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MORPHING FLIGHT: BEYOND IRREDUCIBLE COMPLEXITY

Jerry Fausz, Ph.D.

[EDITOR'S NOTE: A.P. auxillary staff scientist Dr. Fausz holds a Ph.D. in Aerospace Engineering from Georgia Tech.]

Researchers and observers have long recognized that birds and various other flying creatures change the positioning of their body structures in flight in order to perform specific maneuvers or adjust their aerodynamic profile to accommodate changing flight conditions. This adaptive orientation of body shape has been dubbed "morphing" in the popular literature. The words "morph" and "morphing" are actually digressive forms of the word "metamorphosis," which derives from the Greek "*meta*" (to change) and "*morfe*" (form). This is an apt description of the ability that birds possess to change the form or geometry of their bodies for increased maneuverability, as well as for stable flight in a wide variety of ambient conditions.

This capability has always been respected and often mimicked by aircraft engineers to the extent that it has been technologically possible to do so. Furthermore, bird observations have often inspired technological advancement

This eagle is pulling its feet against its body to reduce aerodynamic drag. Note also the craning of the wings (normally used to slow descent speed) and the spreading of the wing feathers to break up wing tip vortices that increase drag.

in aircraft design and development. The Wright brothers incorporated morphing into their first successfully powered aircraft design. In a letter, Wilbur Wright described the biological observation that was the basis for this morphing design:

> My observation of the flight of buzzards leads one to believe that they regain their lateral stability when partly overturned by a gust of wind, by a torsion of the tips of the wings (Wright, 1900, Image 4).

Consequently, the Wright brothers designed their first aircraft to be able to "twist" its wings for lateral stability and control, mimicking bird capability. Another well-known example of morphing in aircraft design is retractable landing gear which serves the same purpose for aircraft as when a bird pulls its feet up to its body in flight. That is, this type of morphing dramatically decreases aerodynamic drag which, in turn, increases energy efficiency for the bird of prey—which translates to fuel efficiency in aircraft. Additional "low-tech" examples of morphing include movable control surfaces used to impart forces and torques on the aircraft for maneuvering and stability, wing "slats," "slots," and "flaps" that extend to change the shape of the wing, providing higher lift at lower speeds for takeoff and landing, and variable "sweep" wings that allow aircraft to fly efficiently at dramatically differing flight speeds, such as in transitioning from subsonic to supersonic flight. In contrast with these examples of "low tech" morphing designs of the past, a morphing aircraft has been defined as "one that utilizes innovative actuators, effectors, or mechanisms to adapt its state **substantially** in order to enhance behavior and performance in addressing multiple environments" (Love, et al., 2007, emp. added). These past examples of morphing technologies were certainly innovative in their time, but are now fairly commonplace—not even considered "morphing" by some.

Nonetheless, research in new innovation for morphing aircraft is once again looking to birds for inspiration and guidance. NASA Administrator Dan Goldin stated:

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Credit: NASA

NASA Morphing Aircraft Concept

> NASA will open the door to a bold and revolutionary era by using technology to mimic nature. The seemingly effortless flight of birds provides the inspiration for new aircraft utilizing wings that reconfigure in flight. The vehicle changes—or morphs—from a low-speed configuration to one more suited for high speed (as quoted in Levine, 2001).

NASA is not the only organization actively pursuing aircraft morphing technology, however. A recent article described an unmanned aerial vehicle (UAV) currently under development, called "Roboswift" as "a small, remote-controlled aircraft that changes shape to mimic the aerodynamic profile of a swift" (Simonite, 2008). A researcher at the University of Florida, also studying morphing technology for UAVs, commented:

> Despite the past century of innovation in aircraft technology, the versatility of modern aircraft remains **far worse than airborne biological counterparts**. The shape changing accomplished by birds and bats in flight stands as one of the few examples of true morphing. As such, the aircraft community is devoting considerable attention to the study of biological systems and how they might be implemented on a flight vehicle (Abdulrahim, 2005, emp. added).

