

PONTIFICAL ATHENAEUM REGINA APOSTOLORUM

Science and Faith Institute

COMBINING ENVIRONMENTAL FACTORS AND HISTORICAL CLIMATE DATA WITH
GOSPEL WRITINGS TO ESTIMATE TRANSPIRABLE TIME FROM DEATH ON THE
CROSS TO THE RESURRECTION

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Introduction

Ascertaining a realistic estimate for the amount of time that transpired between Jesus' death on the cross to the moment of His resurrection can only be theorized by reviewing data from multiple disciplines in order to encompass a complete picture. To accomplish as much of a complete picture as possible, we must view aspects from both science and faith. Omitting one or the other would only prevent any realistic estimate from being established. For example, knowing the 'exact' amount of time that transpired with the current data available to us, will not be scientifically possible. Also, when faith is discussed, knowing the exact time will not add or detract from the significance and value of our lives on this earth. What Jesus has obtained for us through His life, death and resurrection will never change with any amount of scientific facts.

Reasons for studying this subject had one major contributing factor that was a catalyst for my ongoing research. Jesus' Shroud resides in Turin's Cathedral of Saint John the Baptist and located inside the Georgio Chapel. For those of us today who are guilty of our human demands for constant proof, Jesus' Shroud is an awakening revival. It is critical to acknowledge, that the Shroud provides a visual of everything Jesus has done for us. Before I knew of the Shroud, I was a fourteen year old child interested in science and questioning everything. I probably would have grown up lost – a scientist, like so many other colleagues, without faith. I will never forget the cold November night, when I was fourteen and searching for answers. My family had moved when I was in the middle of eighth grade. My Catholic grammar schooling was already being cancelled by two years of public school and science classes. That evening I was reading about different religions in the Encyclopedia Britannica alone in my father's home office. I then searched for and first found the last page of the section on Jesus. As I turned page after page toward the front of that section, I saw multiple human made images of Jesus. From sculptures to paintings and then on the first page about Jesus, for the first time, I saw Jesus' face in a photograph... A photograph! The hair on the back of my neck stood up and I knew this was not art work, this was not a drawing. I knew I was looking at Jesus and I became acutely aware of the miniscule scope of my existence in that room. I questioned how this image of Jesus was possible? This was seven years before the STURP team went to Turin. I had no other

information except the short caption under the photo of Jesus in that encyclopedia. My searching started anew.

The research on the Shroud of Turin to date spans well over one hundred years. All the reports and presentations have shown or determined the topics of WHO, Jesus the Christ; the WHAT, Jesus' death and resurrection; the WHERE, Jerusalem; the BECAUSE, political and religious greed for power and money; the HOW, Roman crucifixion; the WHY, for our salvation and eternal life/existence. However, the WHEN is left with the most ambiguous hypotheses. Only recently, due to environmental changes in our climate, science has been able to acquire additional data that propels us toward a more realistic estimate of dates and times. This data also works as a catalyst for additional confirmation of the Who, What, Where, When and How. The 'Why' will never change.

With the aforementioned in mind, I applied what I learned about 'everything being connected' as an environmental scientist and collected data in all fields of study, so as to have a complete picture about the amount of time that transpired between Jesus' death and resurrection. For example, if we truly want to understand our environment and energy situations, we must connect greed for power and money on the political or corporate fronts. Connections to corruption that is not much different from what Jesus had to confront with His mission on Earth. Thus, over the years my interest grew in using data from my field of environmental studies to include information from multiple other disciplines of study for the purpose of presenting more solidified data that responds to the question presented in this paper.

This discourse will present a more complete view, a view inherently suffering from the internal and external conflict between faith and reason surrounding the Shroud of Turin. Nevertheless, by collaborating historical and current weather physics, we can now insert new data to the equation of WHEN. Relative temperature conditions on the ground, location and phases for the sun and moon are reviewed to match pre-recorded prophecies along with accounts of recorded conditions that took place at the time of the scene, documented both by apostles and secular historians. However, to ascertain these statistics and particulars will not be possible

without the WHEN. Day and year are crucial for any expansion of study or viable theorizations for the amount of time transpiring between death on the cross and the resurrection.

Recent geological research that cites historical earthquake parameters and new data, derived from archeologists studying geological formations in newly exposed layers of the Dead Sea, provides documentation that is extremely relevant to deciphering the WHEN.

