to environments of various kinds are highly affective and little or no conscious processing is involved (Korpela & al. 2002; Ulrich 1983; see also Zajonc 1980). We usually respond to general features of the environment, such as the presence of water, buildings, trees, or landscape geometry (for reviews, see Ulrich 1983; 1986). Environments are typically so complex that their detailed representation would take far more time and resources than is desirable. Acquiring general information about potentially valuable resources and dangerous elements is not only faster but also leaves the brain free to attend to the aspects that do need attention (Orians & Heerwagen 1992). In many cases there is no room for a trial and error type of learning. To be effective, information processing must be automatic and rapid, something that conscious processing can scarcely do. For example, a cue about a predator should trigger the right kind of response not in seconds but in decimals of a second.

Many experimental studies have found that humans have a universal preference pattern according to which the preferred environments contain water, large trees, a focal point, moderate complexity, a moderate depth of field, the presence of deflected vistas, and lack of threats (for reviews, see Ulrich 1983; 1986; see also Fig. 4.1). This preference pattern seems to be cross-cultural (Herzog & al. 2000), indicating a genetically derived predisposition as a function of survival (Kaplan 1992; Kaplan & Kaplan 1989: 40-42, see

3 *It should be remembered that environmental preferences are not unique to humans. Organisms with environmental preferences are found throughout the animal kingdom and even some of the simplest life forms, such as bacteria, show a clear tendency to favour certain type of habitats at the expense of others. Here, only the environmental preferences of humans need be considered, however.*

also Balling & Falk 1982).

This is not to say that environmental preferences are all hard-wired and that there is no room for learning. Among other factors, a bias towards familiarity in environments depends on one's acquired, that is, learned, experience and is a significant predictor of preference. Preferring familiarity really makes sense, because knowing how the current environment can be best utilized, or its threats avoided, has natural advantages. A simple and yet universal example could be finding one's way back home. Familiarity also reduces the sense of complexity, which, if excessive, exposes one to feelings of anxiety and fear. Moreover, familiarity creates a feeling of being in control and thus helps to decrease the level of anxiety (Ulrich 1983, see also Kaplan & Kaplan 1982). Yet familiarity does not necessarily enhance preference if the familiar elements are harmful or unpleasant. For example, cliffs, hostile agents, or other signs of danger usually weaken the preference (Herzog & al. 2000; Kaplan & Kaplan 1989; Ulrich 1983). Even then, however, familiarity is a predictor of preference, though this time a predictor of negative preference.

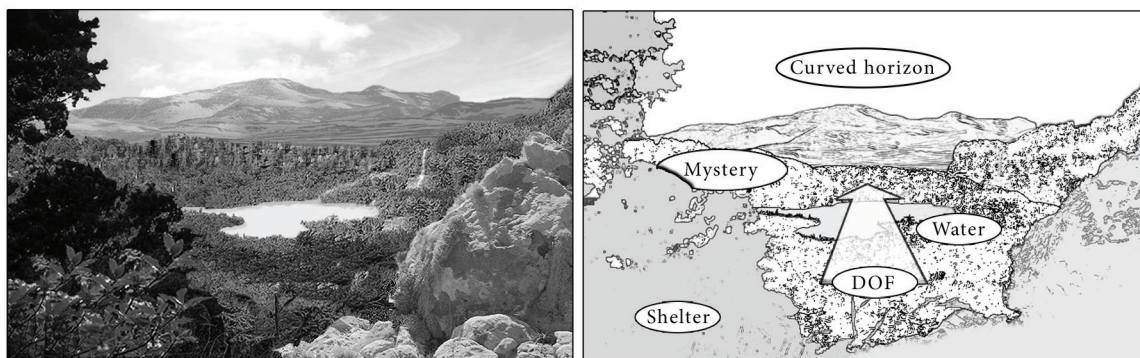


Figure 4.1 – *The fundamental properties of preferred environmental scenes. Shelter from the eyes of others provides a refuge from potential threats. Depth of field (DOF) and partially hidden scene enhance preference by offering good visibility and by suggesting the potential for exploration. Moderate complexity and semi-open space make the scene coherent and easy to observe. Water and verdancy indicate the presence of vital resources.*

In addition to inanimate objects and natural elements of the environment, humans have had to cope with other animate agents. Throughout our evolutionary history, we have constantly encountered not only other humans but also a vast array of lethal predators. Thus, animate agents pose an additional challenge, which complicates the scenario: Even if a certain environment provides abundant resources, it may be inaccessible because of hostile agents, such as other humans or dangerous animals. Similarly, the presence of game does enhance preference as it promises the fulfilment of needs.

Therefore, it is not surprising that the available data suggest that rapidly working, automatic cognitive mechanisms involved in predator detection and evasion have been selected throughout evolutionary history (Barrett 2005). Humans also detect animal activity in their environment automatically without training (New & al. 2007). Moreover,

other humans pose similar but socially more complex challenges and the available evidence suggest that cognitive adaptations to these challenges have probably evolved due to specific selection pressures as well (see Duntley 2005). We should thus add animate agents to the list of factors that determine environmental preferences, as their presence might have interesting implications for the general preference of the scene.

From an evolutionary perspective, the theoretical viewpoints and empirical evidence discussed indicate that humans have a naturally selected preference for favouring environments of a certain kind at the cost of others. The prospect-refuge theory formulated by Jay Appleton (1975; see also Appleton 1988; Woodcock 1984) suggests that humans, on a general level, prefer environments that offer visibility to open spaces and shelter from others' eyes, a standpoint that empirical evidence (Clamp & Powell 1982; Fischer and ShROUT 2006) has later affirmed. The key findings are that humans prefer environments where they have shelter, are able to observe the scene in front of them, have access to resources, and are not exposed to threats (cf. Fig. 4.1).

Thus, we should expect a cross-cultural pattern that predicts the general feature set of preferred environments irrespective of culture. For example, the differences between the preferred scenes of Finns and Bushmen should be modest in magnitude and differences should occur only in specific elements uniquely relevant to one region but not to the other. Generally speaking, *all humans exhibit similar responses to environments; differences are mostly best explained by familiarity, or by its lack* (cf. Herzog & al. 2000).

Bearing these facts in mind, a comparison between the general elements of paradise representations and those present in preferred environments reveals an interesting correlation between certain elements of paradise imagery (see Table 4.1 for details). The presence of water and shelter, the abundance of resources, and lack of threats repeatedly occur. These also repeatedly occur in the preferred real world environments. Moreover, the elements correspond to generally preferred real world elements, such as woods, rivers, or certain animals, i.e., to elements that provide either nutrition or shelter.

The explanation of this observation is that the basic needs are universal although there are always differences in the exact ways they are fulfilled. The Saami, for example, were, and still are, dependent on their reindeer or fish in the lakes, whereas ancient Egyptians put their hopes in the annual flood of the Nile. In both cases, and in every other case in this respect, the goal is the same irrespective of actual circumstances: gaining a satisfactory living from the surrounding environment. Thus, while ideas about the ideal world vary, we should expect paradises to be look-alike versions of the environments of the creators of paradise representations. Paradises are idealized environments characterized by a lack of the usual hardships of everyday life.

Paradise representations are thus characterized by the fact that they are shaped by the universal human environmental preferences. The existing differences reflect differences in environments. Paradises are desirable because they represent a total solution to the problem of survival in a hostile environment. Paradises are the ultimate representations of the most preferable environment.

However, while the basic properties of paradise representations apparently derive from actual environments, there is a need for an explanation of the persistence of paradises, as the responses to environmental scenes are tied to momentary situations that may vary greatly in the course of time. In other words, we must understand the way the human mind processes, creates and holds fast to representations in general and representations

about supernatural environments in particular. We have seen that there seems to be a strong correlation between certain spontaneously preferred elements of the environment and of paradises. The question why paradise representations are so durable must be further examined.

Table 4.1 – Correlation between the core properties of environmental preferences and paradise representations.

Property	In paradises	In preferred environments
Shelter	Yes	Yes
Verdancy	Yes	Yes
Water	Yes	Yes
Animals	Yes	Yes (although not tested extensively)
Threats	No	No
Human presence	Yes	Yes, degree depends on familiarity*
Familiarity	Yes	Yes
Visibility	Semi-open spaces**	Semi-open spaces

* see Bixler & Floyd (1997), also cf. Nassauer (1995).

** Or in the “environment of dreams”, see chapter 5 for details.

Cognitive attraction and the relevance of paradises

While supernatural agent representations have been the most discussed topic, the cognitive science of religion can also be applied to explain paradise representations, as the central issue is why religious concepts of a certain kind are preferred by the human mind, and how they are remembered and transmitted.

Here I address the problem of how paradise representations achieve their success in the competition between cultural ideas. Representations of counterintuitive agents do it by being slightly modified versions of their ontologically intuitive counterparts: Counterintuitive agents are also agents and agents are always of crucial importance to us. While one violation of intuitive expectations makes such representations salient, their intuitive features make them easy to process in the mind.

My argument is that the reasons behind the cultural success of paradise representations are parallel with the reasons that make counterintuitive agents attention-grabbing, and

we should be able to find similar factors determining cultural success or failure in both cases. Thus, my aim here is to show that the rules that regulate the conceptualization of supernatural agents apply to paradise representations as well. I will, however, claim that relevance and selection play a more important role in the case of paradise representations compared to counterintuitiveness, although they are all needed in a successful representation of paradise. To understand this, we need to take a look at the way the mind works because it will help us understand why the repertoire of paradise representations seems so constrained to the “lots of resources and no threats” type of image.

As already noted in the introductory chapter, it is rather widely accepted that the human mind consists of several innate, context-sensitive mechanisms that are specialized to process certain kinds of information. In other words, the mind of a new-born child comes already equipped with a set of predispositions waiting for the right kind of input. Consequently, the mind is a very good problem-solver in some contexts while in other contexts it is not. For example, while humans outperform computers in face recognition tasks (e.g., Hancock & al. 2000), humans perform poorly in tasks where the context is abstract or irrelevant, even if the logic of the task is otherwise perfectly understandable in another context (see Manktelow 1999; Sperber & al. 1995).

Furthermore, many of the abilities of the mind may be adaptations to the pressures of the environment during the evolutionary history and the selective pressures of the ancient world of the hominids and the first humans. This means that the mind works best in the context of problems related to different aspects of survival and social relationships. In abstract tasks, the mind often struggles because it cannot link the problems presented to any meaningful context or goal (for discussion, see Sperber & al. 1995; Tooby & Cosmides 1992; Tremblin 2006: 53-64).

That said, although the specialized mechanisms of the mind are useful in their proper context in specific problem-solving situations, they also set limitations for what humans can easily adopt, as we tend to prefer certain kinds of information at the cost of some other. Information that has relevance from the receiver’s point of view (Sperber 1985; 1996; Sperber & Wilson 1995) is likely to be successful. Unimportant or irrelevant information is unlikely to be remembered or transmitted. Information that has relevance from the receiver’s point of view has most chances to survive and shape cultural ideas. The most general factor affecting the distribution of information is its compatibility and fit with human cognitive organization (Sperber 1996: 140).

Indeed, religiously relevant representations are constrained by mental functioning. It has been amply shown that the human mind does not create intuitive religious representations freely, but rather does so within cognitive boundaries that explain the apparent invariance of the core elements of such representations (Boyer 1994; 2001). In other words, religious representations basically follow the rules of intuitive folk psychology and its basic concepts. They differ, however, from ordinary knowledge in that they systematically violate intuitive ontological categories. Religious concepts break the intuitive expectations of what something should be like (Boyer 1994; 2001; see also Sperber 1994). For example, a talking statue violates an intuitive expectation that non-living objects cannot talk (Boyer 2001: 79).

However, the counterintuitiveness, or the violation of ontological expectations, of religious concepts is limited. Merely violating as many ontological expectations as possible does not make a salient religious concept (Boyer 1994). In fact, it is very difficult for the

human mind to even produce extremely odd concepts or representations (Ward 1994), much less remember or transmit them. Thus, a viable religious concept should possess only one, or very few, violations of intuitive expectations (Boyer 2001: 85-86). For example, a talking pink statue with seventy feet and the ability to spit fire but nothing else is not actually a very good candidate for a god which people might worship. Instead, a statue with the ability to make fields fertile when prayed to would be a much better candidate, because it does not violate too many expectations and it also does something useful. Experimental studies (Barrett & Nyhof 2001; Boyer & Ramble 2001; Pyysiäinen & al. 2003) indicate that minimally counterintuitive concepts spread and endure better than those without or with too many violations. Therefore, it is expected that a salient religious concept has to be based on a similar real world counterpart with one or very few properties tweaked.

While paradises seem to reflect real world environments closely, several properties of paradises also follow the rule of ontological violation. Reincarnating or eternally living inhabitants who can transform themselves into butterflies, talking animals, and fruit trees with diamonds as their fruits are typical counterintuitive elements in paradises. While they realize an intuitive ontological category in principle, they are still impossible. No dead person can reincarnate, nor are there animals with whom humans can have meaningful conversations. Likewise, diamond trees are not possible, as living organisms cannot produce inanimate material from itself. In this respect, paradises follow the path of counterintuitiveness.

The access to paradises represents another counterintuitive aspect of these representations. In order to gain access to a paradise, some supernatural event always seems to be necessary. In many cases it is one's physical death in which the soul departs from the body and ascends to paradise. Sometimes, gods and spirits create the paradisiacal circumstances on Earth. In some cases it might be possible for living persons, such as shamans, to visit paradises e.g., via dreams. In every case, however, a supernatural event or an act of a supernatural agent is required. To go from here to there is not possible by ordinary means. Thus, counterintuitiveness occurs both in the paradise and in getting there. Together they separate the paradise from the real world, no matter how similar these two might otherwise be.

Despite the counterintuitiveness of some elements, paradises still resemble real world environments in many respects. Paradises are described as gardens, fertile valleys, oases in the desert, distant islands, and so on. The flora and fauna of paradises (when described in specific detail) often have their parallels in the real world. Most importantly, many of these properties are described in an intuitive manner. The abundance of resources, buffaloes who do not escape, or lions that eat grass are not counterintuitive even if they are otherwise desirable. Similarly, lack of threats and beautiful landscapes are completely intuitive and within the boundaries of intuitive expectations. Thus, paradises are basically ontologically intuitive but they violate ontological expectations in some details thereby promoting their impression of uniqueness.

While counterintuitiveness can make paradise representations more salient, the feeling of relevance can reinforce them even more. According to Dan Sperber and Deirdre Wilson (1995), relevance sets the value of information. Sperber and Wilson define relevance as a contextual effect of information against the amount of effort required to process it. That is, the more contextual effect and the less effort is required, the more relevant that information is (Sperber & Wilson 1995: 125). Furthermore, they argue that human cognition tends to be

geared to the maximization of relevance and that this is a result of biological functioning and natural selection. A tendency to maximize relevance and minimize processing costs is best realized in a mind that has specialized mechanisms that respond in the most relevant context in the quickest and most meaningful way. In the evolutionary context, a tendency towards the best balance between the cost and benefits should result in a predictable pattern of what is considered relevant in the mind (Sperber & Wilson 1995: 260-266).

This viewpoint is supported by a wide amount of experimental evidence showing that humans tend to remember better things that can be connected to some relevant context in general (for a review, see Smith & Vela 2001; see also Sperber & al. 1995). Therefore, we should expect that culturally successful representations, that is, those that are remembered and transmitted, are somehow connected with the surrounding world.

The most relevant information also tends to remain relevant over time. While some information is relevant only in particular situations, some information is of such crucial importance that it is felt to be relevant independently of time and space (Sperber & Wilson 1995: 160-161). Representations that contain this kind of information have a stronger cognitive effect than other information, and they thus have the best chances to be stored in the mind and remain stable.

As natural selection has shaped human psychology, several aspects of human psychology are genetically structured, that is, they derive from genetically inherited development, and are therefore characteristic of all humans (see Tremblin 2006: 43-72; Sperber 1996: 113-115). As a consequence, certain types of information are felt to be relevant by default by all humans. Furthermore, the most relevant information should always be processed in the most relevant way to achieve the most effective responses to problems of a different kind (Sperber & Wilson 1995: 260-263).

The stimuli that activate the context-sensitive mechanisms of the mind vary depending on one's location in time and space, however. This input variation is caused by the fact that natural and cultural environments differ. The challenges met by humans in the environments of a different type can vary dramatically; Eskimos and Aztecs lived in very dissimilar natural settings, for example. Still, the primary goal of all humans is the same: to ensure survival. Thus, while the stimuli differ, the goal remains the same and the mind is adapted to process and store information related to this goal. That is why representations containing information related to survival are the most likely ones to survive cultural competition.

As already noted, the content of paradise representations is very much related to questions of survival. The emphasis on the abundance of resources and the lack of threats is directly linked to physiological welfare, and information of that kind is effortlessly processed by the human mind. Therefore, paradise representations are relevant and require minimal cognitive processing because the predisposition to process them exists in every individual mind. Furthermore, humans are well adapted to process information related to resource-seeking and the avoidance of threats (e.g., Kaplan 1992; Tomasello 1999: 13-55). Thus, the human mind can handle paradise representations rather effortlessly as their core content is firmly linked with these mechanisms of the mind and is felt to be relevant.

The similarity of paradise representations is therefore an outcome of similarly functioning minds. The differences between representations, on the other hand, are input-specific, while the demands for contextual fit and relevance from the standpoint of survival remain the same. Thus, the predispositions of the human mind explain why paradises

tend to follow a predetermined formula that emphasizes relevant pieces of information as building blocks of paradisiacal circumstances. At the same time, input variation causes differences and gives rise to the ostensible diversity of paradise representations.

Thus, there is no reason to expect that the mechanisms for estimating relevance and the fulfilment of basic needs have changed, unless the cognitive functions of our species have changed radically in the course of time. I do not think that this is the case, for the basic needs of our ancestors are still relevant today though the ways to realize them have changed. Most people no longer need to hunt their food or run away from lions. But we still need to make money to buy meat and we need to lock our doors to prevent hostile agents from trespassing in our houses. Uncertainty and the need to stay alive are here to stay. In this sense, the paradisiacal realms the mind produces are just as relevant to the mind today as they have been for thousands of years (cf. Tremblin 2006: 25-27).

If the dispositions that make paradises salient in one mind make them salient in every mind, the distribution of representations about perfectly suitable environments in and between minds and cultures is not surprising at all. Thus far, they seem to be not only geographically varying realizations of perfect circumstances, but also stickers that glue themselves to the mind with their counterintuitiveness and relevance.

Paradises as reflections

While paradise representations are cognitively attractive and mainly consist of preferred elements, the way they are constructed in the mind remains unclear. The proximate motivation to create such representations is not self-evident, as they have no direct counterparts in the real world, which in turn means that they do not have value in decision making in real world circumstances. For example, even if there are no threats present in paradise representations, there may well be threats in the real world.

To answer the question why paradisiacal circumstances are chosen for cultural transmission from a potentially limitless bunch of imaginary representations, it is necessary to explore the properties and phases of the information processing that ends up as imaginary environments. I have already discussed the innate properties and predispositions of the mind that make paradise representations possible and preferable. Next, I will try to explain what is needed to mix real-world elements into the ideas of the most well-known and widespread supernatural realms.

I will first concentrate on Stewart Guthrie's argument that supernatural agents are a product of the mind seeking maximal coherence (Guthrie 1993: 38), which supports the idea that human minds tend to seek relevance. Coherence means here chances to develop strategies and behavioural responses to the variably changing demands of the world. The consequence of finding coherence in the world is the predictability of the changes and agents acting in it. For example, one's life can depend on the knowledge of when a lion is going to attack, or from what kind of cues its presence can be inferred. Despite the necessity of knowing what is happening around us, it is seldom possible to obtain complete information of everything. Very often much has to be inferred from minimal cues in order to build all-inclusive representations of what is going on (see Barrett 2005).

Imagine, for example, that you are walking in the woods. While the path ahead is clear and clearly visible, you cannot detect everything that happens around you because you cannot see through the trees and vegetation. Yet, if there was a grizzly bear lurking behind the bushes, it would be of crucial importance to recognize the threat and react accordingly. However, you cannot see the bear. Instead, you can make inferences based on minor cues like the noise of heavy paws, or the nervous calls of birds. Still, you have no chance to know what is around unless you go and see, which is not necessarily wise.

This is where inference comes into play. According to Guthrie, an error in inductive reasoning is the main reason for the existence of human-like supernatural agents. The need to know instead of using pure guesswork is so great that even a representation of a human agent supposed to be out there, that is, an imaginary representation to which pieces of information can be anchored, is better than nothing at all. We are intuitively able and even willing to imagine these invisible agents around us because they fit into at least one ontological and intuitive category in the mind. It is better to have at least an assumption of the presence of an agent instead of just having a set of arbitrary cues. Thus, the lack of information causes our mind to make inferences that do not have a counterpart in the empirically observable world (Guthrie 1993). The inferential character of thought is critical here: without the ability to associate and rearrange acquired information we could not produce representations about supernatural agents.

The need for coherence shapes the environmental preference as well. A moderate amount of complexity, shelter, and good visibility are all properties of preferred environments (Ulrich 1983; 1986; see also Kaplan 1992). While observing the environment, humans tend to favour scenes that provide both coherence and access to shelter. In other words, humans try to reduce the need for guesswork while exploring and estimating the value of the environment.

Furthermore, there are several similarities between observing agents and observing the environment. As in the case of agents, full information about an environment is hardly ever available. Behavioural and representational responses are based on cues, short exposures to information, and to some extent making the best guesses. Although the less guesswork the better, inductive reasoning still has a role to play in almost any situation due to the inadequacy of available information. Thus, the ability to add properties and imagine potential scenarios makes room for imaginary representations about the environment. For example, if you are looking for food, would you go where you see trees and water indicating fertility and potential nutrition, or would you just wander around hoping you will come across something edible?

While uncertainty in the real world is evident, paradise representations often describe a world without uncertainty. In paradises the need for guesswork is greatly reduced by providing permanent and coherent conditions favourable to life. For example, nutrition is granted and access to it contains no risks such as becoming the victim of a predator. The catch of paradise representations is that the information gaps that characterize representations about the real world are closed. The uncertainty and shortcomings we must deal with in our everyday life, are absent in paradise. In paradise, we always have nutrition and shelter irrespective of other circumstances.

Thus, of the mechanisms of the mind paradise representations are primarily related to those concerned with environmental preferences, coherence, resources, and avoiding threats. Environmental preferences shape the general picture of the scene, whereas

coherence seeking addresses the problem of predictability. Resource seeking and avoiding threats are connected with object and agent recognition. All these mechanisms and abilities are, in the light of the previously discussed studies, both innate and adaptive. Together, they provide better chances to survive than what would be the case without them. However, they are both context-sensitive and dependent on available information in a similar manner as agent-detection mechanisms and usually they do not get what they would need.

Although we do not find paradises in the real world, paradise representations are felt to be relevant because their core content is strongly rooted in the cognitive mechanisms that regulate primary information processing and deal with the fulfilling of basic needs. As supernatural agents, paradise representations also offer several anchoring points for the categorization automations of the mind, but instead of finding a potential partner for social interactions, paradises represent a complete environment with a complex set of interactions between agents and inanimate objects. Still, they are based on innate mechanisms working to maximize the chances of survival.

This, however, raises another issue: If there is no direct parallel between paradise representations and the empirically observable world, then how exactly do paradises form in the mind? If the mechanisms of the mind were only dependent on actual received information, paradise representations would not be possible because we cannot have any direct information about paradises.

As already suggested, the answer lies in our ability to associate, that is, to rearrange acquired information and mix properties of intuitive ontological categories. In other words, the capability of associating makes paradises possible. Association, or cognitive fluidity, has been an essential tool for our species throughout history (Kaplan & Kaplan 1982: 74-75; see also Mithen 1996; Sperber 1996). It has made it possible to foresee causations and different scenarios and has allowed us to create representations of what something, such as an environment, could be if this or that changed. Consequently, our mental representations do not need to have direct counterparts in the real world.

Association provides a tool so powerful that by using it the human mind can even exceed its original function of combining existing empirically observable elements to create representations that provide a basis for accurate decision making. However, literally speaking, paradise representations do not satisfy this condition, for there is no empirically observable scene that could match them. Even though paradises reflect an evolutionarily ideal world, the realms they represent are unreachable and therefore have no actual point of reference in the real world. Therefore, from the evolutionary perspective, paradise representations are basically useless. Would this weaken the relevance of paradise representations, then?

The simple answer is no. While paradise representations are imaginary, the modifications of natural entities that occur in paradise representations conform to a uniform pattern that follows the rules of relevance from the evolutionary standpoint: paradise representations represent modified versions of desirable natural entities within the boundaries of the properties of the experienced world and cognitive functioning. When a dry desert suddenly provides water, game does not run away any more, or dangers and suffering instantaneously disappear, this makes a representation more attractive from the point of view of survival, but does not make it irrelevant even if such things never happen. Moreover, the lack of harmful things, such as death or war, complements the

picture: living in a paradise is effortless, resources are abundant, and struggle for life has become unnecessary.

The theme of idealization is recurrent throughout paradise representations but it is constrained by the natural and cultural landscape. As already noted, the natural and cultural elements that are present are constantly those that are preferred in the world in which the representation in question was formed. Golden and jade palaces are typical in cultures where they have been known and valued as symbols of prosperity. On the other hand, they are absent in cultures where they have been unknown. Paradises of Plains Indians or Aborigines do not have the notions of high golden towers simply because they did not exist in their cultural landscape.

Similarly, the mind selects familiar beneficial species and natural elements that are connected to the fulfilling of basic needs. The easily hunted buffalo or antelopes, fruitful trees and oases in the desert underline the point of paradise: the crucial features of the world are transformed into the perfections of themselves from the standpoint of human needs. The human mind seeks general properties regardless of the environment in which an individual lives. The invariance of paradise representations, for one, occurs due to the invariance of human needs. Variance, on the other hand, occurs mainly due to geographical differences and variation between circumstances while the architecture of mind remains the same.

Therefore, it is true of paradise representations that *they are products of the tendency of the human mind to continuously improve the chances for survival. Paradise representations are born when this tendency is exaggerated and starts to produce mental representations with no counterparts in the empirically observable world.* Despite the lack of real world counterparts, the representations can survive by themselves because they activate many automatic and innate mechanisms of the human mind designed to solve crucial problems. Thus, by giving an impression of relevance and being cognitively optimal, paradise representations make themselves successful in the competition between mental representations in and between minds. Paradise representations are grounded in the natural abilities of the mind but they differ enough from ordinary representations to make themselves noteworthy (cf. Sperber 1996: 138-150, see also Kelly & Keil 1985).

To sum up, the human mind has a motivation-based predisposition to representations about imaginary realms. Paradises are born when the mechanisms of the mind do not function accurately⁴ in terms of survival but rather when they function as a hyperactive device that grinds out imaginary realms and scenarios even when they are not needed. In this case, environmental preferences aid survival by directing mental reactions and behavioural responses along appropriate paths. Cognitive mechanisms, on the other hand, are responsible for processing the information that has passed the first filter of relevance estimation and it is up to them to rearrange the original information into a more durable and desirable form. Paradises exist due to a combination of unconscious desires driven by naturally selected tendencies. As humans imagine the most desirable conditions, they gradually approach the limit of paradise representations.

It is therefore justified to say that paradise representations reflect the evolutionarily ideal, although unreachable world. While the incompatibility between paradise representations and the empirically observable world is obvious, paradises still represent the best

⁴ Or exceed their domain-specific functionality (cf. Sperber 1996: 142-143).

possible scenario. They do not need to be realized. They exist in our minds as pictures of what humans should aspire to. At the same time, they offer an illusionary way out from all the difficulties of this world.

Cognitively speaking, it is not a major leap to jump from representations about the empirically observable world to purely imaginary ones. Our ability to imagine non-existent worlds, the ability originally evolved to react to the situations and scenarios of a different kind, makes paradises possible. In this respect, paradise-seeking is no different from agent-seeking.

Therefore, the emergence and durability of paradise representations are based on the need for finding coherence and the desire to survive. Together, they overdrive the associating device, our mind, to create imaginary realms that fulfil all our evolutionary needs. That is also why paradises are similar from culture to culture, and from continent to another: The needs are the same and the architecture of the mind is the same. The seemingly extensive library of perfect worlds has in fact quite a limited collection. It is the collection of reflections of what the ideal circumstances would be depending on the actual habitats of humans.

Part II – Studies

Preface to Part II

In the first part of this work, I argued that paradise representations are more similar than different. Despite some deep apparent differences, there are obviously underlying patterns of paradise representations that suggest that the differences are largely superficial and dependent on the divergence of input respective to time and space, that is, on the actual circumstances of the creators of the representations.

While this is an interesting finding which also seems to be supported by the data presented in chapter 3, it would be rather inappropriate to stop here. By doing so, we would come dangerously close to the “just-so” level of explanation of many (absorbing but eventually vague) evolutionary studies. Thus, the issues raised in chapter 4 must be addressed with additional empirical data. We need to study if people indeed perceive their ideal world as suggested. If paradise representations created in the mind evolved to prefer certain types of paradise imagery, this tendency should still exist in the minds of contemporary people and thus probing the preferences of people of today should provide us with noteworthy additional evidence. Moreover, while it seems that the argued importance of familiarity is already reflected in the data presented in chapter 3, this dimension of the theory needs a more detailed examination as well.

