

## Looking for the Evidence of “Self-Evident Truth”: Creation Scientists’ Research and Identity Examined through the Methuselah Project

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### A State-Subsidized Creation Science Project

Creation science, also called scientific creationism, is a fundamentalist Christian and scientific movement based on the assertions of Ellen White, the founder of the Seventh-day Adventist Church. In 1923, Adventist and geologist George McCready Price published a book titled *The New Geology*, which influenced the publication of *The Genesis Flood*, written by John Whitcomb and Henry Morris in 1961. This book triggered the creation science movement in the United States.<sup>1</sup> The movement also spread to Korea, and Korea is now one of the countries where the creation science movement is most active. Established in 1981, the Korean Association for Creation Research (KACR), the largest creation science organization in Korea, has 1,125 paying members as of 2015.<sup>2</sup> The KACR has chapters both in Korea and overseas and has been active on a broad level,

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1 Ronald L. Numbers, *The Creationists: From Scientific Creationism to Intelligent Design* (Cambridge: Harvard University Press, 2006).

2 Hyung Wook Park and Kyuhoon Cho, “Science, State, and Spirituality: Stories of Four Creationists in South Korea,” *History of Science* 56, no.1 (March 2018): 35-71.

hosting annual creation science academic forums and dispatching creation science missionaries overseas.

The creation science movement was a worldwide success, but most of its achievements remain in the popular domain, as the mainstream scientific community does not recognize creation science as science.<sup>3</sup> Mainstream scientists and other creation science skeptics criticize creation science for not being able to produce actual research results. For instance, Richard Dawkins, an evolutionary biologist and one of the major creation science critics, denounced creation science as the “worship of the gaps” and argued that the methodology of creation science is fundamentally different from that of science—and therefore it was pseudo-scientific. According to such criticism, creation science is not a system that produces new scientific evidence, but a collection of rhetoric and discourses based on the Bible. In addition, creation scientists do not produce new evidence or data but only use and reinterpret evidence and data presented by other scientists and arrange them to fit in with the records of the Bible.<sup>4</sup> In his narration of the process in which creationism was transformed into creation science in the mid-twentieth century United States, science historian Ronald Numbers also stated that while the creation science community made considerable efforts to bring in scientists who were qualified and recognized by the mainstream scientific community, and also to publish creation science research in mainstream science journals, most of the creation scientists’ efforts had failed with a few exceptions and “most creation researchers eschewed the laboratory in favor of back-

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3 According to an article published in *Science* in 2006, 40 percent of Americans accept evolution while 39 percent believe that it is a lie. Jon D. Miller, Eugenie C. Scott and Shinji Okamoto, “Science Communication. Public Acceptance of Evolution,” *Science* 313, no. 5788 (August 2006): 765-6. In Korea, the results of a survey on the acceptance of the evolutionary theory was broadcast through EBS’s *Docuprime* on March 9, 2009, which showed that 31 percent of the Korean public rejected the evolutionary theory.

4 Richard Dawkins, *The God Delusion* (London: Bantam Press, 2006).

porch theorizing.”<sup>5</sup>

In Korea, however, there are creation scientists who have been trained and obtained degrees in mainstream scientific institutions and continue to conduct research in the mainstream scientific community.<sup>6</sup> They actively perform studies at “KAIST, POSTECH, Korea University, Yonsei University, Gwangju Institute of Science and Technology, Hanyang University, Chonbuk National University, Chonnam National University, Inha University, Yeungnam University, Konkuk University, Chungnam National University, Chungbuk National University, Handong Global University, Kyungin Women’s College, Samsung Research, Seoul National University Hospital Research Center,” and other secular educational and research institutions, but they also belong to creation science groups.<sup>7</sup> To these scientists, how are “creation science activities” and “laboratory activities” linked? If “creation science activities” are no more than imitating the rhetoric and discourses of the mainstream scientific community and focusing on creation science theories, this means that “creation science activities” and “laboratory activities” are two completely different types of activities to creation scientists. In addition, it seems that the two different types of activities are based on different reasons or faith, since creation science actively brings in God, miracles, and other supernatural causes into the realm of science while methodological naturalism of science does not allow room for such ideas. Then how do creation scientists, who conduct scientific research in universities and corporate research centers yet at the same time submit papers on creation science to creation science journals and give lectures on creation science to Christians at churches, understand their value system, thinking, and identities in these different

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5 Numbers, *The Creationists*, 282.

6 These Korean creation scientists are under analysis in this study, and therefore “creation scientists” in this study refers to them.

7 Han Yun-bong, “Ch’angjo Sinang-kwa Kwahak, Kūrigo Pogūm (Creation faith, science, and the Gospel),” *Che 6 hoe Sōn’gyosa-wa Mokhoeja-rŭl Wihan Ch’angjogwahak Semina Charyojip* (Collection of papers for the 6th creation science seminar for missionaries and ministers) (September 2017), 52.

circumstances?

This paper attempts to answer the question above through the analysis of a creation science project—the “Methuselah Project.” The Methuselah Project began in the early 2000s by Lee Eun-il (Yi Ŭnil), a professor at the College of Medicine at Korea University, with a research team made up of his colleagues at the College of Medicine, as well as graduate students and post-doctorate research fellows. The goal of this project was to empirically verify the “creation science water canopy theory,” which, based on the biblical record that there was a water canopy in the sky prior to the Great Flood, proposes that the atmospheric pressure was higher than today due to the water canopy, and therefore such high pressure possibly affected the growth and aging of living organisms.

Since it is impossible to generalize the research activities and methodologies of all creation scientists through the analysis of one case study, this paper cannot cover the diverse ways in which creation science knowledge is produced. However, the Methuselah Project is worth examining for two aspects. First, this project was not funded by churches or religious organizations. It was, in fact, funded by the government, which meant that its cause was justified in the eyes of the mainstream scientific community. Therefore, the Methuselah Project demonstrates the kind of strategies employed by creation scientists in an environment where creation science is not accepted by the mainstream scientific community. Second, the “water canopy theory,” which was the basis for the Methuselah Project, is not considered a mainstream theory even within the creation science community. As a result, the research team had to convince other creation scientists of the creation-scientific justification of the project as well. In other words, the Methuselah Project was a case in which creation scientists employed the reasoning of both the mainstream scientific community and the creation science community to justify their research. Thus, it is a fitting example for this paper, which aims to understand how creation scientists consistently negotiate their identity between laboratory activities and creation science activities.

This paper is largely divided into two parts. The first part provides an

analysis of the way creation scientists perceive their identity and activities through the rhetoric of creation scientists. It is important to note that not all creation scientists support the same assertions, and there are differences even among the creation scientists affiliated with the KACR.<sup>8</sup> Moreover, although the KACR claims to be a “trans-denominational academic institution,” the differences between denominations that creation scientists belong to are not negligible. Such differences in opinions, however, arise within the scope of “young earth creationism” and “flood geology,” and creation scientists who belong to the KACR have the same attitude toward biblical records and the same perception of the relationship between science and the Bible. The second section analyzes the way in which creation science rhetoric is embodied in creation scientists’ research activities. Using the Methuselah Project led by Korea University’s Lee Eun-il research team as a case study, this chapter will examine how “dialectics,” which creation scientists claim to be employing in their research, is put into practice in the research activities of the Methuselah Project research team. The conclusion section of the study will examine the implications that this study provides on the issue of creation scientists’ identity and creation science in general.

In this study, mainly two sources were used to analyze the creation science rhetoric on the identity of creation scientists and their methodologies, as well as the Methuselah Project. *Creation* (Ch’angjo) is a periodical published by the KACR. Since the publication of its inaugural issue on February 25, 1981, *Creation* was a monthly journal but was later changed to a quarterly publication. *Creation Science Journals* (Ch’angjogwahak haksurji) are collections of the papers presented at the annual academic creation science forums hosted by the KACR. The first issue was published in line with the academic forum held in August 2001 to commemorate the twentieth anniversary of the KACR’s founding. The first three

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8 For instance, most creation scientists agree that the universe is only 6,000 years old. However, some creation scientists argue that the universe is tens of thousands of years old.

issues were published as academic journals, but since 2004 it has been published as collections of papers presented at the annual forum. In addition to these two sources, this study used books written by creation scientists, interviews published in Christian newspapers, and papers published in general science journals.

## Research Background

In the field of science and technology, creation science has been cast aside as a pseudo-science and not taken as a subject that requires serious research. Science and technology studies do not see creation science as an independent research area, and most tend to focus on contrasting creation scientists with evolutionists as part of the larger framework of the evolution-creation controversy, or highlight the issues of creationism to increase the public understanding of science.<sup>9</sup> Since these studies only ana-

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9 Edward Larson has written on the history of the creation-evolution controversy and legal battles in the following books: Edward J. Larson, *Trial and Error: The American Controversy over Creation and Evolution* (New York and Oxford: Oxford University Press, 2003); *Summer for the Gods: The Scopes Trial and America's Continuing Debate over Science and Religion* (New York: Basic Books, 2008). The following is a list of studies that analyze the creation-evolution controversy in the US, UK, Australia, and Finland from a public understanding of science (PUS) perspective. Joachim Allgaier, “Networking Expertise: Discursive Coalitions and Collaborative Networks of Experts in a Public Creationism Controversy in the UK,” *Public Understanding of Science* 21, no. 3 (April 2012): 299-313; Gary Edmond and David Mercer, “Creating (Public) Science in the Noah’s Ark Case,” *Public Understanding of Science* 8, no. 4 (Septembr 1999): 317-43; Hee-Joo Park, “The Creation-Evolution Debate: Carving Creationism in the Public Mind,” *Public Understanding of Science* 10, no. 2 (April 2001): 173-86; Vienna Setälä and Esa Väliverronen, “Public Perception of Evolution and the Rise of Evolutionary Psychology in Finland,” *Public Understanding of Science* 20, no. 4 (March 2011): 558-73. On the creation-evolution controversy in Korea, the following study offers an analysis of the situation: Kim Jinsoo, “Chinhwaron-

lyze the creation science rhetoric that appears in the evolutionary theory and creation science controversy, it is difficult to understand the way in which creation-science knowledge in their rhetoric is created and the kind of research activities creation scientists are performing to create such knowledge.

