

Bringing Brother Darwin into the fold

BIOLOGICAL EVOLUTION

TOWARD A RECONCILIATION OF
THE SCIENCE AND OUR FAITH*By William S. Bradshaw*

DO YOU BELIEVE IN EVOLUTION?" IN MY experience, the chance for positive dialogue to take place among Church members following such a beginning is not very good. The problem is that the word evolution elicits such a wide range of reactions that the discussants are rarely able to focus on a common concern long enough to achieve an understanding, let alone appreciation, of one another's positions. Because few people are neutral on the subject, hostility and ill feelings can sometimes crop up. This generates in many of us a real uneasiness if not fear of approaching the subject. LDS members often go out of their way to avoid the issue or tune it out.

I, for one, am not happy with this situation and would like to see it change. What follows, then, is a modest attempt to promote reasonable dialogue among committed Latter-day Saints, particularly students, about evolution.

Let me be candid at the outset about my own position: I am convinced evolution is a correct principle. If you limited me to a one-word answer to the standard opening question, I would have to reply, "Yes." Furthermore, I believe that evolution is compatible with the doctrines of the Church of Jesus Christ of Latter-day Saints and is not an enemy to faith.

I have proceeded, then, to divide the larger subject into smaller, "bite-sized" pieces. In this article, I identify the most important issues in the evolution controversy and



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frame them as questions. I respond with an initial brief answer and then discuss each at greater length. These are my own views. I am certainly not trying to represent a Church position, though I have tried to put the issues in the context of LDS theology as best I understand it.

Q: What is the scientific status of evolution? Is it legitimate to discount it as "just a theory"?

A: Evolution stands on very secure ground. It is the central and definitive principle of the science of biology. The hard data supporting it are numerous and varied. Evolution is as satisfying and compelling an explanation for the diversity of living things as gravity is for explaining the behavior of falling objects. In scientific parlance, the word "theory" does not mean an unsubstantiated speculation.

The statement "After all, evolution is just a theory" has muddied many a discussion. It is often quoted to advance the view that evolution need not be taken seriously because when all the facts are in, it will be shown as incorrect. Such arguments are based on the vernacular definition of the word "theory," namely, a guess, an opinion, an unproven assumption, a speculation without a basis in the real world, a second-class proposition near the bottom of the hierarchy between truth at the top and falsehood or fraud at the bottom.

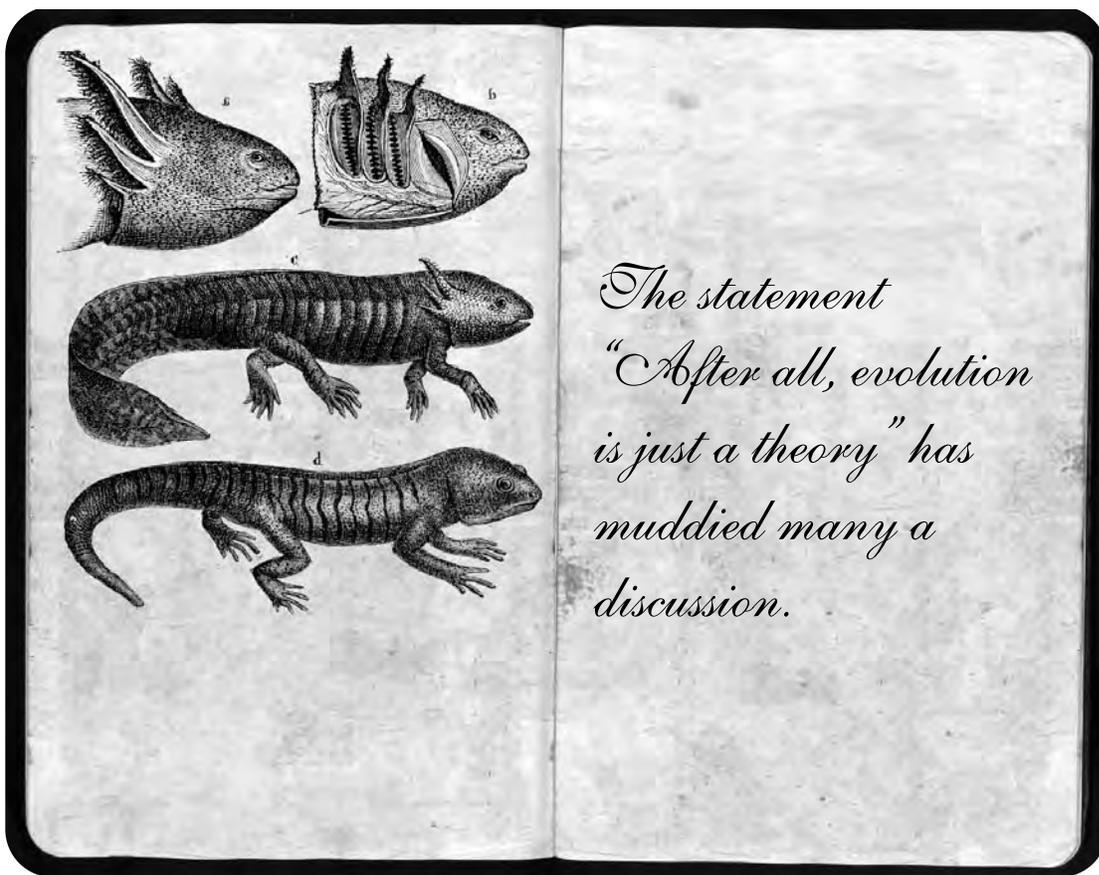
The evidence is overwhelming that this earth is extremely old (in terms of human years), that organisms have been living and dying on the earth during its billions of years, that our planet's diverse life forms are related by means of historical descent through time—with early species giving rise to later ones—and that the physical de-

velopment of humankind is part of this story. The catalogue of facts supporting these conclusions is enormous, with contributions coming from thousands of honest men and women in a wide variety of scientific specialties over many, many years.

To a scientist, the word “theory” usually means a broad proposition based on facts and observations, which has undergone testing, stood the test of time, and best explains and gives meaning to the phenomena under study, though it could be altered if a more adequate, more valid explanation comes along. In what company does evolution travel? What other propositions also bear the title “theory”? Gravity,

electricity, and atomic energy are also notions that have demonstrable consequences (are based on evidence) but are understood, explained, and applied in practical circumstances through theories. Consider, for example, “the law of gravity,” a common phrase for a universally accepted truth. In fact, there is no “law” of gravity. Properly, there is a “law of falling apples”—when released from a tree branch, they always go down, not up—hence a “law” based on repeated observations without exception. Gravity, however, is (in this formal sense) a theory—and as such, it is a much more important and useful idea than “law,” because the theory helps us understand *why* apples fall. We use this theory to inform the calculations of a host of human endeavors from baseball to space exploration. In this sense, evolution is indeed a theory and therefore merits the same respect as gravitational theory.¹

In short, if after extensive, successful scientific investigation, an idea is granted the title “theory,” this is high praise indeed. And in this sense, if people persist in undervaluing evolution as “only a theory,” then to be consistent, they must also be willing to state, “After all, LDS theology is only a theory,” because it, too, is a theoretical framework we use to explain our observations. We do not, however, hold the gospel suspect because it is a theoretical framework. Instead, having accepted evidence and experience from a variety of sources, we prize and apply the gospel in a way that is analogous to the way we prize and apply evolu-



tion—because it helps make sense of our existence in the long term and guides the practical conduct of our lives in the short term.