In this part of the work, I will test the assumptions presented in chapter 4 with two types of data. First, I will examine how people currently perceive their ideal environment. Next, I will put the familiarity argument to the test by analysing it against written descriptions of paradises and see if familiarity actually is a significant predictor of the content of paradise representations. In this way, I try to cover and strengthen the main aspects of the arguments that the repertoire of paradise representations is constrained by both the architecture of the mind and by local circumstances.

This part consists of two independent studies. The findings of both studies and their relation to the theory in general will then be discussed in Summary and conclusions. In that chapter, I will also summarize the results of this work as a whole and consider the possible further implications of this study for the study of religion in general and of supernatural environments in particular.

5 Study I – Spontaneous responses to the typical properties of paradise representations

As shown in the first part of this work, the assumption that natural selection plays a role in the creation of paradise representations is theoretically justified. Environmental preferences and the architecture of the mind seem to support the durability and dispersion of cultural ideas of better realms in a uniform way across the world.

The data presented in the theoretical part was strongly rooted in religious history, however. Only a few of the presented traditions were contemporary. Therefore, even though the paradises of historical traditions show eye-catching uniformity, we do not know how humans would respond to the imagery of those representations today. If, as I have argued, the response pattern is uniform due to the species-specific architecture of the mind, we should find a similar pattern among contemporary humans as well.

The aim of this study is to examine spontaneous responses to the typical properties of paradise representations. The study was designed to test the hypothesis proposed in the theoretical part of this work. In other words, the aim is to study both environmental preferences, the presence and absence of certain environmental elements, and characterizations of human life typical of paradises.

The hypothesis suggests that we should look closely for three factors that could affirm the plausibility of the hypothesis. First, scenery that provides resources and shelter should be preferred. Second, the preference for the certain properties of paradises should reflect their presence in paradises. This should also be true with properties absent in paradises. Third, the preference pattern should be uniform irrespective of sex and religiosity. If the preference pattern depends on sex and especially on religiosity, we should probably question, or at least re-examine the hypothesis from the standpoint of cultural bias.

As paradises are exaggerated idealizations of environments, are generally verdant, sheltered, and contain abundant supplies of water, these four elements were specifically investigated. Moreover, the impact of human presence on preference was examined.

Method

The study was implemented as an Internet-based survey (see Technical discussion for details). The technical requirements consisted of a web browser with Macromedia/Adobe Flash Player 6 or newer installed.

The participants were mainly university students (42 men and 139 women) from the universities of Helsinki, Turku (Finland), Jerusalem, Oxford, and Victoria (New Zealand).

The participants were recruited via e-mail lists. Due to the fact that the test was publicly available on the Internet, there were some “outsiders” as well. Participation was voluntary and anonymous completion of the survey was possible. The prerequisite for completion was an e-mail based registration, however. The purpose of the registration was not to identify participants but to prevent multiple submissions, as each e-mail address served as a valid identification key only once.

Participants were told that the survey was about “the environment of dreams”, that is, the best environment they could imagine themselves living in. Participants were asked to imagine this environment before answering the questions. References to any religious dimensions of such environment were eliminated from the instructions. The purpose of this was both to prevent biased answers and to promote heterogeneity, that is, to avoid a bias towards the religious-atheist axis among potentially interested participants.

The actual survey consisted of three parts. In the first part, participants were asked to rate 18 pictures representing landscapes (see Appendix A for details). The emphasis on the scenes was on the properties that affect the intuitive response resulting in differences in preference. These properties were verdancy, presence of water, shelter, light, and human presence. The pictures also contained an idealized scene to test if emphasizing elements typical of literal paradise descriptions would yield enhanced preference (scene 5), and a typical Finnish forest landscape (scene 17) to test if typical characteristics of a familiar scene enhance preference (comparison was made between Finns and other nationalities).

In the second part, the participants were asked to choose the property they preferred from the pair of adjectives describing the atmosphere of the dream environment. The pairs of adjectives were chosen to represent oppositions of a varying degree in dynamics, population, and visibility. The purpose of this was to test if the general preference was towards that of paradises, that is, an environment with low dynamics, moderate human presence, and safety. Moreover, some pairs were related to the properties of the pictures of part 1 to survey consistency (see Appendix A for details).

In the third part, the participants were asked if they wanted to see the offered property (e.g., cars) in their dream environment. The selection criterion for the shown properties was their regular presence or absence in paradise representations. In the third part, there were also items unrelated or not central to most paradises to mix things up (see Appendix A for details).

To make the answers as spontaneous as possible, the participants were instructed to answer the questions as quickly as they could. The latencies were recorded along with the actual answers and they were used afterwards to monitor whether a participant had followed the instruction to be quick.

In addition to the actual test, background information about the participant was collected based on his or her own answers. The information consisted of sex, year of birth, nationality, properties of childhood habitat, general personality, and religiosity. Religiosity was measured using the revised version of Hoge’s intrinsic religiosity test (see Gorsuch & McPherson 1989; Appendix A for the questions). The religiosity scale contained 10 questions with a five-point Likert scale. Therefore, possible scores could range from 10 to 50.

Table 5.1 – Participants by sex and nationality (as reported by participants).

		Sex		
		Female	Male	Total
Nationality	Finland	125	27	152
	Great Britain	0	1	1
	Iceland	0	1	1
	India	1	0	1
	Israel	6	2	8
	New Zealand	6	6	12
	Other	0	1	1
	Sweden	0	1	1
	United States	1	3	4
Total, other than Finns		14	15	29
Total		139	42	181

Table 5.2 – Distribution of participants' membership of religious traditions grouped by intrinsic religiosity score.

		Religiosity group (1-5)					
		1	2	3	4	5	Total
Member of	N/A (not indicated)	8	5	3	0	0	16
	Christianity	11	24	26	13	3	77
	Judaism	0	2	1	4	1	8
	Hinduism	0	0	0	0	1	1
	Buddhism	2	4	1	1	0	8
	New age (any)	1	1	1	0	0	3
	Neopagan (any)	1	1	0	0	0	2
	Other	2	4	2	1	0	9
	None	36	19	2	0	0	57
Total		61	60	36	19	5	181

Results

The total number of accepted participants was 181 out of 195 (see Table 5.1 for details) who completed the survey (for rejection criteria, see Technical discussion). Analysis concentrated on the general trends and comparative analysis. For comparative analyses, participants were divided into groups by sex, nationality, and religiosity score. The impact

of childhood habitat and personality type were also analysed.

In part one, the highest average rates were given to pictures that contained verdancy, water, and shelter (see Fig. 5.1 and Appendix A for details). The amount of verdancy was the strongest predictor of preference. Furthermore, all the most preferred pictures offered good but not unlimited visibility to the scene. The results were in line with current knowledge about human environmental preferences indicating that the general imagery of a dream environment closely follows environmental preferences.

The results revealed two noteworthy phenomena, however. First, the scenes with moderate human presence were preferred. Previous studies have shown that human presence tends to weaken preference compared with scenes without human touch or elements (but see Bixler & Floyd 1997, also Nassauer 1995). On the other hand, when human presence dominated the scene, preference was diminished. Scenes 11 ($M = 4.66$) and 18 ($M = 4.57$), and scenes 4 ($M = 4.72$) and 13 ($M = 3.30$) tested this aspect of preference. In the case of scenes 11 and 18, the difference was not statistically significant ($p = .36$) while in the case of scenes 4 and 13 it was ($p < .001$).

Second, scene 5 ($M = 5.23$) representing an exaggerated environment with several waterfalls, a rainbow, symbols of wealth (villa, pool), and brighter colours was the most preferred even though it had an impression of steepness, which normally should weaken preference. The mean difference between scene 5 and the second best, scene 4 ($M = 4.72$), was .508. The difference was statistically significant ($p < .001$), indicating that the preference pattern can be disturbed and preference enhanced by the presence of extraordinary properties in the scene.

Women generally preferred more scenes that provided shelter from other's eyes. While the trend was consistent throughout the scenes with a shelter element, the difference was statistically significant in only one case (scene 16, $M_w = 3.99$, $M_m = 3.52$, $p = .039$),⁵ however.

In part two, the responses tended towards properties describing general peacefulness. The dichotomy was the most explicit in cases of populated/crowded ($M = .99$), peaceful/restless ($M = .98$), green/harsh ($M = .97$), luminous/dark ($M = .96$), calm/tense ($M = .95$), and quiet/noisy ($M = .94$). Again, it is notable that a dominant human presence was strongly rejected (populated/crowded, $M = .99$) while moderate human presence was generally accepted (populated/uninhabited, $M = .71$). Women showed a somewhat more definite general trend than men. The differences in the case of individual properties were statistically significant in four cases: bright/dusky ($M_w = .87$, $M_m = .74$, $p = .41$), calm/tense ($M_w = .97$, $M_m = .88$, $p = .019$), warm/cold ($M_w = .96$, $M_m = .86$, $p = .023$), and peaceful/restless ($M_w = .99$, $M_m = .93$, $p = .013$).

In part three, the results showed a clear trend that closely reflects the properties of paradise representations and the fulfilment of basic needs alike. As expected, the properties most closely connected to basic needs showed the most polarized distribution of mean scores. Similarly, the properties not directly connected to basic needs clustered in the middle of the range. This indicates that the fulfilment of basic needs regulates the preferences of humans while in the case of less relevant properties preferences tend to divide more.

5 *Mann-Whitney test was used to compare the differences between sexes/ two groups.*

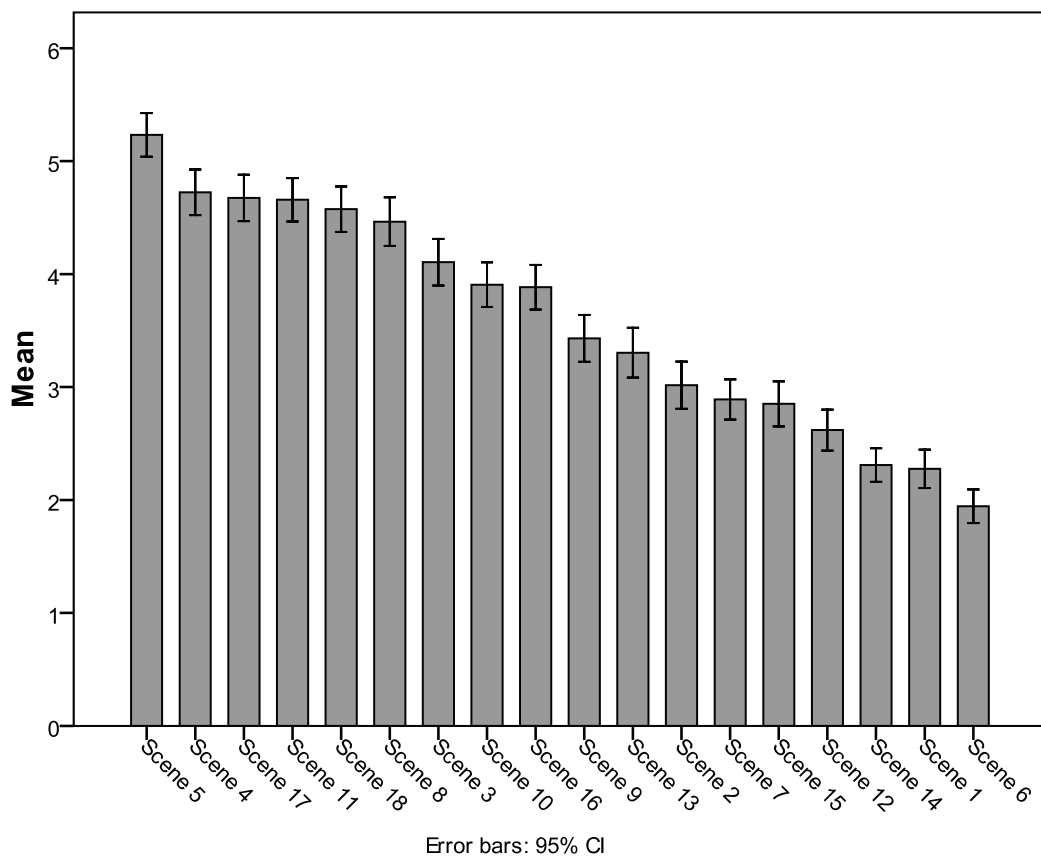


Figure 5.1 – Means of preference of scenes, part 1.

Table 5.3 – Means of desirability of properties, part 2.

	Mean*	Std. Deviation
Bright/dusky	.84	.368
Cool/hot	.65	.479
Populated/uninhabited	.71	.456
Quiet/noisy	.94	.229
Calm/tense	.95	.218
Exciting/dull**	.30	.459
Warm/cold	.93	.249
Sheltered/open	.77	.423
Luminous/dark	.96	.206
Predictable/unpredictable	.75	.433
Peaceful/restless	.98	.147
Green/harsh	.97	.180
Populated/crowded	.99	.105
Active/idle	.84	.368

N = 181, except for Exciting/dull**

* A higher mean shows the first option was more preferred. To improve readability, the options appear here in a different order than in the survey.

** Only Finnish answers ($N = 151$) are displayed due to the obvious mistranslation of 'dull' in the English translation. The mean was .87 ($N = 30$) for English speakers.

Table 5.4 – Means of desirability, part 3.

	Mean*	Std. Deviation
Cars	.31	.466
Shelter	.99	.105
Wars	.02	.128
Broad-leaved forests	.94	.229
Sorrow	.23	.420
Animals	.96	.193
Shops	.73	.443
Partner	.99	.105
Hunger	.04	.193
Bridges	.76	.430
Death	.25	.437
Colourful birds	.88	.321
Diseases	.14	.352
Conifer forests	.91	.285
Lakes	.97	.164
Flowers	.98	.128
Snakes	.44	.497
Mountains	.67	.472
Campfire	.77	.423
Insects	.61	.490
Thirst	.11	.314
Rivers	.94	.229
Fruit trees	.93	.259
Light	.98	.128
Darkness	.58	.495
Water	.99	.074
Butterflies	.96	.193
Choicest food	.81	.392
Palaces	.22	.416
Eternal life	.28	.451

$N = 181$

* Higher value indicates higher desirability

General differences between the sexes in part three were again small. However, even though the general response pattern followed similar outlines irrespective of sex, there

were statistically significant differences in several individual properties. Women preferred broad-leaved forests ($M_w = .97, M_m = .86, p = .005$), conifer forests ($M_w = .94, M_m = .83, p = .042$), butterflies ($M_w = .98, M_m = .90, p = .031$) and shelter ($M_w = 1, M_m = .95, p = .01$) more than men. At the same time, women were less willing to tolerate hunger ($M_w = .02, M_m = .10, p = .031$), thirst ($M_w = .06, M_m = .26, p < .001$), and darkness ($M_w = .53, M_m = .74, p = .018$) in their dream environment. With the exception of thirst, the most central properties of paradise representations were equally preferred by men and women. The same was true for the most disliked properties.

Participants who described themselves as risk-seeking rather than safety-seeking were generally more willing to tolerate higher dynamics, steepness and unpredictability in scenes and in part 2. The difference was especially high in part 2 in predictable-unpredictable ($N_{risk} = 48, M_{risk} = .44, N_{safe} = 133, M_{safe} = .16, p < .001$). There was no difference in religiosity between these two groups, however. Childhood habitat was not a significant predictor of preference.

To analyse the correlation between responses and religiosity, participants were divided into five groups according to their religiosity scale score. The most religious group was, in theory, larger due to a greater range of scores (9 points instead of 8), but as there were no participants who scored the full 50 points, it did not affect the analysis in practice.

The variance analysis of religiosity groups did not reveal statistically significant differences between the groups (significance level .05). The contrast between the least religious ($N = 61$) and the combination of the two most religious groups ($N_{total} = 24, N = 19$ for group 4, and $N = 5$ for group 5), revealed statistically significant differences in two cases, though. Darkness was disliked more by the most religious groups ($p = .005$). Also, eternal life ($p = .011$) was preferred more by the most religious groups. However, there was no increasing trend of means from the least religious group towards the most religious groups. Moreover, the difference was not visible in both groups simultaneously. Lack of darkness was strongly preferred by group 5, while eternal life was strongly preferred only by group 4. Thus, the results imply that religiosity does not affect the general preference pattern behind the responses in any predictable way.

However, religiosity may affect responses if the stimulus has references to familiar religious descriptions. Lack of darkness and eternal life are typical of biblical descriptions of paradise and the vast majority of the participants belonging to the most religious groups identified themselves either as Christians ($N = 16$) or Jews ($N = 5$) (other groups Hinduism $N = 1$, Buddhism $N = 1$, and Other, $N = 1$). Therefore, it is very possible that the knowledge of how paradisiacal circumstances are described in the Old Testament and in the New Testament affected the preference in these two particular cases.

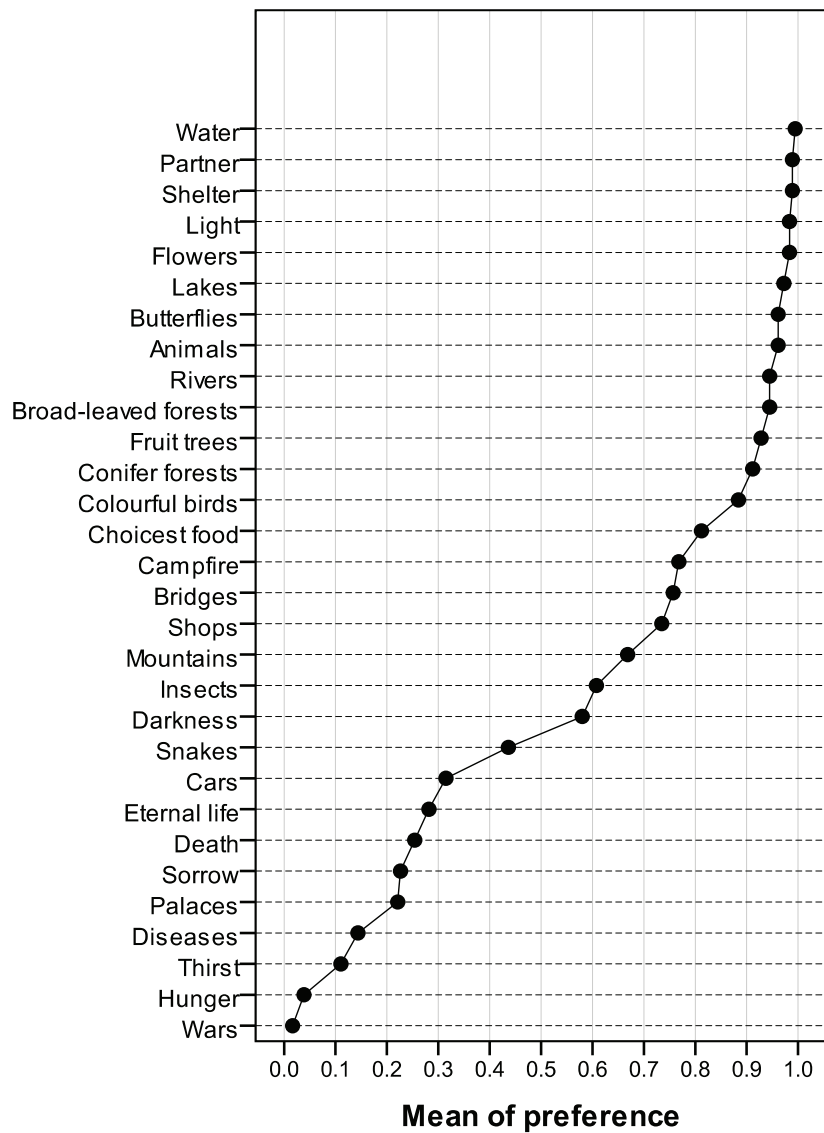


Figure 5.2 – Trend of desirability of properties, part 3. Higher mean indicates stronger preference.

Table 5.5 – Differences in preference between groups: darkness and eternal life.

Religiosity group (1-5)	Darkness (mean)	Eternal life (mean)
1	.70	.26
2	.52	.18
3	.53	.36
4	.63	.37
5	.00	.80
Total	.58	.28

Discussion

The results provide evidence that people prefer environments with the same elements as in descriptions of paradises. The results are also in line with the findings of environmental psychology. The most popular properties – water, a partner, shelter, and light – are all typical of paradise representations. They are also crucial from the evolutionary standpoint. Similarly, the least popular ones were diseases, thirst, hunger, and wars. Thus, the properties of paradise representations that were most closely connected to basic needs were the most and least popular ones. The dichotomy was generally more defined in women than in men. Most notably, women preferred properties which promised shelter more than men. Men were more willing to accept small discomforts than women. It seems that men in general were more action-oriented.⁶ Nevertheless, the overall trend was similar irrespective of sex.

Interestingly, the concepts typical of paradises, eternal life ($M = .28$) and palaces ($M = .22$), were also among the least popular concepts. The possible explanation for the unpopularity of eternal life is that it is possibly felt to be unnatural (i.e., not intuitive). On the other hand, death, which is undoubtedly a natural and intuitive concept, was not desirable either ($M = .25$), indicating a conflicting idea of dying in the dream environment. The contradiction becomes even more evident considering that eternal life also implies the absence of death (not wanted), and death implies the absence of eternal life (not wanted either).

The ontological contradictions related to the conceptions of afterlife and dead people have been reproduced in several previous studies (Bering 2002a; Bering & Bjorklund 2004; see also Bering 2002b). For instance, people intuitively attribute dead persons with properties of the living irrespective of religious conviction. At the same time, they are generally aware that a dead person has ceased to exist. As Jesse Bering (2006) suggests, there seems to be an error in cognitive reasoning with regard to the conceptual grounds of dead persons and the afterlife: Even if people know that a deceased person is no longer alive, they still tend to describe him or her with properties characteristic of living people, such as having intentions and emotions. Thus, it is evident that human intuition struggles to draw the line between the living and the dead. The reasons for the ontological contradiction observed here may derive from an error of a similar kind. Currently, there is not enough evidence to make any further conclusions about this particular issue, however.

Similarly, there was a conflict between insects ($M = .61$) and butterflies (also insects, but $M = .96$) that is not ontological but rather categorical indicating a misconception in folk-biological taxonomy (see Medin & Atran 1999). It is possible that while certain concepts of more general categories are either preferred or disliked, there can be considerable variation within those categories and concepts. Moreover, it seems that at least some folk-biological categories can be “cheated” if some properties (here the supposed bright colours

⁶ *Many activities (warfare, hunting) have been typical male activities throughout history. It is an intriguing idea, although not verifiable based on the results of this survey alone, that such a tendency may be reflected in some paradise representations. It is possible that the distinctive male preferences have been transmitted culturally as the transmission process (theology, narratives) has been shaped and controlled by men in most cultures. This could explain, for example, why there is warfare in Valhalla (see Table 3.1 for details) but no references to distinctive activities for women.*

of butterflies) are dominant enough. When the attitude towards insects in general was only modestly positive, butterflies were strongly preferred, perhaps from the aesthetic point of view. Thus, it seems that a manipulation of preferences is possible to a certain extent simply by modifying the original concept. To affirm or falsify this and to learn about the boundaries of this phenomenon, a more specific study would be necessary, however.

When it comes to palaces, the reasons behind their unpopularity are probably cultural. Palaces as manifestations of well-being or high status are often not present in contemporary Western cultures. As the vast majority of participants represented some form of Western culture, it is unlikely that they would discern palaces in the same way as the people of the ancient Near East or China did, for example. Thus, it is possible that if the concept of palaces had been replaced with a similar term with more references to contemporary Western culture, the preference could be different. This remains speculative, however.

In the dream environment low dynamics were generally preferred. However, properties indicating no action at all were also disliked. This suggests that the dream environment is neither static nor too eventful. Again, women showed a slightly stronger general preference for properties associated with peacefulness. The preferences of men showed a similar trend, though.

The results also hint that familiarity might affect the preference in a way predicted by previous studies (e.g., Bixler & Floyd 1997; Ulrich 1983; Kaplan 1992; Kaplan & Kaplan 1982), as the childhood habitat seemed to have a consistent effect on the preference for human presence. If this was studied in detail, it could be possible to determine new aspects of familiarity that affect the composition of the environment of dreams (cf. Bixler & Floyd 1997). To verify or falsify these notions, additional research would be necessary, as this aspect was not the main subject of this study. Furthermore, the familiarity of natural properties should be analysed with a wider material in order to affirm this aspect of the hypothesis. This issue will be addressed in study 2 (see chapter 6).

To summarize, according to the results of this study, the environment of dreams is spontaneously understood as being green, luminous, stable, calm, quiet, and moderately populated. Having a partner is one of the crucial requirements for the dream environment. The ideal environment is also characterized by abundant water, flowers, butterflies, and animals. On the other hand, wars, hunger, thirst, and diseases should be absent. If this sounds familiar, it is so for a reason, as this is how most paradises are described across the world's religious traditions. Thus, it is obvious that the content of paradises does not require any religious training to be adapted; humans rather prefer paradise-like imagery even without cultural guidance.

Technical discussion – Internet-related issues and how they were addressed

In the Internet-based experiments, there are several potential issues that might threaten the validity of the data. Ulf-Dietrich Reips (2002) and Michael Roth (2006) have summarized the possible disadvantages of using the Internet as a platform. Especially identification, dependence on technology, and the motivation of participants are issues that need to be

addressed. Moreover, the skills of users must be taken into account as it especially affects response times (Roth 2006).

Identification issues were addressed in this study by a mandatory registration which required a valid e-mail address. The address was then used as the disposable identification key when the participant logged in. Of course, this does not ensure that the rest of the user input is accurate, but where it was possible to control according to the provided e-mail address, at least the sex of the participant was reported truthfully in every case. According to Reips (2002), “gender-swapping” occurs in less than 3 per cent of cases. In this study, the rate was seemingly even lower.

Multiple submissions were checked by examining the registration times and IP-addresses. Only one presumable multiple submission (in which the first attempt was aborted by the user) was found and both submissions were rejected.

In this study where spontaneity is important the latencies of single answers and total completion time were also analysed. 13 out of 195 completed tests were rejected on this basis as being too slow (total time over 30 minutes or average latency of responses over 5 seconds). It is evident that the instructions were not followed in these cases.

Motivation problems can easily lead to dropouts. This can be a problem especially in Internet-based experiments for the face-to-face contact between a participant and a researcher is absent (Reips 2002). In this study, the dropout rate was low, reaching just 8.9 per cent. However, the registration process eliminated more potential participants. 86.6 per cent of those who registered started the test, and only 78.9 per cent of those who registered actually completed it. Thus, while registration helps to prevent multiple submissions and to identify submissions better, it may also mean losing potential data.

On the positive side, the Internet allows participants to freely choose where and when to complete the survey. This should help in making a participant feel relaxed and avoid the stress often present in experiment situations, where the conditions are usually artificial due to certain required arrangements (e.g., laboratory settings). Indeed, 64.1 per cent of participants reported that they completed the survey at home.

Dependence on technology was kept as low as possible. The technology used in this survey is widely available: according to Adobe, the current developer of the Flash Player, Flash Player 6 or newer was installed on over 98 per cent of Internet-enabled computers at the time of collecting the data (April 2007 – June 2007, see references).

The client-server traffic during the test was designed in a way that the speed of the Internet connection could not affect the results. It could, of course, slow things down during the transfer of data, but these phases took place between the parts of the actual tests, not during them. Therefore, data collection and users were not disturbed by the data transfer unless there were severe problems in networks. Unfortunately, network problems are usually beyond the control of a researcher and it is quite well possible that some participants failed to complete the survey due to network issues. Due to the nature of the Internet, this would have been practically impossible to monitor, however, so monitoring of actual network traffic was intentionally omitted from the survey design.

One could also object that the respondent group was too homogeneous to represent an all-embracing sample of how people think about ideal environments. University students with Internet access and computer skills are hardly a representative sample of the world population. Indeed, the Internet can be a limiting factor. It is also true that university students do not generally represent the average person. However, even if this

kind of criticism is understandable, such limitations in methods and samples are generally unavoidable for practical reasons. One cannot expect to study all the people of the world to make further conclusions about the universality of certain mental or behavioural traits. One must always rely on relatively small samples. Furthermore, this test is not Internet dependent. It is designed in a way that it can be implemented without an Internet connection and computer skills if needed. The recruiting method can also be modified if necessary.

6 Study 2 – Context-specific features of paradises in biblical imagery and UFO religions

An important part of the hypothesis of this work is the claim that by examining the real world circumstances in which paradise representations have emerged, it is possible to predict the content of paradises. Despite the promising looking list of paradise representations around the world presented in chapter 3, this part of the hypothesis has so far remained largely untested.

In what follows, I will address this issue. I will probe the extent to which the content of culture-specific everyday knowledge can explain and predict the content of paradise representations. As suggested in the theoretical part, the apparent concreteness of paradises hints at the fact that everyday circumstances by and large shape the content of paradise representations.