Several studies on creation science and pseudo-science attempted to use rhetorical analysis to gain an understanding of the strategies of pseudo-science that makes the demarcation problem a difficult issue.<sup>10</sup> These studies argue that pseudo-scientists, including creation scientists, are imitating the rhetoric and discourses of the mainstream scientific community. In particular, Michael Gordin asserted that pseudo-science's imitation or mimicry does not stop at imitating the semblance of mainstream science but expands into the boundaries of the mainstream scientific community, which involves labeling and ostracizing other pseudo-scientific arguments as pseudo-science. Gordin further argued that such a strategy employed by pseudo-scientists incapacitated the scientific community's attempt to expel pseudo-science from the area of science. Stefaan Blancke and others explained the emergence of cultural evolution, where pseudo-sciences came to take after science, through the epidemiology of pseudoscience. According to researchers, pseudo-sciences, including creation science,

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ch'angjoron Nonjaeng-e Taehan Haengwija-yŏn'gyŏrmang Punsŏk: Kwahakgyo gwasŏ-rŭl Chungsimŭro (An actor-network analysis of the evolution-creationism controversy: focusing on Korean science textbooks)" (MA diss., Kookmin University, 2016).

- 10 Stefaan Blancke, Maarten Boudry and Massimo Pigliucci, "Why Do Irrational Beliefs Mimic Science? The Cultural Evolution of Pseudoscience," *Theoria* 83, issue 1 (February 2017): 78-97; Maarten Boudry, Stefaan Blancke, and Massimo Pigliucci, "What Makes Weird Beliefs Thrive? The Epidemiology of Pseudoscience," *Philosophical Psychology* 28, no. 8 (October 2014): 1177-98; Michael D. Gordin, *The Pseudoscience Wars: Immanuel Velikovsky and the Birth of the Modern Fringe* (Chicago: University of Chicago Press, 2012); Simon Locke, "The Use of Scientific Discourse by Creation Scientists: Some Preliminary Findings," *Public Understanding of Science* 3, no. 4 (October 1994): 403-24.

evolved to look more like science in order to survive in a society where scientific authority is respected. However, researchers also argued that while pseudo-sciences have evolved to conform with the human intuition, science has grown distant from human intuition in its developmental process, and that pseudo-science resembles science on the surface but is unable to imitate science’s epistemic warrant. Rhetorical and discourse analyses of creation science explain the reason creation science is able to survive in the public sphere despite being cast aside by the mainstream scientific community. However, in such a narrative, creation scientists are considered as actors who do not perform actual research but focus on theorizing and interpreting the Bible.

In his study, Jan Golinski argued that the perspective of science and technology studies on scientists’ identity has changed since the transition to constructivism.<sup>11</sup> Prior to the transition, science sociologists believed that the identity and social role of scientists were indoctrinated by a system, organized through the historical developmental process, and that each scientist accepted the identity and social role that are given to them. However, more recent studies on the identity of scientists demonstrate that scientists proactively shape their identity using the given resources in the cultural environment they belong to. Moreover, cases where scientists should have felt conflicted according to the previous science sociology no longer appear contradictory to them. For instance, mid-twentieth century sociologists, including Robert K. Merton, argued that there are inherent strains between science and enterprises, because the nature of companies’ activities, such as secrecy, patents, pressure to produce results, and limited research topics, are in direct conflict with the scientific norms inherent in scientists, such as openness and autonomy. However, Steven Shapin’s ethnographic research on corporate scientists revealed that corporate scientists do not feel any contradiction between scientific norms and corporate values. Rather, some even enjoyed academic freedom and

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11 Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science* (New York: Cambridge University Press, 1998).



abundant resources at corporate research centers and believed that science at corporate research centers was true science.<sup>12</sup>

Hugh Gusterson, who conducted an ethnographic analysis of scientists developing nuclear weapons at the Lawrence Livermore National Laboratory in California, also showed how scientists accept the “contradictions in their identity as scientists.”<sup>13</sup> Gusterson stated that the argument of anti-nuclear activists that scientists who are developing nuclear weapons are either unaware of or ignore the potential results of their actions. Scientists at the Livermore Laboratory believed that they were enjoying abundant resources and academic freedom through their activities at the laboratory and believed that the nuclear weapons they were developing were increasing nuclear deterrence and thereby they were contributing to making the world a place where nuclear weapons will never be used. Gusterson argued that this “central axiom” was nothing more than an empty and dangerous cliché to the anti-nuclear activists on the outside of the laboratory but a simple truth to the members of the laboratory.

The change in scientists’ awareness of their own identity suggests the need to revisit the issue of creation scientists’ identity. Creation scientists should not be seen simply as actors who passively accept the identity and role of scientists that are placed on them by society, but as actors who are forming a new identity based on their faith and their position in the secular world. However, understanding the way in which creation scientists define their own identity and methodology, or analyzing the creation scientists’ rhetoric, needs to be conducted in parallel with the analysis of creation science research activities. Susan Trollinger and William Trollinger’s research shows how creation science’s rhetoric turns into practice.<sup>14</sup> In examining

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12 Steven Shapin, *The Scientific Life: A Moral History of a Late Modern Vocation* (London: University of Chicago Press, 2008).

13 Hugh Gusterson, *Nuclear Rites: A Weapons Laboratory at the End of the Cold War* (Berkeley: University of California Press, 1996).

14 Susan L. Trollinger and William V. Trollinger, *Righting America at the Creation Museum* (Baltimore: Johns Hopkins University Press, 2016).

the Creation Museum, established by an American creation science organization called Answers in Genesis (AiG) in 2007 in Kentucky, United States, the Trollingers studied the exhibitions of the Creation Museum from the perspective of the AiG and creation scientists who belong to the AiG, in order to find out how the internal reasoning and rhetoric of the creation science movement is put into practice. Through this analysis, the authors argued that, contrary to the AiG’s superficial reasoning that the Creation Museum showcases empirical evidence for creation science, its true purpose was in fostering warriors who would fight the culture war to the end without compromising.

This study examines the Korea University’s Medical Research Center (MRC) project and the Methuselah Project with the constructivist perspective of the science technology study. It is an attempt to understand the process in which creation science rhetoric, discourses, and practices are created and performed from the perspective of creation scientists, disregarding the stereotypical hypothesis that creation scientists’ research activities have failed to support the arguments put forth by creation science. This kind of approach was taken not because the researcher agrees with the arguments of creation scientists but because this study is an attempt to gain a new understanding of creation scientists and the way creation scientists construct their identity as scientists who have faith and conviction. As seen in the case of Professor Lee Eun-il, creation scientists firmly believe that their research activities in the laboratories and their creation science activities in churches are unified. And to rationalize their belief, they redefine science and position themselves in that context. This is an example that shows how a scientist with values or conviction that is far removed from the mainstream scientific community addresses the issue of his identity in a society where scientific authority has become much more important. Creation science, in particular, is one of the various ways in which religion and faith, which are important pillars of our society, are in contact with science. Therefore, a deeper understanding of creation science will provide an important reference for us to address such contact between religion and science. Moreover, it will broaden our knowledge of

the context (science, religion, and Korean society at large) in which such a knowledge system was developed.

### **The Methodology of Creation Science: Verification and Dialectics**

Creation science is based on the ideas of biblical inspiration and inerrancy. Biblical inspiration is the doctrine in Christian theology that everything in the Bible, down to the dots and strokes, have been written and edited under the influence of God; biblical inerrancy is the doctrine that the Bible is without “errors.” The Korean Association for Creation Research (KACR) expresses the above ideas as follows: “We believe that the Bible has been written through the inspiration of the Holy Spirit, holds the authority of God’s word that we must obey, and is truth without errors.”<sup>15</sup> Creation scientists who believe in biblical inspiration and inerrancy emphasize that the Christian Bible, the “book of Genesis” in particular, contains historical and scientific facts, and therefore should not be subjectively interpreted but taken literally. Of course, there are many objections to the creation scientists’ argument that the Bible should be taken literally. For instance, theologian Shin Chaesik criticizes creation science, stating that a “literal reading of the Bible, which creation science blindly believes in, results in distorting the message of the Bible considerably, as it is difficult to understand the idea of the world at the time that is reflected in the Bible.”<sup>16</sup>

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15 “Han’guk Ch’angjo Kwahakhoe Sinang Kobaengmun (The Korean Association for Creation Research Confession of Belief),” accessed on June 18, 2018, <http://creation.or.kr/intro/Index.asp>.

16 Kim Yunsŏng, Shin Chaeshik and Jang Dayk, *Chonggyo Chŏnjaeng: Chonggyo-e Mirae-nŭn Innŭn’ga?* (War of religion: is there a future in religion?) (Seoul: Saiŏnsŭboksŭ, 2009), 421. Susan and William Trollinger point out that, if creation scientists and the AiG take the Bible literally as they assert, they should describe the earth as a flat disc and the celestial bodies such as stars as attached to the sur-

Two of the major assertions that creation science puts forward are the young earth creationism (YEC), which claims that the universe was created in seven days as written in the book of Genesis and that this creation occurred in the recent past between thousands of years and tens of thousands of years ago, and the flood geology, which claims that the Great Flood was a historical event and that all geological strata, features, and fossils were created due to the sudden change during the flood. Creation scientists actively enlist biblical records to their knowledge production activities, which become the basis for creation science skeptics, who argue that creation scientists confuse the boundary between the area of faith and the area of science that should be kept separate.<sup>17</sup>

However, creation scientists are creating a new identity for themselves, rejecting the identity given them by society in which personal faith must be disregarded in scientific research. Then what is the creation scientists’ identity? And how do creation scientists understand their own identity? In this section, I will first explore “science” from the perspective of creation scientists. This is important since their self-awareness and practices are closely related to the way they define “science” or “creation science.” In particular, their assertions about the relationship between scientific knowledge and the Bible show the way in which they mold their personal faith and research activities together.

On September 1, 2017, the KACR refuted the criticisms of creation science in a statement titled “Misconceptions and Truths about Creation

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face of the celestial sphere. However, exhibitions in the Creation Museum project the model of modern universe. Trollinger and Trollinger, *Righting America at the Creation Museum*.

17 This hypothesis can be summed up into the Stephen J. Gould’s so-called “non-overlapping magisterial (NOMA).” Gould argued that science is a matter of the physical world or the real world, while religion is a matter of the spiritual world, spirits, and afterlife, and therefore the areas of science and religion do not mix and each should respect the other’s territory. Stephen Jay Gould, *Rocks of Ages: Science and Religion in the Fullness of Life* (New York: Ballantine Pub, 1999).

Science.”<sup>18</sup> In the third item of the statement, the KACR clearly reveals the relationship between the Bible and science and the purpose of creation science. “The Korean Association for Creation Science does not attempt to prove the Bible scientifically. We only demonstrate that the result of God’s creation as recorded in the Book of Genesis is scientifically true.”<sup>19</sup> In this statement, the KACR refutes the argument of frequent criticism that creation scientists are attempting to prove the Bible with science. At the same time, they reveal their perspective on the relationship between scientific knowledge and the Bible.