Q: At present, considerable debate and differences of opinion exist among evolutionary biologists. Does this indicate scientific uncertainty about the validity of evolution and leave me free to reject the idea?

A: No.

True, differences of opinion exist, but not about whether evolution occurred. The differences focus on how it took place. It is the mechanism of evolution, not its existence, that is under scrutiny. The vigorous exchange between scientists with different points of view is actually a healthy and necessary part of the process for achieving a clearer understanding of the mechanism.

Q: Who is a creationist? Is it correct to identify Latter-day Saints as creationists?

A: Though this may seem to be a straightforward question, the word “creationist”—like so many used in conversations about evolution—needs careful definition. As generally used in the context of the contro-

versy over teaching creationism in the public schools, Latter-day Saints are not creationists.

Putting one-word labels on people to categorize their positions on a certain issue is nearly always unfair and inaccurate. Often the term “creationist” is used carelessly, as if its meaning is self-evident. Thus a creationist is commonly thought to be one who believes in a divine Creator, and creationism is the designation for a religious person’s political stand. This notion is reinforced by the fact that creationism is nearly always positioned as the antithesis of evolution. Thus, a false dichotomy has been born, and creationism/evolution joins the ranks of white/black, good/evil, and theism/atheism as mutually exclusive alternatives at opposite ends of a single continuum. This polarization is not helpful.

Although Latter-day Saints accept Jesus Christ as the Creator of the earth, we cannot theologically and should not politically align ourselves with “creationism” as generally understood in the United States today. Our beliefs about the Creator and his methods are not compatible with the tenets of the ultra-conservative Protestant tradition espoused by contemporary “creationists.”² Unlike “creationists,” we do not demand a literal interpretation of all scriptural passages. We regard some biblical statements about the origin of life on earth as figurative. For example, we do not believe that the earth was created in six 24-hour days out of nothing. Also, in contrast to contemporary creationists, we do not pursue a political agenda calling for the insertion of religious belief into the science curriculum of the public schools.

I believe that the divine revelator and the inspired human writers intended the scriptural accounts of creation to convey general, spiritual aspects of the events, not a literal description of specifics. I am not, therefore, a creationist as the term is generally used today.

Q: Is creationism a science? Is evolution a religion?

A: Creationism (or Creation Science) including its latest reincarnation as “intelligent design” is not science but a religious/political movement. Evolution is the central, unifying theory of biology, not a religious principle.

To try to legitimize and promote acceptance of their religious views, contemporary creationists have labeled their dogma, “creation science.” However, they have neither experimental nor historical evidence for their assertions. Because creationism lacks a scientific methodology and empirical data for support, it is not science. There are certainly some people whose enthusiasm for evolution might be likened to religious zeal. Others doubtless feel that the evidence supporting evolution must invalidate religious faith. But evolutionary science has neither the intent nor

the means to substitute for or contradict religion.

Under the 1981 Balanced Treatment Act, Louisiana law required the teaching of creation science alongside evolution in the public schools. However, in 1987 the Supreme Court ruled that because that Act “advances a religious doctrine by requiring either the banishment of the theory of evolution from public school classrooms or the presentation of a religious viewpoint that rejects evolution in its entirety,” it violated the First Amendment’s prohibition on government promotion of religious beliefs.³

Q: Is evolution an atheistic concept? (Does evolution assume the absence of a divine Creator?)

A: Unfortunately, many commonly assume that evolutionary theory operates on the premise of the absence of a Creator. This is not true. No data generated by chemistry, biology, earth sciences such as geology and paleontology, or other related academic disciplines either validate or invalidate the conclusion that a divine Creator exists. Theological questions are outside the realm of science. True, some evolutionary scientists are atheists, but many others adhere to their religious faiths and maintain a strong belief in God.

The mistaken conflation of evolution and atheism is a result of a popular belief during the latter 19th century (after Darwin presented the case for natural selection as the mechanism for evolutionary change) that science and religion were at odds with each other, irreconcilable enemies destined to fight for the souls of men. The truth is that scientists, evolutionary biologists included, have neither the means nor (generally speaking) a motive to discount, invalidate, or repudiate religious faith. Consider the following statement from the concluding paragraph of an entry in a popular book about dinosaurs and other prehistoric creatures:

So, nowadays, although they argue about the details of what controls the rates or pattern of evolution, almost all biologists accept that extinction and evolution have taken place, and that Darwinian natural selection is the major mechanism underlying them. There is nothing in this that necessarily contradicts a belief in God or even in Divine intervention, for the record in the rocks could be interpreted as a testament to the way in which God chose to create the natural world.⁴

Q: If evolution is valid, does that mean that life originated “by chance”?

A: Let’s rephrase the question. “Could life have originated without the hand of God?” I believe the answer is no. “Could God have employed a mechanism for creation that depended on the random behavior of molecules and other probabilistic biochemical and bi-

ological events, confident that the outcome would be as he envisioned?" I believe the answer is yes. God would not have needed to intervene at each stage of the creation process in order to insure the eventual appearance of living organisms on the earth.

People whose view of creation is based on a totally literal interpretation of all the scriptural accounts have difficulty understanding how evolution could allow Deity a role. In contrast to the idea that God effected creation instantaneously, the scientific scenario of gradual change over billions of years, irregular patterns of appearances and extinction, and hereditary connections between apparently diverse organisms can seem directionless and precarious, as if the earth and its inhabitants are a chance occurrence.

But this problem is at least partly semantic. For example, when a chemist describes the random behavior of molecules, his nonchemist listener may develop the sense of a haphazard, purposeless event and, by extension, perhaps, of a world in which Deity is excluded. On the contrary, in large samples, random processes are predictable with very high precision, which means that their outcome could be understood, foreseen, and even utilized by Deity. In discussing evolutionary concepts, "chance," like several other important terms, needs to be carefully defined

I believe that if, during the early stages of the primeval earth, the Creators left matter to act for itself, its activity, though random, would still be predictable and its outcome foreseeable, at least in general outline. Viewed in this way, evolution is not an accidental or fortuitous process, but an inevitable one. Given a set of elements from which to construct molecules, cells, tissues, and organisms, and given air, water, and rock as environments in which organisms can live, evolution will fashion lungs and gills—wings, fins, and feet. Living things reflect both the properties of their raw matter and their environment. Thus the assembly of life, even a self-assembly, could not be totally capricious. I expect that if we were able to go elsewhere in the universe and study the history of life on other planets with conditions similar to earth's, we would find evidence for sets of organisms remarkably similar to those that have inhabited this planet. Evolution will have mainly achieved there what it has here.

Clearly randomness operates in the chemistry of living cells today. Molecules move and react in a nondirected fashion, subject to somewhat arbitrary environmental forces. Nevertheless, the maintenance of life is not at risk. God does not have to follow the path of each molecule of

glucose nor check each enzyme-catalyzed reaction nor monitor the replication of chromosomes in order to insure that they will behave predictably. He can trust these objects to follow the laws governing life processes.