It is necessary to examine the details of paradise representations in order to see if context-specificity actually shapes their content. To test the assumptions, I have chosen two apparently very different representations of paradises, namely those of the ancient⁷ Israelites and of the millennialian UFO religions of the 20th century which worship extraterrestrials. This means two distinctive geographical locations and two distinctive eras, and, in theory, very different conceptions of paradisiacal circumstances. Yet, if my hypothesis is correct, these paradise representations should be more similar than different and they should closely reflect the environment, both natural and cultural, in which they were formed. In other words, while differences should occur in both the natural and cultural settings, the general frames of the idealization of an environment should be close to identical.

In analysis, it is necessary to itemize the references of the paradise representations that refer to the properties of the surrounding environment. Furthermore, the actual circumstances must be reconstructed as precisely as possible. The actual correlation between the real and the imaginary world can then be found by comparing the properties of these two.

While the focus is on the relationship between the real world and imaginary world environments, I will also analyse the similarities between paradise representations and the characteristics of human life in paradise. It could, for example, be the case that the strongest links between the paradises of the ancient Near East and the 20th century are, after all, the references to the nature of human existence.

⁷ *Ancient should be understood here as the period from roughly 10000 BCE to 100 CE, i.e., as the period from the end of the most recent glacial period to the emergence of Christianity in the Near East.*

Method and data

In this study, two data sets are used. The first set consists of the paradise representations that appear in the texts of the Old and New Testament. The second one consists of the paradise representations of three 20th century UFO religions. The method here is a comparative analysis which will be applied to both data sets separately. I will first outline the actual circumstances of the world in which the respective paradise representations were created. Next, I will catalogue all the references to the paradisiacal circumstances with regard to environment. I will then explore if and how the properties of paradises are connected with the real world environment known to the creators of the paradise representations. Each reference will be analysed as an independent entity.

I will also perform a comparison between the data sets. I will look for mutual similarities and differences between the two data sets. In this phase, I will also examine the references to the nature of human existence in paradise. The purpose of this is to test the hypothesis that only the external settings change while the ideal nature of human existence remains stable.

I will first focus on the ancient Near East, then on the UFO religions. Last, I will compare the representations to see if there are similarities and how the differences reflect changes in the real world environment. Before doing so, however, the issues concerning the reliability of data should be discussed.

How to reconstruct lost and contemporary worlds?

This study is neither archaeological nor philological, though the data presented here has been collected and analysed by various experts. Thus, it is safe to assume that the data has already undergone critical review processes and is reliable. Nevertheless, it is appropriate to say a few words about the methods used before proceeding with the research problem. This will help us understand the uncertainties that are unavoidable in archaeological research.

Archaeological data is based on human, animal, and plant remains revealed either in excavations or in the surface ruins of ancient sites. In the case of humans, written documents can also serve as indirect evidence of life in the past. Several subdisciplines, such as archaeozoology and paleoethnobotany, have specialized in natural remains and they are proving increasingly important in the study of past circumstances. These fields are based on other disciplines related to microbiology and geology, for example (for a concise review of methods, see Rosen 1997).

The use of archaeological evidence for the reconstruction and verification of the connections between the environment and certain texts of the past is always a difficult task. The evidence is often scarce and imperfect. Some aspects of the past cannot be reconstructed at all as the evidence has decomposed or has only existed in an immaterial form. Moreover, dating the remains is often very difficult. The widely used carbon-14 method has turned out to be not accurate enough in many cases, for example. Furthermore,

while scholars prefer to classify cultures and epochs into categories, such categorization always remains more or less arbitrary. Thus, we must be cautious in our inferences (see e.g., Cryer 1995; Rosen 1997).

Animals are often even more difficult to study than the life of humans as the material remains are usually more scarce. Again, the indirect evidence of the presence of animals or plants, such as carvings and art, can be used as additional sources of information if direct evidence such as bones are not available. On the other hand, by relying on archaeological sites alone the picture easily becomes distorted as the remains found at archaeological sites often contain animals that had some special value for humans. Thus, domesticated animals become overrepresented in the data. Moreover, small animals or those with fragile bones, such as birds, do not preserve well. Recovered bones often reveal more about the cultural preferences and the durability of bones than about the original nature of the animal world (Gilbert 2002). The same is usually true of flora although the remains are often more scarce and more difficult to uncover. The structure and diversity of flora is mainly reconstructed by using pollen records preserved in the soil (see Pollock 1999; van Zeist & Bottema 1982).

The extinction, domestication, and introduction of species can also change the balance of nature rather quickly (Gilbert 2002, see also Tchernov 1982). Perhaps the most extreme impact of the introduction of a new species into the native fauna is found in Australia, where feral cats (*Felis catus*) have caused major damage affecting both the distribution and balance of the native fauna (Dickman 1996). While no such extreme consequences associated with the introduction of a new species are known from the ancient Near East, it is still a potential factor that should be kept in mind when reconstructing the picture of ancient flora and fauna.

Humans interact with the environment in many other ways than by simply killing or introducing new species. Agriculture, the use of wood, mining, and the growth of populations all have a profound impact on the environment. This again makes things more complex as the change of natural settings cannot be analysed solely on the basis of natural processes (Butzer 1995; Gilbert 2002).

Despite certain unavoidable degree of uncertainties, I am still optimistic. The history of the Near East is perhaps the best known history of any part of the world. Over a century of intensive archaeological research in the region (for a review, see Moorey 1991) has revealed us many aspects of the past important for this study. Moreover, the Near East is the origin of three major world religions, Judaism, Christianity, and Islam. It has ensured the continuous interest of not only archaeologists, but theologians and philologists as well, and has promoted the collation and analysis of all-important research material. Thus, the part of this study which discusses biblical paradise representations is based on a wide range of studies on the environment and ways of life in the ancient Near East. Therefore, the frames should be well-defined and eligible enough to allow the analysis and inferences that follow.

Reconstructing the world around the UFO believers seems like a somewhat easier task. While the problem with reconstructing ancient conditions is usually the lack of data, the reverse is the case with modern religions. The sources are often available in English and some influential UFO groups, especially outside the United States, offer several translations of their teachings. Yet the actual circumstances in which the various UFO religions were born must be carefully studied as the boundaries of local and global variables that affect

knowledge about the real world are unlikely to be as clear as they were in ancient times. Thus, the context and context-specificity of UFO religions may be more difficult to define reliably.

Data set I – Paradise representations of the Bible

The paradise representations that appear in the Bible are products of separate but interwoven traditions of the Israelites and of Christianity that further interacted closely with their surrounding traditions and cultures. Thus, even if we talk about Judaism and Christianity here, it should be borne in mind that the cultural boundaries of the ancient Near East were often loose and cultural knowledge of any particular region was far from exclusive. The time span of our interest reaches from the third millennium BCE to the first century CE. However, it should be noted that the culture of the Near East was much older. Thus, some portions and themes of biblical texts may have been derived from even further back than the third millennium BCE. This issue, among other things, will be discussed in what follows.

Sources

The Christian Bible is a collection of texts of the ancient Israelites and early Christians written by multiple, often anonymous authors. It is divided into two parts, the Old Testament (or “old covenant”) and the New Testament (or “new covenant”).

The texts of the Old Testament – or The Hebrew Bible – are the holy scriptures of Judaism embracing virtually every aspect of the social, political, and religious life of ancient Israel and post-exilic Judaism. The Old Testament also describes the foundations of the cosmos and world order. The texts of the Old Testament represent multiple literary genres varying from narratives to prophecies and they were originally written in Hebrew and Aramaic. While there is no clear date for the canonization of the Old Testament texts, it is apparent that its texts were acknowledged as orthodox by the Jews by the first century CE (Sanders 1992). However, it is notable that its texts were generally acknowledged as authoritative long before that (Barton 2001; Sanders 1992).

In addition to the Hebrew Bible, the early Christian Bible – The Greek Bible (The Septuaginta) – includes additional, so-called deuterocanonical and apocryphal books within it. Unlike the texts of the Hebrew Bible, some of these texts were originally written in Hebrew and Greek and they were not a part of the original Hebrew corpus (Goodman 2001). However, the status of these texts has varied depending on the church; Orthodox, Catholic, and Protestant views differ significantly on whether these texts should be regarded as authoritative as the texts which belong to the Hebrew Bible (Barton 2001).

The New Testament, in turn, is a collection of texts written during the first and second

centuries CE. They were written to record early Christian history, to guide the members of the newborn sect, and to describe the life and deeds of the Messiah and the future kingdom of God. Only a portion of the early texts were finally included in the New Testament canon at the councils of Laodicea in 363 CE, Hippo in 393 CE, and Carthage in 397 CE (Gamble 1992), where 27 texts were officially accepted as orthodox. As a result, many early influential texts, such as the gospels of Thomas, Jacob, and Nicodemus, and Gnostic literature discussing the hidden nature of Christ were left out from the New Testament even though they had been widely recognized by early Christians (Houlden 2001; Gamble 1992). The important selection criteria for the canonized texts were that they were already widespread, apostolic, widely accepted, and supposedly written by a disciple of Jesus (Gamble 1992). Thus, the New Testament is rather the result of political and theological decisions than a single book. The texts of the New Testament were originally written mostly in Greek (Houlden 2001).

Biblical texts basically contain three texts where paradise, as defined in this study, is described in detail. Genesis 1-3, portions of the collection of texts known as the Book of Isaiah, and Revelation 21-22 provide the most detailed descriptions of the paradisiacal realms. In Genesis, paradise is a garden isolated from the real world by the cherubim and a flaming sword, who guard the way to the tree of life (Gen. 3:24). In Isaiah and Revelation, paradise will be established on Earth by God. While these three texts provide the most detailed descriptions of paradise, they are not the only ones. Especially other prophets follow similar outlines. Paradisiacal visions in Ezekiel (e.g., Ezek. 28, 31, 36), Hosea (Hos. 14), Joel (Joel 4), Amos (Amos 9), and Zechariah (Zech. 8-14) are similar to those of Isaiah. Nevertheless, they basically repeat the content of Isaiah with fewer details. Therefore, they are not included in this analysis as they are chronologically rooted in the same epoch and in the same environment as the texts of Isaiah and they are content-wise very similar.

The dating of texts is a complicated issue. The most difficult of the texts analysed here is Genesis, the first part of the Pentateuch. The task becomes even more complex because of the widely accepted fact that Genesis 1-3 is compiled from two different sources and the rest of Genesis from additional sources (Whybray 2001). By comparing the content with archaeological data, it is possible to say that both sources of Genesis 1-3 existed by the beginning of the first millennium but their final versions were not written down until probably the 6th century BCE (Whybray 2001). However, the contents of Genesis 1-3 also suggests that some portions of the narratives behind it are derived from Mesopotamian and Babylonian traditions indicating that the themes of Genesis 1-3 could be of even earlier origin. On the other hand, some other portions suggest that at least Genesis 4-11 must be younger, possibly from 6th century BCE indicating again the use of different sources. Genesis is therefore a compilation from different sources rather than a single text. Nevertheless, although it is not possible to reliably date the individual texts of Genesis, it is relatively safe to assume that the original narratives partially derive from earlier neighbouring cultures and traditions even if they were revised by later authors (Wenham 1987; Whybray 2001).

Isaiah is somewhat easier to date by using other biblical texts as a point of comparison. The activity of the prophet took place during the last third of the 8th century BCE. However, this dating is applicable only to the first 39 chapters. It is very likely that the following chapters 40-55 date from the Babylonian exile and thus from the 6th century BCE (the so-called Deutero-Isaiah). Chapters 56-66 were possibly written later still, perhaps after the

Israelites returned from exile in the 5th century BCE (Coggins 2001; Watts 1987).

We know much more about the author and dating of the Revelation. The author was a Christian prophet named John who was familiar with early Christian communities. The majority of scholars date the Revelation around 90 CE (e.g., Bauckham 2001).

In addition to dating, biblical texts are often problematic content-wise. The nature and style of ancient writing challenges scholars and it is often very difficult to translate the texts reliably. Moreover, in many cases, several different interpretations are possible. This should be kept in mind when reading the ancient texts. For this reason, I will use three translations, of which ESV (English Standard Version) is the main source as it is the most widely used. NIV (New International Version), and NLV (New Living Translation) provide points of comparison. Since the purpose of this study is to examine whether the biblical paradises correspond with the real world circumstances of the past, a comparative approach should ensure that we decipher the original meaning of the concept with sufficient certainty. Naturally, in some cases even a reliable translation cannot ensure success as the meaning of certain terms and passages is sometimes difficult to determine. Should this be the case, definite answers cannot usually be found and some issues will remain unanswered.

The world of biblical traditions

The actual territory occupied by the ancient Israelites varied at different periods in history but principally it can be located in the area covered by Israel and Palestine today. The territory familiar to the Israelites was much larger, however, extending from northeastern Africa to today's Iran and Armenia. Furthermore, the Mediterranean and coastal states are often mentioned in the Bible indicating that they too were part of the known world of the biblical writers (Curtis 2007).

The dominant biotope of the ancient Near East was desert. Deserts covered most parts of the Arabian peninsula, the Sinai peninsula and Egypt, excluding the river valleys and plains. Where deserts did not dominate, they were usually replaced by steppe. The northern parts of the area were mountainous and forested, however. The forests were especially characteristics of the so-called Fertile Crescent, a crescent-shaped territory that covered roughly the area from the Nile to Mesopotamia, including the eastern Mediterranean coastal strip (Butzer 1995; Curtis 2007; Zohary 1973).

Hills and mountains characterized the area. Several mountain chains, such as the Taurus Mountains in today's Turkey and the Zagros Mountains between Mesopotamia and Persia formed natural boundaries within the Near East. In the Levant area, hills dominated the territory on the western and the eastern coasts of the Jordan river, the Sea of Galilee, and the Dead Sea. The plains were mainly coastal in the Levant. Other significant plains were located in Mesopotamia and Egypt (Curtis 2007).

Rivers were the main water supply although oases and lakes, both permanent and episodic, provided additional sources of water. The most important rivers of the ancient Near East were the Nile, the Jordan, the Euphrates, and the Tigris around which the most significant cultural centres were developed and concentrated.

Nature: climate

After the most recent glacial period, the climate of the Near East has undergone several changes affecting the natural settings and biodiversity. However, there are no records of rapid climate changes during biblical times. The transition into a climate similar to the Near East of today took place by the Early Bronze Age (Goldberg & Bar-Yosef 1982). The annual climatic cycles, moisture levels and temperatures were relatively stable from 2000 BCE to 100 CE, the time within which the biblical narratives are recorded. There were no clearly definable climatic trends during that time (see Butzer 1995).

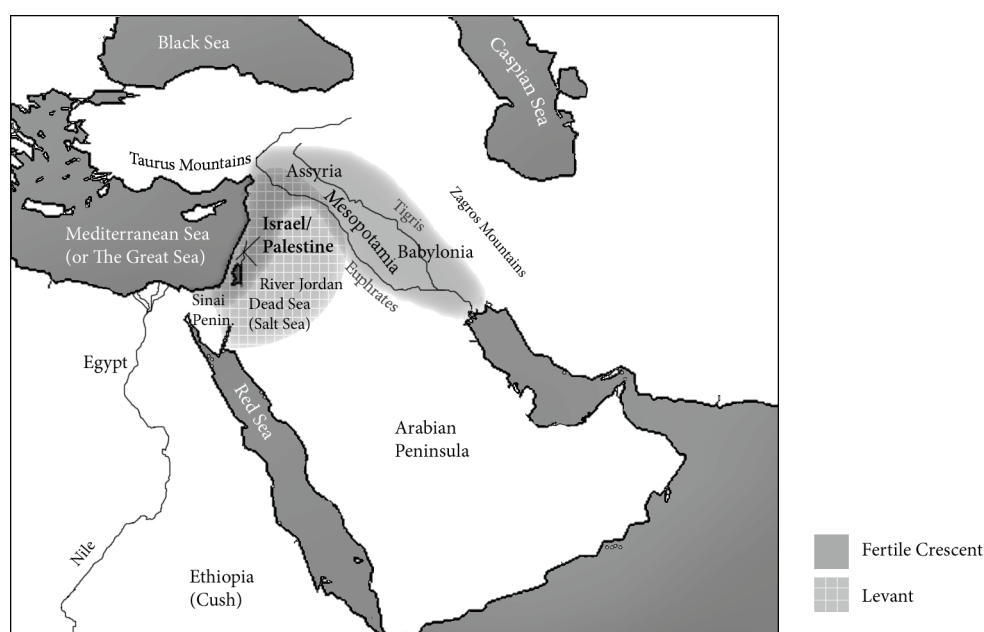


Figure 6.1 – The main regions of the ancient Near East and the approximate boundaries of the Fertile Crescent and the Levant. (Figure by the author, see Curtis 2007 for details)

The climate of the Near East in biblical times was dominated by annual climatic cycles that are similar today. Generally speaking, a year was divided into two seasons, a cooler and rainy winter, and a hot and practically rainless summer (Butzer 1995; Pollock 1999). The annual rainfall varied regionally but it was approximately 200 mm although the sequence was not generally predictable (see Pollock 1999: 30-31). In the lowlands of the Levant, the rainfall varied between 100 and 700 mm. The 200 mm is generally considered as the lower limit necessary for dry farming. In mountainous areas, rainfall was higher and in deserts there was not necessarily annual rainfall at all (Butzer 1995; Curtis 2007; Hopkins 1997; van Zeist and Bottema 1982).

Nature: fauna and flora

The Near East is a bridge between Africa and Eurasia, and a bottleneck of Ethiopian and the temperate Palearctic terrestrial fauna of Eurasia (Gilbert 2002) and African and Eurasian subalpine flora (Zohary 1973). Thus, despite the generally arid circumstances, the biodiversity of the Near East has been rather high after the Pleistocene period.

The mammalian fauna is the best studied and the best known. Domesticated animals are, naturally, best known because of the high number of remains around archaeological sites. However, most tamed species had wild ancestors that existed alongside them (e.g., wolves and dogs) and were thus known to humans. The diversity of mammalian fauna is much larger, however. Forty-three families of mammals ranging from mice (subfamily *Murinae*) to bats (eight families) and wild cats (family *Felidae*) populated the Near East. However, some species are now locally extinct due to human activity. For example, the Asiatic lion (*Panthera leo persica*) has disappeared from the Near East and is found as a rarity only in India. Furthermore, several other species are now endangered and their distribution is much reduced (Gilbert 2002).

There were probably over 1000 indigenous species of birds (class *Aves*) in the ancient Near East, some of which are now extinct mostly due to human activities, either locally or globally (Gilbert 2002). Not all of these species were breeders, however. Most of them were simply flew over the region during the annual migrations. While the avifauna was probably generally similar to today, the distribution of species presumably deviates from that of ancient times. Habitat losses and restoration as well as human activities, especially hunting, have affected the distribution of species in various ways (Gilbert 2002). However, the current abundance of species was not known in the ancient Near East due to the lack of identification methods available today. Thus, it is expected that the nomenclature used was much more limited and lacked the precision of the taxonomy of today. In fact, according to Bible (Lev. 11:19), even bats were identified as birds sometimes.

There is far less evidence available of other groups of animals and usually only the remains of those with significant cultural or economic importance are found in archaeological sites. Among those are the Nile crocodile (*Crocodylus niloticus*), honeybees, of which *Apis mellifera* is indigenous, several species of arthropods (family *Acrididae*), and scorpions (family *Arachnoida*). Fish are generally poorly known but some remains have been found from Egyptian sites (Gilbert 1995; 2002). Among the most common and important species were Nile perch (*Lates niloticus*), tilapia (family *Cichlidae*), and catfish (*Clarias sp.*) (Brewer & Friedman 1989; Gilbert 2002). According to the evidence, it is obvious that underwater life was generally much better known in Egypt than elsewhere in the ancient Near East (Gilbert 2002). The distribution of fauna other than mammalian or avian is difficult to determine, but it is likely that human activities have crucially reduced the living space of many species.

The flora of the Near East is surprisingly rich considering that most of the region suffers from a lack of regular rainfall and is consequently deserted and harsh. Yet several types of vegetation zones existed in the ancient Near East (Curtis 2007, van Zeist & Bottema 1982, see also Zohary 1973). Outside the Fertile Crescent, steppe and desert were the dominant biotopes. The typical plants of these biotopes were low and with a grass stalk, including several types of thorns (*Ziziphus sp.*) and thistles (*Cirsium spp.*). Forests were concentrated

around alluvial plains, river valleys, and mountainous regions where the level of rainfall was higher. While the forests concentrated on the northern regions and the recolonization of forests was rather slow after the last Ice Age, the Levant and the Fertile Crescent were reforested by biblical times (see Butzer 1995 for details).

The most typical plants with nutritional importance were cereals (especially barley and wheat) and fruit trees (e.g., mulberry (*Morus sp.*), olea (*Olea sp.*), vines (*Vitis sp.*), and fig (*Ficus carica*)), which provided the main ingredients for everyday nutrition (e.g., Curtis 2007). While these were indigenous to the ancient Near East, they were domesticated and further refined by humans. The most typical plants used for other purposes were often trees, such as acacia (*Acacia sp.*), poplar (*Populus sp.*), pine (*Pinus sp.*), cedar (*Cedrus sp.*), fir (*Picea sp.* or *Abies sp.*), oak (*Quercus sp.*), and cypress (*Cupressus sempervirens*) which were used as the raw material of houses, furniture, ships, and boats (Kuniholm 1997). In the Levant, the mountainous forested regions of Syria and Lebanon represented the most important sources of wood.

Culture

Evidence of human impact on the land has been dated back to the beginning of the early Holocene period. The first signs of agriculture and semipermanent dwellings become evident after 6000 BCE. The settlements and farming were not necessarily localized around the rivers as was later the case (Butzer 1995). Early stages of urbanization took place several millennia later, in the Chalcolithic era c. 4500-3300 BCE, during which the alluvial plains become the central locations of human populations (Curtis 2007: 199; Pollock 1999: 45-46).

In Palestine, several city-states were formed by 2700 BCE during the Early Bronze Age. This eventually led to more specialized societies and especially to a specialized military, which in turn denoted more lethal weapons and, on the other hand, more developed defence systems including fortified and walled cities typical of later times in the ancient Near East (Coogan 1998; Giddens 1997: 470; Mazar 1995).

The states of the ancient Near East were usually monarchies, small kingdoms or city-states. Even the largest cities of ancient times were small, extending over an area rarely larger than a few square kilometres. Furthermore, the population of even the largest cities probably did not exceed fifteen or twenty thousand people. The communities were strictly local and travel was the business of a few specialists such as merchants and the military. However, trading routes ensured the spread of cultural knowledge even if the process was slow by the standards of today (Curtis 2007; Giddens 1997: 470-471). As most of the cities and states were connected with the trading routes, knowledge accumulated in cities which became cultural, political, and scientific centres of the time.

While cities brought permanent settlements and cultural unity, and urbanization made the first “true” civilizations possible (Coogan 1998), pastoral nomadism and rural communities still represented the most typical ways of life in the ancient Near East with their respective social systems often not controlled by the leaders and officials of the cities (Giddens 1997: 470-471). Pastoral nomadism refers to the way of life which is based on the care and use of herd animals (LaBianca 1997). In the Near East, this meant the herding

of camels, cattle, sheep, and goats. Where possible, nomads utilized flexibly the resources of the environment according to the seasonal changes. Thus, in contrast to farmers, they were not as dependent on local and annual variations of the climate. Still, the evidence suggests that nomads traded their herds for the cultivated products of farmers indicating interdependence on each other. Furthermore, pastoral nomadism provided supplies for the growing urban populations and by the Early Bronze Age it was already specialized in several kind of animals products, such as wool, meat, milk, and fibre (Hopkins 1997; LaBianca 1997, see also Pollock 1999; Potts 1997).

Agriculture was a key factor in the genesis of ancient civilizations (Diamond 1998). The best known forms of ancient agriculture were organized around the floods of rivers in Egypt and Mesopotamia, but traces of early forms of agriculture have appeared in southern Levant as early as about 9000 BCE (Hopkins 1997). Well established agricultural villages appeared after 6000 BCE. Hunting wild animals continued alongside farming but became gradually less important. Furthermore, hunting was largely replaced by herding of domesticated cattle by 6000 BCE. The cultivation of fruit trees was developed by 3500 BCE (Diamond 1998; Hesse 1995; Hopkins 1997).

Cultivation techniques varied. In Palestine, irrigation systems were not largely used. While this meant that less human effort was required to cultivate crops, the lack of rains could result in disaster and lead to famine as the well-organized large-scale irrigation systems typical of Egypt and Mesopotamia had not been adopted (Butzer 1995; Curtis 2007: 31-32; see also Renfrew 1995). However, both methods were highly dependent on regular rainfall and predictable climatic conditions. Especially in Mesopotamia, this was not often the case: uncontrollable floods were much more common than in Egypt and they could cause severe problems for people and irrigation systems.

The most important of the field crops were the various types of cereals. Moreover, fruits, of which grapes (fruits of *Vitis sp.*) and olives (fruits of *Olea sp.*) were the most important, provided important sources of nutrition (Curtis 2007, Hopkins 1997, Renfrew 1995).

As the human population grew, its impact on the environment also grew. There is evidence of large-scale clearance of forests as early as c. 4000 years ago (van Zeist and Bottema 1982). At the same time, the pollen of cultivated species, such as *Olea (Olea sp.)*, *Juglans (Juglans sp.)*, or *Vitis (Vitis sp.)* become more common in pollen remains in Syria, which suggests large-scale use of wood (van Zeist & Bottema 1982). Cultivation techniques had already changed the alluvial plains of Egypt and Mesopotamia and the concentrations of humans caused substantial pressures on surrounding natural resources. Despite this, human impact was generally local and limited to the regions which were the most populated and accessible (see Butzer 1995).

Politically, the ancient Near East was anything but stable. Conflicts between kingdoms and city-states throughout the Near East were common and long periods of peace rare (e.g., Campbell 1998; Cogan 1998; Hamblin 2006). The contacts with neighbouring regions were not only dependent on occupations and conflicts, however. Trading between states and regions was common as several active trading routes indicate (see Curtis 2007 for trading routes). Trade did not only provide resources from neighbouring regions but also helped cultural ideas to spread. Thus, no part of the ancient Near East was isolated from other parts and from the cultural perspective it is far more difficult to draw borders than the geography might suggest.

To sum up, there were basically three interdependent cultural systems in the ancient Near East: pastoral nomadism, agriculturalism, and urbanism. The first two were interdependent of each other and provided supplies for the urban centres which in turn were cultural centres in which most of the scientific and technological innovations, such as metallurgy, largely took place. The societies were highly dependent on annual seasonal cycles and resources of nature, however. Moreover, nature posed several types of threats in the form of wild animals and harsh physical conditions. Most of the ancient Near East remained a wilderness despite the sometimes heavy local human impact.

Paradise representations and the actual environment

The geographical setting is described rather accurately in many books of the Bible and it seems that the connections between the biblical geography and the archaeological records are relatively strong. Even mythical places, such as the Garden of Eden or New Jerusalem, clearly reflect geographical interest and provide a comparative view of the mythical realms and the real world (Curtis 2007: 3-4). Several passages in the Bible describe the natural environment in detail. Indeed, many inferences regarding the world of the ancient Near East have been made based on descriptions in the Bible (Curtis 2007).

In theory, this should not necessarily affect the paradise representations of the Bible in any way, as they are representations of imaginary worlds. This is not the case, however. The paradise representations reflect the real world almost as accurately as the passages describing the real world. Paradisiacal realms actually have only a few references to elements that did not exist or were unknown in the real world. Instead, there is almost always a reference to the current circumstances and everyday knowledge. For example, Genesis provides such detailed cues of the location of the Garden of Eden that it was long believed Eden was a real geographical location:

“A river flowed out of Eden to water the garden, and there it divided and became four rivers. The name of the first is the Pishon. It is the one that flowed around the whole land of Havilah, where there is gold. And the gold of that land is good; bdellium and onyx stone are there. The name of the second river is the Gihon. It is the one that flowed around the whole land of Cush. And the name of the third river is the Tigris, which flows east of Assyria. And the fourth river is the Euphrates.” [Gen. 2:10-14]

Most notable, however, is the detailed description of general natural settings. Especially the Book of Isaiah is, in addition to the paradise representations, full of references to the real world that make the visions of Isaiah even more specific and tied to real-world environments. Cedars (*Cedrus sp.*) and oaks (*Quercus sp.*), thorn (*Ziziphus sp.*), and nettle (*Urtica sp.*) provide examples of vegetation used to describe the characteristics of the world, either the paradisiacal or real (e.g., Isa. 2, 7, 34). Similarly, references to animals seem to be limited to those with a real world counterpart such as ostrich (*Struthio camelus*), hyena (*Crocuta crocuta* or *Hyaena hyaena*), wild goat (*Capra hircus*), owl (families *Tytonidae* and *Strigidae*), and hawks (families *Accipitridae* and *Falconidae*) (e.g., Isa. 34). According to

current knowledge, all the species mentioned in the Book of Isaiah were or are known in the Near East (see Gilbert 1995; 2002; Zohary 1973). Moreover, geographical formations such as mountains and hills as well as precious minerals such as gold, and silver (e.g., Isa. 2) all had their meaningful counterparts in the real world.