### The Relationship between the Bible, Science, and Creation Science

First, let us examine the arguments of creation science critics. The criticism that creation science attempts to “prove the Bible with science” comes largely from two different contexts. From the scientific methodology aspect, creation science is criticized for not using the “correct” scientific methodology. The attempt of creation scientists who try to prove the Bible with science only seems as though they are trying to interpret the data to reach a fixed conclusion.<sup>20</sup> Secondly, from a theological aspect,

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18 On August 24, 2017, the Moon Jae-in administration designated Pak Söngjin, a professor at POSTECH, as a candidate for a new ministry, the Ministry of SMEs and Startups. Pak’s activities as a board member of the KACR and other creation science related activities immediately aroused objections from the mainstream scientific community. This put a spotlight on creation science for the first time in five years, since the “Society for Textbook Revision incident” in 2002. The KACR’s statement was the association’s response to the sudden outpouring of criticisms on the creation science community.

19 “Ch’angjo Kwahakhoe-e Taehan Ohae-wa Chinsil (Misconceptions and truths about the Korean Association of Creation Research),” accessed on June 18, 2018, [http://creation.or.kr/bbs/view.asp?tn=news&key\\_id=7396&b\\_no=7165&page=1&category=1](http://creation.or.kr/bbs/view.asp?tn=news&key_id=7396&b_no=7165&page=1&category=1).

20 Michael Ruse, a philosopher of science who served as a witness for the plaintiff in the McLean v. Arkansas case in 1981, testified that one of the inherent characteristics of science is the tentativeness of conclusion. Michael Ruse, “Creation Science

the attempt to prove the Bible with science seems to be blind faith in science. The Bible is the truth in itself and does not need to be proven. Therefore, using scientific methodology to prove it implies that scientific knowledge is more credible than the truth of the Bible.<sup>21</sup>

Since the criticism that the creation scientists are attempting to prove the Bible with science comes from two different contexts, the creation science community’s refutation—that creation science is not an attempt to prove the Bible—can be understood in two contexts as well. First, from a theological perspective, creation scientists believe that biblical records are self-evident truths and that the Bible does not contain any scientific or historical errors. The belief that the Bible does not contain any scientific error leads to the argument that the Bible does not “need” to be proven through science. For instance, Lee Eun-il asserts that the faith that biblical records are the truth cannot be supported by changeable scientific evidence. Instead, he states that anyone can “confess their belief that God is the Creator without scientific knowledge” and that “No one needs to study science to learn that God is the Creator.”<sup>22</sup>

Missionary Lee Jae-man (Yi Chaeman), the president of the Association for Creation Truth and the head of the American chapter of the

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Is Not Science,” *Science, Technology, & Human Values* 7, no. 3 (July 1982): 72-8. Judge William Overton cited Ruse and handed down the decision, stating that creation science is religion and not science because it does not fulfill the conditions to be science.

- 21 Yang Sünghun, a professor at the Vancouver Institute for Evangelical Worldview and a creation scientist who was once active in the KACR, criticized the argument that science can prove the inerrancy of the Bible “poses a serious problem in biblical hermeneutics” and the “assertion that the inerrancy of the Bible is evidenced by scientific proof implies that science is more credible than the Bible.” Pak Söngmin, “Könganghan Shinhakjök Kich’o wi-e Sewöjyö Ijji Anhün Ch’angjoron Undongün Simgakhan Munje Yagi (Creation science movement on unstable theological foundation can cause a serious problem),” *Kidogilbo* (Christianity Daily), July 28, 2014 (accessed on June 18, 2018)
- 22 Lee Eun-il, *Han son-e Chaphinün Ch’angjogwahak* (Creation science in one glance) (Seoul: Turanno, 2008), 17.

KACR, also argues that the Bible is a “book of revelation” that proposes a “clear answer to the past” and a “way to learn the [answer] that cannot be learned by oneself.”<sup>23</sup> Lee Jae-man used the analogy of a jigsaw puzzle to explain the difference between “general science” and creation science. Scientists, including creation scientists, propose theories by putting together and interpreting observable evidence. This is akin to a jigsaw puzzle made up of countless pieces. Because there are too many puzzle pieces, it is nearly impossible to put together the whole puzzle without a picture to show what the completed jigsaw puzzle looks like. Fortunately, he believes, creation scientists have the picture of the completed jigsaw puzzle—the Bible—and therefore they can find the right way.<sup>24</sup>

Furthermore, creation scientists assert that one should not attempt to prove the Bible scientifically. The attempt to prove the Bible through scientific methodology puts science above the Bible. Lee Eun-il emphasizes that creation science is only a signpost that points to the way to the destination—the Bible—and attempting to prove the Bible with science is like placing more importance on the signpost than the destination, and thus misguided. According to him, creation scientists must “remember that scientific evidence used in creation science cannot break out of biblical records” because “science is only the accumulated results of limited knowledge and not absolute truth.”<sup>25</sup>

Creation scientists acknowledge that their assertion that the Bible is self-evident truth is different from general scientific thinking. “Creation science makes use of the scientific content of general science but is completely [different] from general science...therefore it is possible for general scientists to say that creation scientists are not working on proper

23 Lee Jae-man, *Ch’angjogwahak Konsötŭ* (Creation science concert) (Seoul: Turanno, 2006), 191.

24 Lee Jae-man, *Noah Hongssu Konsöt’ŭ* (Noah’s flood concert) (Seoul: Turanosŏwŏn, 2009), 4-7.

25 Lee Eun-il, “Ch’angjogwahak, Ijŏngp’yo-ŭi Yŏkhal-ŭl Punmyŏngghi Haja (Creation science must play a clear role of a signpost),” *Ch’angjo* (Creation) 150 (2007): 24.

science. This is because creation scientists already have the conclusion through the Bible before coming to a conclusion through observation and experiments.”<sup>26</sup> It seems that such an argument of creation scientists is an acknowledgment of the criticism that creation scientists are putting together evidence to reach an already fixed conclusion.

#### Observational Science and Historical Science: Redefining Science

From the perspective of scientific methodology, creation scientists emphasize that it is impossible to prove the Bible with science because the six days of creation and the Great Flood recorded in the Bible are all occurrences of the past and therefore cannot be observed firsthand. Creation scientists argue that evolutionary theory should also be considered an unverifiable hypothesis since it consists of assertions that cannot be observed firsthand. On the other hand, they believe that some branches of science can produce credible, “verified” knowledge. For instance, creation scientists argue that modern biology, other than evolutionary theory, is a study of observable vital phenomena, and therefore there is no reason not to accept it. In the same context, engineering is also considered verifiable and credible knowledge—meaning, if an engineer succeeds in launching a rocket, it proves the engineering knowledge used in the production of the rocket is correct.

In order to accept certain achievements of modern science and separate controversial scientific topics, creation scientists classify science into two groups: “observational science (or experimental science)” and “historical science (origin science).” Observational science refers to knowledge that can be gained through direct observations and experiments, and includes cell biology, chemistry, physics, mechanical engineering, and electrical engineering. On the other hand, historical science refers to the assumptions and hypotheses about past phenomena and includes assertions about

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26 Lee Eun-il, “Ch’angjogwahak-e Taehan Sogae (2) (An introduction on creation science 2),” *Ch’angjo* (Creation) 125·126 (2001): 39.



the origin of the universe or organisms, such as creationism, evolutionary theory, and the Big Bang theory. According to creation scientists, historical science cannot be proven through experiments and observations. For instance, creation scientist Lim Bun-sam (Im Bŏnsam) argues that historical science topics have all “occurred in the past, have no witnesses, and cannot be experimented, and therefore its repeatability cannot be confirmed”; as a result, “from the empirical perspective, origin science cannot be part of natural science.”<sup>27</sup>

According to this creation scientist assertion of dividing science into observational science and historical science, creation science is historical science. The young earth creationism and flood geology, two of the major creation science arguments are hypotheses of past occurrences, and the truth cannot be verified. However, this does not mean that creation scientists do not consider historical science as a non-science. Historical science is “science in a broad sense,” along with social science and political science. Hong Ki-bum (Hong Kibŏm), professor of electrical engineering at Chonnam National University and the head of the Kwangju-Chonnam chapter of the KACR, explains the significance of historical science as follows:

“There may be people who think that [observational] science is the only way or the most credible way to discover truth or facts. However, [observational] science is one of many ways to explore truth or facts. Currently, only natural science, such as physics, where theories and laws are formed through observation or experiments, can be considered [observational] science in its strict sense. However, in cases where current observational and experimental methods cannot be used, it is not always possible to use objective and empirical methods, instead of speculative methods, yet these are still labeled as science in general. Moreover, science, which

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27 Lim Bun-sam, “Chonggyo-wa Kwahak-ŭn Öttŏn Kwangyein’ga? (What is the relationship between religion and science?),” *Ch’angjo* (Creation) 160 (2010): 17.

relies on rationale and the five senses, can discuss the physical world, but spiritual phenomena that transcend human rationale cannot be objectively explored and expressed in the human language. In other words, [observational] science is only one of the ways to explore truth or facts.<sup>28</sup>

Hong argues that although it is impossible for historical science to verify its assertions, it can be considered as a way to explore truth or facts by collecting evidence.

In this context, the existence or lack of evidence becomes a factor in determining the priority of the hypotheses proposed in historical science. While theories and laws in empirical science are created through induction, the cogency of theories in historical science is evaluated based on “hypothesis-deductive” thinking, meaning that “a consistent hypothesis for an assumption is formulated and verified by determining the degree to which empirical predictions are aligned with past and current data.”<sup>29</sup> According to this reasoning, the competing hypothesis of evolution is part of historical science, and its cogency is determined by the existence or the lack of evidence that support this hypothesis.

Creation scientists place a heavy emphasis on evidence being ambiguous, meaning evidence can be used to explain conflicting theories. Fossil evidence is an example that creation scientists often use. Lee Jae-man explains that both evolutionists and creationists use fossil evidence to support their hypotheses, but their interpretations differ completely.

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28 Hong Ki-beom, “Ch’angjo-chinhwa Nonjaeng-ŭn Kwahak Nonjaeng-i Anin, Yŏksa Nonjaengida (The creation-evolution controversy is not about science but about history,” *Ch’angjo* (Creation) 166 (2011): 120. In this paragraph, the author uses the term “science” to refer to science in the narrow sense (empirical science) and science in the broad sense.

29 Jo Jeong-il. “Wuri-nŭn Wae Ch’angjogwahak-ŭl Chijihanŭn’ga?: Kwahak, Sŏnggyŏng, Kŭrigo Yulli-wa Kwallyŏnhayŏ (Why do we support creation science? On science, the Bible and morals),” *Ch’angjo* (Creation) 150 (2007): 32.