Clearly, research in aircraft technology and design continues to draw ideas and inspiration from **nature's** flyers. It is also clear that **our** technical capabilities seriously lag behind **their natural** abilities.

In spite of the fact that aerospace researchers have birds and other flying creatures to show them "how it's done," morphing aircraft design poses some very daunting technical challenges. This fact was discussed in an article describing the Morphing Aircraft Structures (MAS) project being carried out by the Lockheed Martin company with funding from the Defense Advanced Research Projects Agency (DARPA):

> Morphing technology development requires integrated research in materials, smart structures, multifunctional airframe, and adaptive control. It is necessary to evaluate these constitutive technologies in a morphing vehicle to establish requirements and assure readiness for technology implementation (Love, et al., 2007).

Another research team, funded by the Air Force Research Laboratory (AFRL) and Northrup Grumman, further stated: "Significant design challenges require advances in smart structures and materials (skins), actuation and power distribution, and feedback control of the morphing structure" (Ghandi, et al., 2007). The implication here is that morphing design is highly multidisciplinary (structures, aerodynamics, control, etc.) and that all of these areas require additional research before the technology readiness level will be sufficient to actually build a true morphing aircraft. These examples only scratch the surface of the extreme levels of government funding and human resources that have gone into morphing aircraft research, yet there is still much work that must be done before a viable design can be realized, mainly due to the multidisciplinary nature of the problem.

Given the substantial resources that have been poured into morphing aircraft research without yet achieving the final objective, it seems inconceivable that researchers would look at their biological inspiration and assume that the capabilities they are striving to emulate were derived from an unprompted, undirected natural process. That is, however, what often occurs. Consider what one evolutionist insisted:

> This provides a cautionary note for those pursuing biomimicry, direct replication of biological features: essential aspects of those biological features may be driven by secondary characteristics or functions unrelated to the features' primary functions. The bat wing, with all of its elegant modifications for flight, is an obvious example. It is derived from a typical vertebrate forelimb with all of the associated musculature, skeletal, and neuronal architectural characteristics that were originally developed for terrestrial or aboreal locomotion. That is, it was not designed for propulsive flight a priori as an engineered device might be, but was modified from other structures that originated for other functions (Evers, 2007, p. 10).

Dr. Evers issued a warning here to all those engaged in morphing aircraft research that are proceeding from the perspective of biomimicry (copying nature)—that they may be in fact designing structures that are not optimally suited to their purpose because they are copying from organic structures that, presumably, were not designed for the purpose they serve. Note, however, that Dr. Evers states that the bat wing was "modified from other structures **that originated for other functions**" (p. 10, emp. added). One might wonder how the bat wing "was not designed for propulsive flight a priori," but the

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Associate Editor:

Kyle Butt, M.A.*
(*New Testament, Freed-Hardeman University)

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"typical vertebrate forelimb," from which it supposedly derived, "originated for other functions." This type of "double-speak" is not uncommon, however, in Darwinist writings, and it belies an underlying difficulty with Darwinian thought. Nature's machines are so good at what they do that it is difficult for even die-hard Darwinists to accept that they all arose as a result of an undirected process even while arguing that they did.

Dr. Evers' comments also illustrate how Darwinists will often focus on the structural aspects of animal functionality when comparing characteristics of different animals. As we have already noted here, however, morphing flight is an example of a capability that involves so much more than just the structural configurations that give animals such as bats, birds and butterflies the ability to fly. Indeed, morphing flight is a highly multi-disciplinary skill. The different disciplinary facets of morphing may be broken down as follows:

SENSING

Flying creatures and machines must be able to detect or sense the condition of the atmosphere around them, as well as their own position and structural configuration, in order to be able to carry out the activity of flying in a given environment. Examples of the types of data that must be gathered include air speed, altitude, air pressure, position relative to other objects, and the position and shape of their wings at each moment (especially true if morphing is being employed). This capability can involve highly specialized sensors in aircraft such as angular rate gyros for measuring orientation, and ports along the wing for measuring air pressure. Flying animals are able to make use of typical animal sensing capabilities such as vision, hearing, and smell, but must also rely on some very special sensor systems. Examples of these special sensors in animals include echo-location in bats (Colley, 2004), a bird's ability to sense linear and angular acceleration with its ears (Pennycuick, 2008, p. 307), and highly sensitive hair-like mechanoreceptors that allow insects to sense the approach of potential predators (Vaidyanathan, et.al., 2001). It has even been suggested, in recent research, that birds can sense the magnetic field of the Earth, providing valuable information for navigation (Brahic, 2008).