In Isaiah, paradise representations reflect the actual environment closely in many respects. The following excerpts show a clear tendency to locate future paradises in the familiar abodes:

“The wilderness and the dry land shall be glad; the desert shall rejoice and blossom like the crocus; it shall blossom abundantly” [*Isa. 35:1-2*]

“The wolf shall dwell with the lamb, and the leopard shall lie down with the young goat, and the calf and the lion and the fattened calf together; and a little child shall lead them. The cow and the bear shall graze; their young shall lie down together; and the lion shall eat straw like the ox. The nursing child shall play over the hole of the cobra, and the weaned child shall put his hand on the adder’s den. They shall not hurt or destroy in all my holy mountain” [*Isa. 11:6-9*]

“A multitude of camels shall cover you, the young camels of Midian and Ephah; all those from Sheba shall come. They shall bring gold and frankincense, and shall bring good news, the praises of the Lord. All the flocks of Kedar shall be gathered to you; the rams of Nebaioth shall minister to you;” [*Isa. 60:6-7*]

In Revelation, the salience of nature is diminished at the cost of descriptions of the city of New Jerusalem. Nevertheless, the descriptions of New Jerusalem and God’s kingdom still reflect the characteristics of the environment, albeit with obvious interest in the actual dwelling place:

“And he [an angel] carried me away in the Spirit to a great, high mountain, and showed me the holy city Jerusalem coming down out of heaven from God, having the glory of God, its radiance like a most rare jewel, like a jasper, clear as crystal. It had a great, high wall, with twelve gates, and at the gates twelve angels, and on the gates the names of the twelve tribes of the sons of Israel were inscribed – on the east three gates, on the north three gates, on the south three gates, and on the west three gates. And the wall of the city had twelve foundations” [*Rev. 21:10-14*]

“Then the angel showed me the river of the water of life, bright as crystal, flowing from the throne of God and of the Lamb through the middle of the street of the city; also, on either side of the river, the tree of life with its twelve kinds of fruit, yielding its fruit each month. The leaves of the tree were for the healing of the nations. [...] And night will be no more. They will need no light of lamp or sun, for the Lord God will be their light” [*Rev. 22: 1-4*]

The nature of human existence, on the other hand, remains similar throughout the texts. Physical welfare, access to vital resources, lack of threats whatsoever, and control over nature are consistently used to portray the nature of human life in paradise:

“Be fruitful and multiply and fill the earth and subdue it and have dominion over the fish of the sea and over the birds of the heavens and over every living thing that moves on the earth.’ And God said, ‘Behold, I have given you every plant yielding seed that is on the face of all the earth, and every tree with seed in its fruit. You shall have them for food.’”
[*Gen. 1:28-30*]

“Then the eyes of the blind shall be opened, and the ears of the deaf unstopped; then shall the lame man leap like a deer, and the tongue of the mute sing for joy.” [Isa. 35:5-6]

“Then justice will dwell in the wilderness, and righteousness abide in the fruitful field. And the effect of righteousness will be peace, and the result of righteousness, quietness and trust forever. My people will abide in a peaceful habitation, in secure dwellings, and in quiet resting places.” [Isa. 32:16-18]

“You will see no more the insolent people, the people of an obscure speech that you cannot comprehend, stammering in a tongue that you cannot understand. Behold Zion, the city of our appointed feasts! Your eyes will see Jerusalem, an untroubled habitation, an immovable tent, whose stakes will never be plucked up, nor will any of its cords be broken.” [Isa. 33:19-20]

“Behold, the dwelling place of God is with man. He will dwell with them, and they will be his people, and God himself will be with them as their God. He will wipe away every tear from their eyes, and death shall be no more, neither shall there be mourning, nor crying, nor pain anymore, for the former things have passed away.” [Rev. 21: 3-4]

In Table 6.1, I have listed the terms used to describe paradise. Should there be a real world counterpart, it is marked. Additional details and notes are provided when needed. The characteristics of human existence have been summarized in Table 6.2.

Table 6.1 – The presence of the properties of biblical paradises in the real world.

Bible	In the Bible*	Present in the real world	Details/Notes
Gen. 1-3	Garden	x	<p>In addition to being a mythical abode of God or the status symbols of kings, gardens played a role in growing vegetables in the ancient Near East. The so-called shade-tree gardening technique, first used by the Sumerians, in which tall trees provided shelter and shade for other species, was widely used in the Near East and Egypt.</p> <p>Most of the trees in these gardens were fruit trees such as the date palm (<i>Phoenix dactylifera</i>), mulberry (<i>Morus alba</i>), fig (<i>Ficus carica</i>), and pomegranate (<i>Punica granatum</i>). The shade gardens were usually situated near water and were subject of well-controlled irrigation. (a, k, w)</p>
	A river that flows out of the garden	–	At least for the Tigris and the Euphrates, there are no common springs today. (n)
	Pishon	(x)	One of the rivers flowing out of Eden. Location unknown. Possibly one of the two major branches of the Nile. (h)
	Gihon	(x)	One of the rivers flowing out of Eden. Location unknown. Possibly one of the two major branches of Nile. Also a perennial spring in Jerusalem. (h, p, u)
	Tigris	x	The more eastern of the two rivers that define Mesopotamia.
	Euphrates	x	The more western of the two rivers that define Mesopotamia.

Bible	In the Bible*	Present in the real world	Details/Notes
	Havilah	(x)	A land known for its abundance and riches. Usually associated with southern Ethiopia and Egypt (Nubia, i.e., Cush), which were major sources of gold. See also “Cush” below. (h, t)
	Cush	(x)	A region covering large parts of Eastern Africa, mainly the southern parts of today’s Egypt and Ethiopia. See also “Havilah” above. (h)
	Assyria	x	A mountainous region extending along the Tigris. Also a kingdom that controlled the Fertile Crescent and parts of northeast Africa. (h)
	Cattle	x	The livestock mainly consisted of sheep (<i>Ovis aries</i>) and goats (<i>Capra hircus</i>), also known as small cattle. Additional domestic livestock consisted of cattle (<i>Bos taurus</i> and <i>B. indicus</i>), water buffaloes (<i>Bubalus bubalis</i> or <i>B. arnee</i>), pigs (<i>Sus scrofa</i>), equids (<i>Equus sp.</i>), bactarian camels (<i>Camelus bactrianus</i>), and dromedary (<i>C. dromedarius</i>). (b)
	Living creatures (including livestock, creeping things, sea creatures, and beasts)	x	For livestock, see “Cattle” above.
	Serpent	x	Over 30 species are found in the Near East, twenty of which are poisonous. (l, m, w)
	Birds	x	Or “flying things”, which may include bats (<i>Chiroptera</i>) as well.
	Fish	x	
	Fruit trees	x	See “Garden” above.

Bible	In the Bible*	Present in the real world	Details/Notes
	Fig	x	Together with the vine and the olive tree, constituted the most important and useful fruit tree. See also "Garden" above. (w)
	Green plants	x	Present especially in gardens where tall trees provided shelter from harsh conditions. (a)
	Bushes	x	Typical vegetation of the steppe and deserts in the Near East. (k)
	Grass	x	Typical vegetation of the steppe and deserts in the Near East. (k)
	(Good/pure) gold	x	<p>Gold was a widely employed precious metal used for personal ornaments and amulets as well as for the ornaments of temples and palaces. Furthermore, there is some evidence from Mesopotamia that gold was used for weapons, tools, seals, and vessels, such as strainers and goblets.</p> <p>Gold was valued in the Near East at least from the Akkadian period onwards. According to Ur III texts, gold was classified by purity, or silver-gold ratio: "almost pure", "mixed", and "normal". "Almost pure" was the best available form of gold. Sources of gold were mainly Egypt, Nubia (see "Cush" and "Havilah" above), and, at least in antiquity, Arabia. In Genesis, the relevant passage obviously refers to Nubian gold. (d, t)</p>
	Bdellium	x	Aromatic gum exuded from <i>Commiphora wightii</i> (or possibly <i>C. africana</i>), indigenous to the Near East. (c, k, w)
	Onyx stone	x	A microcrystalline quartz. Coloured milky-white alternating with black. Important sources Egypt and Arabia. (d, t)

Bible	In the Bible*	Present in the real world	Details/Notes
	Thorn	x	It is not possible to identify species here. Thorns probably refer to <i>Ziziphus sp.</i> , or any species with thorns, of which there are numerous examples in the Near East. Not present in paradise, only outside it. (f, k, w)
	Thistle	x	<i>Cirsium spp.</i> , thrives in arid environments in the Near East. Some species are also used as food. Not present in paradise, only outside it. (k, w)
	Garments of skin	x	Skins of game and herded animals were used as garments. Not present in paradise, only outside it. (aa)
Isaiah 2	The house of the Lord	–	
	Mountains	x	There are several mountain ranges in the Near East, including the Levant area. (j)
	Hills	x	Hills are typical of the lowlands of the mountain ranges in the Near East. (j)
	Swords	x	Typical weapons of infantry. (å)
	Plowshares (Ploughshares)	x	Used as an agricultural tool. (ä)
	Spears	x	There is evidence of the use of spear both for hunting and warfare. (å)
	Pruning hooks	x	Widely used in viticulture around the world.
Isaiah 11	Fruit	x	See “Garden” above for examples of sources of fruit.
	Wolf	x	<i>Canis lupus ssp. pallipes/arabs</i> , native to the Near East. (e)

Bible	In the Bible*	Present in the real world	Details/Notes
	Lamb	x	(Young) sheep (<i>Ovis aries</i>). See “Cattle” above.
	Leopard	x	<i>Panthera pardus ssp. nimr</i> is native to Arabia and southern Levant, <i>ssp. tulliana</i> in Turkey, and <i>ssp. saxicolor</i> in Iran, Afghanistan, and Central Asia. Was known as one of the most fearful beasts. (b, e, w)
	Goat	x	See “Cattle” above.
	(Fattened) calf	x	See “Cattle” above.
	Lion	x	<i>Panthera leo persica</i> , native to the Near East. Was known as one of the most fearful beasts. (b, e, w)
	Cow	x	See “Cattle” above.
	Bear	x	<i>Ursus arctos syriacus</i> , native to the mountains and forests of Lebanon. (b, e, w)
	Straw	x	It is not possible to specify species or even family here. Refers here to the general nutriment of cattle.
	Ox	x	Male of a species of cattle. See “Cattle” above.
	Cobra	x	<i>Naja sp.</i> , a group of dangerous and lethally poisonous snakes. Probably refers to Egyptian cobra (<i>Naja haje</i>), native to the Near East. (w)
	Adder	x	Or viper, <i>Vipera berus</i> (or <i>Vipera sp.</i>), several poisonous species are native to the Near East. (w)
	Sea	x	The sea is not specified here but probably refers to the Mediterranean.

Bible	In the Bible*	Present in the real world	Details/Notes
	Assyria, Egypt, Pathros, Cush, Elam, Shinar, Hamath, coastlands of the sea	x	All are regions in the Near East. This passage describes how Israelites are gathered to the promised land from the surrounding regions. (q)
	Judah	x	A region west from the Dead Sea, south of Ephraim. (q)
	Efraim	x	Or Ephraim, a region between the Jordan River and the Mediterranean. (q)
	Philistines (in the west)	x	A region west of Judah. (q)
	Edom	x	A region south of the Dead Sea. (q)
	Moab	x	A region east of the Dead Sea. (q)
	Ammonites	x	A tribe that lived east of the Jordan River and Gad. Israelites believed that the Ammonites were related to them, since Lot was a nephew of Abraham. (x)
	Sea of Egypt	(x)	Obviously refers to the Red Sea, as the passage compares the highway from Assyria to the highway across the Red Sea from Egypt to Israel. NIV names this the gulf of Egypt and NLV the gulf of the Red Sea.
	River	x	According to NIV and NLV, Refers to the Euphrates (see also "Euphrates" above).
	(Seven) channels	x	Or, streams. The passage refers here to the road which is made easy to walk by God.
	Sandals	x	As well as closed shoes, several types of sandals were used in the ancient Near East. Usually made of leather or fibre. (ö)
	Assyria	x	See "Assyria" above.
	Israel	x	A territory of the Israelites located between the Mediterranean and the Dead Sea. (h)

Bible	In the Bible*	Present in the real world	Details/Notes
	Egypt	x	A region in the northeastern corner of Africa. (q)
Isaiah 32	Wilderness becomes a ->	x	Most of the ancient Near East was uninhabited desert, steppe, and grassland.
	-> fruitful field	x	Probably refers to fields that provide good crops.
	Forest	x	Forests of the ancient Near East were concentrated in mountainous regions of the Fertile Crescent and in river valleys and plains. (q)
	City	x	In Palestine, several city-states were formed by 2700 BCE during the Early Bronze Age. See also "Great, high wall" below. (q, u)
	Ox	x	See "Ox" and "Cattle" above.
	Donkey	x	See "Cattle" above.
	Dwellings	x	Probably tents or houses.
Isaiah 33	An untroubled habitation	–	Described in many ways in the Book of Isaiah, most of which represent the opposite of real-world circumstances.
	(An immovable) tent	x	A dwelling widely used in the Near East, used especially by nomads and the military. Traditionally tents were made of goat hair. (s)
	Cord	x	Ropes were used to support the tents and small shelters. Usually the tent had two sets of ropes, one to pitch the tent and one to control the panels of the tent. Traditionally made of spun and plied sheep's wool. (s)

Bible	In the Bible*	Present in the real world	Details/Notes
	Stakes	x	Used to support tents and ropes. Generally made of wood. Very little evidence of this material remains, however. (s)
	Broad rivers and streams	x	No direct reference to any particular river. Rivers were of crucial importance in the ancient Near East, however.
	Galleys with oars	x	Different types of vessels from cargo ships to warships that were propelled by human oarsmen. Evidence of such ships has been traced back to 3000 BCE. (o)
	Majestic ship	x	Probably refers to larger vessels.
	Sails, masts	x	Parts of many types of larger vessels used in the Near East. (o)
	Prey	x	Faunal remains indicate the importance of wild animals as a source of meat. Generally, however, domesticated animals were a more important source of meat. (b, m)
	Spoil	(x)	Difficult to identify, probably refers to the stolen treasures of other nations.
Isaiah 35	Desert	x	Deserts dominate the landscapes of the Near East.
	Dry land	x	Dry land may refer to any type of arid environment in the Near East. Due to the climate, large areas of the Near East were dry and unsuitable for cultivation most of the year.

Bible	In the Bible*	Present in the real world	Details/Notes
	Abundant blossom	x	In the biological sense, this refers to the reproductive stage of plants. The active reproductive stage in deserts is closely connected to rainfall. Thus, abundant blossoms can only occur when water is abundant. Interestingly, blossom is associated with paradisiacal circumstances in many cultures. (y)
	Crocus	x	Crocus spp. Several native species in the Near East, some of which are also used as food or ornamental plants. (k)
	Lebanon	x	A territory north of Israel. (h)
	Carmel	x	A mountain top north of Sharon (see "Sharon" below). Also a city in Judah. (h, q)
	Sharon	x	Or plain of Sharon, a coastal region of the Mediterranean. (h, q)
	Deer	x	The Book of Isaiah refers to the typical movement of deer (<i>Cervidae spp.</i>). Deer provided an important supplementary source of meat and raw material for carving. (b)
	Wilderness	x	The ancient Near East was mostly wilderness or desert. (h, j, q)
	Water breaks forth	x	Episodic lakes are often generated after heavy rains in arid environments if sand covers have absorbed and retained groundwater well. Even single rains can form sheets of water on a rocky surface. (j)
	Burning sand shall become ->	x	The high temperatures of sand are typical of the desert during the daytime.
	-> a pool	x	See "Water breaks forth" above.
	Springs of water	x	See "Water breaks forth" above.

Bible	In the Bible*	Present in the real world	Details/Notes
	Jackals	x	Two subspecies of Golden jackals (<i>Canis aureus</i>), Syrian (<i>ssp. syriacus</i>), and Egyptian (<i>ssp. lupaster</i>), are native to the Near East. (b, e)
	Reeds	x	<i>Scirpus spp.</i> , many different types of grasses. Mainly present in marshes and alluvial lands. (k, w)
	Rushes	x	<i>Juncus sp.</i> Present in wetlands and around the edges of pools. (k)
	Highway	(x)	Highway refers here to the safe way to God's kingdom. It is uncertain if the modern use of this term is applicable to the routes of the Near East.
	Lion	x	This passage denies the presence of lions in paradise. See "Lion" above.
	Ravenous beast	x	Probably refers to all large carnivores found in the ancient Near East.
Isaiah 54	Foundations of sapphires	x	<p>A blue form of corundum. Not used as a gemstone before the final quarter of the first millennium BCE. Impure forms of corundum, known as emery, were used for beads and seals from at least the early second millennium BCE, however.</p> <p>The Bible may also refer here to lapis lazuli, an opaque semi-precious, usually blue gemstone, which was the most widely utilized material for beads, ornaments, and amulets in the ancient Near East. Especially for the Sumerians, and in combination with gold, it was a valued status symbol. (d)</p>

Bible	In the Bible*	Present in the real world	Details/Notes
	Pinnacles of agate	x	The Bible may refer here to jasper or ruby as well. For agate and jasper, see details below. Ruby is a red form of corundum. Not used as a gemstone before the final quarter of the first millennium BCE. Impure forms of corundum, known as emery, were used for beads and seals from at least the early second millennium BCE, however. (d)
	Gates of carbuncle	x	Carbuncle, or crystal, was an important and precious mineral. See also “crystal” below. (d)
	Wall of precious stones	(x)	Both walls of the cities or houses and several precious stones were familiar in the Near East. There is no direct counterpart for the wall described here, however.
	Weapon	x	
Isaiah 60	Abundance of the sea	(x)	Refers possibly to the nourishment such as fish and crustacean.
	(The young) camels (of Midian and Ephah)	x	The Bactrian camel (<i>Camelus bactrianus</i>) was probably domesticated by the beginning of the second millennium and was a source of milk and meat. It was also used for transport. The status of the dromedary (<i>Camelus dromedarius</i>) is less clear as it is difficult to infer from the available material whether the dromedary was primarily herded or hunted. (b)
	Midian	x	A territory east of the Sinai peninsula. It may also refer to the people of Midianites. The camels of the Midianites are also described in Judg. 6-8. (h)

Bible	In the Bible*	Present in the real world	Details/Notes
	Ephah	x	Refers probably either to the people of Ephah; also considered to be the people known as the Midianites, or the city of Ephah located south of Kedar. (q)
	Sheba	x	A territory on the south-western corner of the Arabian peninsula. (h, q)
	Gold	x	See “(Good/pure) gold” above.
	Frankincense	x	A highly valued balsamic gum exuded from the trees of genus <i>Boswellia</i> , more specifically <i>Boswellia sacra flückiger</i> and <i>B. frereana birdwood</i> . Native to Arabia, Ephah, Sheba, and Somalia, but probably not to Palestine. Burnt with the sacrifice of meal offerings. (w, z)
	Kedar	x	An area east of the Dead Sea. Also a son of Ishmael (see Gen. 25:13). (h)
	Ram	x	A common name for male sheep (<i>Ovis aries</i>) or goats (<i>Capra hircus</i>).
	Nebaioth	x	Probably refers to the tribe of Nabataeans who lived in a region east of the Dead Sea. Also a son of Ishmael (see Gen. 25:13). (q, h)
	Doves	x	Family Columbidae. Eighteen species are native to the Near East, nine of them in the Levant area. (e)
	Ships of Tarsish	x	Refers either to the vessel’s place of origin or a type of vessel intended for long voyages on the high seas. Tarsish was also a geographical location, probably a synonym for Sardinia (in the Mediterranean) or Tartessos (Tarsish) in Spain. (h, o)

Bible	In the Bible*	Present in the real world	Details/Notes
	Silver	x	In its native form, a rare metal and usually obtained from ores containing silver in small amounts. Possible sources included Midian (east of the Gulf of 'Aqaba), Greece, and Taurus Mountains as well as the Keban and Upper Euphrates regions. Silver was used for many purposes including vessels, statues, and personal ornaments. It was also used as money. (d, t)
	Israel	x	See "Israel" above.
	Walls	x	It is unclear whether this refers to walls of houses or cities.
	Gates	x	Gates were usually passages to fortified cities. (i)
	Lebanon	x	A mountainous region north of Israel. (h)
	Cypress	x	<i>Cupressus sempervirens</i> , native to the Near East, employed for a wide variety of purposes. (b, f, g)
	Plane	x	<i>Platanus sp.</i> , native to the forests of the Near East, employed for a wide variety of purposes. (g)
	Pine	x	<i>Pinus sp.</i> , native in the forests of Near East, employed for a wide variety of purposes. (b, f, g)
	Iron	x	Pure iron was not known in the ancient Near East. An alloy consisting of iron and small amounts of carbon was widely used and employed, however. Sources are difficult to identify, but iron was possibly a by-product of copper smelting. There is also evidence that the first sources of iron were meteorites. Used for tools, vessels, weapons, and armour. (d, t)

Bible	In the Bible*	Present in the real world	Details/Notes
			This passage of Isaiah emphasizes that iron is a less valuable option to silver, which will replace iron in the promised land.
	Bronze	x	A common name for a range of binary alloys consisting of copper and tin. Several sources, of which eastern Anatolia, the Mediterranean coastal region, and the Upper Euphrates were the most significant during the Neo-Assyrian period. Used for tools, weapons, and ornamental purposes. (d, t)
			This passage of Isaiah emphasizes that bronze is a less valuable option to gold, which will replace bronze in the promised land.
	Wood	x	Several species of wood were widely used for a wide variety of purposes. (g)
	Sun	x	
	Everlasting light	–	The midnight sun characteristic of the polar regions was most likely unknown in the ancient Near East. Moreover, the duration of the midnight sun is from a few days to a few weeks a year.
	Moon	x	
Isaiah 65	Houses	x	Houses as permanent dwellings became more common after urbanization took place during the Early Bronze Age. (i, u, q)

Bible	In the Bible*	Present in the real world	Details/Notes
	Vineyards	x	Wine and viticulture were important throughout the ancient Near East. Vines (<i>Vitis sp.</i>) require regular rainfall and sunlight. Thus, vineyards could only be successful if general circumstances were favourable and water resources were plentiful enough. Viticulture was generally risky due to unpredictability of climatic factors. See also Isa 32. (a, w)
	Fruit	x	The Book of Isaiah refers here to grapes, widely cultivated in the Near East. See also Isa. 32. (a).
	Wolf	x	See “wolf” above.
	Lamb	x	Sheep (<i>Ovis aries</i>). See “Cattle” above.
	Lion	x	See “Lion” above.
	Ox	x	Male of a species of the cattle. See “Cattle” above.
	Serpent	x	See “Serpent” above.
	(Holy) mountain	x	Mountain tops were typical locations for cities, including Jerusalem. See also “Mountains” above.
Revelation 21-22	Throne	x	Seats of kings and gods. Usually decorated with jewels, gold, and silver. (ab)
	Mountain	x	See “Mountains” and “(Holy) mountain” above.
	The most rare jewel	x	Possibly jasper or crystal, or lapis lazuli.

Bible	In the Bible*	Present in the real world	Details/Notes
	Jasper	x	A relatively frequent quartz used for working tools and for ornamental purposes. Several forms of a different colour are known. The main sources were the Irano-Arabian and Arabian mountains. Appeared in Mesopotamia from the Akkadian period onwards. (d)
	Great, high wall	x	Fortification systems characterized the cities of the Near East, especially those of Syria and Palestine. Most cities were surrounded by ramparts by the second millennium BCE. The walls of Jerusalem were built in the 8th century BCE to resist the attacks of conquerors. (i)
	Gates	x	Typical passages to cities. (i)
	New Jerusalem	(x)	The paradise described in Revelation. While the reference to Jerusalem is clear, there is no direct counterpart, however.
	Gold (clear/ transparent as glass)	x	Clear/transparent refers here to the glaring appearance of gold rather than actual transparency. See also “(Good/pure) gold” above. (ac)
	Sapphire	x	See “Foundations of sapphires” above.
	Agate	x	A microcrystalline quartz coloured white and brown, sometimes with a little blue. Widely used for ornamental purposes. (d)
	Emerald	x	A deeper-coloured, green, and transparent variant of beryl found especially in the Sikait/Zabara region of the desert of eastern Egypt. Used for beads and decorative purposes. See also “Beryl” below. (t)
	Onyx	x	See “Onyx stone” above.

Bible	In the Bible*	Present in the real world	Details/Notes
	Carnelian	x	Or cornelian, a transparent microcrystalline quartz used for beads, amulets, and ornaments. It was generally rare and highly appreciated. (d)
	Chrysolite	x	Or olivine, an olive-green and obviously rare mineral in the ancient Near East. Occurs in small pebbles and was therefore suitable only for small items. Used at least for ornamental purposes and in necklaces. (d)
	Beryl	x	A stone of which several colour variants, of which green is the most common, are known. Beryl refers to the light-coloured, transparent variant of this stone. Has yet to be reliably reported in Mesopotamia or Egypt (or elsewhere in the Near East) before the 4th century BCE. (d, t)
	Topaz	x	Topaz known in biblical times was the peridot (a variant of olivine, see “Chrysolite” above) found on the Isle of St. John in the Red Sea. Usually associated with any yellow variety of quartz but topazes were also pink, blue, or colourless. (t)
	Chrysoprase	x	A pale apple-green variety of chalcedony. It was obviously was not available in the Near East before the beginning of the Seleucid period (c. 310 BCE). Chalcedony in general was well known and widely used during the first millennium BCE, however. (d, v)
	Jacinth	x	Or zircon, belongs to the family of mineral called garnets. Can take various forms and colours. Often confused with hessonite. Known at least in Roman times, but earlier evidence is scarce and unconfirmed. (t)

Bible	In the Bible*	Present in the real world	Details/Notes
	Amethyst	x	A transparent quartz coloured deep purple or violet. Occurs naturally in Egypt but was probably only sporadically available. More plentiful during the first millennium BCE. Used in beads and pendants as well as for ornamental purposes. (d)
	Temple	x	A house of god or gods. Remains of different types of temples are found throughout the Near East and Egypt. (p, q, r)
	Lack of darkness	–	The midnight sun characteristic of the polar regions was most likely unknown in the ancient Near East. Moreover, the duration of the midnight sun is from a few days to a few weeks a year. Revelation refers here to eternal light.
	River of the water of life	(x)	No direct reference to any particular river.
	Crystal	x	Or rock crystal, a colourless macrocrystalline variety of quartz. Used especially for beads. Considered as a luxury material in the first millennium and, according to Mesopotamian grave finds, was obviously only available for richer people. (d)
	Twelve kinds of fruit	(x)	Species not specified.

x = present, (x) = possibly present, see Details/Notes for further information, – = not present

* The main source is ESV. NIV and NLV are used as supplementary sources where necessary.

(a) Renfrew 1995, (b) Hesse 1995, (c) Miller 1969, (d) Moorey 1994, (e) Gilbert 2002, (f) Potts 1997, (g) Kuniholm 1997, (h) Aharoni & Avi-Yonah 1977, (i) Mazar 1995, (j) Butzer 1995, (k) Zohary 1973, (l) Caubet 2002, (m) Breniquet 2002; Root 2002; Hesse & Wapnish 2002, (n) Kolars & Mitchell 1991, (o) Bass & Wachsmann 1997; Casson 1995 [1971], (p) Bahat 1997, (q) Curtis 2007, (r) Arnold 1997, (s) Irvin 1997, (t) Ogden 1982, (u) Coogan 1998, (v) Gafni 2007, (w) Fauna and flora of the Bible 1972, (x) Oded & Rabinowitz 2007, (y) Frese 2005, (z) Feliks 2007, (å) Brown 1971; Chapman 1997, (ä) Hopkins 1997, (ö) Irvin 1997, (aa) LaBianca 1997, (ab) Encyclopaedia Britannica 2008d, (ac) Liddell 1996.

It must be noted that in many cases in Table 6.1, several interpretations of the meaning of individual properties are possible and sometimes reliable identification cannot be achieved. This is particularly true of many geographical locations. I have made an assumption that there is a real world counterpart if such a location was known within the territory familiar to the Israelites of the time. Still, it is sometimes uncertain how much familiarity derives from antecedent versions of the representations. This applies especially to the Eden narrative in Genesis 1-3, which borrows elements from Sumerian and Egyptian mythology and has developed in Mesopotamia rather than in the Levant (e.g., Partin 2005; Moynihan 1979: 3-5). For example, the nuances of Mesopotamian origin such the sacredness of trees and water are still apparent in the biblical version (Moynihan 1979: 6). Thus, while examining whether a property has been familiar or not, we must also keep in mind that the knowledge to which biblical writers had access was not limited to the Levant area (for a more detailed analysis, see *Results* below).

Table 6.2 – The nature of human existence in paradises in the Bible.