For instance, let's say that scientists found a fossil... but the fossil cannot speak. Evolutionary scientists use this data and interpret it as an organism that was in the process of evolution hundreds of millions of years ago. On the other hand, creationists interpret it as the result of a turbulent judgment recorded in the Bible... The reality is that most textbooks and science magazines list it without clarifying whether it is data or interpretation.<sup>30</sup>

Lee asserts that the evidence researchers of the mainstream scientific community use to claim that evolution is a fact is, actually, only an interpretation of the evidence, which can be interpreted in a different direction—to support creation science.

In the process of determining the priority of hypotheses by reviewing the proposed evidence, the origin of the hypothesis—whether it stemmed from personal conviction or religious values—is not an important factor. Creation scientists use Thomas Kuhn's concept of paradigm to explain this. When “scientists develop theories, theories are not naturally created from an objective knowledge structure regardless of the scientists' values and convictions... Since hypotheses are influenced by the trends of the society the scientists live in, their convictions, and the paradigm of the scientific community, science essentially cannot exist as an area completely independent of their convictions and values, including religion.”<sup>31</sup> Therefore there is no reason for creation scientists' hypotheses that have been derived from religious conviction to be not examined seriously and scientifically, and “creation science expands the scientific territory and perspective and is a great way to experience the dynamic nature of sci-

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30 Lee Jae-man, “Mushinon Kija, Kūrisūch'ōn Kwahakja-ege Ttajida, Woo Jong-hak, 2014 Pip'an (Criticism of “An atheist reporter questions a Christian scientist, Woo Jong-hak, 2014”),” accessed on June 18, 2018, <http://www.hisark.com/%E C%9C%A0%EC%8B%A0%EB%A1%A0%EC%A0%81-%EC%A7%8 4%ED%99%94%EB%A1%A0-%EC%9A%B0%EC%A2%85%ED%95%99-%ED%8E%B8-1>.

31 Jo Jeong-il. “Wuri-nūn Wae Ch'angjogwahak-ül Chijihanūn'ga,” 30.

ence.”<sup>32</sup>

The argument that creation science expands the scientific territory and perceptions can be found in Matthew Stanley’s analysis of the controversy between naturalism and theism in Victorian England.<sup>33</sup> Stanley posed a question about modern perceptions in which science is strongly associated with methodological naturalism. The scientific community today has the options of naturalism and theism in metaphysics yet only allows naturalism in methodology. This means that, while each scientist can have or not have a religion, the involvement of supernatural beings cannot but be excluded in research activities. However, unlike today, naturalistic science (which follows methodological naturalism) and theistic science (which follows methodological theism) coexisted in the scientific community in Victorian England. Although naturalists and theists had irreconcilable worldviews, they were able to study and have discussions within the same academic community. This was possible because they had extremely similar ideas about the properties of scientific knowledge and proper practices of scientific research. The creation scientist argument that hypotheses derived from the Bible should be subject to scientific verification is similar to that of the theist scientists in Victorian England.<sup>34</sup>

#### “Dialectics” as a Creation Science Methodology

Creation scientists’ endeavors to derive a hypothesis from the biblical worldview and link it to the evidence that can be found in the real world can be seen as “dialectics” via creation science methodology. Dialectics

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32 Jo Jeong-il. “Wuri-nūn Wae Ch’angjogwahak-ül Chijihanūn’ga,” 33.

33 Matthew Stanley, *Huxley's Church and Maxwell's Demon: From Theistic Science to Naturalistic Science* (Chicago: University of Chicago Press, 2014).

34 Of course, it is difficult to claim that today’s creation science is a resurrection of theistic science. Matthew Stanley explains that the theistic scientific community in Victorian England attempted to avoid filling in the gaps of scientific knowledge with supernatural explanation, while modern-day American supporters of intelligent design (ID) actively use supernatural explanations for their arguments.

was a term originally used in theology and referred to the academic efforts to demonstrate that the Christian faith is based on rational reasons, protect their faith from the logic that opposes faith, and furthermore expose the errors of other worldviews.” Dialectics employed various academic methods, such as historical evidence, philosophical arguments, and rhetorical methodologies; it pursues persuasion rather than verification of the Christian faith.<sup>35</sup> The notion of “persuasion, not verification” is also applied to the concept of dialectics that creation scientists bring over to the domain of scientific methodology. Creation scientists repeatedly emphasize that their research is not to prove the creation science hypotheses, such as the young earth creationism or flood geology. Creation “cannot be repeated because only God can create,” and it “cannot be observed because it has already been finished by God.” Therefore “creation cannot be proved.”<sup>36</sup>

As such, in response to the criticisms that creation scientists “attempt to prove the Bible with science” and that they “arrange scientific evidence to fit the fixed conclusion,” creation scientists argue that they are practicing dialectics as a creation-scientific methodology, or “scientific dialectics.” Then for what purpose are creation scientists asserting that they are practicing dialectics and attempting to redefine science by dividing the field into observational science and historical science? Primarily, such rhetoric

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35 Kim Byung Hoon, “Ch’angjogwahak-ŭi Ŭiwi-wa Kidae: Shinhakja-ŭi Kwanjŏm-esŏ (The significance and expectations of creation science: from the perspective of a theologian),” 2009 *Ch’angjogwahak Haksuldaehoe Nonmunjip* (Collection of papers presented at the 2009 creation science forum), 11. Kim is an assistant professor of systematic theology at Hapdong Theological Seminary. In his study, he defines creation science activities as “scientific dialectics” of the Christian faith. Under this perspective, he evaluates the progress of creation science activities and, at the same time, seeks the way for creation science to move forward.

36 Park Chang-sung, “Ch’angjo Kwahakjadŭrŭn Öttöke Ch’angjo-rŭl Chŭngmyŏngharyŏgo Hamnika? Ch’angjogwahakjadŭre Taehan Shimgakhan Ohae (How are creation scientists trying to prove creation? serious misconceptions of creation scientists),” *Ch’angjo* (Creation) 179 (2014): 30.

neutralizes the criticism that creation science attempts to prove faith through scientific methods. Lee Eun-il emphasizes that creation scientists should exercise caution when producing scientific evidence about biblical records. He says, “Just as you can understand the Bible better when you know the historical background of the time, scientific evidence related to the Bible can help understand the Bible;” but scientific evidence only plays a supplementary role. For instance, “it is possible to believe that, prior to the Great Flood, people literally lived for over 900 years. However, through the fossils of huge animals and plants, it becomes possible to believe the fact by understanding that the environment on earth was completely different from that of the time before the Great Flood.”<sup>37</sup> In this way, scientific evidence “can be helpful” in solidifying one’s faith in the Bible, “but people can very well believe in the Bible without proof, and that is not a problem.”<sup>38</sup> This is because creation science can “express God’s power and wisdom by illustrating the amazing order in the world of God’s creation,” and ultimately, “transcendental creation is in the area of faith.”<sup>39</sup>

From the perspective of creation scientists, a heavy reliance on scientific evidence is equal to erring by falling into scientism or naturalism,” or a compromise. Creation scientists criticize the efforts to make modern scientific discoveries and biblical records compatible or compromised, such as theistic evolutionism, the day-age theory, and the gap theory.<sup>40</sup>

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37 Lee Eun-il, “Ch’angjogwahak, Ijōngp’yo-ūi Yōkhal-ül Punmyōngghi Haja,” 22.

38 Lee Eun-il, “Ch’angjogwahak, Ijōngp’yo-ūi Yōkhal-ül Punmyōngghi Haja.”

39 Lee Eun-il, “Ch’angjoron Kyoyuk Idaero Choūn’ga (Creation Science Education, is it okay to maintain a status quo?),” *Ch’angjo* (Creation) 185 (2016): 30.

40 Theistic evolution is a theory that argues that God is the Creator who used evolution as a tool in the process. According to this theory, evolution is a scientific fact, and God’s will play a part in the process. The day-age theory and the gap theory have been formulated as an answer to making the six-day creation recorded in the first chapter of the book of Genesis and the long history of the earth compatible. The day-age theory argues that the six days recorded in the book of Genesis is figurative and that each day actually refers to a long period of time. On the other hand,

To them, compromising with modern science means not taking the Bible literally but rather “interpreting” the Bible through the paradigm of the evolutionary worldview. Therefore, if Christians accept the compromise theories, such as theistic evolutionism, the day-age theory, and the gap theory, they become influenced by the evolutionary worldview without realizing it. In the perception of creation scientists, evolutionary theory is strongly linked to materialism and atheism. According to their argument, an evolutionary worldview causes people to believe that survival of the fittest is the truth.<sup>41</sup> Creation scientists’ understanding that the proliferation of evolutionary theory brought about the evils of society and the crisis of the Church naturally leads to the idea that driving out evolutionary theory will help protect our society and the Church from atheism and materialism, and furthermore, the proliferation of creation science is a way to spread the Gospel.<sup>42</sup>

However, can we simply interpret creation scientists’ rhetoric as a means to differentiate creation science from general science? Creation

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the gap theory argues that the six days of creation occurred literally over six days, but gaps of long time exist between each day.

- 41 The holocaust is often mentioned as an example of such thinking. Creation scientists often use the holocaust and the argument that Hitler was an atheist and a strong supporter of social evolutionism to criticize the evolutionary worldview. Not only historical events but also modern day issues, such as homosexuality, same-sex marriage, legalization of abortion, drugs, and wars are also used as examples of the evils brought on by the evolutionary worldview.
- 42 The argument that the proliferation of the evolutionary theory brought about the crisis of the Church is controversial. In fact, theistic evolutionists assert that the proliferation of creation science resulted in skepticism and disappointment about the teachings of the Church and stopped the inflow of young people to the Church. For instance, Woo Jong-hak, a theistic evolutionist and professor at the Seoul National University, criticized that creation science that the Church teaches resulted in numerous refugees who left the Church” and that creation science became the “fuse that destroyed faith.” Woo Jong-hak, “Kyohoe-ga Ch’angjogwahak-ül Chaegohaeya Hanūn Iyu (The reason the Church should revisit creation science),” *Nyusūaenjo* (News N Joy), November 7, 2015 (accessed on June 18, 2018).

scientists divide science into two—observational science and historical science, scientific evidence and scientific dialectics, inductive method and hypothesis-deductive method. But they do not explicitly express that there is a hierarchy between the two. What is noteworthy at this point is the fact that most creation scientists performing research in secular research institutes are involved in what they classify as the areas of observational science, such as mechanical engineering, electrical engineering, molecular biology, and medicine. This means that while they perform research activities in observational science, in publishing creation science papers or giving lectures on creation science, they are involved in historical science, which includes hypotheses on the origin of the universe or life, and completely different from their concentration.