COMPUTATION

The sensor inputs from eyes, ears, etc., as well as specialized sensor systems, must be integrated and processed in the brain for biological flyers, or alternatively, the flight computer if one is considering the sensor systems of flying machines. The processing that must be carried out includes specialized algorithms for flight stability, guidance, navigation, and control. Flight stability is arguably the most important of these functions, since without stability it is impossible to remain in flight, and lack of stability in flying can easily lead to tragic results. In aircraft, flight stability algorithms are executed at the highest possible processing speeds and given top priority for processor usage. Guidance is the function that determines, to the highest possible accuracy, where the flyer is currently located, particularly with respect to where it needs to go. On the other hand, navigation compares guidance information with known geographical waypoints to compute the "best" course for the flyer to follow to end up where the guidance function wants it to go. The control function takes guidance and navigation information and generates commands for the actuation system to steer the flyer along the computed course. In biological flyers, these commands are electrical impulses from the brain that stimulate specific muscles and organs. In aircraft, the commands are also electrical signals that activate electric motors or trigger hydraulic actuation. Given the computational requirements of flight locomotion, it may not be surprising that the size of a bird's brain with respect to its body size is, on average, 10 times that of the reptiles with whom they are assumed to share common ancestry (Jerison, 2004).

ACTUATION

Morphing flight requires highly specialized structures, but it also requires equally specialized actuators to move and position those structures. The very definition of morphing aircraft, given previously, describes an aircraft that "utilizes innovative actuators, effectors, or mechanisms" (Love, et al., 2004). Natural flyers, as well, require a specialized skeletal structure and attached musculature to perform their amazing feats of aerial acrobatics. Mujahid Abdulrahim discussed the wing craning actuator on his morphing aircraft design and the specialized bird structure that it was modeled after:

> The wing craning (gull-wing) mechanism is loosely modeled after a set of parallel bones connecting the shoulder and elbow joints of a bird wing. A rotation of the shoulder joint in the vertical plane results in an extension or contraction of the entire wing. The skeletal mechanism provides a geometric ratio between the extension of the inner and outer bones. Such a mechanism allows the bird to morph into a variety of positions using a single movement. Each of the positions is largely stable and affords a unique capability within the flight envelope (2005).

The specialization of this "skeletal mechanism" for morphing flight is clearly illustrated in this narrative, and the muscles that actuate these motions would be expected also to be specialized for the task in their attachments to the skeletal structure, as well as their configuration.

So, each of these "subsystems" require specialized components to fulfill their part in enabling the wonders of morphing flight. The manner in which these subsystems interact, however, is equally critical to the success of morphing in providing a positive contribution to flight capability. The sensory outputs have to provide specific information to be useful for stability, guidance and navigation, and the computational capability has to have sufficient processing capacity and be "wired" in such a way as to operate effectively on that information. Similarly, the computation function has to possess information about actuator configuration and dynamics in order to output appropriate command signals to achieve the objective of flight stability and to successfully execute the desired motion in flight. Finally, the actuators have to possess the dynamic range, as well as force and torque magnitudes, to achieve the necessary changes in body shape and position in a timely fashion.

Multiple components of bird anatomy have been studied in the literature with respect to the irreducible complexity they possess regarding the bird's ability to fly. For example, Matthew Vanhorn discussed the amazing com-

plexity of bird feathers (2004), Caleb Colley pointed out how bats use their ears (hearing) for echolocation (2004), and irreducible complexity has been examined in general terms with regard to various components of bird physiology (Fausz, 2008). These discussions of the various elements of bird physiology are compelling irreducible complexity arguments when one considers the specialized requirements of flight systems (cf. Miller, 2006, 5[2]:5-R).