Bible		Terms used to describe human actions and existence
Genesis	Present	Dominion over the other life forms of Earth. Fruits for food Nakedness (without being ashamed) Fear (after eating a fruit of the tree in the midst of the garden, the tree of life)
	Not present	Loneliness Names (humans are given names after God had decided to expel them from the Garden of Eden)
Isaiah	Present	A little child leads lions, calf, and cattle A nursing child shall play over the hole of cobra A weaned child shall put his hand on the adder's den The banished are assembled Kings reign in righteousness Princes rule in justice (People) will abide in peaceful habitation, in secure dwellings, and in quiet resting places Eternal righteousness, quietness, and trust (or security) Prey and spoil in abundance will be divided The lame will take the prey Peace for one's children The eyes of the blind open The ears of the deaf unstop

Bible	Terms used to describe human actions and existence	
		<p>The lame man leaps like the deer The tongue of mute sing for joy The redeemed shall walk there (Everlasting) gladness and joy Land is possessed forever (Chosen people) shall long enjoy (or: shall wear out) the work of their hands Plant vineyards and eat their fruit Young man shall die a hundred years old Sinner a hundred years old shall be accursed The days of the people are like a days of a tree (They and their descendants shall) be the offspring of the blessed of God God knows all the intentions of humans</p>
	Not present	<p>Nations lifting up sword against nations Learning war Hurt or destruction Sickness Iniquity Sorrow Sighing Unclean (people) Disgrace or shame Weapons (against the chosen people) Violence Devastation Mourning Labour in vain Bear children for calamity (or: for sudden terror) Build (and another inhabit) Plant (and another eat) Infant who lives but a few days Old man who does not fill out his days Weeping</p>
Revelation	Present	<p>The water of life will be given without payment Only those whose names are written in the Lamb's book of life</p>

Bible	Terms used to describe human actions and existence
Not present	Anything unclean, detestable, or false Tears Death Mourning Crying Pain Cowards Insolence The faithless The detestable Murderers The sexually immoral Sorcerers Idolaters Liars Everyone who loves or practices falsehood

Results

The comparisons in Table 6.1 show a strong relationship between actual and paradisiacal circumstances. Generally speaking, biblical paradises are very much like the real world with only a few exceptions such as a lack of darkness or beasts, for example. Even in these cases, the properties derive from the real world and the difference is achieved through polarization. The paradisiacal worlds were without doubt very familiar and intuitive to the Israelites. The general forms of the landscape, flora and fauna, and cultural aspects are directly borrowed from the real world.

Furthermore, geographical and cultural transitions are notable. The time frame within which the paradises in this data fit is at least about 11 centuries. The narrative about the Garden of Eden in Genesis shares elements with narratives of the Sumerian and thus of Mesopotamian origin. Compared with the real world, it seems to borrow its main ingredients from Mesopotamian geography and Sumerian shade-tree gardening technique (see Renfrew 1995; Moynihan 1979: 2-12). However, while the core content of the narrative itself has remained largely intact, the clear references to African geographical locations are absent in the Gilgamesh epic and Babylonian accounts (see Heidel 1951; 1954; Wyatt 2005) indicating that the biblical writers have “localized” the narrative to make it fit their world better.

The visions of Isaiah (and other prophets alike) follow the same outline. Again, geographical context reflects the changes of the world of the biblical writers. The geographical settings had become concentrated around the Palestine region as Jerusalem had become a political and religious capital of the Israelites c. 1000 BCE (Firestone 2005;

Sass 1997). In Isaiah, the place-names are clearly of Levantian origin indicating again the salience of surrounding real world circumstances. In Isaiah, natural settings are still very important, however. Most of the references to paradisiacal circumstances are derived from nature rather than culture.

By the first century CE, Romans had brought the Levant into the realms of the Greco-Roman civilization which meant that Romans controlled political, social, and religious realities in Israel (Levine 1998; Schowalter 1998). The archaeological evidence from the first century BCE to the first century CE shows that the transition was rapid and prominent (Gray 1962: 216-229; Levine 1998; Schowalter 1998). At the same time, the Temple of Jerusalem had become the political, economic, and religious centre of the Jews (Firestone 2005; Levine 1998).

The references to natural settings are scarce in Revelation although water, fruits, and lamb are mentioned. Considering that Jerusalem had fallen to the Romans and the Temple had been burned down in 70 CE (Levine 1998) it seems logical, by following the argument that familiarity and desire for stable and predictable circumstances define paradises, that the visions of New Jerusalem in Revelation concentrate on the majesty of the established paradisiacal city instead of natural settings. The re-establishment of Jerusalem and the Temple were, even only as an idea, of crucial importance considering their status among Jews and among the new Christian movement alike. Despite the minor role of natural entities, New Jerusalem is still constructed of familiar elements, especially of jewels.

Albeit different from each other, all the surveyed texts contain several similarities. In each physical welfare is granted and humans have control over the environment. While the real world is a harsh place, paradises are ideal for living. Only the most favourable elements of the real world are present. Ease of life and the abundance of resources are strongly emphasized. Moreover, human existence is not characterized by uncertainty and harshness and the living is earned without exhaustive work. From the emotional perspective, positive emotions dominate life while negative emotions are often explicitly absent (see Table 6.2 for details).

To sum up, irrespective of time and space, biblical paradises are described almost exclusively in concrete terms instead of abstractions or concepts reserved for “divine” use typical of theological concepts. The three major representations of paradise in the Bible strictly rely on the surrounding reality of their inventors.

Data set 2 – Paradise imagery of UFO religions

The era of modern UFO phenomena began in June 24, 1947 in the United States, when Kenneth Arnold sighted nine flying objects near Mount Rainier in the state of Washington. In a religious sense, contacts with extraterrestrials had been familiar to occultists and theosophists much earlier, however (Bartholomew 2003; Rothstein 2003a). Nevertheless, it was just after Arnold’s sighting and especially the claimed UFO crash-landing on July 1947, near Roswell, New Mexico, United States, when belief systems around the claimed UFO contacts and contactees began to emerge.

Although UFOs soon entered the consciousness of the public, before 1950 “flying

saucers” were regarded as secret weapons of a domestic or foreign army rather than spacecrafts of alien civilizations (Bartholomew 2003, Lewis 2003a, Partridge 2003). Their extraterrestrial genesis did not become a paradigm until 1950, however. The gradual change in meaning of the terms used for the UFO sightings was paralleled by the growth of a UFO community in general (Saler & al. 1997: 13).

The rise of religious UFO movements took place from the early 1950s onwards. These movements managed to grab attention and gained supporters probably because of their ability to synthesize existing elements from esoteric and spiritualistic as well as theosophical and Christian traditions with modern science, technology, and scientific cosmology (Grünschloß 2003; Rothstein 2003b; Saliba 1997). Especially science has been one of the cornerstones of UFO religions since the 1950s, which is not surprising considering the supposed technological and scientific superiority of extraterrestrials compared with humans.

Despite their ostensible heterogeneity, UFO religions are generally millenarian, that is, they are movements that await an imminent liberation from this world, which in turn implies the founding of a “perfect” age or kingdom free from all the suffering of this world (Grünschloß 2003; see also Landes 2006). Prophecies of such a kingdom have been a recurrent theme characteristic of most UFO religions (Wojcik 2003). Furthermore, UFO religions are often cargoistic. They borrow the idea of the preternatural arrival of commodities from the Melanesian cargo cults but replace Europeans with extraterrestrials and superior technology while maintaining other characteristics (Grünschloß 2003; Trompf 2003; see also Steinbauer 1979 [1971]). UFO religions also share the leadership-support group type of hierarchy with cargo cults. Nevertheless, UFO religions do not descend from cargo cults but have developed their conceptions independently (Trompf 2003).

Although UFO religions are essentially an American phenomenon, UFO religions and believers are found throughout the Western industrial societies. The phenomenon as a whole is difficult to locate in any specific geographical regions, however. Modern technology, media, and recently the Internet make the messages of UFO religions accessible around the globe in a radically different manner compared with, for example, the societies of the ancient Near East. Thus, it will be more difficult to examine if the context and settings of the paradise representations of UFO religions match the real world. In fact, it may be the globalization of knowledge of the 20th century that may be visible in the paradisiacal visions of UFO religions rather than local peculiarities.

Sources

As UFO religions do not have any canonized texts in a traditional theological sense, it might be difficult to identify the sources that contain the “accepted” visions of paradisiacal circumstances. However, the hierarchical nature of UFO religions offers a solution to this problem. The accepted views are those approved, and usually written down, by the leader of the movement. By using these texts as sources, it is possible to analyse the more or less official ideas of the paradises of UFO religions.

The religious groups around UFOs are numerous and diverse and thus they have various conceptions of paradises. Still, the re-established-paradise-on-Earth type of image

and belief is shared by most UFO religions (Grünschloß 2003; Wojcik 2003). The examples in this study are representative examples of UFO religions and provide rather detailed pictures of their paradise beliefs. The groups selected for this study are the The Ground Crew, the Raelian movement (or Raelian Church), and the IFO-Sananda group studied by Leon Festinger & al. (1956). These three are representative examples of UFO religions and they are spatially and temporally evenly distributed within the epoch of UFO religions.

The Ground Crew is an American group in California and Hawaii. It was originally known as The Ground Crew Project, or Planetary Activation Group. However, it split in 1997 into the new Ground Crew and the Planetary Activation Organization, apparently because of internal conflicts (Grünschloß 2003). Due to this, two similar conceptions of the establishment of paradise exist.

The Ground Crew has published its views in books and on websites. The general view is that the Earth will be saved by extraterrestrials who will turn it into an incomparable paradise where people are raised to “full consciousness”. Moreover, the world government will be taken over by The Spiritual Hierarchy. With its help, the atmosphere of the Earth will be transformed and purified and all communication systems will be replaced with “advanced technologies”. As a consequence, there will be ecological and sociological equilibrium and an immediate awareness of God (see Grünschloß 2003).

The Raelian movement was founded in France in 1973 by Claude Vorilhon (known as Rael), who claims he has received his revelations from humanoid space aliens. The group perceives itself to be a scientific religion and one of its major goals is to establish an extraterrestrial embassy in Israel at which to receive Elohim (or The eternal) when they land in 2035 (Lewis 2003b). The movement emphasizes the role of science and modern technology as solutions to the problems of today and denies the existence of god. However, Rael vividly describes the paradisiacal landscapes in *Intelligent Design*, a book published in 2005 (see sources for details). This book collects the teachings of Rael originally published in French into several separate volumes. The claim of Raelians, according to this book, is that paradise will be established by extraterrestrial scientists who have achieved the higher spiritual, scientific, and technological level that humankind needs to rise to this next level to ensure its immortality.

The third group represents the so-called first wave of UFO contactees (for details, see e.g., Melton 1995; Rothstein 2003a). Officially, the group had no name but it was called IFO-Sananda Religion by J. G. Platvoet (1982) because the extraterrestrial who sent the channeled messages to Mrs. Keech (name given by Festinger & al. (1956)), the founder of the group, was known as Sananda. The group was active from late 1953 to late 1954 or early 1955, depending on one’s perspective. The group was private by nature. Only after receiving the prophecies predicting imminent cataclysm and the rise of a perfect new world did its leaders step forward and attempt to tell the world what was waiting for it.

The IFO-Sananda group predicted that a great flood would drown most of humankind in December 21, 1954, and only the true believers would be saved (Festinger & al 1956; Platvoet 1982). The chosen ones would then repopulate the purified Earth. The prophecies of IFO-Sananda concentrated on the geological cataclysms that would cause the flood but they also described how paradise on Earth would be established.

The data concerning IFO-Sananda used in this study comes from scholarly sources rather than IFO-Sananda itself. Due to the nature of the group, access to primary data was not generally possible as it was reserved for the leaders of the group only. Thus, the views

analysed in this study are drawn from the works of Leon Festinger & al. (1956) and J. G. Platvoet (1982). They are based on the original messages, however.

The world of UFO believers

The world of UFO believers is a post Second World War world. In many ways, the time from the late 1940s until the new millennium has been antagonistic and radically different from the former history of humankind. Rapid urbanization, and technological, and scientific progress are characteristic of the later 20th century along with economic growth, globalization, and an improved standard of living, at least in Western countries. However, the development of even more lethal weapons, poverty, overpopulation, and the environment degradation due to human action have cast their shadow over the optimistic views.

The possibility of the imminent destruction of humankind became evident after the Second World War. For the first time, humans had armaments that could exterminate practically all life on Earth within a few minutes. What made things even worse was the Cold War, the rivalry between the United States and the Soviet Union and their allies that lasted from the late 1940s until the late 1980s. This led to the rapid increase in conventional and nuclear weapons in the world. Moreover, the arms trade to third party countries became a profitable business for these countries. The arms trade also served political purposes: parties involved in conflicts were funded on the basis of ideological orientations (Giddens 1997: 357-362).

Along with the political tensions there has been a trend towards rapid technological development and a shift from rural societies to urban societies. Until the nineteenth century, Europe and the United States were mostly agricultural and rural. Within a century, they had become industrialized and urban (Flora & al. 1987: 10-12; Martin & Olds 2006). The increase in the rate of urbanization is a global phenomenon: the amount of urban population has increased from 14 per cent in 1900 to 37 per cent in 1970 (see Platt 1994). In Europe and the United States, the rates in 1970 were about 63 per cent and 73 per cent respectively (United Nations 1971) and the rates have continued to increase.

Access to information has undergone radical changes during the last few decades. While daily newspapers became common from the end of the 19th century onwards, it was the radio and especially television that truly revolutionized communication during the mid 20th century. The impact of the information revolution on general knowledge has been enormous as access to practically any type of knowledge has become possible due to the globalization of communication. Previously inaccessible information can now be transmitted around the world via several channels (Giddens 1997). Thus, knowledge is no longer limited to local circumstances as it was in traditional societies.

The Western society of the late 20th century is typically urbanized, dependent on technology, and its members work in a specialized profession not directly related to primary production. The everyday environment of the majority of inhabitants is markedly urban and the connections to nature are dependent on artificial establishments such as parks and zoos. Consequently, knowledge about nature has weakened and has been replaced by cultural information acquired mostly through media and literature, but it also stems

from everyday experience. Trade and transportation have undergone radical development meaning that most merchandise and regions are accessible to members of Western societies today. In general, people in Western countries have become more and more dependent on technology. Traffic, food supplies to cities, and the amenities all require technology that is in turn dependent on external sources of energy.

Nature: climate

From the point of view of climate, the environment of UFO believers is diverse. Large areas of lowlands with a temperate climate are broken by mountainous ranges with a colder climate. The majority of Western countries belong, according to Köppen's climate classification, to the climate zones B, C, and D, which are characterized by temperate climates and seasonal changes. Variation may be ample, however. For example, the coldest variation of type D is typical of Nordic countries with four seasons and cold winters, whereas the type B climate around the Mediterranean is characterized by hot, arid summers and cool, rainy winters. Thus, it is not possible to determine a single type of climatological conditions that UFO believers have encountered. In fact, the variation is about the only applicable constant (see Martin & Olds 2006; Peel & al. 2007).

Nature: fauna and flora

The diversity of climatological conditions applies to fauna and flora of Western countries, as well. It is neither possible nor relevant to review the whole diverse fauna and flora here. Nevertheless, outlines will be briefly discussed to provide a general picture of the wildlife of Western countries.

In North America, there are in the United States over 340 native mammalian species ranging from small rodents to wolves (*Canis sp.*) and grizzly bears (*Ursus sp.*) (see Corbet & Hill 1980). In Europe, the respective number of species varies from eleven of Iceland to almost 100 in Greece and former Yugoslavia (see WCMC 1992).

There are about 520 indigenous bird species in Europe ranging from quails and pheasants (family *Phasianidae*) to raptors (families *Acciptridae* and *Falconidae*) and several types of passerines (order *Passerine*). In North America, the respective figures are over 800 species with many similarities to European avifauna. Only very few wild species are companions to humans, however, and even fewer find themselves comfortable in urban environments. Species with any economic importance are usually domesticated or held in captivity (for details, see Hagemeyer & Blair 1997; Sibley 2000).

In addition to the more familiar birds and mammals, reptiles, amphibians, fish, and insects are numerous. While most of these species are not familiar to laypersons, some of them are economically important. This applies especially to the fauna of the seas which is widely used as food.

Like the fauna, also the flora of Western countries is very diverse. Hence, only basic vegetation zones will be covered here to give an idea of what kind of vegetation should be

familiar to UFO believers on the grounds of their everyday experience.

The vegetation zones of Western countries in the North America and Europe vary from boreal coniferous forests to deciduous forests and woodlands with winter rains. Additionally, some regions are best described as desert, steppe, or grassland (Walter 1985).

The variation in species richness is notable. Generally, the closer to the equator a region is located, the greater the species richness. In North America, there are over 18,000 species of flowering plants in the United States but only about 2,500 in Canada, for example. In Europe, the corresponding species richness varies from about 1,000 in Finland to over 5,000 in Italy. The total number of higher plant species (i.e., excluding lower plants such as algae and lichen) is about 17,000 in North America and 12,500 in Europe (WCMC 1992).

Typical examples of native trees of Western countries are pines (*Pinus sp.*), spruces (*Picea sp.*), birches (*Betula sp.*), oak (*Quercus sp.*), lime trees (*Tilia*), maples (*Acer sp.*), and laurels (*Laurus*), meaning that there are both conifers and deciduous trees. Deciduous trees shed their leaves in autumn except in the southern regions, where there are also some evergreen species (Walter 1985). The diversity of flowering plants is even higher than that of trees. Examples of typical flowering plants are different types of roses (*Rosaceae*), sunflowers (*Helianthus annuus*), dandelions (*Taraxacum*), and marigolds (*Calendula sp.*) (WCMC 1992; Junikka 2008).

In addition to native fauna and flora, many species are held in captivity in zoos and in botanical gardens. This complicates things further. Considering that most urbanized people generally have a poor knowledge of the native fauna and flora (Wolff & al. 1999) it may be that they are more aware of captive animals and plants than the native ones.

Culture

All modern Western societies are heavily urbanized. Rapid urbanization is mainly a result of population increase and immigration from rural areas. The effects of urbanization on society are much deeper than a simple concentration of people, however. The growing cities have become centres of financial and industrial activity that provide all the services and goods needed by the residents. As a consequence, sources of livelihood have become more varied than in rural societies (Giddens 1997: 471-474).

As an environment, cities differ radically from traditional rural areas, towns, and villages. The environment is completely created by humans and mostly consists of built structures. Sources of vital resources such as food are artificial, such as grocery stores. Moreover, life is concentrated on the monitoring and maintenance of social relationships rather than coping with environmental threats. Most threats are likely to be of human origin.

In urban areas, culture has many connotations. Culture is a loose term to describe all possible human activities of the late 20th century in the Western world. As class inequalities are typical of Western societies, several subcultures exist and it is rather difficult to identify any universal traits of culture applicable to all members of society (Giddens 1997). Yet some traits can be said to be at least typical properties of Western cultures. A desire for personal affluence, popular culture (including e.g., fashion, popular music, and movies),

and a membership of a certain social class direct behaviour to a certain extent.

Politically, most contemporary Western countries are democracies even though kingship is still formally maintained in many countries. Nation-states, political communities divided by clearly delimited borders, are typical of the Western world. Unlike the ancient rulers, the governments of Western countries have extensive power over many aspects of citizen's lives (Giddens 1997: 55-57). On the other hand, or as a consequence, this political system has managed to guarantee a relatively stable society. There have not been large-scale wars in or between the Western countries after the Second World War. Despite this, political tensions created an atmosphere of uncertainty due to confrontations between the United States and its allies and the Soviet Union and its allies that extended over decades. While the Cold War is now over, it represented a significant potential threat during the times most UFO religions were born and it is probably one of the reasons why apocalyptic cults in general became a widespread phenomenon.

Paradise representations and the actual environment

Paradises of UFO believers are established through the action of supernatural agents. While it is not regarded as necessary for humans to die in order to gain access to the new world, believers are considered somehow to ascend to a new spiritual level. It is, however, assumed that the location of the new paradisiacal world is on Earth.

With regard to general natural settings, not many details are provided by UFO religions. Nature is described in vague terms. However, this is not to say there is no interest in the surrounding environment at all. On the contrary, the relationship between humans and nature is characterized despite the relative lack of details. For instance, The Ground Crew states that after paradisiacal circumstances are established:

“Our beloved animals and plants will also ascend and accelerate their consciousness. You will be able to communicate telepathically with them. You will be able to tell your plants to grow and they will grow. We will also be having new forms of animal life coming to the planet. Some old forms may leave if they are particularly viscous or and outlived their need here.” [*The Ground Crew website*]

IFO-Sananda, in turn, provides quite specific geography with regard to the establishment of the paradisiacal world, while the circumstances themselves are described only briefly:

“The great tilting of the land of the U.S. to the East will throw up mountains along the Central States, along the Great New Sea, along North and South – to the South. The new mountain range shall be called The Argone Range, which will signify the ones who have been there are gone – the old has gone past – the new is. This will be as a monument to the old races; to the new will be the Altar of the Rockies and the Alleghenies.” [*after Festinger & al. 1956: 56-57*]

and

“Egypt would be remade and the desert would become a fertile valley; Mu would rise from the Pacific; the “uprising of the Atlantic bottom” would “submerge the land of the Atlantic seaboard”; France would sink to the bottom of the Atlantic, as would England; and Russia would become one great sea” *[after Festinger & al. 1956, 56-57]*

The most detailed, if still rather general, descriptions of natural environment are provided by Raelians. The text refers to Rael’s visit to a paradisiacal, perfect world where “The Elohim” live:

“Before me a paradisiacal landscape unfolded, and in fact I cannot find any words to describe my enchantment at seeing huge flowers, each more beautiful than the last, and animals of unimaginable appearance were walking among them. There were birds with multicolored plumage, and pink and blue squirrels with the heads of bear cubs climbing in the branches of trees that bore both enormous fruits and gigantic flowers.” *[Intelligent Design: 160]*

and

“[...] behind the trees I was able to make out a group of buildings that resembled brightly colored shells harmonizing perfectly with the vegetation. The temperature was very mild, and the air was perfumed with countless scents of exotic flowers. We [Rael and a small group of Elohim] walked towards the top of a hill, and a marvelous panorama began to appear. Innumerable small streams wound through the lush vegetation, and far off an azure sea sparkled in the sun.” *[Intelligent Design: 160]*

Human existence, however, is a different matter. It is generally described in more specific detail than the natural environment. The Ground Crew states that:

“The end times are simply the end of life on the planet, as we know it. In the new times we will have many wonderful events occurring on the planet and within ourselves. For instance, we will be able to manifest whatever we want, we will be telepathic, live for thousands of years, not have any illness, know our life purpose at birth, have only wanted children, no longer need money or work for someone else. We will be god-like as we were originally created in this image. We will have extraterrestrial brothers and sisters visit here, we will see Angels, devas, fairies, talk with the plants and animals. You will meet up with lost loved ones from the other side. You will see there is no death, just a shifting from one physical form to another. End times are truly the beginning times -- the times of love, peace, joy and harmony.” *[The Ground Crew website]*

IFO-Sananda uses similar, if not such detailed terminology to describe the future existence in paradise. It should be noted, however, that IFO-Sananda describes the circumstances as current but available for the chosen ones only after the cataclysm.

Thus, they do not directly state what the life will be like but what it is already like for the extraterrestrials:

“What we [the extraterrestrials] enjoy as natural everyday enjoyments, you of the world cannot yet imagine. [...] It is a beautiful place to live. We have weather – snow and rain. We adjust our bodies to the temperature.” *[after Festinger & al. 1956: 44]*

Again, the most detailed descriptions are provided by Raelians. Life in paradise seems to be a continuous feast surrounded by perfect men or women. For instance:

“The eternalists who live here, both people from Earth and Elohim, can fulfill themselves as they wish, without having to do anything but that which pleases them – scientific research, meditation, music, painting, and so on. Or they can do nothing at all if they feel like it.” *[Intelligent Design: 162]*

and

“the Eternalists from Earth are not allowed to have children. They agree to have a small operation, which makes them sterile, but that sterility can easily be reversed. The purpose of this measure is to prevent undeserving beings from joining us in this marvelous world. However, male and female eternalists can unite freely just as they wish, and all jealousy is eliminated.” *[Intelligent Design: 163]*

Raelians go even further in describing access to sexual pleasures. In addition to the citations above, they also state that:

“In addition, men who wish to have one or more companions outside the relationships of equality that exist between eternal men and women, or who do not want to live with a woman on an equal basis, may have one or more totally submissive biological robot women with the exact appearance that is desired. The same goes with women, who can have one or several totally submissive biological robot men.” *[Intelligent Design: 163]*

The descriptions contain constant references to real world elements that must have been known to the authors of these descriptions. I have summarized and explained the correspondences between paradisiacal worlds and the real world in Table 6.3. The characteristics of human existence have been summarized in Table 6.4.

Table 6.3 – The presence of the properties of the paradises of UFO religions in the real world.

Religion	Property*	Present in the real world	Details/Notes
The Ground Crew	Planet	x	Earth.
	Angels	–	Probably refers to angels as described in the Bible. According to the Ground Crew, angels will be in charge of paradise.
	Devas	–	Probably refers to a class of celestial male gods in Hindu mythology. Devas can either be with or without form. (e)
	Fairies	–	German, Scandinavian, and Celtic mythical creatures. First appeared in medieval manuscripts but are probably much older. “Fairy” is not a well-defined category. It consists of several kinds of mythical creatures such as spirits and goblins of different sizes. (g)
	Extraterrestrial brothers and sisters	(x)	According to the other references to extraterrestrials, this probably refers to humans who, according to the Ground Crew, live outside Earth.
	New forms of animal life	(x)	By following the principles of evolution this could also be said of the real world.
	(Humans as) god-like images	–	Possibly borrowed from Gen. 1-3. On the other hand, in most religions gods are considered anthropomorphic.
	Plants	x	Species not specified.

Religion	Property*	Present in the real world	Details/Notes
	No pollution, nuclear weapons or power, no overpopulation.		All crucial problems of today that are said to cease to exist after the establishment of paradise.
	(Altered) DNA	x	Or deoxyribonucleic acid. Contains genetic instructions used in the development and functioning of all living organisms. The first evidence of DNA was discovered in 1928 but its structure was not fully determined until 1953.
			The determination of the structure made possible the conscious manipulation of genetic material. (f)
	Five dimensions	(x)	The idea of three dimensions of space and the fourth as time is widely known. The existence of further dimensions has been discussed mainly by physicists during the 20th century. (h)
	Earth back in original condition, “Heaven on Earth”	–	This is not specified in detail. However, the idea of the restoration of the original abode is clear.
The Raelian movement	Flowers	x	Species not specified.
	Animals (of unimaginable appearance)	(x)	Refers to the presence of animals. No further details are provided, however (but see “Pink and blue squirrels with the head of bear cubs” below).

Religion	Property*	Present in the real world	Details/Notes
	Birds (with multicoloured plumage)	x	Species not specified. It is not possible to infer if this refers to bright colours or colours in general. Within the Western Palearctic region, at least the males of most species are multicoloured.
	Pink and blue squirrels with the head of bear cubs	–	This kind of animal is not known in the real world. However, squirrels (family <i>Sciuridae</i>) and bears (family <i>Ursidae</i> .) are found native to as well as captive in Western countries. (x)
	Fruits	x	Species not specified.
	Trees	x	Species not specified.
	Buildings (that resembled brightly coloured shells)	x	May refer to the Sydney Opera House or a similar construction. Scallops (family <i>Pectinidae</i>) are molluscs that are worldwide in distribution and widely used as food. Their shells range in colour. At least the shell design of the Pilgrim's scallop (<i>Pecten jacobaeus</i>) has been used a religious emblem. This use of shells took place during the Middle Ages in Europe (the badge of St. James). (u)
	Mild temperatures	x	Probably refers to the lack of extreme temperatures typical of most regions of Earth during winter and summer. See also "Climate" below.
	Air perfumed with scents of (exotic) flowers	x	

Religion	Property*	Present in the real world	Details/Notes
	Hill	x	Terrain characterized by small hills is typical of many regions in Western countries. (r)
	Small streams	x	Small streams and rivers are typical of many regions in Western countries. (r)
	Lush vegetation	x	Species not specified.
	Azure sea	x	Refers to the bright colour of water.
	Sun	x	Probably the sun of our solar system.
	People (resembling those who live on Earth)	(x)	Obviously human inhabitants of paradise. Later they are described as “Biological robots”, however.
	Robes	x	Several types of robes have been used across the world throughout history. (o)
	(Multicoloured) silk	x	Silk is the fabric produced by silkworms. Originally used in China as clothing for the rich. Known in Europe from c. 2nd century BCE onwards. Has always been considered a luxury product with more symbolic and emotional value than utility value. (n)

Religion	Property*	Present in the real world	Details/Notes
	Cave	x	A natural opening in the Earth that is large enough for a human to enter. Many of the largest caves in the world are found in Europe. (w)
	Furs	x	Here, furs are either carpets or covers for armchairs. Furs as luxury clothing and status symbols have been known in Europe from at least the 11th century onwards. (q)
	Grilled meat	x	
	Armchair	x	Very common. However, at the old royal courts armchairs were reserved for those with the highest social status. Even today, the type of chair may indicate social distinction. The CEO of a company often has a more majestic chair than the rest of the personnel, for example. (t)
	Trays	x	
	Sauces and drinks (of unforgettable flavours)	x	
	(Marvellous) music	x	
	Cities (with multiple architectural styles)	x	While this is true of the cities in the real world, this may also refer to the existing designs of ideal utopian cities. (p)

Religion	Property*	Present in the real world	Details/Notes
	(Innumerable) fountains	x	Fountains are typical decorations of parks, gardens, shopping malls, hotels, houses etc. Evidence of the early use of fountains comes from Persian and Roman times. They were also widely used elements of the gardens of Mughal India and Persia from the 16th century onwards. Fountains also appear in allegories as sources of positive or supernatural powers. (l)
	No winter	x	True only around the Earth's equator (see "Climate" below). Even there, several factors such as elevation or proximity to the sea affect climate. (r)
	Climate (comparable to the Earth's equator)	x	Not true of Western countries that are located in the northern and southern hemispheres. Moreover, climate at the equator is not uniform around the world. See also "No winter" above. (r)
	Rainfall only during the night	–	Generally not true near the equator. Either rainfall occurs around midday (diurnal climate) or during monsoon seasons. (y)

Religion	Property*	Present in the real world	Details/Notes
	Robots	x	This obviously refers to cyborgs, biological organisms whose physiology has been augmented technologically by chemical or mechanical means. The concept was developed in the early 1960s and it quickly spread in popular culture. Genetic engineering related to cyborgs and human evolution has been discussed from the 1960s onwards and should have been already familiar to Rael by 1973, when the movement was founded. (m)
	Scallop shell (as a house)	x	See "Buildings" above.
	Shaggy furs	x	See "Furs" above.
	Bed	x	
	Bathtub (as huge as ->)	x	Bathtubs became common in the 19th century. (t)
	-> Swimming pool	x	The first swimming pools were built by the Romans. However, swimming pools did not become popular until the 19th century. (s)
	Vegetation	x	Species not specified.
	Female companion	x	Depends on one's sexuality if this is desirable in the sexual sense. On the other hand, it is indicated elsewhere that male companions are also available.