Q: Based on LDS theology, is it reasonable that God could have employed evolution as a mechanism for effecting the creation?

A: Given my understanding of the strategy God employs to elevate his spirit offspring to a celestial state, creation through evolutionary processes seems more likely than creation by fiat.

An attempt to understand the theological implications of an evolutionary mechanism might begin with an examination of the LDS concept of the plan of salvation. This is a vision of the eternal nature and possibilities of humanity. In broad outline, a premortal spirit—the literal offspring of Deity—experiences mortal life in order to prepare and qualify for a future of unlimited potential. It seems very useful to distinguish between the role performed by God as Creator in this enterprise, and the program he has prepared for his children as "createes." For us who are attempting to achieve godliness through this program there are two essentials for success as represented in Figure 1: (1) time (life is a probationary period, Alma 42:10), and (2) a chance to exercise agency and prove worthiness (Abraham 3:25–26). Most important is that we are active, not passive participants in the enterprise. What we know of the kingdoms of glory and their inhabitants suggests that this program will result in diversity—a very wide range in the quality of people's preparation and hence in their potential for ultimate accomplishment.

And what is God's part in this plan? In the words of the hymn, "He will call, persuade, direct aright, . . . but never force the human mind."⁵ God knows what the end result ought to be; he knows what is required to achieve it; he provides the circumstances under which it is possible. He may or may not need to engage in trial and error as Creator—but for us would-be gods, trial and error (sin and repentance) are, in fact, indispensable in implementing our own creation (working out our own salvation).

A statement from the Doctrine and Covenants seems to capture the fundamental principle upon which this program operates: "All truth is independent in that sphere in which God has placed it, to act for itself, as all intelligence also; otherwise there is no existence" (D&C 93:30).



Figure 1

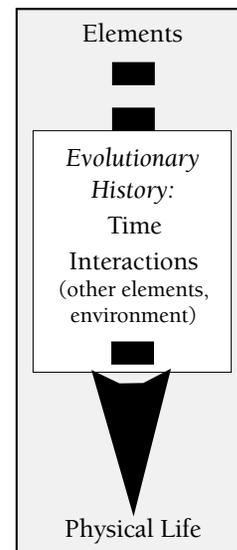


Figure 2

Though our first inclination may be to assume that acting as Creator, an omnipotent God would act quickly and directly to bring his creations into existence, the scripture implies that efficiency is not his first priority. Allowing eternal entities to act for themselves takes precedence. Likely this same principle governed the process that generated physical life in its wonderful variety.

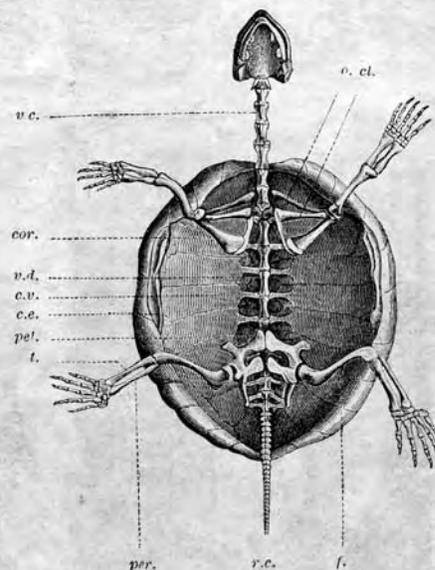
Figure 2 suggests that this might also be appropriately applied in the biochemical/biological world for generating physical life. This proposition begins with the assumption that the chemical elements of the earth are eternal, at least in the sense of premortal (D&C 93:33). Though agency probably doesn't apply in the physical realm (the chemical behavior of molecules is not subject to their "will"), the range of reactions into which the elements can enter (defined by their intrinsic attributes such as atomic organization, bond lengths, and angles) might be properly considered a sphere of action, an estate that they can keep (see Abraham 3:26). Just as God does not force his will upon people's spirits in their quest for godliness, would he not also preserve the opportunity for the elements to "fill the measure of [their] creation" (D&C 88:19, 25) without coercion? After all, it is contrary to the priesthood, which is God's creative power, to operate by control or compulsion (see D&C 121:37–39).

My reading of the Book of Abraham's description of the world's creation suggests that the elements (earth, water, etc.) were allowed to "act for themselves" under the creative direction and oversight of Deity—a scenario consistent with the evolutionary process. Consider verses 12 and 21:

12. And the Gods organized the earth to bring forth grass from its own seed, and the herb to bring forth herb from its own seed, yielding seed after his kind; and the earth to bring forth the tree from its own seed, yielding fruit, whose seed could only bring forth the same in itself, after his kind; and the Gods saw that they were obeyed.

21. And the Gods prepared the waters that they might bring forth great whales, and every living creature that moveth, which the waters were to

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bring forth abundantly after their kind; and every winged fowl after their kind. And the Gods saw that they would be obeyed, and that their plan was good.

Verse 18 of chapter 4 is an especially intriguing description of the Creators during an interim stage: "And the Gods watched those things which they had ordered until they obeyed." There is here a clear suggestion of periods of time during which those objects undergoing creation, as agents, were left to themselves to follow the divinely instigated program.

At the conclusion of several stages of his work, the Creator proclaimed achievements up to that point as "good." In this context, what does "good" signify? Among others, Nephi, Abinadi, and Alma explored the notion that an event, idea, or behavior is good if it leads to or promotes life. "He hath given unto you that ye might know good from evil, and he hath given unto you that ye might choose life or death" (Helaman 15:31; see also 2 Nephi 23, 26–27; 3 Nephi 26:5). Often, of course, in these references, life is used in a spiritual, not biological sense. But isn't it possible that the statement "I God, saw that all things which I had made were good" was a recognition that conditions now existed that would give rise to physical life?

I can more easily believe in a scenario in which the Creator permits the elements to participate in an evolutionary process which in 4-1/2 billion years produces a horse, than one in which the Creator, by virtue of his omnipotence, stretches forth his hand and achieves a complex

creature instantaneously with the proclamation, “Let there be horse!” Perhaps he could do it this latter way if he wanted to, but would he? Would that be in keeping with his mandate to let “truth act for itself”?

Q: Is evolution a concept that demeans and degrades humankind?

A: Though some people may feel this way, such a conclusion is certainly not necessary. The notion of man’s biological kinship with the organisms of the world can be interpreted as an ennobling and uplifting concept that gives an extra dimension of meaning to our stewardship of the earth.

Whether people have a positive or negative reaction to an idea depends on their conceptual framework. For some people, the attributes of human beings constitute a superiority that does not permit comparison with other animals, making the suggestion of a physical relatedness between ourselves and “lower forms” unthinkable. It is quite correct to identify humans as unique, but not because we are singular or dominant or superior in a strictly biological sense. Even a quick comparison will readily demonstrate that many animals perform specific biological functions better than humans do. Instead, it is our self-conscious intelligence with a capacity for language and reasoning that sets humans apart, and these traits, though they certainly have some physical basis in anatomy and biochemistry, we attribute primarily to our spirits.