When these physical components are considered in a system context, however, the arguments of irreducible complexity are taken to a whole new level. As discussed, the bird's brain must have sufficient capacity to carry out the required computations, but this capacity is useless for flight without the required sensor information or the appropriate actuation systems for carrying out the computed commands. Likewise, without the necessary brain capacity the specialized sensing and actuation components would serve no purpose, and would likely be detrimental to survival. Useful flight capability is not possible without flight stability, at a minimum, and this is only possible if the necessary sensor, computer, **and** actuator components are **all** in place. Indeed, attempting flight without stability will, with high probability, result in the death of the flyer.

The multi-disciplinary nature of morphing flight has already been discussed, but is further reflected in the following:

> To lay the foundation for a truly multi-role aircraft, multidisciplinary research efforts are currently focusing on technologies that enable substantial changes to the wing configuration.... Aerodynamics analysis [sic] (including unsteady and transient aerodynamics) are also important to accurately characterize the vehicle for control surface sizing, engine compatibility, and flight-control design. Despite significant strides to develop wing structure and actuation systems, much work remains to effectively control both the morphing planform as well as the entire morphing aircraft (Ghandi, et al., 2007).

This discussion illustrates that, even in focused research, it is difficult to make sure that all aspects of a significant multi-disciplinary problem are given adequate attention. This is no less true when it comes to biological creatures capable of morphing flight.

The irreducible complexity associated with bird feathers and other components of bird physiology are enough of a challenge to the Darwinian notion of natural selection to render it **impractical**. However, when one considers the system level implications of morphing flight, and the necessity of simultaneous development of multiple combinations of these physical components, natural selection as an explanation for morphing flight capability is seen to be **absolutely irrational**. Furthermore, the difficulty of achieving this capability in flying machines, even with substantial resources focused within a significant research effort, illustrates that birds are the product of, not just design, but of an incredibly capable Designer with an unparalleled understanding of the multi-disciplinary nature of the problem. That Designer, of course, is God, who spoke to Job on this subject:

> *Does the hawk fly by your wisdom, and spread its wings toward the south?*
>
> *Does the eagle mount up at your command, and make its nest on high?*
>
> *On the rocks it dwells and resides, on the crag of the rock and the stronghold.*
>
> *From there it spies out the prey; its eyes observe from afar (Job 39:26-29).*

Here God describes the computational capability inherent in a hawk flying by "wisdom" and an eagle by "command." He also indicates the tremendous acuity of the eagle's eyes for sensing prey, as well as several other facts about the behavior of these birds. Truly, only an omniscient, omnipotent God would possess this knowledge **and** the ability to apply it in such wondrous works of design and creation. Few birds have more impressive morphing flight capability than birds of prey, such as hawks and eagles, making them perfect examples of the amazing design ability of the Creator.

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Jesus, Rudely Interrupted

Dewayne Bryant, M.A.

Criticism of the Faith is nothing new. Whether big-budget documentaries, bestselling books, or blockbuster movies, the media is glutted with criticism aiming to overturn the faith of millions. It seems that every year a new angle emerges during the seasons when people step back to reflect upon their faith. As believers consider the truths of Christianity, hostile criticism attempts to revamp, revise, and rewrite what Christians have believed for two millennia. Christmas and Easter are perennial target release dates for books, articles, and television documentaries promising to reveal secrets that will turn Christianity upside down.

One of the most recent contributions of New Testament scholar and textual critic Bart Ehrman is a book entitled, *Jesus, Interrupted*. Released in 2009, this book picks up where his earlier work, *Misquoting Jesus*, leaves off. Ehrman continues his assault on the Christian Faith, assuring believers that his criticism does not controvert Christianity, but informs it. Since this information started him on the journey to agnosticism, it is easy to see how his assertions could be construed as disingenuous.