One of the criticisms of creation science is that creation scientists recklessly infiltrate into a field of study that they have not been trained in. Even though they do not have a degree in evolutionary biology, geology, cosmology, and other fields of science related to the origin of the universe or life, they offer their own theories and interpretations of evidence that scientists who study those fields find difficult to accept. Creation scientists do not seem to acknowledge the authority of the mainstream scientific community in the areas of science that belong to historical science, which implies that there is a hierarchy between observational science and historical science to creation scientists. Moreover, the creation science’s division of science into observational science and historical science allows creation scientists to justify their working outside of the boundaries of their own fields and interfering in the areas of historical science. This seems to suggest that creation science guards itself against heavily relying on science but actually regards science more importantly.

Creation scientists who are affiliated with and perform research in secular research institutes can be considered to be actors who work on “empirical science” as well as “historical science.” This begs a question: what is the link between observational science that creation scientists work on in laboratories, and historical science that they preach outside their laboratories? To this end, it is necessary to examine the research activities



of creation scientists.

### **A Case Study of Creation Science Research: The “Methuselah Project”**

As examined so far, creation scientists claim that the purpose of creation science is not in proving biblical records but in scientifically demonstrating the truth of the Bible, meaning that creation scientists’ research activities are attempts to provide evidence that supports biblical records. Then, are their research activities properly carrying out the “scientific dialectics” of the Bible? Is the methodology of scientific dialectics producing results that are actually different from the results of general scientific research (scientific verification)? Or are their activities nothing more than a rhetorical device? How does the division of observational science and historical science specifically appear in research activities? To this end, it is important to examine the specifics of creation scientists’ research conducted to provide actual evidence. Some noteworthy examples are obvious creation science projects that were funded. The Noah’s Ark Safety Verification Experiment led by the Korean Association for Creation Research (KACR) in 1992 and the Radioisotopes and the Age of the Earth (RATE) project conducted from 1996 to 2005 by American creation science organizations, the Institute for Creation Research (ICR) and Creation Research Society (CRS).<sup>43</sup> The latter project, for example, was fund-

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43 The Noah’s Ark Safety Verification Experiment was jointly conducted in November 1992 by the KACR and the Korea Research Institute of Ships and Ocean Engineering (KRISO). The research team created a scale model of Noah’s ark as described in the Bible and argued that they “scientifically proved that Noah’s ark was safe even in tides of more than 30 meters.” The Korean Association for Creation Research, “Han’guk Ch’angjo Kwahakhoe 25-tae Sagŏn (25 incidents of the Korean Association for Creation Research),” *Ch’angjo* (Creation) 145 (2006): 36. The RATE project was a research project with large-scale funding over the course of eight years to collect empirical data on radioisotope age dating. The research team

ed with large capital for eight years for researchers to collect empirical data regarding the radioisotope age dating technique.

It is unusual for projects that require large-scale research funds, like the two examples above, to be conducted under the banner of creation science. Considering the position of creation science, which is not recognized as science by the mainstream scientific community, it is difficult for creation science projects to receive research funding from the government or large firms. Both the Noah’s Ark Safety Verification Experiment and RATE project were conducted through the Church’s support and fundraisers. Creation scientists who wished to study creation science were in a double dilemma of needing to procure funds and to receive recognition from the mainstream scientific community. Research funding is not provided for creation science activities, even those performed by the KACR, and creation science activities cannot be a means of living for creation scientists but require their devotion and sacrifice.<sup>44</sup> As a result, creation scientists study and conduct research on creation science topics in universities, research institutes, and other secular institutions they are affiliated with. Then how are creation scientists, who are ostracized by the mainstream scientific community, continuing their research?

#### Korea University Medical Research Center (MRC) and the Methuselah Project

In 2003, Korea University’s Environmental Toxicology-Genomic and Proteomic Research Center was selected for the government’s medical re-

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argued that it found scientific evidence that the earth’s age was less than tens of thousands of years. Larry Vardiman, Andrew Snelling and Eugene F. Chaffin eds, *Radioisotopes and the Age of the Earth: A Young-Earth Creationist Research* (El Cajon: Institute for Creation Research & Creation Research Society, 2000).

44 Kim Kwang, a professor at Handong University and the head of the Media Committee at the KACR, said that board members of the KACR did not receive any financial incentives and rather have to pay additional special membership fee. In addition, he argued that creation scientists do not receive any kind of support from the association for giving creation science-related lectures at churches.

search center (MRC) funding project and received KRW 1.5 billion over nine years until 2012 to study the effects of environmental toxic substances on the human body. Lee Eun-il, then the head of Korea University's MRC project and a professor of preventive medicine at Korea University's College of Medicine, wrote in an article in 2004 that "research on damage to health by environmental toxic substances has only given us collective statistical figures," but the public wants to learn about the people who were harmed due to environmental pollution incidents and the level of damage to one's health. In response to such public demand, the Korea University MRC project began.<sup>45</sup> Lee Eun-il focused on the study of genomics and proteomics, which gained attention at the time with the success of the genome project, and emphasized that Korea could gain a competitive edge internationally if genomics research were combined with environmental toxicology research. The resulting project was a collaboration between the industry, academia, and research institutes, consisting of various departments of the College of Medicine at Korea University, including preventive medicine, pathology, pharmacology, biochemistry, and immunology, as well as "Mygene for SNP research and Takara Bio Inc. for genomics research," and the Korea Basic Science Institute for proteomics research and MRI/MRC research. On the surface, it seemed as though the members of the Korea University MRC project and their activities belonged to the mainstream scientific community.

However, behind the Korea University's MRC project was the creation scientists' will to find supporting evidence for biblical records. Not all of the members of the Korea University MRC project were creation scientists, but the central figures included creation scientists who belonged both to the creation science and mainstream scientific communities. In particular, Lee Eun-il, who played a key role in the founding of the Korea University MRC, was a passionate and active creation scientist. After

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45 Lee Eun-il, "Müdusela 969-se-üi Shinbi-e Maeryodoen Kwahakcha (A scientist captivated by the mystery of 969-year-old Methuselah)," *K'ürisüch'ön Tudei* (Christian Today), January 14, 2018 (accessed on June 18, 2018).

graduating from the College of Medicine at Korea University, Lee received his doctorate in preventive medicine from the same university and began to teach in 1990 and still serves as a professor at the College of Medicine. Born into a devout Christian family, he became interested in creation science in 1991. After serving as a board member and vice president of the KACR, he became the president of the association in 2012, where he remained until 2016. Even today, Lee is actively involved in research activities as a professor at the College of Medicine at Korea University and, at the same time, actively pursues creation science, presenting research results at creation science academic forums and writing columns in creation science magazines.

From the early 2000s, Lee Eun-il started the Methuselah Project with a research team made up of his colleague, Professor Sul Dong-geun (Söl Tonggŭn), as well as graduate students and post-doctorate research fellows.<sup>46</sup> The purpose of the project was to empirically verify the creation science water canopy theory, which theorizes that the layer of water in the sky prior to the Great Flood raised the atmospheric pressure, affecting the growth and aging of living organisms to a certain extent. The research team designed an apparatus for cultivating cells in an environment with a two-atmosphere pressure and measured the growth rate, protein expression, DNA recovery rate after damage, and oxidative stress levels of cells that were exposed to a two-atmosphere environment. In the latter half of the project, the research team expanded their experimental subjects from cells to multicellular organisms, such as fruit flies and roundworms, and furthermore exposed not only normal cells but also cancer cells to a two-atmosphere environment. The results of the Methuselah Project were presented at the creation science forums held in 2007, 2011, and 2013, and

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46 The research team, led by Professor Lee Eun-il of preventive medicine at the College of Medicine, Korea University, consisted of Professor Sul Dong-geun of medical science, Oh Sang-nam (O Sangnam), a post-doctorate fellow (current professor of Jeonju University), Im Ho-Sub (Im Hosöp) current researcher at the Smartive Institute for Life & Environmental Technology, and others.

published in Korean and foreign scientific journals.

How, then, are the Korea University MRC project and the Methuselah Project, which were conducted around the similar time period, related? There is no mention of the Methuselah Project, creation science, or the Bible in the Lee research team's research project report for the National Institute of Toxicological Research, which was crucial in propelling the founding of the MRC, or in newspaper columns, reports, academic papers, and other materials related to the Korea University MRC project. However, as a creation scientist, Lee Eun-il clearly mentioned the relationship between the Korea University MRC and the Methuselah Project in his articles for creation science magazines, interviews with Christian newspapers, and creation science academic forums. The Methuselah Project was not only funded by the government's MRC project but also shared the same experimental methods, subjects, and problematic with the MRC project. Essentially, the Methuselah Project was part of the Korea University MRC project.

The Methuselah Project was not an attempt to simply reinterpret the results of scientific research conducted without the creation-scientific intention to fit them into biblical records and creation science theories. It was a research project, in which experiments were planned and carried out by creation scientists to produce empirical evidence to support their assertions. In other words, research for supporting the arguments of creation science, which is considered a pseudo-science by the mainstream scientific community, was conducted in a scientific research institution that was funded by the government. How was this possible?

### Finding the Motive from the Bible

Susan Trollinger and William Trollinger summarized the methodology of creation science as follows: creation science "(1) assumes that records of the Bible on the creation and the flood are historically accurate; (2) formulates a model that explains incidents, process, or phenomenon based on biblical records on creation; (3) finds observable evidence that con-

firms that the model (in other words, biblical records) is true; (4) believes that observations that support the model signify that biblical records have been confirmed by science as facts.”<sup>47</sup> In sum, by verifying the biblical record-based model in the present, creation scientists confirm that biblical records are scientifically and historically true.

The Methuselah Project conducted by the Lee Eun-il research team is a typical research project derived from the Bible. Among the people mentioned in the Bible, Methuselah lived the longest, dying at the age of 969. The Bible records that prior to the Great Flood, people lived for hundreds of years, but their lifespan began to shorten after the flood to what it is today. Creation scientists who accept biblical records as historical truth proposed several theories in order to provide scientific explanations of people’s longevity in the biblical past. In particular, creation scientists focused on environmental changes before and after the flood. They claimed that the environment was different before the flood from now; in the environmental conditions that existed prior to the flood, organisms’ growth was accelerated while aging occurred at a slower pace. The effect of specific environments on aging and growth became a creation-scientific research topic.

The leading theory for explaining the environmental differences prior to and after the Great Flood is the water canopy theory. This theory posits that there was a layer of water above the sky prior to the Great Flood, as recorded in Chapter 1 verse 1 of the book of Genesis: “So God made the vault and separated the water under the vault from the water above it. And it was so.” Creation scientists have varying opinions regarding the thickness of the water canopy, its form (vapor or liquid), and its effects. Some of the theories about the effects of the water canopy include protection from harmful ultraviolet rays, acceleration of the growth of organisms and slowdown of the aging process through the greenhouse effect, and heightened atmospheric pressure due to the weight of the water canopy created similar effects of high oxygen concentration. As stated earlier, the Lee

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47 Trollinger and Trollinger, *Righting America at the Creation Museum*.