Though we maintain a strong faith in the reality of our heritage as the spiritual offspring of our Heavenly Father, our understanding of the relationship of the spirit to the physical body is limited. We don’t know how the unique spirits of human individuals are introduced into their physical bodies. That process was initiated at a particular time in evolutionary history, however, as humans joined the ranks of the living creatures of the earth. That we are a part of the living community of the world, not above and outside of that community, is the important insight of evolution.

We have received a divine commission to be stewards of the earth, to care for it and its inhabitants (Genesis 1:26–28; D&C 59:16–20). My understanding that I am biologically related to other organisms gives that stewardship added meaning, compelling me to be sensitive to all living things, to use the earth’s resources moderately without waste, to avoid polluting, and to promote replenishing. Sadly, there are countless examples of exploitation, extinction, and devastation by humans who suppose that man’s uniqueness among the animals grants license for such acts.

Finally, we can attempt to carefully distinguish between what a study of nature can and cannot teach us about the divine. In pre-Darwinian Western culture, people viewed the earth and its creatures as a perfect

system, the efficacious attributes of plants and animals and their harmonious relationships with one another simply a reflection of the mind of God.⁶ The evidence that natural selection is the major driving force in creation forces us, uncomfortably perhaps, to reconsider this position. I believe that Latter-day Saints ought to agree with Darwin that, in fact, it is not appropriate for people to draw moral lessons from nature. Life on earth is quirky, and living systems display violence, suffering, and uncontrolled instinct-driven behavior that kills and maims. While we can properly permit our aesthetic appreciation for the earth and nature to rekindle our reverence for God, we should look only to God himself, and to our own ability to reason and distinguish good from evil (unique among living things, our legacy as God’s spiritual offspring), as sources of moral guidance.

Q: Does acceptance of evolution lead to a loss of faith, religious skepticism, or an inclination to sin?

A: The answer is no. Though sinners or skeptics may seek reasons to explain or excuse errant behavior, it is incorrect to view evolution as a pathway leading to sin. Many faithful, active Latter-day Saints accept evolution as a true principle.

In the preceding pages, we have argued that evolutionary biology is not atheistic: no scientific data suggest the absence of God, and no theoretical considerations exclude Deity from the processes that generated living things. If one accepts these premises, then a person cannot find in evolution a reason to cease activity in the Church nor disclaim its teachings. Apostates will be punished for their own sins and not for Darwin’s transgression.

Consider the following personal expressions by two university students written at the conclusion of their study of evolutionary biology:

I have, for the most part, resolved the conflict I had with evolution and my religious beliefs. I believe God could and may have used evolutionary means to develop the organisms on the earth. I do not believe He would make the earth appear in a “zap,” but rather would use scientific devices. The same goes for the organisms He created. I believe the evidence for the evolution of other creatures is valid and do not believe He would change His method to make man. The thing He did differently is to give man a soul and the ability to use free agency in order to return back to Him.

I find the theory of evolution to be a beautiful explanation of the creative process. The idea that the organisms here on the earth, including man, have evolved from “lower forms” and are genetically related is to me a remarkable concept—a con-

cept that increases my belief in a Supreme Being who has governed this wonderful process. Indeed, I feel there need be no conflict between the theory of evolution and LDS theology.

Many active, faithful Latter-day Saints find the evidence for evolution to be compelling, accept it as a true principle, and view it as a support and confirmation for their religious commitment (see, for example, the recent book *Relics of Eden* by LDS scientist Daniel K. Fairbanks).⁷

Q: Does the Church have an official position confirming or denying the validity of the claims of evolutionary science?

A: No. Pronouncements by the First Presidency have set forth, in general terms, LDS belief in the divine nature of creation, including man; but with respect to the particulars of man's origin, and the interface of faith with scientific principles, statements by past and present LDS authorities reflect a wide diversity of viewpoints.

Several studies document in detail the views of LDS leaders regarding evolution.⁸ Following is a very brief outline of the most relevant 20th-century statements.

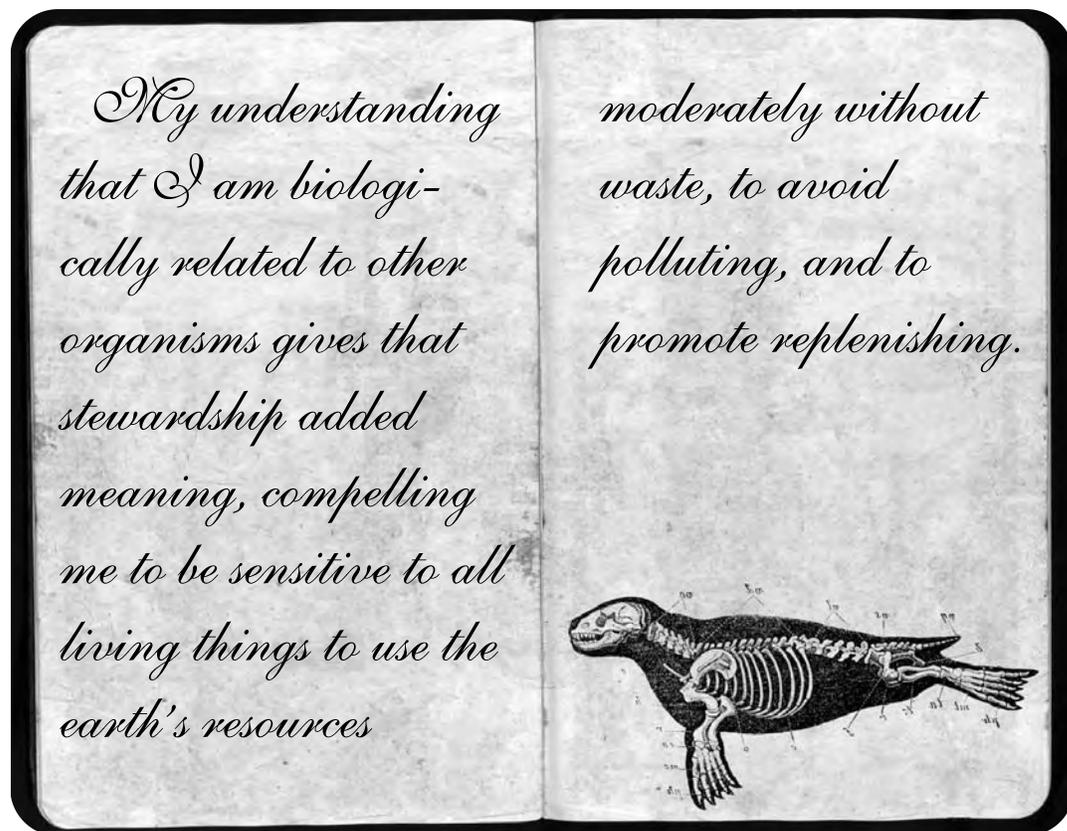
In 1909, the First Presidency issued a statement titled "The Origin of Man."⁹ Written amid the widespread discussion of evolution prompted by the centennial of Darwin's birth and the 50th anniversary of the publication of *The Origin of Species*, this pronouncement is often cited as evidence of a formal anti-evolutionary LDS position. I believe a more accurate appraisal is that the document reaffirms fundamental theological principles (God created man in his own image, the reality of spiritual and physical creation, the Father and Son have bodies, and Adam is the parent of our race) and implies that evolution will be in error if it repudiates these concepts. Shortly thereafter, a remarkably liberal editorial¹⁰ by President Joseph F. Smith left open the possibilities that the bodies of Adam and Eve (a) "evolved in natural processes to present perfection," (b) were "trans-

planted [to earth] from another sphere," or (c) were "born here . . . as other mortals have been." In addition, President Smith later stated that "the Church itself has no philosophy about the modus operandi employed by the Lord in His creation of the world."¹¹