Additional new data from various studies also illuminate previous research dealing with solar events, palynology, historical political time frames, Jewish calendar of religious events, dust storms of seismic origin, and civil twilight for telling time. With this new data and incorporating research from disciplines such as environmental psychology, and understanding human behavior in relationship to time, we can establish key components for theorizing the transpiring time in question. Placing these disciplines into prospective along with modern medical forensics, a realistic estimate can be made for this discourse's concern.

Identifying a Date for Crucifixion

On June 16, 2010, Pope Benedict spoke at St. Peter's square about reason and faith. Pope Benedict pointed out that with reason and faith, one doesn't negate the other and stated further that Thomas Aquinas wanted us to appreciate the reciprocal relationality between all disciplines. Therefore, the collection of what is known in all disciplines must be used as a starting point. For this reason, a wide range of disciplines are utilized for this subject matter. Details are necessary in order to have a fundamental direction for any study being implemented on the theorization and estimate of transpired time between Jesus dying on the cross and His resurrection.

As we establish all known elements that can provide additional data from environmental occurrences, we can utilize them to identify a specific timeframe for when Jesus was crucified. Without having a date or even a season of occurrence, the additional details necessary to answer this paper's inquiry cannot be determined. These details can be gathered by examining the four categories presented below: Roman Factors, Jewish Factors, Gospel Factors and Environmental Factors.

- a. Roman Factors: Roman history at the time of Jesus' life on Earth has been recorded and confirmed by various disciplines and/or sources. Each one of these must fit into the equation of any possible date selected for Jesus' crucifixion.
- b. Jewish Factors: The same holds true for specific events on the Jewish calendar that occurred at the time of Jesus' crucifixion. For example: The Sabbath, the first day of Passover, and Nisan 15 all shared the same day.
- c. Gospel Factors: Eye witnesses reported various environmental and celestial events for the day in question. Detailed descriptions of these events are found in the Gospels, as well as some secular sources.

- d. Environmental Factors: Supporting environmental occurrences that will confirm both secular and religious recordings of conditions on the ground and sky for the time of the crucifixion are essential findings that will further identify a more defined date and time of the crucifixion.

a.) The Roman Factors:

It is believed that Pontius Pilate governed Judea and ordered the crucifixion of Jesus between 26AD to 36AD. Establishing this as evidence and affirming the existence of Pontius Pilate would be a critical place to start. What we know of Pontius Pilate is additionally supported by a Jewish historian, known as Flavius Josephus. Josephus wrote, “So Pilate, when he had tarried ten years in Judea, made haste to Rome, and this in obedience to the orders of Vitellius.”¹ Archaeological testimony has also come to show that Pilate was a real person who existed. This discovery known as The Pilate Stone, has an inscription referring to “Pontius Pilate, prefect of Judea.”² The limestone measures (0.8 meters wide and 0.7 meters high), bears a Latin inscription with the name Pontius Pilatus, and was discovered by the Italian archaeologist Antonio Frova and his team in 1961 while working at the Mediterranean seaside ruins of Caesarea Maritima. The limestone was face down and incorporated into a set of stairs for Caesarea’s Herodian theater around the fourth century. The position of the stone made it possible to preserve the inscription from being worn away. Additionally, recorded Gospel writings lend proof to Pilate overseeing Jesus’ trial. For example, “They bound Him, and led Him away and delivered Him to Pilate the governor.”³ Secular society provides authenticated data from the Roman historian and senator, Tacitus, who referred to Jesus and his execution by Pontius Pilate.⁴

Additional evidence has been uncovered by Israeli archaeologists and engineers as reported by Andrew Lawler in the Nat Geo article published October 20, 2019 that Pontius Pilate when governor of Judea, constructed a step slab avenue for Jewish pilgrims to reach their

¹ Flavius Josephus. *Antiquities of the Jews*. XVIII. 4.2, 89.

² The Pilate Stone. The Israel Museum, Jerusalem. 1995 – 2015. AE 1963. No. 104

³ Matthew. *The New American Bible*. The Gospel of Matthew 27:2

⁴ Roman historian Tacitus. *Annals*. Book 15, chapter 44

Temple with ease. Through the old city of David, all the way up to the Temple from the pool of Siloam, the slab covered steps were almost half a mile long and 26 feet wide. The avenue had shops, thermopoliums that served warm foods, and podiums for public speeches. We also know that this wasn't a project that started with King Herod the Great, who died approximately 4 BC, which was the first assumption by archeologists. While Herod the Great was responsible for many projects that transformed Jerusalem in his time to cause major pilgrimages to his city, this avenue project started long after he died and there is no evidence that he was involved in any way previously. The analysis of over 100 coins found beneath the slabs show that the project started in 26 or 27 AD and the latest coin found was dated 31 AD. "We think it was a single project built at one time,"⁵ says Joe Uziel, the Israel Antiquities Authority archaeologist in charge.