Eun-il research team's Methuselah Project was based on the claims of existing creation science research that the atmospheric pressure on earth prior to the Great Flood was double that of the current atmospheric pressure. The research was designed to empirically verify the effects of a two-atmosphere environment on the growth and aging of organisms. The research team custom-ordered and manufactured the "pressure cell incubator" to cultivate cells in a two-atmosphere environment and conducted other various experiments using the equipment.

In the creation science paper published in 2003, the research team measured the cell growth rate, protein expression, and DNA recovery rate after damage in a two-atmosphere environment created by the pressure cell incubator, and compared the results to those of the controlled group in a one-atmosphere environment. The team confirmed that, in the two-atmosphere environment, cell growth was suppressed, new proteins were expressed, and DNA recovery rate was increased, but drew a line at interpreting these results solely as the effects of a two-atmosphere environment on organisms. It was considered significant only to the extent of "accumulating basic data" when there has been no previous scientific research conducted in a two-atmosphere environment.<sup>48</sup>

For the results presented in the 2007 creation science forum, the Lee Eun-il research team measured the oxidative stress levels and aging speed of cells in a one-atmosphere environment with 40 percent oxygen concentration and also in a two-atmosphere environment with normal oxygen concentration. These experimental conditions were set to compare the justification for the water canopy theory and the evolutionists' argument that oxygen concentration, which was about twice as high in the Paleozo-

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48 Lee Eun-il, Lee Sook, Oh Sang-sam, Im Ho-sub, Hong Hyeon-ho and Sul Dong-geun, "2-kiap Amnyögi Sep'o Söngjang-gwa DNA Pokgu-e Mich'inün Yönghyang (The effect of a two-atmosphere pressure on cell growth and DNA recovery)," *Ch'angjogwahak Haksulji* (Creation Science Journal) 1, no. 3 (2003): 3-12.

ic Era, explains the reason fossils of huge insects are found today.<sup>49</sup> This is an example of creation scientists’ attempts to use scientific evidence to confirm the superiority of creation science hypotheses and prove the Bible. In other words, it is impossible to prove which of the two theories (evolutionary theory and creation science theory) that explain the observed phenomenon (fossilized huge insects) is correct, but it is possible to determine which is more reasonable. The research team, however, reported that there were no significant differences between oxidative stress levels and cell aging speed under the two different environmental conditions, and that it was possible that the early aging processes seen in the two environments are based on two different biological mechanisms.<sup>50</sup>

In the research results that were presented after 2011, the research team expanded their research subjects to include multicellular animals, such as fruit flies and roundworms, and also conducted pressure stimulation experiments on normal cells as well as cancer cells. In an experiment conducted on roundworms, the team demonstrated that while a two-atmosphere environment causes early aging at the cell level, there is a possibility that the same environment will not cause animals to age early. In an experiment on fruit flies, the research confirmed that the increased

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49 Although only the abstract of the study was published in the collection of papers submitted to the forum, the research paper published in a science journal in 2010 includes detailed experimental conditions. The research team conducted experiments under four conditions: control group under normal conditions, and three experimental groups under 1) a two-atmosphere and 40 percent oxygen concentration, 2) a two-atmosphere and 20 percent oxygen concentrations, and 3) a one-atmosphere and 40 percent oxygen concentration. Sang-Nam Oh, Dae-Ho Kwon, Hyun Jung Lee, Joon-Hee Kim and Eun-Il Lee, “Role of Elevated Pressure in Trail-Induced Apoptosis in Human Lung Carcinoma Cells,” *Apoptosis* 15 (2010): 1517-28.

50 Oh Sang-nam, Lee Eun-il, Lee Joo-hyun and Lim Yong-cheol, “Sansodoksöng Mit Sep’onohwa-rül Ch’oraehanün Mulch’üng Iron-e Ipgakhan 2-kiap Amnyök (The water canopy theory-based two-atmosphere pressure that causes oxidative toxicity and cell aging),” *2007 Nyön Ch’angjogwahak Haksuldaehoe Nonmunjip* (Collection of presented papers at the 2007 creation science academic forum), 97-98.



DNA recovery rate at the cell level in a two-atmosphere environment also occurs in animals. In the cancer cell experiment, cell death induced by injecting anticancer drugs increased in a two-atmosphere environment.<sup>51</sup>

### The Methuselah Project as Evidence of the Water Canopy Theory

What is noteworthy in the Methuselah Project was the way the research team secured the justification for their research. What motivated the formation of the team and the research was the team members' faith that biblical records are historical and scientific truths. However, believing in the literal truth of biblical records is not enough to convince fellow creation scientists of the justification of their research, since creation science theories are not a verbatim repetition of biblical records. Moreover, just as general scientific theories undergo the verification process within the mainstream scientific community, creation science theories undergo a similar verification process within the creation science community. The water canopy theory that the Methuselah Project research team attempted to verify underwent changes through the process of discussing conflicting opinions within the creation science community and addressing criticisms from the general scientific community. As a result, the research team had to consider two things: what does the water canopy theory explain? And which hypothesis (evolutionary or creationist) should be compared to the

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51 Lee Eun-il, Oh Sang-nam, Kim Joonhee, Hong Eun-young, Yoo Su-yeon, and Lim Yong-cheol, "P'erüm-sökt'an'gi 35% Sansonongdo-e Taehan Mulch'üng Iron-e Ipgakhan Haesök (The water canopy theory-based interpretation of 35 percent oxygen concentration in the Permo-carboniferous)," *2011 Nyön Ch'angjogwahak Haksuldaehoe Nonmunjip* (Collection of presented papers at the 2011 creation science academic forum): 135-41; Lee Eun-il, Oh Sang-nam, Cha Eun-jeon, Hong Eun-young, Kim Joonhee, Yoo Su-yeon and Kim Mari, "Mulch'üng Iron-e Ipgakhan 2-kiap Amnyök-üi Saengmulhakjök Yöngnyang (Biological impact of the water canopy theory-based two-atmosphere pressure environment)," *2013 Nyön Ch'angjogwahak Haksuldaehoe Nonmunjip* (Collection of presented papers at the 2013 creation science academic forum), 313-6.

justification for the water canopy theory?

The water canopy theory that the research team used originally emerged as a theory to examine the enormous amount of water that caused the worldwide flood.<sup>52</sup> Creation scientists ran calculations to estimate the thickness and the property of the water canopy, and many different speculations were proposed on the thickness and property of the water canopy. However, starting in the late 1990s, creation scientists began to identify problems in the water canopy theory. Some concluded that the thickness of the water canopy that was calculated to hold the water that caused the Great Flood in Genesis was so thick that the global warming effect caused by such a water canopy would make it impossible for organisms to live on earth. Currently, many creation scientists advocate the catastrophic plate tectonics to explain the cause of the Great Flood. Catastrophic plate tectonics interpret the phrase “all the springs of the deep burst forth” in Chapter 7 verse 11 of the book of Genesis as the emission of underground water and claim that this water caused the Great Flood. Creation scientists welcomed this theory as it not only provided an explanation of the mechanism of the Great Flood but also had the potential to explain other geologic events, such as the movement of continents, that were unable to be explained by existing creation science theories.

The Methuselah Project research team explained the current circumstances, in which the water canopy theory underwent transformations and is now considered a minority theory. “The water canopy theory continues to be controversial even among creation scientists. American creation scientists explain the bursting of the springs of the deep as the cause of the Great Flood, but do not necessarily explore the existence and the destruction of the water canopy.”<sup>53</sup> However, the Lee Eun-il research team indicated that the water canopy theory was a useful one. “Without the

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52 The first attempt in which the water canopy theory was used to explain the cause of the Great Flood was in *The Genesis Flood* by John Whitcomb and Henry Morris.

53 Lee, Oh, Cha, Hong, Kim, Yoo and Kim, “Mulch’ung Iron-e Ipgakhan 2-kiap Amnyök-üi Saengmulhakjök Yöngnyang,” 313.

existence of the water canopy, it is difficult to explain the worldwide global warming phenomenon and the ice age.” More specifically, fossils of enormous insects discovered today, the longevity of the people recorded in the Bible, and other “pieces of evidence are phenomena that cannot be explained in the current environment of the earth” and therefore the possibility that the current state of affairs resulted from “an environment different from the current environment on earth had prolonged the lifespan of organisms in the past and allowed them to grow to enormous sizes; or the change in the environment triggered changes in the genes, changing the lifespan and sizes of the organisms; or some combination of both environments has become more than an assumption—it has become a subject of scientific study today.”<sup>54</sup> The research team argued that the water canopy theory is the most convincing hypothesis of the pre-flood environment and conducted the research to support this claim experimentally.

The example of the water canopy theory demonstrates that even in creation science, which is ostracized by the mainstream scientific community, there are mainstream theories supported by the majority of creation scientists and non-mainstream theories only supported by a minority. In addition, the relationship between mainstream theories and non-mainstream theories is not fixed and at times reversed by a different interpretation of the Bible. This means that the water canopy theory is not a (biblical) fact naturally derived from biblical records but a theory with its own history that requires a certain interpretation of the Bible. Therefore, the Methuselah Project research team also had to think about the way to propose scientific evidence for the water canopy theory based on the historical context of the theory in order to secure the creation-scientific justification for their research.

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54 Lee, Lee, Oh, Oh, Im, Hong and Sul, “2-kiap Amnyōgi Sep’o Sōngjang-gwa DNA Pokgu-e Mich’inūn Yōnghyang,” 4.

### The Methuselah Project as a Study of Environmental Toxicology

The Methuselah Project research team had to secure the justification for their research from the creation science perspective. At the same time, the team had to come up with another rationale that was acceptable by the mainstream scientific community, since the members of the research team wished to publish their creative science research in general scientific journals. Most creation scientists who perform independent research belong to secular groups, such as universities and corporate research centers and are also subject to pressure to produce results like any other researchers. Therefore, they wish to publish creation science research achievements in general scientific journals. Another reason it was important to creation scientists for the justification of their research be accepted by the mainstream scientific community is that it is not easy to secure research funding with only projects that are acceptable to the creation science community. The Methuselah Project is an example that illustrates the funding procurement process for creation science research.

Lee Eun-il, who led the Methuselah Project research team, first came to be interested in the study of a two-atmosphere environment based on the water canopy theory in 1995. Then in 2000, he built a pressure cell incubator and started the “creation scientific research on healthy longevity.”<sup>55</sup> The research team was able to reveal its research achievements at the Korean Society for Preventive Medicine academic forum in 2001 but the experiments were unable to be continued due to broken equipment.<sup>56</sup> The

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55 Lee, Oh, Cha, Hong, Kim, Yoo and Kim, “Mulch’ŭng Iron-e Ipgakhan 2-kiap Amnyŏk-ŭi Saengmulhakjŏk Yŏngnyang”; Lee Eun-il, “Mŭdusela 969-se-ŭi Shinbi-e Maeryodoen Kwahakcha.”