PARDON THE INTERRUPTION

Raised in a "fundamentalist" Christian home, Ehrman graduated high school and attended the conservative Moody Bible Institute. He continued his studies at Wheaton College in Illinois, and later received his Ph.D. from Princeton Theological Seminary under the watch of Bruce Metzger, one of the foremost textual scholars of the 20th century. Somewhere along the way, he became increasingly disenchanted with the Christian Faith. Although he was a denominational minister during his time in graduate school, Ehrman has now left his Christian upbringing far behind. He now considers himself a "happy agnostic" (2005, p. 258). *Jesus, Interrupted* goes farther than his previous work, claiming not only that the Bible is full of scribal errors, but that the gospel accounts are fraught with contradictions and late inventions. In this sense, according to Ehrman, the story of Jesus—the historical man—was "rudely interrupted" by late insertions into the text. Though it has been well received on the popular level, Ehrman's work has not met with approval from those best quipped to evaluate his claims. In his blog, respected New Testament scholar Ben Witherington III critiques Ehrman's book, saying,

> It is mystifying however why he would attempt to write a book like *Jesus, Interrupted* which frankly reflect [*sic*] no in-depth interaction at all with exegetes, theologians, and even most historians of the NT period of whatever faith or no faith at all. A quick perusal of the footnotes to this book, reveals mostly cross-references to Ehrman's earlier popular works, with a few exceptions sprinkled in.... What is especially telling and odd about this is Bart does not much reflect a knowledge of the exegetical or historical study of the text in the last thirty years. Even in a work of this sort, we would expect some good up to date bibliography for those disposed to do further study, not merely copious cross-references to one's other popular level books.... The impression is left, even if untrue, that Ehrman's actual knowledge of and interaction with NT historians, exegetes, and theologians has been and is superficial and this has led to **overly tendentious and superficial analysis** (2009, emp. added).

Ehrman spends a great deal of time demonstrating what he considers to be problems with the gospel accounts. The discussion includes the nature of authorship, supposed inconsistencies and contradictions, and the idea that the gospel accounts present different accounts of events in Christ's life. This includes the assertion that no one knows who wrote the gospel records. It was not Matthew, Mark, Luke, and John as tradition claims, because Jesus' disciples consisted of "[l]ower-class, illiterate, Aramaic-speaking peasants from Galilee" (2009, p. 106). Someone else far removed from the original historical setting must have written them.

Ehrman overplays the old chestnut that the gospel accounts were written anonymously. They are considered **formally anonymous** because none ever identifies their author. John's gospel account gives the "Beloved Disciple" as the one responsible for its writing, and many believe that Mark mentions himself as the young man who runs away while Jesus is arrested (cf. Mark 14:51). Authors in the ancient world often referred to themselves indirectly in their work, and this is as close as any of the gospel accounts come to identifying their authors.

While the evangelists did not sign their work, this is a far cry from not knowing who wrote the gospel accounts. There was virtually no dispute in the early church over who wrote each one. If they had truly been written anonymously, there would be no end to the debate. In one sense we could compare the book of Hebrews to the gospel accounts. Like the gospel records, it, too, is formally anonymous. However, no one really knows who wrote it, and no less than a half dozen possibilities are cited as potential authors. If the gospel accounts were truly in the same category, the debate over their authorship would have continued to the present.

Ehrman notes that, "[s]tories were changed with what would strike us today as reckless abandon.... They were modified, amplified, and embellished. And sometimes they were made up" (2006, p.

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259). He never explains why he chooses to believe that the stories concerning Jesus are legendary or fictitious. Biography, legend, and fiction are different genres, each with its own distinguishing characteristics. This is common fare for Christianity's critics: to announce the Bible as fiction, legend, myth, or fairy tale without justification or supporting evidence. Ehrman notes:

> For nearly twenty-five years now I have taught courses on the New Testament in universities, mainly Rutgers and the University of North Carolina at Chapel Hill. In all this time, the lesson that I have found most difficult to convey to students—the lesson that is the hardest to convince them of—is the historical-critical claim that each author of the Bible needs to be allowed to have his own say, since in many instances what one author has to say on a subject is not what another says. Sometimes the differences are a matter of stress and emphasis; sometimes they are discrepancies in different narratives or between different writers' thoughts; and sometimes these discrepancies are quite large, affecting not only the small details of the text but the very big issues that these authors were addressing (2009, pp. 98-99).