From multiple publicized research, the time frame for when Pilate was prefect in Judea Samaria, (an area which now encompasses the entire West Bank of Israel) has been recognized as the years 26 AD to 36 AD. For most scholars two conclusions come about for the year Jesus' was crucified under Pilate, 30 AD or 33 AD. However, these years will also need to meet the criteria cited by the additional factors that we know about when Jesus was crucified.

b.) The Jewish Factors and The Gospel Factors:

Specific Jewish traditions must be acknowledged and abided by, such as a Jewish person being buried by nightfall before a Sabbath day. Also, consideration for the conformity of how the measurement of time was and still is for some, from nightfall to nightfall. Therefore, the Sabbath day would start at sun down on the day before the Sabbath.

In accordance to the Jewish calendar that occurred at the time of Jesus' crucifixion, we need to see the occurrence of three events: The Sabbath, the first day of Passover, and Nisan 15 sharing the same day. To confirm this, we need to review all known sources of information.

⁵ National Geography. October 20, 2019, Andrew Lawler, <https://www.nationalgeographic.com/history/article/road-built-biblical-villain-uncovered-jerusalem>

In the three Synoptics Gospels (Mark, Matthew, and Luke) they say Jesus died on the day of Preparation or in Greek, paraskeu  , that is the day before the Sabbath. In Luke’s Gospel he wrote “It was the day (h  mera) of preparation (paraskeu  s), and the Sabbath was beginning”⁶

John’s Gospel asserts that Jesus’ Crucifixion occurred on the preparation day of the Passover, “Then they led Jesus from Caiaphas into the praetorium. Now it was morning, and so they did not enter into the praetorium, so that they would not be defiled, but might eat the Passover. Therefore, Pilate went outside to them, and he said, What accusation are you bringing against this man?”⁷ This signifies that the Jews accusing Jesus had not yet eaten the Passover which is eaten after sunset on Nisan 14. However, the Jewish day starts at sundown and when Nisan 14 falls on a Friday, the meal is eaten after sunset on that Friday. After sunset, would actually be the start of Saturday, which was considered a great day because both the Sabbath and the first day of Passover, Nisan 15 shared the same day. Therefore, this implies that Jesus died Friday, Nisan 14, before sunset. Jesus ate the Passover Thursday evening, which is the start of a new day after sunset. So, Jesus shared the Passover meal with his loved ones on Thursday evening, which was the beginning of a new day, Friday, according to Jewish tradition.

All four Gospels present a timeframe for Jesus’ death on the cross. They all state the crucifixion occurred on a Friday. A few hours before the beginning of the Jewish Sabbath. The Gospels also indicate that the Jewish time of Nisan was placing the day in early April. Friday was Nisan 14 and to immediately disperse the incorrect assumption that the synoptic Gospels do not agree with John’s Gospel the following is presented:

John used the term Passover in his Gospel and this causes confusion between John’s Gospel and the three Synoptics Gospels. However according to Brant Pitre, a New Testament scholar and author of *Jesus and the Last Supper*,⁸ he speaks about the term ‘Passover’ not only referring to the initial Seder meal, but is used with the seven day feast of Unleavened Bread.

⁶ Luke. The New American Bible. The Gospel of Luke 23:54

⁷ John. The New American Bible. The Gospel of John 18:28 – 29

⁸ Pitre, Brant. *Jesus and the Last Supper*. Eerdmans Publisher, 2015

Support for this is found in the Gospel of Luke, “Now the feast of Unleavened Bread drew near, which is called the Passover.”⁹ Craig Blomberg, author of the book, *The Historical Reliability of John’s Gospel*, ascertains that John is presenting Passover in his Gospel so that he may highlight the Friday as the day of preparation for the Sabbath during Passover week. John continues with, “...that Sabbath was a high day”¹⁰ Blomberg implies that this was a doubly sacred Sabbath, not an ordinary Sabbath. This Sabbath fell during Passover week.