Controversy over evolution was revived in 1925 during the famous Scopes trial in Tennessee. After the trial, the First Presidency (headed by Heber J. Grant) published "Mormon" View of Evolution," excerpts of the 1909 document shortened by excluding the paragraphs with the strongest anti-evolutionary tone.¹² In 1930, a dispute over evolutionary concepts arose between Joseph Fielding Smith and B. H. Roberts. After lengthy debate between the two and discussion with the Quorum of the Twelve and the First Presidency, the First Presidency announced that the Church had no doctrinal position one way or the other on "pre-Adamites" or whether there was death on the earth prior to Adam's fall. The brethren also declared a moratorium on further debate of these issues.

When, in 1954, Joseph Fielding Smith published *Man, His Origin and Destiny*, an unqualified denunciation of evolution, many assumed that he spoke for the Church. However, President David O. McKay, who had been an active, first-hand participant in the events 25 years earlier, repeatedly wrote that the Church "has made no official statement nor taken an official position on the subject of evolution, and [Elder Smith's] book contains his personal views which are neither authorized nor published by the Church."¹³

Significantly, whereas the *Handbook of Instructions*,



which details principles and policies governing the Church, comments on a number of biologically related sensitive matters (such as abortion, artificial insemination, and AIDS), it contains no statement whatever on evolution. In June 1992, the BYU Board of Trustees approved a cover letter to a packet of evolution-related statements issued by the First Presidency, which includes the following sentence: “Although there has never been a formal declaration from the First Presidency addressing the general matter of organic evolution as a process for development of biological species, these documents make clear the official position of the Church regarding the origin of man.”¹⁴

Despite the absence of a definitive, direct statement, in an authorized organ, that the concepts of evolutionary biology might be in direct conflict with LDS theology or religious practice, a large fraction of contemporary Church members perceive that conflict exists. Consider the following response to a study administered to 1,347 BYU students enrolled in Biology 100 during fall semester 1994.

In your view, which statement below best represents the official position of The Church of Jesus Christ of Latter-day Saints toward the principle of biological evolution?

12% A. The official position of the Church is that evolution is incorrect. The idea is not in harmony with statements of the scriptures and Church leaders and is harmful to the spiritual growth of Church members.

5% B. The official position of the Church is that evolution is correct. It is scientifically sound and compatible with the principles of the gospel.

63% C. There is no official position of the Church concerning evolution. A wide difference of opinion exists among both Church leaders and members on the subject.

20% D. None of the above.

The anomalously large number who responded with option D, “None of the above,” seems to reflect the general uncertainty and anxiety over this issue which persists among members of the Church. This is not surprising in view of the periodic suggestions by some Church leaders that evolution is incompatible with our doctrine.¹⁵ Less well known, it seems, are statements that reflect a spirit of openness or acceptance. For example, Elder Stephen L. Richards of the Quorum of the Twelve wrote in 1933:

The time of creation has ever been a subject of much comment and dispute. Yet I challenge anybody to produce from the Bible itself any finite limitation whatsoever of the periods of creation. By strained inferential references and interpretations

men have sought to set the time in days or periods of a thousand years, but I feel that no justification of such limitations is warranted by the scriptures themselves. If the evolutionary hypothesis of the creation of life and matter in the universe is ultimately found to be correct, I shall neither be disappointed nor displeased if it will turn out so to be. In my humble opinion the Biblical account is sufficiently comprehensive to include the whole of the process . . . If you will take the counsel of one who loves science and reveres religion, permit me to admonish you: Never close your mind or your heart; ever keep them open to the reception of both knowledge and spiritual impressions. Both true science and true religion are the exponents of truth. Their fields are different, their provinces are distinct, but their purposes are identical—to enlighten man, to give him power, to make him good, and bring him joy.¹⁶

Apostle John A. Widtsoe argued against the idea that the creative periods were either 24 hours or 1,000 years. He also repudiated the idea that fossil-bearing rocks were reconstituted from other worlds—views held by some Church members that contradicted the scientific evidence.¹⁷

In 1976, President Spencer W. Kimball offered the view that the account of Eve’s creation from Adam’s rib was figurative and that we don’t exactly know how Adam and Eve’s coming into the world happened.¹⁸

Finally, Elder Paul H. Dunn of the First Quorum of Seventy wrote that “four prophets whom he had asked about the age of the earth said they didn’t know.”¹⁹

There are other thoughtful and illuminating statements in Church publications to which the reader is referred.²⁰

Q: What principles of evolutionary biology are acceptable to Latter-day Saints?

A. *The earth is 4.5 billion years old.*

There is no reason for believing Church members not to accept the evidence of “deep time” for the age of our planet. The “days” of the Genesis account may properly be interpreted as indeterminate periods of time. This was the opinion articulated in an editorial in the *Improvement Era* in 1909:

The Book of Abraham, in the 3rd and 4th chapters, very distinctly points out, or conveys, the idea that the creative days or periods included long periods of time. This is plainly set forth on pages 56 to 59 in the Manual. We are not told how long these periods were. It is only demonstrated in the Manual that science declares the creation to have covered long periods of time; and that Joseph the Prophet, through the Book of Abraham, also declared that

long periods of time were consumed in the preparation of the earth for man.²¹

B. There is a long history of life and death on our planet.

Living organisms have occupied the earth continuously for three-fourths of its existence. Exhibiting a great variety of life cycles, individual bacteria, plants, animals, and other organisms have been born, developed, and died over the past millions of years. In 1931, the presiding councils of the Church deliberated about the possible conflict between this proposition and LDS religious beliefs. Apostle James E. Talmage summarized the decision of the First Presidency as follows: “That there was no death upon the earth prior to Adam’s fall is likewise declared to be no doctrine of the Church.”²²

C. Physical characteristics of living things have changed over time; the genealogical history of organisms very different in appearance and behavior can be traced to a common ancestral lineage.

As a single example, the whales of 50 million years ago had legs, having evolved from earlier, four-footed, terrestrial mammals.²³

The scriptural language that organisms reproduce “after their kind” (Moses 2:25) is consistent with the scientifically documented mechanisms of heredity: offspring inherit genes from their parents and resemble them.