Religion	Property*	Present in the real world	Details/Notes
	Helmet	x	Helmets are protectors widely used by the military, fire fighters, racing drivers etc. The use of a helmet here is obviously related to the “Ideal women” (see below).
	Ideal man/men/ woman/ women (really robots)	(x)	Anthropomorphic figures that are exactly like humans from the outside but are really “biological robots”. See also “Robots” above.
	Machines (that generate worker/companion robots)	(x)	Obviously a sort of factory. Parallels with the real world can be found.
	700 Elohim members of the Council of the Eternals	–	The beings in charge in paradise. Among the members of the council is Yahweh, which refers to the god of the Jews but also to the claimed father of Rael (see also “Yahweh” below).
	Transportation belt	x	A belt that makes travelling in the air possible. The idea of the “jet pack” has been popular in science fiction literature from the early 20th century onwards. Some prototypes have been developed in Germany and the United States. (v)
	Jews	x	Ethnic, cultural, and religious group that has its origins in the ancient Near East. There are about thirteen million Jews today around the globe. Most of them live in Israel, and the United States. (c)

Religion	Property*	Present in the real world	Details/Notes
	Jesus	x	Or Jesus of Nazareth, c. 4-30 CE. A Jewish preacher and a religious leader. Christianity sees him as its founder and object of faith. (b)
	Moses	(x)	Traditionally regarded as the founder of Israel's religion. Historicity debatable. (j)
	Elijah	x	An Israelite prophet active in Israel c. the 9th century BCE. (k)
	Koran	x	The holy book of Muslims.
	Mohammed	x	Or Muhammed, c. 570-632 CE, the author of the Koran and the prophet of Allah, the god of Muslims. (a)
	Yahweh	–	Usually refers to the god of the Jews (see "Jews" above) but is used here in a different meaning. Yahweh is claimed to be an "Eloha" one of the extraterrestrial scientists who engineered the first humans. Also the claimed father of Rael. Also called "Elohim". (d)
	Buddha	x	Or Siddhartha Gautama, c. 563-483 BCE, Indian philosopher and the founder of Buddhism. (i)
	Allah	–	The god of Muslims.
	Grass	x	Species not specified. Obviously grass is a common name for any green plant with grass stalk.

Religion	Property*	Present in the real world	Details/Notes
	Computers	x	Computers have become a vital component of Western society from the late 20th century onwards.
	Large vessel	(x)	Depending on interpretation, several kinds of aerial vessels are known today, including several types of spacecraft.
IFO-Sananda	Mu (rises from the Pacific)	–	Refers to a continent that rises from the Pacific. The myth of Mu is parallel to the myth of Atlantis. (ä)
	Sahara ->	x	
	-> will be green again	(x)	The last desertification of the Sahara that is still continuing occurred by 3000 BCE. There are several wet periods before that, however. The most recent wet period took place between 10000 BCE and 5000 BCE. (å)
	Egypt ->	x	
	-> becomes a fertile valley	(x)	Only small regions around the Nile are fertile today.
	-> is remade	–	Possibly refers to ancient Egypt and the time of the pharaohs.

Religion	Property*	Present in the real world	Details/Notes
	Atlantis (re-emerges)	–	<p>The myth of Atlantis was originally formulated by Plato in his dialogues <i>Timaeus</i> and <i>Critias</i>. According to him, Atlantis was an ideal, paradisiacal city. In the course of time, its inhabitants degenerated, however. As a punishment, the gods decided to drown the city and its inhabitants.</p> <p>The formulation of Plato borrows elements of several flood narratives known in the ancient Near East and the Mediterranean region. Several attempts to localize Atlantis have failed and it is unclear if there is any historical truth in Plato's account. Today, Atlantis remains a rather popular topic in popular culture. (ä)</p>
	Atlantic seaboard countries and Russia will become a great sea.	(x)	Geographical interest and knowledge are clear here. Again, this seems to refer to flood mythology and the future great flood.
	Earth	x	
	Argone range (in the United States)	(x)	A mountain range that symbolizes the birth of the new world. Situated in the United States.
	Altar of the Rockies	(x)	Probably refers to the Rocky mountains that range from southern Canada to the northwestern United States. (z)
	Altar of the Alleghenies	(x)	Probably refers to the Allegheny mountains that range from Pennsylvania to southwestern Virginia in the United States. (z)

x = present, (x) = possibly present, see Details/Notes for further information, – = not present

* If several translations exist, the English version has been used.

(a) Lecker 2007, (b) Flusser 2007, (c) Jones 2005, (d) Lewis 2003b, (e) Williams 2003, (f) Campbell & al. 1999, (g) Briggs 1967, (h) Hawking 1996, (i) Reynolds & Hallisey 2005, (j) van Seters 2005, (k) Gutmann & al. 2007, (l) Moynihan 1979; Thurn 2005, (m) Asaro 2001, (n) Anquetil 1995, (o) see Racinet 1988, (p) see Eaton 2002, (q) Black & Garland 1975, (r) Martin & Olds 2006, (s) Encyclopaedia Britannica 2008a, (t) Encyclopaedia Britannica 2008b, (u) Encyclopaedia Britannica 2008c, (v) Hambling 2005, (w) see Courbon & al. 1989, (x) Encyclopaedia Britannica 2008e; 2008f, (y) Walter 1985, (z) see Penny & Olds 2006, (â) Allan 1981, (ä) Ramage 1978.

Again, in many cases in Table 6.3, several interpretations of the meaning of individual properties exist and sometimes reliable identification is not possible. This is particularly true of natural settings. It is not possible to identify trees or birds, for example. Furthermore, most of the specific entities seem to be derived from the cultural environment, especially from literature, either religious or secular. I have made the assumption that there is a real world counterpart if information about the actual parallel has most likely been accessible through some widely used channel such as popular literature or the mass media.

Table 6.4 – The nature of human existence in paradises of UFO religions.

Religion	Terms used to describe human actions and existence
The Ground Crew Present	Ability to manifest whatever they want or make the reality whatever one wants it to be Have only wanted children Ability to communicate telepathically Ability to live thousands of years Ability to know our life purpose at birth Ability to talk with plants and animals Humans are god-like Ability to meet the lost loved ones Love Peace Joy Harmony
Not present	Illness Death Money Work (for someone else)

Religion		Terms used to describe human actions and existence
Raelian movement	Present	<p>Happy life Eternal life Ability to fulfil him/herself with anything one wishes without having to do anything but that which pleases them (e.g., scientific research, painting, meditation, music, or nothing) Several (sexual) relationships with men/women (who actually seem to be biological robots) Open-mindedness Enjoying all the pleasures (Doing nothing other than) making love Safety Liberty Nudity Ability to use the full potential of the brain A cosmic mind that is connected to infinity Universal love and harmony</p> <p>In paradise on Earth: Fulfilment Freedom Universal fraternity</p>
	Not present	<p>Dirty jobs Aggression Jealousy Problems between the inhabitants Surprises Soul</p>
IFO-Sananda	Present	<p>Those who are open and receptive to "Light" Joy Enlightenment Unparalleled new experiences (Unimaginable) natural everyday enjoyments</p>
	Not present	<p>Scientists (or, people who follow Lucifer) Death Wars</p>

Results

The shift from knowledge about nature to knowledge about culture, both current and ancient, is clear in the paradise representations of UFO religions. Most of the paradisiacal elements of UFO religions are cultural and not directly related to nature. Imaginary entities such as fairies and angels have their parallels in tradition and literature, however, meaning that totally new imaginary entities do not appear in the paradises of UFO religions. When nature is described, details are generally scarce with very few specific references.

What is described in detail is the nature of human existence (see Table 6.4). Much attention is paid to emotions and the availability of modern amenities. Furthermore, humans are said to be able to ascend to a new superhuman level which makes it possible to fulfil every wish and to live forever without any problems, indicating that humans have control over the environment. Thus, the environment is no longer a source of fatal threats; whatever threats there are can be met relying on the power of advanced technologies.

The time span here is too short to analyse possible demographic transitions. Despite this, there is one apparent example of such a transition: the rapid development of genetics is completely omitted by IFO-Sananda. Considering that the activity of IFO-Sananda dates back to the early 1950s when genetics was still not established, this factor clearly separates it from the other two groups that have been able to derive the content of their paradise representations from the world of the last decades of the 20th century.

Paradises of the Bible and UFO religions – comparisons

At first sight, the paradise representations of the Bible and UFO religions do not have much in common. Utopian realms created by extraterrestrials where robots do all the work do not resemble very much the biblical paradises in which nature flourishes and wine flows. The apparent dissimilarity is more apparent than real, however.

While tools for mapping natural settings were modest during biblical times compared with the 20th century, a profound knowledge of nature is reflected in biblical paradises much more than in the paradises of UFO religions. UFO religions generally stick to a very generic characterization of nature with simple references to wonderful animals and plants. Biblical paradises, however, contain detailed descriptions of local natural settings, including flora and fauna, and seem as accurate as possible considering the knowledge of the time. Moreover, Genesis and Isaiah provide rather little information about human settlements; the importance of nature receives far more attention. The believers of UFO religions are not generally as aware of the importance of nature, as industrialization and urbanization have made nature a somewhat alien environment.

What remains similar is the nature of human existence in paradise. Both biblical narratives and the visions of UFO believers describe life in paradise in very similar terms and they are similarly connected with the fulfilment of needs. At the same time, context-

specific threats cease to exist and humans gain the power to master the world around them. Moreover, both argue that work becomes unnecessary, people can live forever, aggression is suppressed, and eternal peace reigns over the world. In this respect, the different paradises resemble each other closely.

Again, some differences in how this state is achieved indicate change in real-world circumstances: UFO religions advocate the role of science, new technologies, and extraterrestrials, whereas the Bible only talks about God. Thus, a belief in scientific progress is only typical of UFO religions and it affects the picture of how the paradisiacal circumstances are gained. This contrast is not surprising. Science in its contemporary form was generally unknown in the biblical world and modern technological achievements were certainly not familiar to biblical writers.

We must keep in mind, however, that UFO religions partially derive from Christianity and thus use biblical imagery as a reference. Thus, some likenesses derive from the use of the Bible as a source in UFO religions. Indeed, many features, such as the Jews as the chosen people, or the importance of Jesus as a prophet (or as an influential extraterrestrial) have found their way into the paradises of UFO religions. The tendency to provide a detailed picture of natural settings is not passed down, however; it is replaced with a general level illustration. At the same time, the paradises of UFO religions remain more anthropocentric than their biblical counterparts emphasizing the importance of cultural settings at the expense of natural environment.

Discussion

The results of this study indicate that in constructing an imaginary paradisiacal world people tend to stick to the factual content directly derived from the surrounding nature and culture. The analyses show that paradise representations depend in fundamental ways on the circumstances and knowledge of the physical world. The idealized environment and the no-threats type of image are similar in both studied data sets, however. The differences reflect the changes in the real world. At the same time, the nature of human existence has remained essentially the same.

The cultural environment plays a far more extensive role in UFO religions. It is notable that most specific references to the nature of paradise are actually references to how the inhabitants of paradise live and what kinds of resources are available. Specific references to natural settings without their direct significance to humans are almost absent. This is explained by the alienation from the natural environment typically experienced by urbanized people (Wolff & al. 1999). Cultural knowledge has become a more important building material of paradises as it has become the most significant type of lore. What can be inferred from the rather generic descriptions of the natural settings of UFO religions, is that they probably still follow the general outlines set by innate environmental preferences.⁸ Bright colours, flowers, water, animals, and trees still seem to be constituents of paradisiacal environments. Obviously, the lack of knowledge of nature that restrains the creators of the

⁸ See the results of study 1 for details and further indications of what kind of environment is spontaneously perceived as "ideal" by contemporary Western people.

paradises of UFO religions from describing the natural settings in detail, does not prevent them following intuitive expectations of how the paradisiacal environment would look in general.

UFO believers seem to borrow supernatural entities from existing folklore and religious traditions. According to Rodney Stark and William Bainbridge (1987) this seems to be a recurrent trend among religious traditions in general. The adoption of the symbols of previously established religions helps new traditions to establish their own credibility (Stark & Bainbridge 1987). Following this argument, the paradise imagery along with other symbolism should be based on existing imagery and symbolism. Indeed, the paradise imagery of UFO religions owes much not only to the actual environment but to (religious) literature as well. The supernatural agents that appear in the paradises of UFO believers, appear in literature and folklore well before UFOs. That said, the establishment of a modern paradise seems to be dependent on previous establishments. This is characteristic not only of UFO religions, however. Biblical paradises were also, partially at least, adoptions of the mythological themes of neighbouring peoples (cf. e.g., Heidel 1951; 1954; Penglase 1994; Wyatt 2005).

In a cognitive sense, the paradise representations in my data are ontologically intuitive in most respects, just as my hypothesis predicts. They also follow the outlines set by the surrounding environment and therefore seem to depend on knowledge about the actual world. Counterintuitiveness, as already noted in chapter 4, does not seem to play any major role in paradisiacal environments. Nevertheless, paradise is always established by a supernatural counterintuitive agent, or agents, thus separating paradises from the real world. Interestingly, there seems to be no major contradiction between this data and the preferences analysed in study 1. Thus, it is apparent that the dichotomy between theological and intuitive conceptions there is not as sharp as with supernatural agents. Paradise representations seem to be both theologically correct and intuitive although they remain concrete rather than abstract in both cases, which is usually not case with supernatural agents.

In evolutionary terms, the paradisiacal environments in my data are adapted to human needs rather than *vice versa*. This theme is in view in both data sets and, as already suggested in chapter 4, it is dominant throughout the paradise representations. The struggle for survival ceases to exist as circumstances become evolutionarily ideal in paradise.

From the viewpoint of environmental psychology, the results indicate that familiarity is a dominant property of a paradise irrespective of time and space. The studies discussed in chapter 4 have shown that familiarity usually enhances preference. The results of this study suggest that this applies to imaginary worlds as well. This aspect was more visible in biblical paradises due to more detailed descriptions. However, as already argued, the alienation from nature that has occurred during the 20th century in the west as a result of heavy urbanization has had a profound impact on the nature of everyday knowledge (Wolff & al. 1999). As nature has lost its significance as a direct source of supply, nature no longer represents the most considerable element in the surroundings but is replaced by a more relevant and immediate cultural environment. Thus, when the significance is lost in the real world, it is also lost in the imaginary world.

While these results indeed look promising, we should keep in mind that this study is by no means exhaustive. I have analysed only two sets of ideas of paradisiacal circumstances here. The primary purpose was to address the argument of the hypothesis that paradise representations are shaped by the actual circumstances and that the paradise imagery

varies depending on changes in circumstances. Still, I hope I have managed to make the argument clearer here. By looking at Table 3.1 in chapter 3 and the detailed analyses of this study together, it is evident that real world circumstances indeed play a major role in shaping paradise representations.

7 Summary and conclusions

The starting point and the principal argument of this work was that the possible repertoire of paradise representations is cognitively constrained and the mechanisms responsible for the constraints are originally evolved for tasks related to coping with the environment rather than with supernatural worlds. After theorizing and testing the hypothesis, the picture has hopefully become sharper and we are now able to observe it from different perspectives.

Key findings

Generally, the hypothesis appears to be supported by the data. In study 1, environmental preferences seemed to affect how idealized landscape is perceived: the idea of an ideal environment followed the general outlines of environmental preferences. As paradises go, there is always a companion present, which has not been a consistent finding of previous studies in environmental psychology. Unbuilt environments have been preferred more than their built counterparts. However, recent evidence suggests that slightly modified environments with cues to care (e.g., parks) may be preferred most by contemporary people (e.g., Nassauer 1995; Williams & Cary 2002), which is in line with the findings of study 1 as well with paradises, which always contain traces of human modification despite the emphasis on natural elements.

When it comes to theological correctness, it is evident that theologically correct and intuitive conceptions of paradise do not differ much. The biblical paradises analysed in study 2 and those catalogued in chapter 3 are still basically intuitive. Thus, the contrast that appears between the theological and intuitive ideas of supernatural agents is not present in paradise representations. While religious traditions include abstract ideas concerning the final destiny of man, it seems that traditions recurrently hold belief in paradise representations that are generally both intuitive and theologically correct.

The journey has also revealed some surprises. Although the data derived from past cultures and religious traditions suggest that paradises are primarily natural environments, their modern counterparts refer to technological and urban ideals rather than wildlife, indicating that the details do depend on the location of the actual environment in time and space. This suggests that environmental preferences are content-wise slightly more flexible than some previous studies indicate and the importance of familiarity is greater than the environmental preferences alone would suggest. Even so, the typical preferred properties of a scene, such as visibility and shelter, still shape the preference for urban environments

in a similar manner to natural environments (e.g., Nasar 1992; Talbot 1992). Thus, it is evident that environmental preferences primarily serve as the frames of reference within which the human mind tries to optimize its responses to those circumstances.

In the data presented in study 2, this was indeed shown. Familiarity is among the significant predictors of the content of paradise representations. Moreover, the transition from nature-oriented to culture-oriented paradises was visible even BCE, and more so in the 20th century. It also follows the urbanization process that took place during the 19th and 20th century. Thus, the everyday environment of believers seems to have a major impact on paradise imagery, again indicating the important impact of familiarity. Alienation from nature reduces descriptions of natural conditions. This seems to happen under the constraints of folk-taxonomical knowledge, however, meaning that intuitive general-level classifications such as separation of mammals and birds still directs the construction of the individual natural elements of paradise representations (cf. Medin & Atran 1999).

In addition to the natural elements, many of the cultural elements present in paradises were constantly highly valued by the cultures in which the respective paradise representations were born. Again, only familiar elements tend to be found in paradises. Thus, the contrast between the paradisiacal abundance and actual harshness was indeed marked. Similarly, the emphasis on the positive quality of human life without any dangers and difficulties was contradictory with real-world life and conditions. Paradises were and are constructed within the boundaries defined by environmental preferences, familiarity, and contrast.

The results of the study 1 then raise another issue, that is, the role of the brain in the process of making up paradise representations. Paradises, like supernatural agents, are unreachable, and elusive at best being therefore outside the everyday experience and information our brain is adapted to process. But the results of the cognitive science of religion and neuroscience strongly suggest that supernatural conceptions are not built by some special structure in our mind. Instead, they are the result of the coordinated activity of many automatic mental modules (for reviews, see Boyer 2003; Tremblin 2006). Thus, the question is primarily about which mental modules are triggered.

While supernatural agents are primarily products of the mental network consisting of agency-detection, contagion-avoidance, and social exchange (Boyer 2003), supernatural environments require more processing in the mind. The environment is a whole that consists of multiple agents and objects. Agents can be further divided into human and non-human agents. Similarly, objects can be divided into animate and inanimate objects that roughly represent either resources or threats. An environment is also a landscape that looks different depending on the location of an observer. Thus, an environment is a great deal more complex than a single agent and the perception of an environment is cognitively more complicated.

Despite the complexity, agency-detection is still applicable to most individual elements of an environment as the agents are a crucial part of that environment. The same is true of contagion-avoidance which is used for judging optimal behavioural responses. Thus, there is a need for just one more evaluation mechanism to make the observation of an environment possible, that is, the environmental preference mechanism discussed in the theoretical part of this work. This mechanism works automatically and it continuously evaluates the environment around us. No awareness of its actions is needed and it is only visible to outsiders in the form of possible spontaneous emotional and behavioural responses. As the

mental mechanisms processing information related to agents, environmental preferences are adapted to respond to problems primarily related to one's survival from the point of view of external resources and threats.

The results of study 1 indicate that the preference pattern of the properties typical of paradises follows the pattern found in previous studies of environmental psychology. There were no signs that religiosity would affect the preference pattern in any predictable or significant way. Therefore, it appears that the preference pattern behind the paradise representations is of secular origin and works in a similar manner irrespective of a possible religious dimension. Thus, it seems that there are no dedicated mental modules that would be needed to produce mental representations of paradises. In addition to the supernatural agents, supernatural environments can also be produced in the mind by using mechanisms and modules originally adapted to tasks of a different kind.

The evidence in study 1 is not conclusive, however. There are still insufficiently examined details, such as the potential limits of manipulative elements that can enhance a preference for otherwise mediocre scenes. Some hints of this are found in the results of study 1. Bright colours can by themselves enhance preference, for example. Thus, future studies should concentrate on these issues instead of the general-level preferences which were the object of my interest here.

According to the previous studies in the cognitive science of religion, the hallmark of supernatural (agents) is counterintuitiveness. Supernatural agents constantly violate one or very few intuitive ontological expectations, which separates them from ordinary agents and thus makes them special. Unexpectedly, this does not seem to apply to paradise representations. Many paradises are natural, albeit ideal, environments without specific, recurrent counterintuitive elements. While many elements of paradises are stretched to near non-naturalness (such as eternal light or pasturing predators), they are not counterintuitive. If this was systematically true of paradise representations, their supernatural nature would become questionable. The data analysed in the study 2 suggests that this indeed may be the case.

The catch is that paradises are never accessible without an intervention of a supernatural event or agent. Paradises are always separated from this world by a supernatural force. Access to paradise is invariably preceded by an act of a supernatural agent even if the paradise is established on Earth and in this life. A counterintuitive element is therefore always present in paradise representations although the final environment itself may be ontologically intuitive. On the other hand, in most paradises some of the elements are counterintuitive. Humans who can transform themselves into butterflies, live forever, or can reincarnate, are good examples. Yet the violation of ontological expectations seems to be restricted to agents; violations occur far more rarely in other elements of paradises. Why?

This question is an extremely interesting one, but also raises so many issues that I will not be able to answer it comprehensively here as it would require another extensive study. However, I would like to speculate within the limits and knowledge provided by this work. My suggestion is that the answer may lie low within the nature of agents compared with other elements of an environment. Not only are other agents important actors in an environment, they are also the most dynamic ones. They go here and there; they are sometimes dangerous and sometimes not. Interacting with agents is more complex and reciprocal than any other type of environmental interaction. Thus, they must be constantly

observed and identified in order to maintain the sufficient level of knowledge of their state as a part of an environment. As they are dynamic by nature, it is more difficult to gather reliable information about them, however. Usually information about agents must be assembled and compiled from minimal cues. This, in turn, has led to the inductive inferential processes that eventually start to produce false positives, some of which we know as supernatural agents (Guthrie 1980; 1993; 2002).

This is not generally true of more static elements such as trees and rivers, however. The fundamental difference is that the static elements are not capable of moving. Consequently, there is no need to infer their presence based on minimal cues. Static elements can often be observed better, and acquiring information about them is rather easy. Thus, the pressure to acquire information about them however unreliable is not generally necessary, at least to a similar extent compared with agents.

As the mind has evolved to respond better to the challenges of the environment, in the case of static objects induction has not necessarily provided evolutionary advantages. Selective pressures have not directed the evolving mind to trigger inductive inferences for every object. Only in those cases where imagining false positives and reacting to them has actually helped one to survive have such inferences been promoted by natural selection. Thus, as the natural elements other than agents are not as likely to be objects of inductive inference, the mind has probably not evolved to handle this type of information in a similar manner than information related to agents. While some paradise representations show that humans are perfectly capable of creating ideas of ontologically odd trees and other plants, for example, these violations are not a general trend in paradise representations. The weaker evolution-based induction tendency could explain this difference rather well.

Speculations aside, let me now summarize the findings of this work. According to the hypotheses and results presented, the following notions apply to paradise representations (see also Fig. 7.1):

- Paradise representations are imaginary realizations of an idealized environment that reflect the environments in which they are born. Their creation process is primarily guided by innate, species-specific environmental preferences that at the same time regulate and constrain the possible repertoire of paradisiacal realms.
- Paradise representations are exaggerated by-products of mental mechanisms rather than real solutions to the problems of survival. Their attraction is based on the promise of solving all the problems and this triggers positive emotional responses. Moreover, their success over competitors is due to their ability to implant themselves in the evolved architecture of the human mind.
- Access to paradises always requires an interference of a supernatural agent or a supernatural event, which also distinguishes them from other utopian worlds and other imaginary representations. This further enhances the memorability of paradise representations. The presence of counterintuitive elements in the paradisiacal environment is not axiomatic, however, and it is generally restricted to agents.

- No special mental modules are needed to create paradise representations. Mental modules evolved to solve the problems of actual circumstances are fully capable of creating paradise representations by rearranging and combining information.
- Theologically correct and intuitive paradise representations are not generally different from each other. While there are some abstract, theologically correct ideas of paradises in some traditions that are markedly different from intuitive paradises, belief in the intuitive type of paradise is usually held in spite of the existence of a theological counterpart.

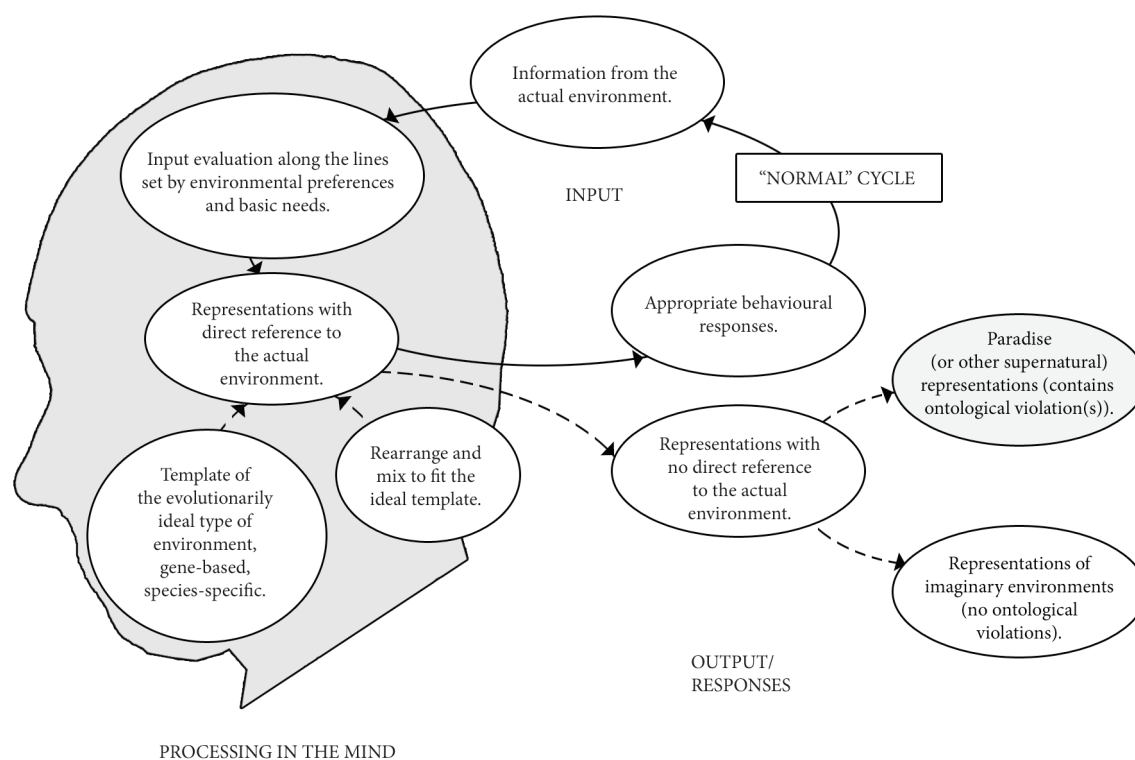


Figure 7.1 – The making of paradise representations. The “normal” cycle indicated by solid lines is the ordinary process of acquisition and processing of information from the environment. Dotted lines indicate the process of rearranging acquired and previously stored information into new representations with no direct parallel in the environment at hand. The template also serves as a point of reference for the normal evaluation of a scene.