56 Sul Dong-geun, Lee Sook, Lee Jong-geun, Oh Sang-nam, Hong Hyeon-ho, Im Ho-sub and Lee Eun-il, “2-kiap Amnyŏk Yŏn’gu-rŭl Wihan Amnyŏk Sep’o Paeyanggi Chejak Mit 2-kiap Amnyŏg-i Sep’o Sŏngjang Mit Sep’o Hwalsŏng-e Mich’inŭn Yŏngnyang (Manufacturing of a pressure cell incubator for a two-atmosphere pressure study and the impact of a two-atmosphere pressure has on cell growth and vitality),” *Taehan Yebang Ŭihakhoe 2001-nyŏndo Che 35 Ch’a*

research team was faced with an early end to their research due to lack of experience, broken equipment, and funding issues.

Then in 2002, the Lee Eun-il research team received a research project from the National Institute of Toxicology Research for “the development of toxicological assay on genomics, proteomics, exposure assessment and DNA damage.” This was an eight-month-long research and development project that came with KRW 100 million of funding. The research team used experiment techniques such as the comet assay, cDNA microarray analysis, and proteomic analysis, to measure proteomic expression and DNA damage on people and animals exposed to toxic substances and created a database.<sup>57</sup> This research led to the founding of the Environmental Toxico-Genomic and Proteomic Research Center a year later in 2003.

The Korean government began to select medical research centers (MRCs) starting in 2002, based on the Master Plan for the Promotion of Biomedical science in Korea implemented in 2001. Selected MRCs received a maximum of KRW 1.8 billion over the course of nine years—first stage (KRW 300 million for two years), second stage (KRW 500 million for three years), and third stage (KRW 1 billion for four years)—to conduct basic medical science research.<sup>58</sup> The Korea University MRC was selected in 2003 and ended in 2012. Its research tasks included assessing “toxicity impact on people who are exposed to environmental

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*Ch'ugye Haksuldaehoe Yŏnjejip* (Collection of presentations from the 53rd fall academic forum of the Korean Society for Preventive Medicine in 2001): 343-4; Lee, Oh, Cha, Hong, Kim, Yoo and Kim, “Mulch'ŭng Iron-e Ipgakhan 2-kiap Amnyŏk-ŭi Saengmulhakjŏk Yŏnghyang.”

57 Lee Eun-il, “Yujŏnch'e, Tanbaekjilch'e Kisul Mit Noch'ul P'yŏngga, DNA Son-sang P'yŏngga Tŭngŭl Iyonghak Toksŏng Pyŏngga Kisul Kaebal Ch'oejongbogosŏ (Development of toxicological assay on genomics, proteomics, exposure assessment and DNA damage),” Korea University, 2002.

58 Lim In-bae, “Kich'ŏ Ŭigwahak Yŏn'gu Sentŏ (MRC) Chŏngch'aek T'oronhoe Charyojip (Collection of materials for a policy discussion on medical research centers),” National Assembly Library of Korea, November 17, 2006.

toxic substances,” “development of a biomarker for assessing the early impact of exposure to environmental toxicity,” and the “identification of genomes vulnerable to toxicity,” and the team also conducted “research on the mechanism of toxicity through direct toxicological assay on humans as well as animal experiments and cell experiments.”<sup>59</sup>

Although the Methuselah Project’s two-atmosphere environment research did not appear in the Korea University MRC’s research tasks, the Methuselah Project and the Korea University MRC project were closely related. First, the Methuselah Project was able to continue with the funding from the MRC. Lee Eun-il recalled, “in the frustrating circumstance when the experiments we started with a vision of pressure research was stopped,” he was able to “restart the pressure research” when the [Environmental Toxico-Genomic and Proteomic Research Center] was “miraculously” selected to participate in the MRC project.<sup>60</sup> When the MRC project came to an end in 2012, Lee “applied for new funding to continue the pressure research,” but was unable to procure any funding, and the Methuselah Project found itself in gridlock once again. Second, the MRC project and the Methuselah Project both use the same experiment methods. In their 2001 paper, the research team conducted an experiment, which involved cultivating cells under a two-atmosphere environment and observing the number of cells to compare them with the control group cultivated under a one-atmosphere environment. However, in the research project conducted in 2002, the research team introduced experimental methods for analyzing genomes and proteomes, including comet assay, cDNA microarray analysis, and proteomic analysis, which were also used in the Methuselah Project. Lastly, both the Methuselah Project and the

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59 Lee Eun-il, “Yujöch’e Mit Tanbaekch’e Hwan’gyöngdoksöng Ŭigwahaksentö, Koryö taehakkyo MRC (Environmental Toxico-Genomic and Proteomic Research Center, Korea University MRC),” *Punja Sep’o Saengmulhak Nyusŭ* (Molecular and Cellular Biology News) 16, no. 3 (2004): 32.

60 Lee, Oh, Cha, Hong, Kim, Yoo and Kim, “Mulch’üng Iron-e Ipgakhan 2-kiap Amnyök-üi Saengmulhakjök Yöngnyang,” 315.

MRC project are similar in that both projects aimed to expose organisms at the cell, animal, or human level to certain stress and identify their reactions and reaction mechanisms.

How, then, has the Methuselah Project secured the justification for research? In the studies published in general science journals, the research team emphasized the fact that there was no previous research on measuring cell stress levels under a two-atmosphere environment.<sup>61</sup> Until then, there has been studies on the impact of pressure stimulation on cells using hundreds of atmosphere by creating a deep sea environment, a pressure of hypertension (approximately 1.2 atm), and pure oxygen environment at about 1.5 to 2.5 atm used in hyperbaric oxygen therapy. However, it was impossible to “find a study on the effects of a two-atmosphere environment on living organisms.”<sup>62</sup> In fact, the research team had to design a device for cultivating organisms in a two-atmosphere environment and applied for a patent for the resulting apparatus.<sup>63</sup> The patent announcement for the equipment explains the purpose of the invention of the “pressure-controlled incubator” as follows:

Studies in the technological field, in which this apparatus belongs, include: research on circulatory diseases found in vascular endothe-

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61 Eun-Ha Oh, Sang-Nam Oh, Ho-Sub Im, Joo-Hyun Lee, Jin-Young Kim, Joo-Hee Moon, Eun-Young Hong, Yang-Hee Kim, Min-Ho Yang, Yong-Chul Lim, Sun-Young Park, Eun-Il Lee and Dong-Geun Sul, “Effects of Hyperbaric Pressure on Cellular Morphology, Proliferation and Protein Expression of Jurkat Cell,” *Molecular & Cellular Toxicology* 1, no. 2 (June 2005): 116-23; Dong-Geun Sul, Sang-Nam Oh, and Eun-Il Lee, “The Expression of DNA Polymerase-B and DNA Damage in Jurkat Cells Exposed to Hydrogen Peroxide under Hyperbaric Pressure,” *Molecular & Cellular Toxicology* 4, no. 1 (January 2008): 66-71.

62 Lee, Lee, Oh, Oh, Im, Hong and Sul, “2-kiap Amnyōgi Sep’o Sōngjang-gwa DNA Pokgu-e Mich’inūn Yōnghyang,” 4.

63 Lee Eun-il and Oh Sang-nam, “Amnyōk Chojōl Ppaeyang Changch’i T’ūkhō Gonggo (Patent announcement of a pressure-controlled incubator),” February 26, 2008.

lial cells, smooth muscle cells, and glomerular cells of various animals; dental research on alveolar bone cells and periodontal ligament cells; research on the impacts of mechanical and physical stimulations, such as pressure, on the cartilaginous differentiation of cartilage cells and stem cells; research on hyperbaric oxygen therapy, which is a way to cure wounds, hypoxia, decompression sickness, carbon monoxide intoxication, and other similar illnesses by using 100-percent oxygen at a higher atmosphere pressure (two to four atmospheres) on the outside of the organism; and research on oxidative stress and antioxidant materials on cells or organisms.<sup>64</sup>

This shows that experiments for measuring the stress level of cells under pressure can be related to various areas, such as research on circulatory disorders, dentistry, and hyperbaric oxygen therapy.

From a practical perspective, the research team had a particular interest in hyperbaric oxygen therapy, which had a long history as a method that uses 100 percent oxygen and high atmospheric pressure. Effective for cardiac infarction, strokes, aging, and cancer, it was spotlighted in the 1960s but gradually faded as people began to question the results of the therapy and its side effect of oxygen toxicity came to the fore. The research team stated that studies have been conducted on one to two atmosphere environments with 100 percent oxygen concentration to verify its side effect and curative effect, but “there are no reports of studies on whether oxygen toxicity exists when atmospheric pressure is increased to two atmospheres in normal air composition or whether two-atmosphere pressure in normal air composition has a curative effect.” The research team argued that the significance of their research was in “providing basic data for maximizing the curative effects of hyperbaric oxygen therapy while decreasing oxygen toxicity.”<sup>65</sup>

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64 Lee Eun-il and Oh Sang-nam, “Amnyök Chojöl Paeyang Changch’i T’ükhö Gonggo.”

65 Lee, Lee, Oh, Oh, Im, Hong and Sul, “2-kiap Amnyögi Sep’o Söngjang-gwa DNA



In terms of “measuring oxygen toxicity in the two-atmosphere environment, the Methuselah Project was in line with one of the MRC research tasks, which was to identify the mechanism of toxic substances through genomic and proteomic analyses. Therefore, it can be considered as a basic research necessary for the process of completing the Korea University MRC’s specific research tasks, including the identification of “toxicity impact on people who are exposed to environmental toxic substances” and “development of a biomarker for assessing the early impact of exposure to environmental toxicity.”<sup>66</sup> However, at the same time, the Methuselah Project was a creation science project conducted to prove the hypothesis that heightened atmospheric pressure due to the water canopy that existed prior to the Great Flood had an impact on the growth and aging of organisms.

Then, how can we evaluate the Methuselah Project from the perspective that it is a “scientific dialectic” of the Bible? This project was “based on the ‘water canopy theory in creation science,’ which supposes that the atmospheric pressure of the earth was two atmospheres prior to the Great Flood.”<sup>67</sup> However, the water canopy theory was not a conclusion that was naturally derived from the belief that biblical records are historical and scientific truth. In fact, regardless of such belief, the water canopy theory is in a competing relationship with other creation science hypotheses originating from biblical records. Supporters of the water canopy theory and advocates of the catastrophic plate tectonics all believe that the Bible is historically and scientifically true, and each attempt to produce evidence to support the hypothesis they believe is correct. Likewise, the

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Pokgu-e Mich'inūn Yōnghyang,” 7.