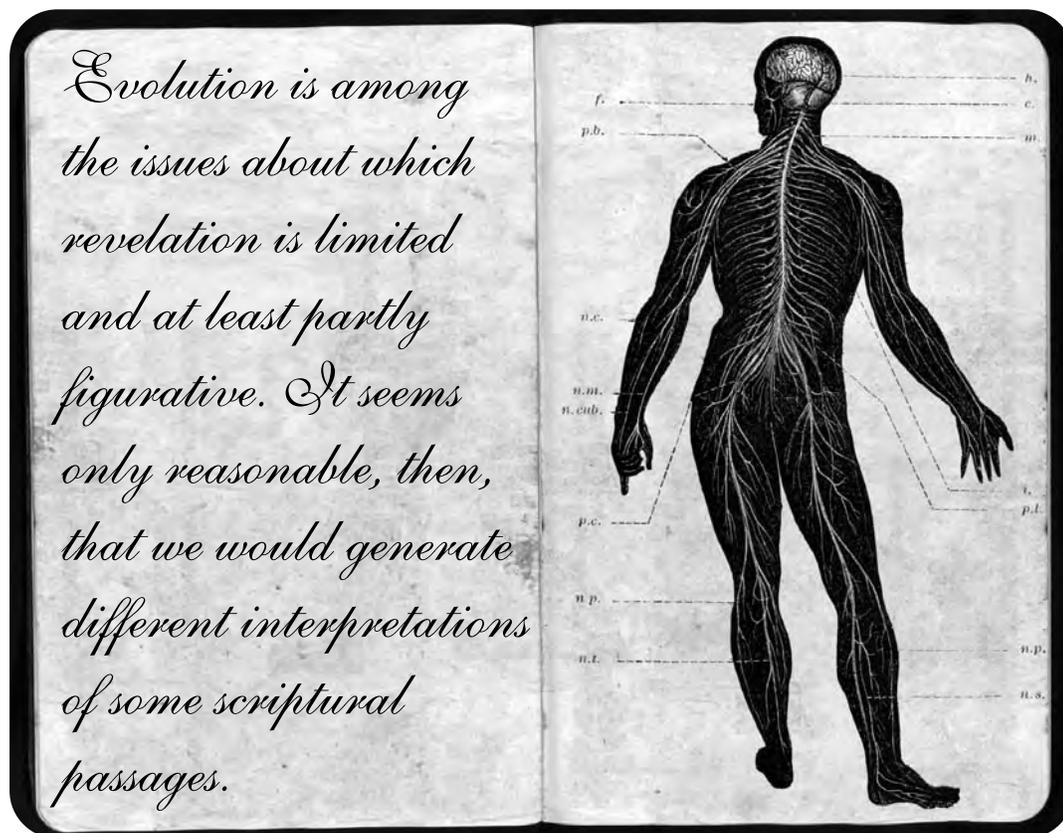
There is nothing in this to demand a fixity of species over hundreds or thousands of generations. In fact, the success of humans in generating new breeds of farm animals or dogs clearly demonstrates that species aren’t fixed. Whether or not there is a genealogical connection between animals of very different form, like birds and reptiles, ought to be resolved by scientific investigation, not theological speculation.

Q: How should I respond to the widely divergent views about evolution held by persons I respect, especially Church teachers and leaders?

A: Any important idea of consequence deserves thoughtful consideration. Our difficulty lies in giving a fair hearing to ideas we think we disagree with. We ought to conduct such an investigation with open minds and in a spirit of humility and kindness toward those whose opinions are different from our own. Latter-day Saints can properly expect unity on fundamental doctrines. But on issues for which revelation is incomplete, a diversity of opinion is natural and valuable.

This may be the most important question in this list and perhaps the most difficult to answer satisfactorily. The issues seem to be: How can one determine the truth when reputable people have such large differences of opinion on the subject? What weight should the views of Church authorities carry? Because they are entitled to special inspiration, shouldn’t one yield to their views?

Good people (parents, seminary teachers, Church authorities, and others) have issued unequivocal denunciations of evolution and perpetuated the view that the idea is totally irreconcilable with the principles of the gospel. “From the day of their first announcement, these theories of organic evolution found themselves in violent conflict with the principles of revealed religion as such are found recorded in the scriptures and expounded by inspired teachers . . . There is no harmony between the truths of revealed religion and the theories of organic evolution.”²⁴ Thus, for many, the “evolution



problem” is less a concern about biology and more directly an anxiety about not being in harmony with the doctrines and leaders of the Church.

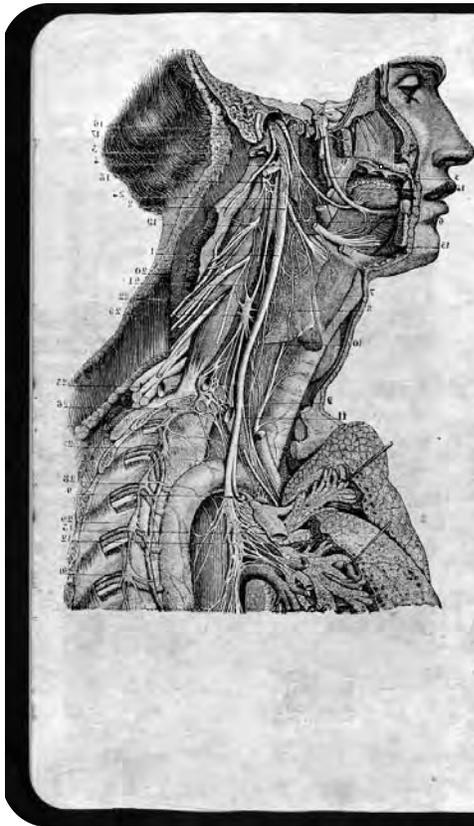
On what issues is it reasonable for Latter-day Saints to expect unity, and on what issues is diversity acceptable, even healthy? We readily agree on a number of religious principles and aspects of practical living (examples include the reality of the Restoration, the cornerstone role of the Book of Mormon, the 4th Article of Faith, the Word of Wisdom, missionary work, the focus on family ideals). However, some of us are uncomfortable when that

unity is incomplete, preferring that we be of one mind on all issues. As a result, we do not tolerate differences among us very well. If the arguments expressed above are valid, then evolution is among the issues about which revelation is limited and at least partly figurative. It seems only reasonable, then, that we would generate different interpretations of some scriptural passages and diversity in how we relate them to the scientific facts. But whatever our differences, we ought to respond to one another with thoughtful consideration, courtesy, and good will.