Discerning this information shows that all four Gospels state that Jesus was crucified and was buried on “the day of Preparation.”¹¹ Additionally, John uses *paraskeu * for Friday. “Now since it was the day of Preparation (*paraskeu *), in order that the bodies might not remain on the cross on the Sabbath, for that Sabbath of that week was a solemn one (a high day), the Jews asked Pilate that their legs be broken and they be taken down.”¹² This now addresses the Jewish tradition not to violate the Sabbath rest. Maria Elisabetta Patrizi quoted in her book, *De Sindone: Nova Et Vetera*,¹³ Maria Grazia Siliato who wrote, “In any case, the idea of handling a corpse, after 40 and more hours in the sepulchre, was quite macabre! (...) What’s more, the Mishnah (oral teaching) – which took form during 4 centuries of Hebrew civilization in Palestine and was collected by Rabbi Judah, called the “Nasi”, in the second century after Christ – in the treatise regarding the obligations of the Sabbath festivities (Sabbath, Chapter 23:5), authorized on feast days [= the Sabbath] the washing and anointment of corpses.”^{14/15}

Therefore, even with authorization to meet burial obligations on the Sabbath, we have Jesus’ body being removed and buried before sundown which would be the start of the Sabbath. This shows that Jesus died on Friday, the day called the day of Preparation in all four Gospels and we know Jesus died a violent death. This is addressed in the work by Doctors Bonnie and Gilbert Lavoie with Rev. Daniel Klutstein and John Regan, they state that in accordance with

⁹ Luke. The New American Bible. The Gospel of Luke 22:1

¹⁰ John. The New American Bible. The Gospel of John 19:31

¹¹ The New American Bible. The Gospels of Matthew 27:62; Mark 16:42; Luke 23:54; John 19:14, 31, 42

¹² John. The New American Bible. The Gospel of John 19: 31

¹³ Patrizi, Maria E. *De Sindone: Nova Et Vetera*, Tau, 2018, 19

¹⁴ Siliato, Maria G. *Indagine su un antico delitto. La Sindone di Torino*, Edizioni Piemme, 1981, 156

¹⁵ Quote translated from Italian to English by Father Joseph Andrew Spence, APRA.

Jewish burial custom, the body of Jesus was not washed.¹⁶ This paper was published on Shroud.com with permission from SINDON #30, December 1981, *Dentro Internazionale di Sindonologia*, Turin. Then in the paper's conclusions we have, "If a man dies a violent death and blood is shed, the blood is not washed from the body. He is simply buried in a white linen sheet with his clothes not removed for fear of losing blood that has flowed from the man at the time of death. This blood flowing at death is considered life-blood."¹⁷

c.) Environmental Factors:

Now determining the 'year' needs to have or match additional confirming factors. We start with the Gospels and secular sources provide information regarding conditions witnessed on the ground and in the sky for the day Jesus died. The two most difficult conditions to reconcile is that of darkness coming over the land and proof of a blood red moon rise after dusk. Additionally, we have reports of an Earthquake occurring. During the last century, astronomical calculations have also been studied and reviewed. We know, from these century-old calculations that there wasn't an eclipse of the sun on that day. These studies also claimed that there wasn't a Lunar eclipse after sunset in Jerusalem. A reconciliation of the witnessed occurrences and the astronomical results should ideally take place if we are to provide scientific data that confirms the written reports from the Gospels and secular sources. The environmental events that caused the darkness need additional investigations if the prophecies and written reports are to be true about the sun being blocked throughout most of the early afternoon.

Geologist searching for proof of the Earthquake event reported to have occurred on the day of Jesus' Crucifixion had their questions recently answered with new technology, calculations and some help from Mother Nature or should I say God. Details to these environmental factors will be discussed in the next section.

¹⁶ STERA, Inc. "In Accordance with Jewish Burial Custom, The Body of Jesus Was Not Washed" *Shroud.com*, Dec. 1981, <https://www.shroud.com/pdfs/ssi03part4.pdf>

¹⁷ *Ibid*, <https://www.shroud.com/pdfs/ssi03part4.pdf>

Additionally, as I studied our environment, I was also learning more about God because I followed the developments on Jesus' Shroud in the city of Turin that survived humankind and the environment for 2,000 years. This happened because I became enthralled by how environmental research could connect and provide some missing data on the details surrounding Jesus' death and Resurrection. I became faithful to reading and collecting data on all the facts about Jesus' Shroud. This investigation became a personal challenge and I relished devising theories to unanswered questions. Finding links or missing pieces to Jesus' life story was fulfilling not just so that I could understand better, but to share theories, scientific studies and possible answers.