Anyone who is familiar with paradise imagery has noticed that paradises are by and large quite natural environments. What has been less notable, however, is that evolution plays an indirect but major role in the development of paradise representations. While

evolution offers the tools, or the mechanisms of the mind, necessary for creating such representations, it is also the limiting factor. The study of the conceptions of supernatural agents has already shown us that it is not easy to exceed the limits of our own mind. The same seems to apply to supernatural environments. As powerful as the human mind can be, it is, in a way, a prisoner of its original functioning evolved in the course of time

Suggestions for further study

The purpose of this study was not only to try to find new results but also to serve as an opening. The issues of different aspects of the afterlife and, in a wider sense, supernatural environments have been largely omitted in the study of religion. So far, this has applied to the cognitive science of religion as well.

If we learn to understand how and why the representations of supernatural environments are developed in the mind, interesting research possibilities open up. For example, the question of how to gain access to a paradise has been a central theme in religions across the millennia. This has had secular consequences. Paradises have been used as instruments of power in the medieval Catholic Church, for example. Indulgences were collected from people who the church said could not go to heaven unless they had purified themselves from sin. It is difficult to see other reasons for this questionable business other than the exercise of power and money. Thus, belief in paradise may be utilized as a tool of manipulation.

Much more serious uses of paradises for manipulation purposes also exist. The access to paradise is often at least one of the motives connected with martyrdom. Furthermore, several cults and extremist wings of world religions use paradisiacal realms as promised prizes for certain actions. In extreme cases, this has led to mass suicides and other tragedies. While there are certainly other factors affecting the manifestation of such behaviour, the role of paradise beliefs in these cases could possibly be analysed along the lines proposed here. It would be possible to study, for example, if the uncertainty of real-world conditions promotes martyrdom as a way out of surrounding difficulties. It may turn out that the idea of gaining access to paradise is a more important factor in the psychology of an individual than has hitherto been thought. At this point, this is naturally mere speculation, however.

We should also remember that not all supernatural environments are pleasant ones. Many representations of supernatural environments are not comfortable at all. Representations of hells and netherworlds are, if not as common as paradises, widespread. At least the roles of environmental preferences and familiarity should be testable along the lines proposed in this work. It would certainly be interesting to know how much the architecture of the mind shapes representations of other types of supernatural environments.



Evolutionary considerations cannot take place without examining the adaptive values of behavioural traits. Although I have largely omitted these considerations here, the possibility of adaptiveness of belief in paradises should be studied in the future. While, according to my results, it seems that pursuing unreachable worlds is a by-product of

the adaptive functioning of the mind and therefore, from the adaptive standpoint, just vanity and a striving after wind, the answer may not be that simple. For example, belief in paradise may have a function that is a signal of one's commitment to his or her society and thus maintaining paradise beliefs indirectly would promote one's welfare (cf. Bulbulia 2004; Sosis & Alcorta 2003). Thus, belief in paradise may serve as a signal of commitment. As a solution for adaptive problems related to an individual's survival, it is difficult to see any adaptive advantage of spending one's resources on holding such beliefs, however. For the fact that paradise representations offer apparent solutions to other types of problems than social cohesion, I cannot see them as directly adaptive. Further study may change this opinion, of course, as currently there is not enough evidence to affirm or disclaim the adaptiveness of a belief in paradise.

At the beginning of this work, I found the current knowledge about paradise representations and supernatural environments in general insufficient. At the same time, major leaps have been taken elsewhere in the cognitive study of religion; the progress, however, has not been reflected in the study of the afterlife. Thankfully, the situation is changing. In addition to this study, there are current interesting projects concerning the afterlife and paradise beliefs in progress⁹ and I hope my work will further enhance the interest in this fascinating dimension of religious beliefs.

⁹ e.g., <http://evolution.binghamton.edu/religion/afterlife.html>

Appendix A – Structure and questions of the survey of Study I

Part	Q no.	Question/Details
Registration		General information, instructions, privacy policy, and passwords. Provided via an email message.
Log in and language selection		
Background information	B.1.	Sex
	B.2.	Year of birth
	B.3.	Nationality
	B.4.	Level of computer skills (three-point scale, used only to survey possible user interface issues)
Part 1 task		You will see a series of pictures representing landscapes. The pictures are shown on the screen for a short time*. After the picture has disappeared, you will be asked to rate the pleasantness of the scene in the picture on the scale of 1-7. Use the top row keys [of participant's keyboard] 1-7 to answer. If you experience that the scene was similar or very close to the environment of your dreams [that a participant just imagined according to previous instructions], give 7 points. Otherwise, use the scale from 1 to 6.
Part 1 questions*	1.1.	
	1.2.	

Part**Q no. Question/Details**

1.3.



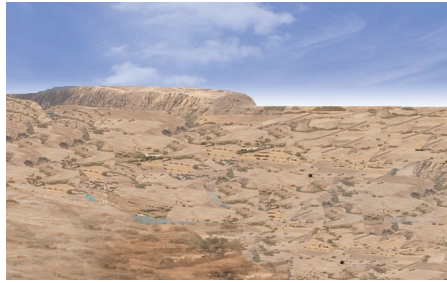
1.4.



1.5.



1.6.



1.7.



1.8.



Part**Q no. Question/Details**

1.9.



1.10.



1.11.



1.12.







1.13.



1.14.



Part	Q no.	Question/Details
	1.15.	
	1.16.	
	1.17.	
	1.18.	

Part 2 task

Which one of the following describes the environment of your dreams better?

Part 2 questions*

	Finnish		English		
	Option 1	Option 2	Option 1	Option 2	
	2.1.	Hämärä	Kirkas	Dusky	Bright
	2.2.	Kuuma	Viileä	Hot	Cool
	2.3.	Lämmin	Kylmä	Warm	Cold
Related to part 1	2.4.	Suojaisa	Avoim	Sheltered	Open
Related to part 1	2.5.	Autio	Asuttu	Uninhabited	Populated
	2.6.	Äänekäs	Hiljainen	Noisy	Quiet
Related to part 1	2.7.	Valoisa	Pimeä	Luminous	Dark
	2.8.	Ennustettava	Arvaamaton	Predictable	Unpredictable
Related to part 1	2.9.	Vehreä	Karu	Green	Harsh
	2.10.	Rauhallinen	Levoton	Peaceful	Restless

Part	Q no.	Question/Details	
Related to part 1	2.11.	Jännittynyt Tyyni Tense Calm	
	2.12.	Asuttu Ruuhkainen Populated Crowded	
	2.13.	Verkkainen Jännittävä Dull Exciting	
	2.14.	Aktiivinen Toimeton Active Idle	
Part 3 task	You will be asked if the word you see on the screen fits in your idea of the environment of dreams. That is, would you like to see X in the environment of your dreams. Answer yes or no.		
Part 3 questions*	Finnish	English	
Unrelated to paradise repres.	3.1.	Autoja Cars	
	3.2.	Suojaa Shelter	
	3.3.	Sotia Wars	
	3.4.	Lehtimetsiä Broad-leaved forests	
	3.5.	Surua Sorrow	
	3.6.	Eläimiä Animals	
Unrelated to paradise repres.	3.7.	Kauppoja Shops	
	3.8.	Kumppania Partner	
	3.9.	Nälkää Hunger	
Unrelated to paradise repres.	3.10.	Siltoja Bridges	
	3.11.	Kuolemaa Death	
	3.12.	Värikkäitä lintuja Colourful birds	
	3.13.	Sairauksia Diseases	
	3.14.	Havumetsiä Conifer forests	
	3.15.	Järviä Lakes	
	3.16.	Kukkia Flowers	
	3.17.	Käärmeitä Snakes	
	(Unrelated to paradise repres.)	3.18.	Vuoristoa Mountains
	(Unrelated to paradise repres.)	3.19.	Leirinuotiota Campfire
	3.20.	Hyönteisiä Insects	
	3.21.	Janoa Thirst	
	3.22.	Jokia Rivers	
	3.23.	Hedelmäpuita Fruit trees	
	3.24.	Valoa Light	
	3.25.	Pimeyttä Darkness	
	3.26.	Vettä Water	
	3.27.	Perhosia Butterflies	
	3.28.	Hienoja ruokia Choicest food	
	3.29.	Palatseja Palaces	
	3.30.	Ikuista elämää Eternal life	
Background information	B.5.	Childhood habitat (city, suburb dominated by terrace houses, suburb dominated by blocks/ apartment houses, town on the countryside, village on the countryside, sparsely populated area)	

Part	Q no.	Question/Details																																	
	B.6.	Completion habitat (e.g., home, work, public place, other)																																	
	B.7.	Personality type (risk-seeking, safety-seeking)																																	
Religiosity measurement (score from 1 to 5, 1 = strongly disagree, 5 = strongly agree)																																			
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* The exposure time was 1.5 seconds. The length of exposure was not told to participants.

Sources and references

Sources

BibleGateway.com, www-document. Last visited: January 21, 2008. URL: <http://www.biblegateway.com/>

Catechism of the Catholic Church (1995). New York: Doubleday.

ESV.org: Official website of the English Standard Version Bible, www-document. Last visited: January 21, 2008. URL: <http://www.esv.org/>

Festinger, Leon, Riecken, Henry W. & Schachter, Stanley (1956). *When prophecy fails. A social and psychological study of a modern group that predicted the destruction of the world.* New York: Harper & Row.

Jones, Aurelia Louise (2004). *Telos – Revelations of the New Lemuria, vol 1.* Mount Shasta: Mount Shasta Light.

Rael (2005). *Intelligent Design. Message from the designers.* Nova Distribution/ Raelian Foundation cop.

The Holy Bible,

English standard version.

New International version.

New Living translation.

The Ground Crew – Light workers who serve humanity and Mother Earth, www-document. Last visited: January 30, 2008. URL: <http://www.thegroundcrew.com/>

The Urantia Book, www-document. Last visited: August 22, 2008. URL: <http://www.urantia.org>

References

- Adobe Flash Player penetration*, www-document. Last visited: October 23, 2007. URL: http://www.adobe.com/products/player_census/flashplayer/version_penetration.html
- Aharoni, Yohanan & Avi-Yonah, Michael (1977). *The Macmillan Bible atlas, revised edition*. New York: Macmillan.
- Allan, J. A. (ed.) (1981). *The Sahara. Ecological change and early economic history*. Outwell: Middle East and North African Studies.
- Anquetil, Jacques (1995). *Silk*. Paris: Flammarion.
- Appleton, Jay (1975). *The Experience of Landscape*. London: Wiley.
- (1988). Prospects and refuges revisited. In: J. L. Nasar (ed.), *Environmental Aesthetics*, 27-44. New York: Cambridge University Press.
- Arnold, Dieter (1997). Temples. In: E. M. Myers (ed.), *The Oxford encyclopedia of archaeology in the Near East*, vol. 5, 165-179. New York: Oxford University Press.
- Asaro, Peter M. (2001). Cyborg. In: R. Rojas (ed.), *Encyclopedia of computers and computer history, vol. 1*, 219-221. Chicago: Fitzroy Dearborn.
- Atran, Scott (2002). *In gods we trust. The evolutionary landscape of religion*. New York: Oxford University Press.
- Atran, Scott & Norenzayan, Ara (2004). Religion's evolutionary landscape: Counterintuition, commitment, compassion, communion. *Behavioral and Brain Sciences*, 27, 713-770.
- Auffarth, Christoph (1999). Paradise now – but for the wall between. Some remarks on paradise in the Middle Ages. In: G. P. Luttikhuisen (ed.), *Paradise interpreted. Representations of Biblical paradise in Judaism and Christianity*, 168-179. Leiden: Brill.
- Bahat, Dan (1997). Jerusalem. In: E. M. Myers (ed.), *The Oxford encyclopedia of archaeology in the Near East*, vol. 3, 224-238. New York: Oxford University Press.
- Balling, John D. & Falk, John H. (1982). Development of visual preference for natural environments. *Environment and Behavior*, 14, 5-28.
- Bamberger, Bernard J. (1978 [1972]). Paradise. In: C. Roth (ed.), *Encyclopaedia Judaica*, vol. 13, 78-86. Jerusalem: Keter.
- Barr, James (1993). *The Garden of Eden and the hope of immortality*. Minneapolis, MN: Fortress.
- Barrett, H. Clark (2005). Adaptations to predators and prey. In: D. M. Buss (ed.), *The*

Handbook of evolutionary psychology, 200-223. New Jersey: Wiley.

Barrett, H. Clark & Kurzban, Robert (2006). Modularity in cognition: Framing the debate. *Psychological Review*, 213:3, 628-647.

Barrett, Justin L. (1998). Cognitive constraints on Hindu concepts of the divine. *Journal for the Scientific Study of Religion*, 37:4, 608-619.

– (1999). Theological correctness: Cognitive constraints and the study of religion. *Method & Theory in the Study of Religion*, 11, 325-339.

– (2000). Exploring the natural foundations of religion. *Trends in Cognitive Sciences*, 4:1, 29-34.

– (2004). *Why would anyone believe in God?* Walnut Creek, CA: AltaMira.

– (2007). Cognitive science of religion: What is it and why is it? *Religion Compass*, 1:6, 768-786.

– (2008). Keeping ‘science’ in the cognitive science of religion. In: J. Bulbulia, R. Sosis, E. Harris, R. Genet, C. Genet & K. Wyman (eds.), *The evolution of religion: Studies, theories & critiques*, 295-301. Santa Margarita, CA: Collins Foundation Press.

Barrett, Justin L. & Keil, Frank C. (1996). Conceptualizing a non-natural entity: Anthropomorphism in god concepts. *Cognitive Psychology*, 31, 219-247.

Barrett, Justin L. & Nyhof, Melanie A. (2001). Spreading non-natural concepts: The role of intuitive conceptual structures in memory and transmission of cultural materials. *Journal of Cognition & Culture*, 1, 69-100.

Bartholomew, Robert E. (2003). Signs of the secular times: The adaptive and transcendent function of UFOs in America. In: J. R. Lewis (ed.), *Encyclopedic sourcebook of UFO religions*, 77-101. New York: Prometheus.

Barton, John (2001). Introduction to the Old Testament. In: J. Barton & J. Muddiman (eds.), *The Oxford Bible commentary*, 5-12. New York: Oxford University Press.

Bass, George F. & Wachsmann, Shelley (1997). Ships and boats. In: E. M. Myers (ed.), *The Oxford encyclopedia of archaeology in the Near East*, vol. 5, 30-34. New York: Oxford University Press.

Bauckham, Richard (2001). Revelation. In: J. Barton & J. Muddiman (eds.), *The Oxford Bible commentary*, 1287-1306. New York: Oxford University Press.

Baumann, Hermann (1936). *Schöpfung und urzeit der menschen im mythus der afrikanischen völker*. Berlin: Andrews & Steiner.

Benjamins, Hendrik S. (1999). Paradisiacal life: The story of paradise in early church. In: G. P. Luttikhuisen (ed.), *Paradise interpreted. Representations of Biblical paradise in Judaism*

and *Christianity*, 153-167. Leiden: Brill.

Berenbaum, Michael & Skolnik, Fred (2007). Afterlife. In: M. Berenbaum & F. Skolnik (eds.), *Encyclopaedia Judaica, second edition*, vol. 1, 441-442. Detroit: Macmillan.

Berndt, Ronald M. & Berndt, Catherine H. (1988). *The world of the first Australians*. Canberra: Aboriginal Studies Press.

Bering, Jesse M. (2002a). Intuitive conceptions of dead agents' minds: The natural foundations of afterlife beliefs as phenomenological boundary. *Journal of Cognition and Culture*, 2, 263-308.

– (2002b). The existential theory of mind. *Review of General Psychology*, 6, 3-24.

– (2006). The folk psychology of souls. *Behavioral and brain sciences*, 29:5, 453-462.

Bering, Jesse M. & Bjorklund, David F. (2004). The natural emergence of reasoning about the afterlife as a developmental regularity. *Developmental Psychology*, 40, 217-233.

Binder, Jeffrey R., Frost, Julie A., Hammeke, Thomas A., Cox, Robert W., Rao, Stephen M. & Prieto, Thomas (1997). Human brain language areas identified by functional magnetic resonance imaging. *The Journal of Neuroscience*, 17:1, 353-362.

Bixler, Robert D. & Floyd, Myron F. (1997). Nature is scary, disgusting, and uncomfortable. *Environment and Behavior*, 29:4, 443-467.

Black, J. Anderson & Garland, Marge (1975). *A history of fashion*. London: Orbis cop.

Boyer, Pascal (1994). *The naturalness of religious ideas: A cognitive theory of religion*. Berkeley: University of California Press.

– (2001). *Religion explained. The evolutionary origins of religious thought*. New York: Basic Books.

– (2003). Religious thought and behaviour as by-products of brain function. *Trends in Cognitive Sciences*, 7, 119-124.

Boyer, Pascal & Ramble, Charles (2001). Cognitive templates for religious concepts: Cross-cultural evidence for recall of counter-intuitive representations. *Cognitive Science*, 25, 535-564.

Bolle, Kees W. (2005). Myth: an overview. In: Lindsay Jones (ed.), *Encyclopedia of religion, second edition*, vol. 9, 6359-6371. Detroit: Macmillan.

Brandon, S. G. F. (1962). *Man and his destiny in the great religions*. Manchester: Manchester University Press.

Breniquet, Catherine (2002). Animals in Mesopotamian art. In: B. J. Collins (ed.), *A history of the animal world in the ancient Near East*, 145-168. Leiden: Brill.

Brewer, Douglas J. & Friedman, Renée F. (1989). *Fish and fishing in ancient Egypt*. Cairo: The American University in Cairo Press.

Briggs, Katharine M. (1967). *The fairies in tradition and literature*. London: Routledge and Kegan Paul.

Brown, John P. (1971). Peace symbolism in ancient military vocabulary. *Vetus Testamentum*, 21:1, 1-23.

Bulbulia, Joseph (2004). The cognitive and evolutionary psychology of religion. *Biology and Philosophy*, 19, 655-686.

Bulbulia, Joseph, Sosis, Richard, Harris, Erica, Genet, Russell, Genet, Cheryl & Wyman, Karen (eds.) (2008). *The evolution of religion: Studies, theories, and critiques*. Santa Margarita, CA: Collins Foundation Press.

Buller, David J. (2005). *Adapting minds: Evolutionary psychology and the persistent quest for human nature*. Cambridge: MIT Press.

Burgess, Robert L. & MacDonald, Kevin (eds.) (2005). *Evolutionary perspectives on human development*. Thousand Oaks, CA: Sage.

Butzer, Karl W. (1995). Environmental change in the Near East. In: J. M. Sasson (ed.), *Civilizations of the ancient Near East*, vol. 1, 123-151. New York: Charles Scribner's Sons.

Campbell, Edward F. Jr. (1998). A land divided: Judah and Israel from the death of Solomon to the fall of Samaria. In: M. D. Coogan (ed.), *The Oxford history of the biblical world*, 274-319. New York: Oxford University Press.

Campbell, Joseph (1968). *The hero with a thousand faces*. Princeton: Princeton University Press.

– (1973). *The masks of God. Primitive mythology*. London: Souvenir Press.

Campbell, Neil A., Reece, Jane B. & Mitchell, Lawrence G. (1999). *Biology, fifth edition*. Menlo Park, CA: Addison Wesley Longman.

Carey, John (1982). The location of the otherworld in Irish tradition. *Eigse*, XIX:I, 37-43.

Casson, Lionel (1995 [1971]). *Ships and seamanship in the ancient world*. Baltimore: John Hopkins University Press.

Caubet, Annie (2002). Animals in Syro-Palestinian art. In: B. J. Collins (ed.), *A history of the animal world in the ancient Near East*, 211-234. Leiden: Brill.

Chapman, Rupert (1997). Weapons and warfare. In: E. M. Myers (ed.), *The Oxford encyclopedia of archaeology in the Near East*, vol. 5, 334-339. New York: Oxford University Press.

Charlesworth, Max, Morphy, Howard, Bell, Diane & Maddock, Kenneth (eds.) (1984). *Religion in aboriginal Australia: An anthology*. St. Lucia: University of Queensland Press.

Chase, Valerie, Hertwig, Ralph, & Gigerenzer, Gerd (1998). Visions of rationality. *Trends in Cognitive Sciences*, 2, 206-214.

Chomsky, Noam (1957). *Syntactic structures*. The Hague: Mouton.

– (1980). *Rules and representations*. New York: Columbia University Press.

Clamp, Peter & Powell, Mary (1982). Prospect-refuge theory under test. *Landscape Research*, 7:3, 7-8.

Cogan, Mordechai. (1998). Into Exile: From the Assyrian conquest of Israel to the fall of Babylon. In: M. D. Coogan (ed.), *The Oxford history of the biblical world*, 321-365. New York: Oxford University Press.

Coggins, R. (2001). Isaiah. In: J. Barton & J. Muddiman (eds.), *The Oxford Bible commentary*, 433-486. New York: Oxford University Press.

Comstock, W. Richard. 1972. *The study of religion and primitive religions*. New York: Harper & Row.

Coogan, Michael D. (1998). In the beginning. In: M. D. Coogan (ed.), *The Oxford history of the biblical world*, 3-31. New York: Oxford University Press.

Corbet, G. B. & Hill, John E. (1980). *A world list of mammalian species*. London: British Museum.

Courbon, Paul, Bosted, Peter, Chabert, Claude & Lindsley, Karen (1989). *Atlas of the great caves of the world*. St. Louis: Cave Books.

Cryer, Frederick (1995). Chronology: Issues and problems. In: J. M. Sasson (ed.), *Civilizations of the ancient Near East*, vol. 3, 651-664. New York: Charles Scribner's Sons.

Curtis, Adrian (2007). *The Oxford Bible atlas, fourth edition*. New York: Oxford University Press.

D'Andrade, Roy G. (1996). *Development of cognitive anthropology*. Cambridge: Cambridge University Press.

Damasio, Antonio R. (1999). *The feeling of what happens: Body and emotion in the making of consciousness*. New York: Harcourt Brace.

Darwin, Charles (1882). *Descent of man and selection in relation to sex, 2nd edition*. London: John Murray.

– (1897 [1859]). *On the origin of species by means of natural selection*. London: John

Murray.

– (1965 [1872]). *The expression of the emotions in man and animals*. Chicago: Chicago University Press.

Diamond, Jared (1998). *Guns, germs, and steel: A short history of everybody for the last 13000 years*. London: Vintage.

Dickman, Chris (1996). *Overview of the impacts of feral cats on Australian native fauna*. ANCA/ University of Sydney, cop.

Duntley, Joshua D. (2005). Adaptations to dangers from humans. In D. M. Buss (ed.), *The Handbook of Evolutionary Psychology*, 224-249. New Jersey: Wiley.

Eaton, Ruth (2002). *Ideal cities: Utopianism and the (un)build environment*. New York: Thames & Hudson.

Ekman, Paul (1992). Facial expressions of emotion: New findings, new questions. *Psychological Science*, 3, 34-38.

Eldredge, Niles (1986). Information, economics, and evolution. *Annual Review of Ecology and Systematics*, 17, 351-369.

Eliade, Mircea (1959). *The sacred and the profane: The nature of religion*. New York: Harcourt.

– (1963). *Myth and reality*. Willard R. Trask (transl.). San Francisco, CA: Harper & Row.

– (1971). *The myth of the eternal return: or, cosmos and history*. Transl. W. R. Trask. New York: Bollingen/Princeton University Press.

– (1978). *A History of Religious Ideas, vol 1*. Chicago: Chicago University Press.

– (1982). *A History of Religious Ideas, vol 2*. Chicago: Chicago University Press.

– (1983). *Patterns in comparative religion*. London: Sheed and Ward.

Elman, Jeffrey L., Bates, Elizabeth A., Johnson, Mark H., Karmiloff-Smith, Annette, Parisi, Domenico & Plunkett, Kim (1996). *Rethinking innateness: A connective perspective on development*. Cambridge MA: MIT Press.

Encyclopaedia Britannica (2008a). Swimming. In: *Encyclopaedia Britannica Online*. Last visited: February 10, 2008. URL: <http://search.eb.com/eb/article-7035>

– (2008b). Furniture. In: *Encyclopaedia Britannica Online*. Last visited: February 10, 2008. URL: <http://search.eb.com/eb/article-73705>

– (2008c). Scallop. In: *Encyclopaedia Britannica Online*. Last visited: February 11, 2008.

URL: <http://search.eb.com/eb/article-9066017>

– (2008d). Throne. In: *Encyclopaedia Britannica Online*. Last visited: February 11, 2008. URL: <http://search.eb.com/eb/article-9072306>

– (2008e). Squirrel. In: *Encyclopaedia Britannica Online*. Last visited: February 13, 2008. URL: <http://search.eb.com/eb/article-9069300>

– (2008f). Bear. In: *Encyclopaedia Britannica Online*. Last visited: February 13, 2008. URL: <http://search.eb.com/eb/article-9013932>

Fauna and flora of the Bible. (1972). London: United Bible Societies.

Feldman, Burton & Richardson, Robert D. Jr. (1972). *The rise of modern mythology*. Bloomington: Indiana University Press.

Feliks, Jehuda (2007). Frankincense. In: M. Berenbaum & F. Skolnik (eds.), *Encyclopaedia Judaica, second edition*, vol. 7, 212-213. Detroit: Macmillan.

Festinger, Leon, Riecken, Henry W. & Schachter, Stanley (1956). *When prophecy fails. A social and psychological study of a modern group that predicted the destruction of the world*. New York: Harper & Row.

Firestone, Reuven (2005). Jerusalem: Jerusalem in Judaism, Christianity, and Islam. In: L. Jones (ed.), *Encyclopedia of religion, second edition*, vol. 7, 4838-4841. Detroit: Macmillan.

Fischer, Mary Ann & Shrout, Patrick E. (2006). Children's liking of landscape paintings as a function of their perceptions of prospect, refuge, and hazard. *Environment and Behavior*, 38:3, 373-393.

Flora, Peter, Kraus, Franz & Pfenning, Winfried (1987). *State, economy, and society in western Europe 1815-1975, 2 vols*. Frankfurt: Campus Verlag.

Frese, Pamela R. (2005). Flowers. In: L. Jones (ed.), *Encyclopedia of religion, second edition*, vol 5, 3135-3137. Detroit: Macmillan.

Flusser, David (2007). Jesus. In: M. Berenbaum & F. Skolnik (eds.), *Encyclopaedia Judaica, second edition*, vol. 11, 246-251. Detroit: Macmillan.

Fodor, Jerry A. (1983). *The modularity of the mind*. Cambridge, MA: MIT Press.

Freud, Sigmund (1959). *Collected papers, vol. 2*. J. Riviere (transl.). New York: Basic Books.

Gafni, Isaiah (2007). Seleucid Era. In: M. Berenbaum & F. Skolnik (eds.), *Encyclopaedia Judaica, second edition*, vol. 18, 260. Detroit: Macmillan.

Gamble, Harry Y. (1992). Canon: New Testament. In: D. N. Freedman (ed.), *Anchor Bible Dictionary*, vol. 1, 852-861. New York: Doubleday.

Gazzaniga, Michael S. (1995). Principles of human brain organization derived from split-brain studies. *Neuron*, 14:2, 217-228.

Geary, David C. & Huffman, Kelly J. (2002). Brain and cognitive evolution: Forms of modularity and functions of the mind. *Psychological Bulletin*, 128:5, 667-698.

Giddens, Anthony (1997). *Sociology, third edition*. Cambridge: Polity Press.

Gilbert, Allan S. (1995). The flora and fauna of the ancient Near East. In: J. M. Sasson (ed.), *Civilizations of the ancient Near East*, vol. 1, 153-174. New York: Charles Scribner's Sons.

– (2002). The native fauna of the ancient Near East. In: B. J. Collins (ed.), *A history of the animal world in the ancient Near East*, 3-75. Leiden: Brill.

Glassé, Cyril (1989). al-Jannah. *The concise encyclopedia of Islam*, 206-207. San Francisco: Harper & Row.

Goldberg, Paul & Bar-Yosef, Ofer (1982). Environmental and archaeological evidence for climatic change in the southern Levant. In: J. L. Bintliff & W. van Zeist (eds.), *Palaeoclimates, palaeoenvironments, and human communities in the eastern Mediterranean region in later prehistory*, 399-414. BAR International Series 133.

Gomez, Luis O. (1996). *The land of bliss*. Honolulu: University of Hawai'i Press.

Gorsuch, Richard L. & McPherson, Susan E. (1989). Intrinsic/extrinsic measurement: I/E-revised and single-item scales. *Journal for the Scientific Study of Religion*, 28:3, 348-354.

Gould, Stephen J. & Lewontin Richard C. (1979). The spandrels of San Marco and the Panglossian paradigm: A critique of the adaptationist programme. *Proceedings of the Royal Society of London*, 205, 581-598.

Gray, John (1962). *Archaeology and the Old Testament world*. London: Thomas Nelson.

Grünschloß, Andreas (1998). "When we enter into my Father's spacecraft". Cargoistic hopes and new millenarian cosmologies in new religious UFO movements. *Marburg Journal of Religion*, 3:2, 1-24.