The principle of continuing revelation is fundamental for Latter-day Saints, but it is also one that is subject to abuse. Perhaps this was the view of Brigham Young when he said:

I am more afraid that this people have so much confidence in their leaders that they will not inquire for themselves of God whether they are led by him. I am fearful they settle down in a state of blind self-security, trusting their eternal destiny in the hands of their leaders with a reckless confidence that in itself would thwart the purposes of God in their salvation, and weaken that influence they could give to their leaders, did they know for themselves, by the revelations of Jesus, that they are led in the right way.²⁵

When confronted with evolution, many students are so fearful of making a wrong decision that they quickly defer



Significant gaps exist in both the scientific and scriptural data, yet to me, the two act in complementary fashion to paint a preliminary picture of creation that is both intellectually and spiritually satisfying.

to the security of adopting a particular Church leader's view as their own. Differences are thus not settled on the merits of the arguments but by recourse to “My General Authority can ‘beat up’ your General Authority.” The wisdom, experience, and spiritual guidance of Church leaders can be very helpful, and we ought to pay respectful attention to their counsel. Ultimately, however, each of us is responsible for our own salvation and for making individual decisions along the way. Consider these remarkable sentiments from one who served in the First Presidency of the Church:

I have been very grateful that the freedom, dignity, and integrity of the individual are basic in church doctrine. We are free to think and express our opinion in the church. Fear will not stifle thought . . . I admire men and women who have developed the questing spirit, who are unafraid of new ideas as stepping stones to progress. We should, of course, respect the opinions of others, but we should also be unafraid to dissent—if we are informed . . . We should be dauntless in our pursuit of truth and resist all demands for unthinking conformity. No one would have us become mere tape recorders of other people's thoughts. . . . While I believe all that God has revealed, I am not quite sure I understand what he has revealed, and the fact that God has promised further revelation is to me a challenge to keep an

open mind and be prepared to follow wherever my search for truth may lead.²⁶

Elder Marion D. Hanks conveyed a similar spirit in remarks to the BYU university community at the preschool conference in the fall of 1988. Quoting A. J. Cronin, he said, “I would fondly wish, though honestly do not anticipate, that no teacher or worker will remain at BYU, and no student ever depart, filled with ‘that bumptious security that springs from dogma rather than from faith,’ who does not have and is determined to stifle in others ‘inquisitiveness and tenderness,’ who is not ‘sensible to the distinction between thinking and doubting.’”²⁷

Q: Are there any negative consequences for the Church or individual members of an anti-evolution sentiment in the LDS community?

A: Among the potential problems is an unhealthy mistrust of science or rational inquiry in general. Such an attitude can lead to sloppy thinking, which may be just as inimical to one’s eternal development as misuse of physical or spiritual faculties would be. Also, if people outside the Church perceive that the Church eschews reason or rejects science as a legitimate process for finding truth, they may be less likely to respond to its missionary effort.

The following are direct quotations from LDS college students when asked to express as honestly as possible their primary response to the concept of biological evolution. These were formulated before they had undertaken a thoughtful study of the subject.

- Evolution has always been an insulting and unsettling idea to me.
- The first thoughts that this theory brings to my mind provoke a feeling of disgust and disagreement. Evolution is nothing more to me than a thoughtless idea created to explain how man came to be.
- I hate having to learn evolution in a biology class. I do not think professors should teach this kind of stuff.
- To the natural man, evolution is both logical and acceptable, but as far as I am concerned, it is nothing but a foolish tale taught by the learned men of our day.
- I am a child of God, not of an ape. When I think of evolution, my first feeling is of rage. The images that come to mind are of amoebas, of fish, and of apes. The only word I have to sum up my opinion

of the subject is “sick.” I am outraged that Charles Darwin would come up with [this] disgusting idea.

- The concept of evolution is an insult to the human race. My ancestors don’t have ape lineage running through their veins . . . Evolution is a negative, degrading, and faithless idea. I get upset with the scientists and researchers who are so discontent and unbelieving, as far as the religious aspects of their lives go, that they feel they must resort to their own explanations of where we come from.
- As with many members of the Church, from the time I was young, I was warned that not everything I was taught in the world would be true . . . [Evolution] seemed a dark and evil concept, and I remember feeling as if I would be in danger if someone tried to teach it to me.
- It seems that my logical mind is fighting my spiritual mind. I realize that the scientific world has come to accept the theory of evolution as the most probable explanation. I can see the logic in the theory. I feel a sort of loyalty to it for these reasons. But the Church which I believe in implicitly has informed me that this is not so. There is no evolution in the history of man. I can accept this. Unfortunately, the Church offered no alternative explanations to the question of how God created man without breaking the laws of nature to which He is subject.

According to these respondents, this was the composite legacy each had received from parents, peers, or Church teachers in Sunday School and seminary. These comments are not unusual; a very large proportion of our young people bear similar burdens.

A common LDS response to questions about evolution is, “Well, it’s not necessary for your salvation; don’t worry about it.” On the one hand, this is true; in one’s list of priorities are probably a number of practical and spiritual concerns with greater short- and long-term significance than ascertaining the validity or meaning of evolutionary principles. I believe, however, that this offhand dismissal of the issue often becomes a rationale for an unwillingness to examine the data upon which those principles rest. If applied generally, such an attitude may be detrimental to people’s ability to develop a state of mind that will help qualify them for a place in the Lord’s kingdom. Consider how we are saddened when people respond to our efforts to introduce them to the Book of Mormon by saying, “Why should we read a book we already know is false?” There are bad habits of *behavior* that certainly threaten one’s eligibility for exaltation; but there are bad habits of *thinking* that may have an equally negative impact on a person’s efforts to achieve the same

HOW I HARMONIZE EVOLUTION AND THE GOSPEL

LDS THEOLOGY

1. *Age of the Earth*

The exact age of the earth can't be determined from the scriptures; parts of the scriptural accounts are best interpreted figuratively. I will accept the scientific data as valid.

2. *My Relationship to God*

I am a literal child of God; he is the Father of my spirit. This is a divinely inspired doctrine whose truth has been confirmed for me by the Holy Ghost.

3. *My relationship to the living organisms of the world*

The scriptures do not disclose my physical/historical relationship to other living organisms. I will accept the scientific data as valid. I believe those data yield an ennobling concept that helps give meaning to my stewardship of the earth.

4. *My relationship to Christ*

I accept the inspired doctrines of the fall of man and the atonement of Jesus Christ.

5. *The origin of man*

The spirit of "the man Adam" is different from that of all other creatures. How Adam was introduced into the world is not specified. I view Eden as an immortal state which prepared our first parents to enter an otherwise mortal earth.

EVOLUTIONARY THEORY

1. *Age of the Earth*

There is an enormous volume of convincing data demonstrating that the earth is very old (at least in terms of human years)—4.5 billion years.

2. *My Relationship to God*

No attempt is made to validate or invalidate this relationship. There are no data on this subject; the methods of science are not capable of generating this kind of information. I will defer to the epistemology of faith and accept the ennobling concept of my individual spirit and its divine origin.

3. *My relationship to the living organisms of the world.*

The scientific data demonstrate a genealogical relationship through time for the plants and animals of the earth. The evidence is compelling.

4. *My relationship to Christ*

There are no scientific data on this subject. I will defer to the epistemology of faith, accepting the doctrine of the plan of salvation.

5. *The origin of man*

I accept the data for the existence of "protohumans" (human-like creatures) pre-dating modern man.

goal. Each of us in the course of our private, family, and public lives will encounter complex issues the resolution of which will require the very best of both intellect and spirit. We should not avoid those encounters.

Consider the following excerpts from a letter written by a bright, committed young Latter-day Saint who had recently completed studying the principles of evolution.

Until [now] my attitude towards evolution has been that it is totally false and opposes my religious beliefs. I think that attitude came partly from my own misunderstanding of what "evolution" means, and also from the general attitude of the other Mormons I associated with. Until this week, it was my understanding that evolution meant

there was no God and that man evolved directly from apes, including our spirits.