One of the episodes Ehrman cites as a bona fide "error" in the gospel records is Christ's cleansing of the Temple. John locates this event in the Passion Week, while the Synoptics present the incident early in Jesus' ministry. So which is it? Which one made the mistake? Actually, it never would have crossed the minds of the ancient audience. The ancients did not insist on chronological accuracy in the same way moderns do. Ancient authors often arranged their material chronologically, but they also arranged it topically, and, in the case of the gospel accounts, theologically. To force an ancient work written in another culture to conform to modern Western standards is scholastic arrogance at its worst.

Many moderns put the Bible under a literary microscope, analyzing every chapter, every verse, every word. In the eyes of hostile critics, even the tiniest difficulties balloon into monumental testaments to the inaccuracy and unreliability of the Bible. Ben Witherington makes an interesting point in this regard. He says that we can think of the authors of the four gospel accounts much like painters. Each painted a portrait of Jesus based on his own perspective, as well as the purpose and rationale intended by the Holy Spirit. They selected the material to include in their work, a selectivity that is individualistic in nature. That the gospel writers would highlight different events, or give different angles on the same events, is expected. Modern biographers work the same way. Critics expect the authors to record the life of Jesus with a high-resolution, all-seeing lens. Rather than holding the biblical books to the same standards in use during the time they were produced, critics insist on modern standards in a way that is as unreasonable as it is irrational. To force the ancient text to conform to modern standards is bad interpretive method. It is a fundamental building block of reading ancient literature—the Bible included, of course—that one must seek to understand the context in which the literature is written. One cannot read ancient Greco-Roman literature by modern standards any more than one should read a modern newspaper with the same frame of mind as a citizen of ancient Rome. To continue Witherington's analogy, this would be like criticizing Leonardo Da Vinci for not using a digital camera to photograph the Mona Lisa.

To point out one supposed contradiction highlighted in *Jesus, Interrupted*, Ehrman argues there is an irreconcilable difference concerning the death of Judas as recorded in Matthew and Acts. Matthew says that Judas hanged himself and the place became known as the Field of Blood because it was purchased with blood money (Matthew 27:3-9). In Acts, Luke claims that the Field of Blood is called that because, as Ehrman puts it, Judas burst open and bled all over the place. The reading in Acts is not as different as Ehrman suggests. Both accounts agree that the property is purchased with Judas' money. Luke is ambiguous as to why the field was named the Field of Blood, while Matthew is explicit. Ehrman barely gives a passing nod to suggested attempts to reconcile the two, and downplays them accordingly. It is highly likely that Judas hanged himself, and after death, when the immune system is no longer working, bacteria began to multiply and produced gases that bloated Judas' body. If the rope broke or Judas' body fell when others were taking him down, Judas' body would have ruptured upon striking the ground. This is not imaginative speculation, but the practical stuff of elementary biology.

Another problem in *Jesus, Interrupted* is the absence of comparative data concerning manuscript evidence from other ancient sources. Other Greco-Roman sources ranging from Greek philosophers to Roman government officials demonstrate far less attestation than the New Testament. The average classical author may have a work represented in only a couple of dozen manuscripts. The oldest copy of these works is often many centuries after the original date of writing. For instance, in the cases of Greek philosophers such as Plato and Aristotle, their most famous works are represented by a handful of manuscripts dating to the medieval period. Comparing the New Testament to these writings, the Bible has well over 5,700 copies. Roughly a dozen date to within a century of the original authors, and about four dozen exist that date to within two centuries. The earliest copy of a New Testament text is P^{52}, otherwise known as the John Rylands papyrus. Housed in the British Library, this fragment of John's Gospel dates to approximately A.D. 115-135. The contrast between the textual evidence of the New Testament and the manuscript evidence from the classical world could not be more vivid. The noted historian F.F. Bruce recounts the words of Sir Frederic Kenyon, former director of the British Museum: "The interval between the dates of the original composition and the earliest extant evidence [is] so small as to be negligible, and the last foundation for any doubt that the scriptures have come down to us substantially as they were written has now been removed" (Bruce, 1972, p. 20).