– (2003). When we enter into my father's spacecraft. Cargoistic hopes and millenarian cosmologies in new religious UFO movements. In: J. R. Lewis (ed.), *Encyclopedic sourcebook of UFO religions*, 17-42. New York: Prometheus.

– (2004). Waiting for the "Big Beam". In: J. R. Lewis (ed.), *The Oxford handbook of new religious movements*, 419-444. New York: Oxford University Press.

Gonce, Lauren O., Upal, Afzal M., Slone, Jason D. & Tweney, Ryan D. (2006). Role of context in the recall of counterintuitive concepts. *Journal of Cognition & Culture*, 6:3/4, 521-547.

- Guthrie, Stewart E. (1980). A cognitive theory of religion. *Current Anthropology*, 21: 181-203.
- (1993). *Faces in the clouds: A new theory of religion*. New York: Oxford University Press.
- (2002). Animal animism. In: I. Pyysiäinen & V. Anttonen (eds.), *Current approaches in the cognitive science of religion*, 38-67. London: Continuum.
- Gutmann, Joshua, Sperling, David S., Aberbach, Moses, Horodezky, Samuel Abba, Noy, Dov, Hirschberg, Haïm Zëw & al. (2007). Elijah. In: M. Berenbaum & F. Skolnik (eds.), *Encyclopaedia Judaica, second edition*, vol. 6, 331-337. Detroit: Macmillan.
- Hagemeyer, Ward J. M. & Blair, Michael J. (eds.) (1997). *The EBCC atlas of European breeding birds*. London: T & A. D. Poyser.
- Hagen, Edward H. (2005). Controversial issues in evolutionary psychology. In: D. M. Buss (ed.), *The handbook of evolutionary psychology*, 145-173. New Jersey: Wiley.
- Hamblin, William J. (2006). *Warfare in the ancient Near East to 1600 BC*. New York: Routledge.
- Hambling, David (2005). *Weapons grade: How modern warfare gave birth to our high-tech world*. New York: Carroll & Graf.
- Hamilton, William D. (1964). The genetical evolution of social behaviour: I and II. *Journal of Theoretical Biology*, 7, 1-32.
- Hancock, Peter B. J., Bruce, Vicki & Burton, Mike A. (2000). Recognition of unfamiliar faces. *Trends in Cognitive Sciences*, 4: 330-337.
- Hegel, Georg W. F. (1977 [1807]). *Phenomenology of spirit*. A. V. Miller (transl.). Oxford: Oxford University Press.
- Herzog, Thomas R., Herbert, Eugene J., Kaplan, Rachel, Crooks, C. L. (2000). Cultural and developmental comparisons of landscape perceptions and preferences. *Environment and Behavior*, 32: 323-346.
- Hawking, Stephen W. (1996). *A brief history of time*. New York: Bantam Books.
- Heesterman, Jan C. (2005). Brahman. In: L. Jones (ed.), *The Encyclopedia of religion, second edition*, 1024-1026, vol. 2. Detroit: Macmillan.
- Heidel, Alexander (1951). *The Babylonian Genesis*. Chicago: University of Chicago Press.
- (1954). *The Gilgamesh epic and Old Testament parallels*. Chicago: University of Chicago Press.
- Hesse, Brian (1995). Animal husbandry and human diet in the ancient Near East. In: J. M. Sasson (ed.), *Civilizations of the ancient Near East*, vol. 1, 203-222. New York: Charles

Scribner's Sons.

Hesse, Brian & Wapnish, Paula (2002). An archeozoological perspective on the cultural use of mammals in the Levant. In: B. J. Collins (ed.), *A history of the animal world in the ancient Near East*, 457-491. Leiden: Brill.

Hopkins, David C. (1997). Agriculture. In: E. M. Myers (ed.), *The Oxford encyclopedia of archaeology in the Near East*, vol. 1, 22-30. New York: Oxford University Press.

Houlden, Leslie (2001). Introduction to the New Testament. In: J. Barton & J. Muddiman (eds.), *The Oxford Bible commentary*, 830-844. New York: Oxford University Press.

Hultkrantz, Åke (1980). *The religions of the American Indians*. M. Setterwall (transl.). Berkeley, CA: University of California Press.

Irvin, Dorothy (1997). Clothing. In: E. M. Myers (ed.), *The Oxford encyclopedia of archaeology in the Near East*, vol. 2, 38-40. New York: Oxford University Press.

– (1997). Tents. In: E. M. Myers (ed.), *The Oxford encyclopedia of archaeology in the Near East*, vol. 5, 179-181. New York: Oxford University Press.

Jensen, Jeppe S. (1993). Is a phenomenology of religion possible? On the ideas of a human and social science of religion. *Method & Theory in the Study of Religion*, 5, 109-133.

– (2003). *The study of religion in a new key: Theoretical and philosophical soundings in the comparative and general study of religion*. Doctoral dissertation. Århus: University of Aarhus.

Jones, Jason (2001). Habitat selection studies in avian ecology: A critical review. *The Auk*, 118:2, 557-562.

Jones, Lindsay (2005). Judaism: An overview. In: L. Jones (ed.), *Encyclopedia of religion, second edition*, vol. 7, 4968. Detroit: Macmillan.

Junikka, Leo (2008). Personal communication.

Kaplan, Rachel & Kaplan, Stephen (1989). *The experience of nature. A psychological perspective*. New York: Cambridge University Press.

Kaplan, Stephen (1987). Aesthetics, affect and cognition. Environmental preference from an evolutionary perspective. *Environment and Behavior*, 19, 3-32.

– (1992). Environmental preference in a knowledge-seeking, knowledge-using organism. In: J. H. Barkow, L. Cosmides & J. Tooby (eds.), *The adapted mind. Evolutionary psychology and the generation of culture*, 581-598. New York: Oxford University Press.

Kaplan, Stephen & Kaplan, Rachel (1982). *Cognition and environment: Functioning in an uncertain world*. New York: Praeger.

-
- Kasulis, Thomas (2005). Nirvāna. In: L. Jones (ed.), *Encyclopedia of religion, second edition*, vol. 10, 6628-6635. Detroit: Macmillan.
- Kelly, Michael H. & Keil, Frank C. (1985). The more things change...: Metamorphoses and conceptual structure. *Cognitive Science*, 9, 403-416.
- King, Ursula (1984). Historical and phenomenological approaches to the study of religion: Some major developments and issues under debate since 1950. In: F. Whaling (ed.), *Contemporary approaches to the study of religion*, vol 1. Berlin: Mouton.
- Kohn, Livia (2005). Dao and De. In: Lindsay Jones (ed.), *The Encyclopedia of religion, second edition*, 2172-2175, vol. 4. Detroit: Macmillan.
- Kolars, John F. & Mitchell, William A. (1991). *The Euphrates river and the southeast Anatolia development project*. Carbondale: Southern Illinois University Press.
- Korpela, Kalevi M., Klemettilä, Terhi, Hietanen, Jari K. (2002). Evidence for rapid affective evaluation of environmental scenes. *Environment and Behavior*, 34: 634-650.
- Kōtatsu, Fujita (1987). Pure and impure lands. In: M. Eliade (ed.), *The Encyclopedia of Religion*, vol 12, 90-91. Transl. K. K. Tanaka. New York: Macmillan.
- Kruglanski, Arie W. (1989). *Lay epistemics and human knowledge: Cognitive and motivational bases*. New York: Plenum.
- Kuniholm, Peter I. (1997). Wood. In: E. M. Myers (ed.), *The Oxford encyclopedia of archaeology in the Near East*, vol. 5, 347-349. New York: Oxford University Press.
- Kuper, Adam (1988). *The invention of primitive society: Transformations of an illusion*. London: Routledge.
- LaBianca, Oystein S. (1997). Pastoral nomadism. In: E. M. Myers (ed.), *The Oxford encyclopedia of archaeology in the Near East*, vol. 4, 253-256. New York: Oxford University Press.
- Laland, Kevin N. & Brown, Gillian R. (2002). *Sense and nonsense: Evolutionary perspectives on human behaviour*. Oxford: Oxford University Press.
- Lamarck, Jean-Baptiste (1907 [1809]). *Philosophique zoologique*. Paris, cop.
- Landes, Richard (2006). Millenarianism and the dynamics of apocalyptic time. In: K. G. C. Newport & C. Gribben (eds.), *Expecting the end. Millennialism in social and historical context*, 1-23. Waco, Texas: Baylor University Press.
- Lawson, E. Thomas & McCauley, Robert N. (1990). *Rethinking religion: Connecting cognition and culture*. Cambridge: Cambridge University Press.
- Lecker, Michael (2007). Muhammad. In: M. Berenbaum & F. Skolnik (eds.), *Encyclopaedia Judaica, second edition*, vol. 14, 601-605. Detroit: Macmillan.

Lévi-Strauss, Claude (1963). *Structural anthropology*. C. Jacobson (transl.). New York: Basic Books.

Levine, Amy-Jill (1998). Visions of kingdoms. From Pompey to the first Jewish revolt. In: M. D. Coogan (ed.), *The Oxford history of the biblical world*, 467-514. New York: Oxford University Press.

Lewicki, Pawel, Hill, Thomas & Czyzewska, Maria (1992). Nonconscious acquisition of information. *American Psychologist*, 47:6, 796-801.

Lewis, James R. (1994). *Encyclopedia of afterlife beliefs and phenomena*. Detroit: Gale.

– (2003a). Introduction. In: J. R. Lewis (ed.), *Encyclopedic sourcebook of UFO religions*, 9-14. New York: Prometheus.

– (2003b). The Raelian movement. In: J. R. Lewis (ed.), *Encyclopedic sourcebook of UFO religions*, 489-496. New York: Prometheus.

Liddell, Henry G. (1996). *A Greek-English lexicon*. Oxford: Clarendon.

Lieberman, Matthew D., Gaunt, Ruth, Gilbert, Daniel T. & Trope, Yaacov (2002). Reflection and reflexion: A social cognitive neuroscience approach to attributional inference. *Advances in Experimental Social Psychology*, 34, 199-249.

Lindow, John (2001). *Handbook of Norse mythology*. Santa Barbara: ABC-Clío.

Lorenz, Konrad (1966). *On aggression*. London: Methuen.

Maguire, Eleanor A., Gadian, David G., Johnsrude, Ingrid S., Good, Catriona D., Ashburner, John, Frackowiak, Richard S. J., & Frith, Christopher D. (2000). Navigation-related structural change in the hippocampi of taxi drivers. *Proceedings of the National Academy of Sciences*, 97, 4398–4403.

Manktelow, Ken (1999). *Reasoning and thinking*. Hove: Psychology Press.

Martin, Penny & Olds, Margaret (eds). (2006). *Geographica*. Transl. J. Harju, O. Kaskinen, J. Kostamo, M. Lantz, O. Ruth, H. Seppä, M. Tammilehto, A. Tiitta, M. Tikkanen & S. Vaalgamaa. Köln: Könenmann.

McCauley, Robert N. (2001). Ritual, memory, and emotion: Comparing two cognitive hypotheses. In: J. Andresen (ed.), *Religion in mind: Cognitive perspectives on religious belief, ritual, and experience*, 115-140. Cambridge: Cambridge University Press.

McNamara, Patrick (2001). Religion and the frontal lobes. In: J. Andresen (ed.), *Religion in mind: Cognitive perspectives on religious belief, ritual, and experience*, 237-256. Cambridge: Cambridge University Press.

Medin, Douglas L. & Atran, Scott (eds.) (1999). *Folkbiology*. Cambridge, Mass.: MIT

Press.

Melton, J. Gordon (1995). The contactees: A survey. In: J. R. Lewis (ed.), *The gods have landed. New religions from other worlds*, 1-13. Albany, NY: State University of New York Press.

Miller, James I. (1969). *The spice trade of the Roman empire*. Oxford: Clarendon.

Mithen, Steven (1996). *The prehistory of the modern mind: The cognitive origins of art, religion, and science*. New York: Thames & Hudson.

Moorey, Peter R. S. (1991). *A century of biblical archaeology*. Cambridge: Lutterworth.

– (1994). *Ancient Mesopotamian materials and industries: The archaeological evidence*. Oxford: Clarendon.

Moynihan, Elizabeth B. (1979). *Paradise as a garden*. New York: George Braziller.

Nasar, Jack L. (1992). Visual preferences in urban street scenes: A cross-cultural comparison between Japan and the United States. In: J. L. Nasar (ed.), *Environmental aesthetics: Theory, research & applications*, 260-274. New York: Cambridge University Press.

Nassauer, Joan I. (1995). Messy ecosystems, orderly frames. *Landscape Journal*, 14:2, 161-170.

New, Joshua, Cosmides, Leda & Tooby, John (2007). Category-specific attention for animals reflects ancestral priorities, not expertise. *Proceedings of the National Academy of Sciences*, 104:42, 16598-16603.

Närhi, Jani (2008). Beautiful reflections. The cognitive and evolutionary foundations of paradise representations. *Method & Theory in the Study of Religion*, 20:4, 339-365.

O’Cathasaigh, Tomás (1978). The semantics of Síð. *Éigse XVII:II*, 137-155.

O’Rahilly, Thomas F. (1946). *Early Irish history and mythology*. Dublin: Dublin Institute of Advanced Studies.

Oded, Bustanay & Rabinowitz, Louis (2007). Ammon, Ammonites. In: M. Berenbaum & F. Skolnik (eds.), *Encyclopaedia Judaica, second edition*, vol. 2, 83-87. Detroit: Macmillan.

Ogden, Jack (1982). *Jewellery of the ancient world*. London: Trefoil.

Orians, Gordon H. & Heerwagen, Judith H. (1992). Evolved responses to landscapes. In J. H. Barkow, L. Cosmides, J. Tooby (eds.), *The adapted mind: Evolutionary psychology and the generation of culture*, 555-579. New York: Oxford University Press.

Panksepp, Jaak, Moskal, Joseph R., Panksepp, Jules B. & Kroes, Roger A. (2002). Comparative approaches in evolutionary psychology: Molecular neuroscience meets the mind. *Neuroendocrinology Letters*, 23, 105-115.

Panksepp, Jaak & Panksepp, Jules B. (2000). The seven sins of evolutionary psychology. *Evolution and Cognition*, 6:2, 108-131.

Partin, Harry B. (2005). Paradise. In: L. Jones (ed.), *The Encyclopedia of religion, second edition*, 6981–6986, vol. 10. Detroit: Macmillan.

Partridge, Christopher (2003). Understanding UFO religions and abduction spiritualities. In: C. Partridge (ed.), *UFO religions*, 3-42. London: Routledge.

Peel, Murray C., Finlayson, Brian L. & McMahon, Thomas A. (2007). Updated world map of the Köppen-Geiger climate classification. *Hydrology and Earth System Sciences*, 11, 1633-1644.

Penglase, Charles (1994). *Greek myths and Mesopotamia*. New York: Routledge.

Penner, Hans H. (1989). *Impasse and resolution: A critique of the study of religion*. New York: Lang.

Pentikäinen, Juha (1995). *Saamelaiset. Pohjoisen kansan mytologia*. Helsinki: Suomalaisen Kirjallisuuden Seura.

Pinker, Steven (1994). *The language instinct: The new science of language and mind*. London: Allen Lane.

– (1997). *How the mind works*. New York: Norton.

Platt, Rutherford H. (1994). The ecological city: Introduction and overview. In: R. H. Platt, R. A. Rowntree & P. C. Muick (eds.), *The ecological city. Preserving and restoring urban biodiversity*, 1-20. Amherst, MA: University of Massachusetts Press.

Platvoet, J. G. (1982). *Comparing religions: A limitative approach. An analysis of Akan, Para-Creole, and IFO-Sananda rites and prayers*. The Hague: Mouton.

Pollock, Susan (1999). *Ancient Mesopotamia. The Eden that never was*. Cambridge: Cambridge University Press.

The poetic edda. Ursula Dronke (transl.) (1997). New York: Oxford University Press.

Potts, Daniel T. (1997). *Mesopotamian civilization. The material foundations*. London: Athlone.

Puhvel, Jaan (1988). *Comparative mythology*. Baltimore: John Hopkins.

Pulkkinen, Risto (2005). Sáiva. In U-M Kulonen, I. Seurujärvi-Kari, R. Pulkkinen (eds.), *The Saami: A cultural encyclopaedia*, 374-375. Helsinki: Suomalaisen Kirjallisuuden Seura.

Pyysiäinen, Ilkka (2001a). Cognition, emotion, and religious experience. In: J. Andresen

(ed.), *Religion in mind: Cognitive perspectives on religious belief, ritual, and experience*, 70-93. Cambridge: Cambridge University Press.

– (2001b). *How religion works: Towards a new cognitive science of religion*. Leiden: Brill.

– (2004a). Intuitive and explicit in religious thought. *Journal of Cognition & Culture*, 4:1, 123-150.

– (2004b). Phenomenology of religion and cognitive science: The case of religious experience. *Temenos*, 35-36, 125-153.

– (2009). *Supernatural agents: Why we believe in souls, gods, and buddhas*. New York: Oxford University Press.

Pyysiäinen, Ilkka, Lindeman, Marjaana, Honkela, Timo (2003). Counterintuitiveness as the hallmark of religiosity. *Religion*, 33, 341-355.

Racine, Albert (1988). *The historical encyclopedia of costume*. London: Studio Editions.

Ramage, Edwin S. (ed.) (1978). *Atlantis, fact or fiction?* Bloomington: Indiana University Press.

Reips, Ulf-Dietrich (2002). Standards for Internet-based experimenting. *Experimental Psychology*, 49:4, 243-256.

Renfrew, Jane M. (1995). Vegetables in the ancient Near East diet. In: J. M. Sasson (ed.), *Civilizations of the ancient Near East*, vol. 1, 191-202. New York: Charles Scribner's Sons.

Reynolds, Frank E. & Hallisey, Charles (2005). Buddha. In: L. Jones (ed.), *Encyclopedia of religion, second edition*, vol. 2, 1059-1071. Detroit: Macmillan.

Rode, Catrin, Cosmides, Leda, Hell, Wolfgang, Tooby, John (1999). When and why do people avoid unknown probabilities in decisions under uncertainty? Testing some predictions from optimal foraging theory. *Cognition*, 72, 269-304.

Root, Margaret C. (2002). Animals in the art of ancient Iran. In: B. J. Collins (ed.), *A history of the animal world in the ancient Near East*, 169-209. Leiden: Brill.

Rosen, Arlene M. (1997). Paleoenvironmental reconstruction. In: E. M. Myers (ed.), *The Oxford encyclopedia of archaeology in the Near East*, vol. 4, 201-205. New York: Oxford University Press.

Roth, Michael (2006). Validating the use of Internet survey techniques in visual landscape assessment – An empirical study from Germany. *Landscape and Urban Planning*, 78, 179-192.

Rothstein, Mikael (2003a). The rise and decline of the first-generation UFO contactees. A cognitive approach. In: J. R. Lewis (ed.), *Encyclopedic sourcebook of UFO religions*, 63-76. New York: Prometheus.

– (2003b). UFO beliefs as syncretistic components. In: C. Partridge (ed.), *UFO religions*, 256-273. London: Routledge.

Saler, Benson, Ziegler, Charles A. & Moore, Charles B. (1997). *UFO crash at Roswell. The genesis of a modern myth*. Washington D.C.: Smithsonian Institution Press.

Saliba, John A. (1997). Religious dimensions of UFO phenomena. In: J. R. Lewis (ed.), *The gods have landed. New religions from other worlds*, 15-64. Albany, NY: State University of New York Press.

Sand, Erik Reenberg (1999). Comparative religion: Between phenomenology and typology of religions. In: E. Reenberg Sand & J. P. Sørensen (eds.), *Comparative studies in history of religions: Their aim, scope, and validity*, 109-120. Copenhagen: Museum Tusulanum Press.

Sanders, James A. (1992). Canon: Hebrew Bible. In: D. N. Freedman (ed.), *Anchor Bible Dictionary*, vol 1, 837-852. New York: Doubleday.

Sass, Benjamin (1997). Jerusalem. E. M. Myers (ed.), *The Oxford encyclopedia of archaeology in the Near East*, vol. 3, 224-246. New York: Oxford University Press.

Schowalter, Daniel N. (1998). Churches in context. The Jesus movement in the Roman world. In: M. D. Coogan (ed.), *The Oxford history of the biblical world*, 517-559. New York: Oxford University Press.

Segal, Robert A. (1987). *Joseph Campbell: An introduction*. New York: Garland.

– (1999). *Theorizing about myth*. Amherst: University of Massachusetts Press.

Sharpe, Eric J. (1994). *Comparative religion: A history*. London: Duckworth.

Sibley, David (2000). *The North American bird guide*. Sussex: Pica Press.

Simpson, Jeffry A. & Campbell, Lorne (2005). Methods of evolutionary sciences. In: D. M. Buss (ed.), *The handbook of evolutionary psychology*, 119-141. New Jersey: Wiley.

Silverman, Irwin & Choi, Jean (2005). Locating places. In D. M. Buss (ed.), *The Handbook of Evolutionary Psychology*, 177-199. Hoboken, NJ: John Wiley.

Sjöblom, Tom (2004). Wordpower: Narratives, tradition, and religion. *Temenos*, 39-40, 185-208.

– (2007). Spandrels, gazelles, and flying buttresses: Religion as an adaptation or as a by-product. *Journal of Cognition & Culture*, 7:3/4, 293-312.

– (2008). Narrativity, emotions, and the origins of religion. In: J. Bulbulia, R. Sosis, E. Harris, R. Genet, C. Genet & K. Wyman (eds.), *The evolution of religion: Studies, theories & critiques*, 279-285. Santa Margarita, CA: Collins Foundation Press.

Slone, Jason, Gonce, Lauren, Upal, Afzal, Edwards, Kristin & Tweney, Ryan (2007). Imagery effects on recall of minimally counterintuitive objects. *Journal of Cognition & Culture*, 7:3/4, 355-367.

Smith, Steven M. & Vela, Edward (2001). Environmental context-dependent memory: A review and meta-analysis. *Psychonomic Bulletin & Review*, 8:2, 203-220.

Sosis, Richard & Alcorta, Candace (2003). Signaling, solidarity, and the sacred: The evolution of religious behavior. *Evolutionary Anthropology*, 12, 264-274.

Sperber, Dan (1985). Anthropology and psychology: Towards an epidemiology of representations. *Man*, 20, 73-89.

– (1994). The modularity of thought and the epidemiology of representations. In: L. A. Hirschfeld & S. A. Gelman (eds.), *Mapping the mind: Domain specificity in cognition and culture*, 39-67. Cambridge: Cambridge University Press.

– (1996). *Explaining culture. A naturalistic approach*. Cambridge, MA: Blackwell.

Sperber, Dan & Wilson, Deirdre (1995). *Relevance: Communication and cognition, second edition*. Padstow: Blackwell.

Sperber, Dan, Cara, Francesco, Girotto, Vittorio (1995). Relevance theory explains the selection task. *Cognition*, 57, 31-95.

Stark, Rodney (2007). *Discovering God: The origins of the great religions and the evolution of belief*. New York: HarperCollins.

Stark, Rodney & Bainbridge, William S. (1987). *A theory of religion*. New York: Lang.

Steinbauer, Friedrich (1979 [1971]). *Melanesian Cargo cults: New salvation movements in the South Pacific*. Max Wohlwill (transl.). London: George Prior.

Talbot, Janet F. (1992). Planning concerns relating to urban nature settings: the role of size and other physical settings. In: J. L. Nasar (ed.), *Environmental aesthetics: Theory, research & applications*, 290-299. New York: Cambridge University Press.

Tchernov, Eitan (1982). Faunal responses to environmental changes in the eastern Mediterranean during the last 20,000 years. In: J. L. Bintliff & W. van Zeist (eds.), *Palaeoclimates, palaeoenvironments, and human communities in the eastern Mediterranean region in later prehistory*, 105-131. BAR International Series 133.

Thurn, Richard W. (2005). Fountain. In: Lindsay Jones (ed.): *The Encyclopedia of religion, second edition*, vol. 5, 3177-3178. Detroit: Macmillan.

Tomasello, Michael (1999). *The cultural origins of human cognition*. Cambridge: Harvard University Press.

Tooby, John & Cosmides, Leda (1992). The psychological foundations of culture. In J. H. Barkow, L. Cosmides, J. Tooby (eds.), *The adapted mind: Evolutionary psychology and the generation of culture*, 19-136. New York: Oxford University Press.

Tremlin, Todd (2006). *Minds and gods: The cognitive foundations of religion*. New York: Oxford University Press.

Trivers, Robert L. (1971). The evolution of reciprocal altruism. *Quarterly Review of Biology*, 46, 35-57.

Trompf, Garry W. (2003). UFO religions and cargo cults. In: C. Partridge (ed.), *UFO religions*, 221-238. London: Routledge.

Tylor, Edward B. (1970 [1871]). *Religion in primitive culture*. Gloucester, Mass.: Peter Smith.

Ulrich, Roger S. (1983). Aesthetic and affective response to natural environment. In I. Altman & J. F. Wohlwill (eds.), *Behavior and the natural environment*, 85-125. New York: Plenum.

– (1986). Human responses to vegetation and landscapes. *Landscape and Urban Planning*, 13, 29-44.

United Nations (1971). *Demographic yearbook 1971*. New York: United Nations.

Uttal, William R. (2001). *The new phrenology: The limits of localizing the cognitive processes in the brain*. Cambridge, MA: MIT Press.

van der Leeuw, Gerardus (1963). *Religion in essence and manifestation*. New York: Harper & Row. 2 vols.

van Seters, John (2005). Moses. In: L. Jones (ed.), *The Encyclopedia of religion, second edition*, 6199–6204, vol. 9. Detroit: Macmillan.

van Zeist, Willem & Bottema, S. (1982). Vegetational history of the eastern Mediterranean and the Near East during the last 20,000 years. In: J. L. Bintliff & W. van Zeist (eds.), *Palaeoclimates, palaeoenvironments, and human communities in the eastern Mediterranean region in later prehistory*, 277-321. BAR International Series 133.

Varela, Francisco J., Thompson, Evan & Rosch, Eleanor (1993). *The embodied mind: Cognitive science and human experience*. Cambridge, MA: MIT Press.

Walker, Benjamin (1968). *Hindu world: An encyclopedic survey of Hinduism*. London: George Allen & Unwin. 2 vols.

Wallace, Howard N. (1985). *The Eden narrative*. Atlanta: Scholars Press.

Waller, James, Edwardsen, Mary & Hewlett, Martinez (2005). *Evolution: Evolutionism*.

In: L. Jones (ed.), *Encyclopedia of religion, second edition*, vol. 5, 2913-2917. Detroit: Macmillan.

Walter, Heinrich (1985). *Vegetation of the Earth and ecological systems of the geo-biosphere*. Berlin: Springer-Verlag.

Ward, Thomas B. (1994). Structured imagination: The role of category structure in exemplar generation. *Cognitive Psychology*, 27, 1-40.

Watts, John D. W. (1987). *Word biblical commentary: Isaiah 34-66*. Waco: Word Books.
WCMC – World Conservation Monitoring Centre (1992). *Global biodiversity: Status of the Earth's living resources*. London: Chapman & Hall.

Wenham, Gordon J. (1987). *Word biblical commentary: Genesis 1-15*. Waco: Word Books.

Werner, Edward T. C. (1961). *A Dictionary of Chinese mythology*. New York: Julian Press.

Whitehouse, Harvey (1995). *Inside the cult: Religious innovation and transmission in Papua New Guinea*. Oxford: Clarendon.

– (2000). *Arguments and icons: Divergent modes of religiosity*. Oxford: Oxford University Press.

– (2001). Transmissive frequency, ritual, and exegesis. *Journal of Cognition and Culture*, 1, 167-181.

– (2002). Modes of religiosity: Towards a cognitive explanation of the sociopolitical dynamics of religion. *Method & Theory in the Study of Religion*, 14, 293-315.

Whybray, R. N. (2001). Genesis. In: J. Barton & J. Muddiman (eds.), *The Oxford Bible commentary*, 38-66. New York: Oxford University Press.

Williams, George M. (2003). *Handbook of Hindu mythology*. Santa Barbara, CA: ABC CLIO.

Williams, Kathryn J. H. & Cary, John (2002). Landscape preferences, ecological quality, and biodiversity protection. *Environment & Behavior*, 34:2, 257-274.

Wilson, Edward O. (1975). *Sociobiology: The new synthesis*. Cambridge, MA: Belknap.

Wojcik, Daniel (2003). Apocalyptic and millenarian aspects of American UFOism. In C. Partridge (ed.), *UFO Religions*, 274-300. London: Routledge.

Wolff, Phillip, Medin, Douglas L. & Pankratz, Connie (1999). Evolution and devolution of folkbiological knowledge. *Cognition*, 73, 177-204.

Woodcock, David M. (1984). A functionalist approach to landscape preference. *Landscape Research*, 9:2, 24-27.

Wyatt, Nicolas (2005). *The mythic mind: Essays on cosmology and religion in Ugaritic and Old Testament literature*. London: Equinox.

Zajonc, Robert B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist*, 35, 151-175.

Zohary, Michael (1973). *Geobotanical foundations of the Middle East*, 2 vols. Stuttgart: Fischer.

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