I found great difficulty on my mission because of this misunderstanding. I served in Tokyo, Japan. Many of the Japanese people believe in the theory of evolution, and it caused me stress when they stated this belief. There usually followed a non-productive argument/discussion on the issue. If I had understood then what I understand now about evolution, I could have shown them how evolution can fit into the concept of a God who created this earth and man.

How many potential investigators have declined to listen to the message of the restoration of the gospel because they

have accepted the misconception that Latter-day Saints have an irrational contempt for science?

A PERSONAL POINT OF VIEW

I DON'T BELIEVE there is a conflict between my enthusiastic belief in the validity of biological evolution and my spiritual commitment to the truthfulness of the gospel of Jesus Christ. I do not suggest that all questions about the origin of life are answered or all potential conflicts resolved; our ignorance about these matters is large. Nevertheless, my study of the issues leads me to conclude that there are no irreconcilable differences between Latter-day Saint theology and evolutionary theory. Significant gaps exist in both the scientific and scriptural data, yet to me, the two act in complementary fashion to paint a preliminary picture of creation that is both intellectually and spiritually satisfying.

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Genesis 1 and Science Side by Side

By O. Cliff Clay

It is widely accepted in Mormon circles that Moses was an eye witness to the creation of the earth and that he authored the book of Genesis according to this experience. Some may assume that Moses observed the creation from “outside” the universe and should therefore have seen the “Big Bang” and all of the cosmos being created before the earth; thus the sun, moon and stars should have been created before day four. This line of reasoning overlooks the possibility that Moses viewed the creation of the earth from the perspective of the earth. In Moses 1:35, the Lord says to Moses regarding the Creation story: “But only an account of this earth, and the inhabitants thereof, give I unto you.” From this premise, it is possible to read chapter one of Genesis as agreeing with the scientific view of earth’s creation.

Genesis

Science

Reconciliation

DAY 1

PRE-HADEAN EON

MUCH MORE THAN 4.6 BILLION YEARS AGO

1 In the beginning God created the heaven and the earth. 2 And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.

Prior to the Hadean Eon, our solar system consists of dark dust and gases slowly rotating around a central point where the sun would ultimately coalesce. The play of internal gravity on the matter creates a fluid, liquid-like appearance similar to water.

Both accounts agree that light comes first. Genesis, using phrases such as “earth was without form, and void” is entirely consistent with the scientific account.

The visual appearance of the elements that would create the earth could have had a quality and appearance like fluid or water.

3 And God said, Let there be light: and there was light.

Heat and light emanate from the sun as it comes into existence. However, from the vantage point of where the earth would be, the mass of dust and gases make the sun indistinct.

If one were located in the vicinity of the earth (or what would become the earth), light would have been apparent first, and then a division between light and darkness would have occurred as the earth first begins. Incidentally, another Hebrew rendering of the word that was translated as “created” could be “organized,” which nicely describes the process proposed by science.

HADEAN EON

3.8 TO 4.6 BILLION YEARS AGO

4 And God saw the light, that it was good: and God divided the light from the darkness. 5 And God called the light Day, and the darkness he called Night. And the evening and the morning were the first day.

Later, loose matter coalesces into planets. The earth forms, revolving around the sun, and spinning on its axis for the day-and-night effect. Likely this occurred 4,600 million years ago. The oldest rock on earth is dated at 3,800 million years.

DAY 2

ARCHEAN EON

2.5 TO 3.8 BILLION YEARS AGO

6 And God said, Let there be a firmament in the midst of the waters, and let it divide the waters from the waters. 7 And God made the firmament, and divided the waters which were under the firmament from the waters which were above the firmament: and it was so. 8 And God called the firmament Heaven. And the evening and the morning were the second day.

The oceans come into being largely through the cooling of the crust and atmosphere, and are eventually able to support life, starting with single-celled organisms. An evaporation-precipitation cycle ensues. No consistently dry land is in evidence yet, possibly due to tectonic issues and the lack of polar ice caps.

Both accounts agree that oceans come next and that there are clouds above them. The use of “heaven” and “firmament” in Genesis refer to the sky and air in this case. Genesis’s omission of single-cell organisms or other minute details should not be deductions from Genesis’s summary of events. This is consistent with what a human eyewitness would have seen and reported.

Genesis

Science

Reconciliation

DAY 3

SILURIAN PERIOD

408-435 MILLION YEARS AGO

9 And God said, Let the waters under the heaven be gathered together unto one place, and let the dry land appear: and it was so. 11 And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth: and it was so.

1 billion years later, defined, dry, continental land manifests itself. The continental split that creates the Atlantic Ocean will not happen for another 260 to 290 million years. Land plants are prevalent. Life in the ocean has progressed to more complex, fish-like creatures. The Venus-like atmosphere is still full of greenhouse-type gases that limit visibility and completely obscure the sky.

Both accounts agree on the state of land and plants. Both accounts are consistent with what someone standing on the earth would have seen.

DAY 4

SILURIAN PERIOD

408-435 MILLION YEARS AGO

14 And God said, Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs, and for seasons, and for days, and years.

Oxygen makes up a larger percentage of the atmosphere, having displaced the greenhouse gases such as methane and carbon monoxide. The atmosphere clears, and the sun, moon, and stars become visible from the earth's surface (occasional water vapor clouds notwithstanding).

While there is some debate on the exact timing, accounts agree that plants and even some lower life forms appear before the atmosphere is clear enough to see through. A local observer may have experienced the sun, moon, and stars appearing "suddenly": a relative term for a process that takes place over a short few million years or less.

DAY 5

DEVONIAN 360-408 million years ago,
PENNSYLVANIAN 286-320 million years ago,
TRIASSIC 208-245 million years ago, and
JURASSIC 145-208 million years ago

20 And God said, Let the waters bring forth abundantly the moving creature that hath life, and fowl that may fly above the earth in the open firmament of heaven. 21 And God created great whales, and every living creature that moveth, which the waters brought forth abundantly, after their kind, and every winged fowl after his kind.

Life emerges from the water, starting with amphibians (Devonian Period), reptiles (Pennsylvanian Period), dinosaurs (Triassic Period), and birds and small mammals (Jurassic Period).

Both accounts are still consistent, including the suddenness of the appearance of diverse creatures after 3 to 4 billion years of slow change. The Hebrew word that was translated to "great whales" (verse 21) could also have been translated to "sea monsters" which could be a fair description of some dinosaurs and other animals that lived near or in large bodies of water.

DAY 6

CENOZOIC ERA

66 MILLION YEARS AGO TO NOW

24 And God said, Let the earth bring forth the living creature after his kind, cattle, and creeping thing, and beast of the earth after his kind: and it was so. 26 And God said, Let us make man in our image, after our likeness.

100,000 years ago or less, or some 66 million years after large mammals appear, modern human beings appear. By this reckoning, 99.998% of the earth's existence has passed without human beings. This is compared to the dinosaurs that lived during 4% of the earth's existence, and ocean life that has lived during 9% of the earth's existence—and counting.

Both accounts state that mammals (beasts, cattle, and creeping things) materially come into being after all the other types of life. Both accounts state that, later in the same day (or era), human beings appear on the earth.