THE OTHER SINS OF EHRMAN

Ehrman plays his hand with considerable calculation. In his *The New Testament: A Historical Introduction to the Early Christian Writings*, he asserts, "there is not a single reference to Jesus or his followers in pagan literature of any kind during the first century" (2008, p. 41). While technically correct, it is somewhat misleading. Josephus is Jewish—and therefore not pagan—yet he mentions Christ in two passages in his *Jewish Wars* at the end of the first century, references which are undisputed among scholars specializing in Josephan studies. If we were to include the first two decades of the second century, we would have to include several pagan authors: the Roman historians Suetonius and Tacitus, along with Pliny the

Younger, governor of the Roman province of Bithynia.

The assertion that no references to Jesus and His followers exist in the first century has one important qualification that Ehrman seems to have omitted deliberately. While there are no extant references to them known to scholars today, Suetonius and Tacitus would have needed historical records or official documents in order to produce their biographies of the Roman emperors. While these documents no longer exist today, first-century records seem to have been readily available to historians. In other words, these documents **did** exist, but have perished with the passing of time. Ehrman's rather misleading statement should have read, "there are no **surviving** references to Jesus or his followers in **strictly** pagan literature during the first century A.D. **known to scholars presently**."

New Testament scholar Robert Yarbrough points out in Ehrman's work the "traditions of (much later) noncanonical gospels are consistently privileged vis-à-vis their canonical counterparts; the assumption is that we must treat their assertions as potential historical fact even though the assertions were not written down for a century, at least, after their putative origin" (2000, p. 366). Ehrman tends to elevate the noncanonical gospel records over those of the New Testament even though they were written centuries after the life of Christ. The constant claim that the gospel accounts cannot be trusted because they were written decades later then the events they describe vanishes, and the non-canonical gospels are considered relatively trustworthy despite the fact that the amount of time that separates them from the events they purport to describe is not decades as with the gospel accounts, but **centuries**.

As an example of his approach, Ehrman notes that the *Gospel of Peter* features "[a] giant Jesus and a walking, talking cross," adding, "It's hard to believe that this Gospel was ever lost" (2009, p. 209). He seems to think that Christianity was like any other religion, accepting the fantastic with little regard for reality. Many of the extracanonical gospels Ehrman prizes demonstrate the same features. The *Infancy Gospel of Thomas* has a number of odd miracle stories. The author appears to enjoy telling fantastic stories of weird happenings during the fictional childhood of Jesus, and the more bizarre the better. This provides a vivid contrast with the canonical gospel accounts, which record the happenings of Jesus' life in sober fashion. It should be no wonder why the Christians dismissed the tall tales of gospels like *Peter* and *Thomas*. They preferred believable biographies to other "gospels" that were the ancient equivalent of science fiction.

THE HERMENEUTIC OF SUSPICION

As a text critic, Ehrman is quite good. As an interpreter he is abysmal. He insists on a rigidly literal interpretation of the text that does not allow for nuances or for passages from one book to complement those from another. In some cases, individual authors may state components of a biblical doctrine individually, but Ehrman forces them into different camps. It seems almost as if his method aims to pit the biblical authors against one another rather than allowing them to work together. In this way, Ehrman is able to create contradictions where none actually exist. In some places, he appears to deliberately distort the theological viewpoint of the biblical authors in order to manufacture divergent viewpoints. He typically notes that scholars have attempted to reconcile these positions, unsatisfactorily as far as he is concerned. After explaining what appear to be perfectly legitimate and convincing solutions to each problem he discusses, Ehrman then reverts to an unorthodox reading of the text and pronounces the difficulty unsolvable.