66 Of course, the results of the Methuselah Project were not the only results of the Korea University MRC. The research team also conducted research on toxicology assay and toxicity mechanism of toxic substances, such as dioxins and polycyclic aromatic hydrocarbons.

67 “Mūdusela P'ūrojekt'ū-e Tongch'amhal Post-Doc Mīt Yōn'guwōn Mojip (Recruiting Post-Doc fellows and graduate students to participate in the Methuselah Project),” *Ch'angjo* (Creation) 123 (2001): 30.

Methuselah Project research team also produced results for justifying the water canopy theory. The goal of the research group, in sum, was not a “direct” demonstration of biblical records but rather a verification of one of the hypotheses derived from a certain interpretation of the Bible. And their research process was not very different from the general research activities conducted in the mainstream scientific community.

Seeing creation scientists’ research activities from this perspective answers the question about how creation scientists can perform research activities with a “fixed conclusion.” To creation scientists, the Bible is an uncompromising, absolute truth, and therefore they cannot accept research results that reject biblical records. However, creation science hypotheses, which are subject to verification in creation science research activities, are not equal to biblical records and therefore are not absolute truths. In the Methuselah Project, the water canopy theory plays a mediating role between the dialectics of the immutable truth of the Bible and the production of variable scientific knowledge. In the words of a creation scientist, this is the role of bridging the gap between observational science, which makes use of inductive methods, and historical science, which uses hypothesis-deductive method.

The water canopy theory also played its role as a creation science hypothesis in the process in which the research team secured the justification to conduct the research in the mainstream scientific community. The research team had to include the whole scope of the project (experimental conditions, methods, equipment, etc.), which originated with a creation science purpose, and also come up with a justification that was acceptable to the mainstream scientific community. In this process, elements of creation science were removed from the Methuselah Project. Mentions of biblical records or previous creation science research were taken out of government research reports and research papers published in general journals, and the rationale of the mainstream scientific community was employed.<sup>68</sup> This was possible because the Methuselah Project was not at-

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68 In his criticism of Woo Jong-hak, Lee Jae-man said: “Imagine that a scientist wrote

tempting to provide a direct dialectic of biblical records but rather a verification of the hypothesis derived from the Bible. The hypothesis that the research team aimed to verify—that high-pressure environment would affect the growth and aging of organisms—had certainly been derived from biblical records, but because the link between the biblical records and the hypothesis was loose enough, the research team was able to separate the biblical significance of the research from the hypothesis.

### **Successes and Failures of Creation Science Projects**

Creation scientists bring in the concept of “dialectics,” which was used in the theological context to support Christianity, as a methodology different from scientific verification, and argue that their research activities are “scientific dialectics.” The rhetoric of “scientific dialectics” serves to refute the criticism that creation scientists are too dependent on science and place science over the Bible on the one hand. On the other hand, by broadening the scope of science, it disproves the criticism that creation science research has fixed conclusions. However, from a different perspective, creation scientists attempt to create a hierarchy in science by dividing science into observational science and historical science and justify their engaging in a field of study different from their expert areas. In other words, creation scientists consider themselves as actors who conduct empirical scientific research using strict “scientific verification” in laboratories but study historical science through “scientific dialectics” of biblical records in churches. This perspective can also be gleaned from

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“god” or the “Bible” in his paper. Would that paper be accepted? If [professor Woo Jong-hak] wrote at the end of his paper on evolutionary cosmology, ‘All this was first started by God,’ which scientific journal would accept his paper? The theistic evolutionism he is discussing in this book is also something that cannot be published in scientific journals.” Lee Jae-man, “Mushinnon Kija, Kūrisūch’ōn Kwahakja-ege Ttajida, Woo Jong-hak, 2014 Pip’an,” 19.

the fact that the process of research conducted by the Methuselah Project research team was not very different from general scientific research.

Then, how are observational science in the laboratory and historical science in the Church related? “Scientific dialectics” is a rhetorical device that protects creation science from the mainstream scientific community’s attacks and, at the same time, a bridge that connects creation scientists’ laboratory activities and creation science activities. In the case of the Methuselah Project, it was difficult for mainstream scientists to think that the results of the research team’s study published in general science journals were related to the Bible. However, members of the research team believed that their research on the two-atmosphere environment could be used to support the truth of biblical records. By observing the changes in organisms that were exposed to the two-atmosphere environment and linking them with biblical records as well as physical evidence (such as enormous fossilized insects) the Methuselah Project became a research project for verifying the hypothesis that a layer of water existed in the sky prior to the Great Flood. From the perspective of the research team members, the two-atmosphere environment research and biblical records were connected through “scientific dialectics.” In this way, creation scientists’ belief that they are performing dialectics plays a key role in helping them maintain a consistent identity between their laboratory activities and creation science activities.

Until now, many studies on the so-called pseudo-sciences, including creation science, analyzed their discourses and rhetoric under the presumption that their knowledge production systems do not use scientific methodology. Of course, not all actors who consider themselves as creation scientists perform activities to produce evidence. But as we can see in the case of the Methuselah Project, even though the research team found the motive for research from a biblical worldview, their research activities were not much different from general scientific activities. The research team’s activities to produce evidence showed that they were not simply imitating or copying the methodologies employed by the mainstream scientific communities. Creation scientists are not only engaging in bounda-

ry work using rhetoric and discourses, blurring the boundary between science and pseudo-science, but also perform real evidence production activities as the Methuselah Project shows, which is an important reason that creation science was able to survive.

The Methuselah Project research team was unable to achieve its original purpose—to find empirical evidence of creation science’s water canopy theory. However, the fact that the Methuselah Project’s results were unable to support the water canopy theory did not have any effect on the research team’s faith in the Bible and creation science. In an interview from early 2018, Lee Eun-il spoke of the results of the Methuselah Project as follows: “There were no massive results as we’d hoped and expected; and we learned that the research on healthy longevity that we thought were related to the Great Flood during the time of Noah has a lot of limitations. Nevertheless, I am very grateful to God for leading me through creation science.”<sup>69</sup> It seems that Lee’s faith in the Bible was even more solidified despite the Methuselah Project’s failure in achieving the anticipated goal.

Although this sounds like a contradiction, Lee accepted it naturally. To him, creation science is not a collection of rhetoric and discourses based on the Bible. Rather, Lee Eun-il argues that all the science in the world can be creation science. He believes that creation science fits into the definition of science, and if “creation science can be broadly understood as a study of the order of all things God created, then all sciences can be creation science.” Lee also believes that “all scientific activities that he performs demonstrate the order of God’s creation and that God is benefiting the people through him.”<sup>70</sup> Just as general scientists do not believe that failure of science projects mean failures of science, creation scientists also do not accept the failure of creation science projects as failures of creation science. Creation science is not a small part of Lee’s identity as a scientist, or something that he would give up because of a failed research project.

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69 Lee Eun-il, “Mūdusela 969-se-ūi Shinbi-e Maeryodoen Kwahakja.”

70 An interview with Lee Eun-il via email, August 18, 2017.

To him, the Bible, creation science, and laboratory activities are connected together in a line. Just as corporate scientists or weapons scientists created a new identity under the moral and ideological circumstances they operated under to resolve their identity conflicts, Lee Eun-il and other Christians attempted to create a new identity as creation scientists in order to resolve the conflict between their faith and science.

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〈Abstract〉

## **Looking for the Evidence of “Self-Evident Truth”: Creation Scientists’ Research and Identity Examined through the Methuselah Project**

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One of the major criticisms of creation science is the assertion that creation science is not a knowledge production system but rather a collection of rhetoric and discourses based on the Bible. This means that creation scientists are not producing new evidence or data but are only reinterpreting the evidence and data produced by other scientists to make them fit in with the Bible. However, some creation scientists have received academic degrees through methodologies required by traditional science and are conducting research in secular organizations, including universities and government institutions. Creation scientists reject the common notion that personal faith and research need to be separated. How should we understand these creation scientists? In this context, this study analyzes the decade-long Methuselah Project, led by Professor Lee Eun-il (Yi Ŭnil) of Korea University in the early 2000s. Regardless of the research team’s belief that the Bible is an uncompromisable record of scientific and historical fact, the water canopy theory, one of the theories that the Methuselah Project aimed to verify through research, was a hypothesis derived from the Bible. Therefore it was able to play a mediating role between the immutable truth of the Bible and dynamic science. By examining the research activities of creation scientists from this perspective, it is possible to explain how creation scientists can conduct research for an already fixed conclusion. Moreover, this study shows us how creation scientists resolve the conflict between their personal faith and their identity as scientists.

**Keywords:** creation science, pseudo-science, boundary work, demarcation problem, identity, science and religion

〈국문초록〉

## “자명한 진리”에 대한 증거 찾기: 므두셀라 프로젝트를 통해 보는 창조과학자의 연구활동과 정체성

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창조과학에 대한 주된 비판 중 하나는 창조과학이 하나의 지식 생산 체계가 아니라 성경에 근간을 두고 있는 수사와 담론의 집합에 불과하다는 주장이다. 즉 창조과학자는 새로운 증거나 데이터를 생산하지 않고 다만 다른 과학자들의 증거와 데이터를 성경에 끼워 맞춰서 재해석하고 있을 뿐이라는 것이다. 하지만 스스로를 ‘창조과학자’라고 인식하는 이들 중 일부는 정통 과학이 요구하는 방법론을 통해서 학위를 받았으며 자신이 소속되어 있는 대학, 정부기관 등 세속적인 집단에서 연구활동을 하고 있다. 창조과학자들은 개인의 신앙과 연구활동이 분리되어야 한다는 통념을 거부한다. 이들을 어떻게 이해해야 하는가? 이러한 문제의식 하에 본 연구에서는 고려대학교 이은일 교수의 주도 하에 2000년대 초반부터 10여 년간 진행되었던 ‘므두셀라 프로젝트’를 분석했다. 성경 기술이 타협할 수 없는 과학적·역사적 사실이라는 연구팀의 믿음과는 별개로 ‘므두셀라 프로젝트’의 검증 대상이었던 ‘물층 이론’은 성경으로부터 도출되는 하나의 가설이었기 때문에 절대불변하는 진리인 성경 기술과 가변적인 과학 지식 사이에서 중재적인 역할을 수행할 수 있었다. 창조과학자의 연구 활동을 이런 관점에서 봄으로써 창조과학자가 어떻게 ‘결론이 정해져 있는’ 연구 활동을 할 수 있는지에 대한 설명이 가능해진다. 또한 창조과학자들이 개인의 신앙과 과학자로서의 정체성 사이의 갈등을 어떻게 해소하는지 볼 수 있다.

**주제어:** 창조과학, 사이버과학, 경계작업, 구획문제, 정체성, 과학과 종교