For Ehrman, the ultimate reason why more people do not know about these supposed contradictions is because the population is largely ignorant—the very problem he seeks to remedy. In his view, scholarship has not written popular-level books, and seminary-trained ministers are unwilling to share this information with their church members. When discussing his view that most of the New Testament books were not written by the actual authors, he asks with incredulity, "why isn't this more widely known? Why is it that the person in the pew—not to mention the person in the street—knows nothing about this? Your guess is as good as mine" (2009, p. 137). It never seems to cross his mind that seminary-trained ministers and biblical scholars who know about these views find that **they fail to agree with the evidence**.

Yarbrough makes a powerful point about the cavalier attitude Ehrman takes toward the biblical text: "the early Christians who supposedly invented stories about Jesus...and then believed them were not deconstructionists engaged in teaching careers in comfortable university positions but tradesmen and professionals who knew the daily struggle for survival and were willing to die for their convictions" (2000, p. 370). For those living in the first century, the Christian faith was not a detached system of belief that could be adopted or discarded without consequence. Mistrust, discrimination, and even persecution ever loomed above the heads of the early Christians. Making the choice to follow Christ was a genuine commitment that had real—and often highly unpleasant—consequences.

The reader of *Jesus, Interrupted* must be careful to sort through Ehrman's arguments. He is an accomplished textual critic, but allows preconceptions and personal bias to color his conclusions. Rarely, if ever, does Ehrman engage the opposing viewpoint. He seems to delight in manufacturing biblical contradictions and then refuses to allow them to be solved. His work makes it seem as if he has uncovered a secret hoard of biblical knowledge previously denied to all others. To those who are academically equipped to evaluate the truthfulness of Ehrman's claims, this treasure trove of trade secrets is nothing more than fool's gold.

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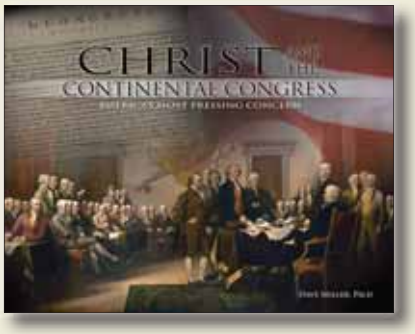
NOTE FROM THE EDITOR

NEW BOOK: CHRIST AND THE CONTINENTAL CONGRESS

Just over a year ago, Apologetics Press released a volume that depicts the heartbreaking shift occurring in America's culture war, as God and the Christian religion are being systematically eliminated from the nation's institutions. *The Silencing of God: The Dismantling of America's Christian Heritage* is the coffee-table book version of the popular DVD seminar, *The Silencing of God*, which documents the sinister attempt to expunge America's religious heritage.



The sequel to this volume is now available: *Christ and the Continental Congress*. This fascinating book answers the question: Did the Founders believe that the survival of the Republic **depends** on America's acknowledgement of Jesus Christ? Revisionist historians, who now firmly dominate academia, answer that question with a resounding—"absolutely not"! But the truth is that the Founders stated over and over their deep conviction that, indeed, **acknowledgement of God and the Christian religion are integral to the survival of the nation**.

In the 15 supplication proclamations that they issued to the entire nation during the tumultuous years of the Revolutionary War, the Continental Congress called upon all Americans to set aside entire days for the sole purpose of petitioning God. In those public pronouncements, they openly acknowledged Jesus Christ as "our gracious Redeemer" and advocated the exclusivity and priority of Christianity. They affirmed the critical importance of the Bible to the people and beseeched God to spread Christianity throughout the Earth. They requested that God establish American Independence on Christianity and Christian morality and urged Americans to keep all of God's laws. They enjoined on Americans the practice of Christianity as the foundation of national happiness, and credited God with America's military success and national prosperity. **You must see for yourself the evidence that establishes these facts**.

Like its prequel, *CCC* is filled with beautiful, colorful pictures and historical images. Placing these volumes in a visible location in your home will definitely attract attention from guests and visitors. Why not consider giving both books as gifts, and help to call people back to the God of the Bible and His Son?

Dave Miller

See the Center Spread for More Details