Therefore, in regard to the questions surrounding Jesus' existence and resurrection, there is significant data available to support the crucifixion of Jesus with the existence of His burial cloths. Known today as the Shroud of Turin and the Sudarium, they are kept in two separate locations. The Cathedral of San Salvador, in Oviedo Spain, has the Sudarium face cloth. This cloth has matching attributes of human blood stains and bodily fluids to the Shroud kept in Turin Italy.¹⁸

The original Greek translated version of John's Gospel tells details about Jesus' burial cloths that lend proof to the reality of this historical event and the existence of actual artifacts as proof. More than one cloth is reported, one flat and a smaller one rolled up. The words **ta othonia** from the translation can mean Sindon, textile, large sheet. The word **keimena** used translates into lying "in the same position." As for the location of the two cloths in the tomb, the words **Ou meta ton othonion keimenon** were used meaning "not lying together." The words **eis hen topon** means "both in a particular or exceptional/unique position." Monsignor Giuseppe Ghiberti stated, "There isn't anything to exclude the Shroud from the Gospels."¹⁹

During turbulent times when the Shroud was in France and the de Charny family wanted the Shroud to be an instrument of devotion and Bishop Pierre d' Arcy couldn't accept the Shroud

¹⁸ Jackson, John PH.D. *The Shroud of Turin, A Critical Summary of Observations, Data, and Hypotheses*. 1st ed., *The Turin Shroud Center of Colorado*, 2017; Page 22-23

¹⁹ Ghiberti, Giuseppe Monsg. *La Sepoltura Di Gesù. I Vangeli E La Sindone*. Piemme, 1982.

as Jesus' burial cloth, we have Pope Clement VII approached for a decision through a petition to go to Inquisition. If the Shroud was a fake by means of paint, Pope Clement VII would have declared the Shroud a fake and forbid the showing of the Shroud. However, the Pope didn't state the Shroud was not real and he allowed the Shroud to be shown. The Shroud could be known as an image used as a Pastoral guide, not venerated or used for idolatry.²⁰

Extraordinary evidence came about when in 1898, Secondo Pia, Esq. took the first photograph to show the Shroud's image as a negative and developed into a detailed Black and White positive. Pia reported that he almost dropped and broke the photographic plate in the darkroom from the shock of what appeared: A positive image of a man and a face in a detail that could not be seen with the naked eye.²¹

Then in April of 1902, the team of Paul Vignon and Yves Delage, an agnostic, submitted their paper on the Shroud of Turin for approval at the Institute of France, Sessions of the Academy of Science for publication. The paper presented in session had detailed step-by-step research and experiments by Vignon and his colleagues, which Delage had overseen and approved. Science had demonstrated that the Shroud was not some painting or other kind of forgery. At the end, Delage pronounced these words:

“Tradition, more or less apocryphal, I would say – tells us that this is precisely what happened to Christ; dead on Friday and – disappeared – on Sunday. The Man of the Shroud,” the agnostic stated solemnly, “was the Christ.”²²

Finally, years after the 1988 Carbon dating test that was done, the truth was spoken about that test and the lack of following proper scientific protocols. New technology with X-Rays called WAXS showed that the Shroud of Turin was 2,000 years old. “The study was conducted by Dr. Liberato de Caro of Italy's Institute of Crystallography of the National Research Council, in Bari. Dr. de Caro has employed a method known as “Wide-Angle X-ray Scattering,” or

²⁰ Wilson, Ian. *The Blood And The Shroud*. The FREE Press, 1998. pp. 289, 297.

²¹ Pia, Secondo Esq. "A Letter From Secondo Pia." *Shroud.Com*, 15 Oct. 2019, shroud.com/pdfs/ssi18part4.pdf.

²² Cauwenberghe, Andre. "The 1902 Concealment." *Shroud.Com*, 15 Oct. 2019, www.shroud.com/pdfs/ssi41part4.pdf.

WAXS, which measures the natural aging of flax cellulose and converts it to time since manufacture.”²³ The test was done in April of 2022 providing evidence that the Shroud of Turin was old enough to be Jesus’ burial cloth and is additional evidence that all events covered in the discourse of this paper actually happened.

Progress has also been made with additional new methods of testing the age of cloth. These other dating methods were used by Giulio Fanti, professor of mechanical and thermal measurement at the University of Padua’s Engineering Faculty. He is the first to present these tests showing results that the Shroud is from the time of Jesus. The tests are established techniques: Raman spectroscopy measuring the amount of cellulose in the Shroud fibers, Infrared light or Fourier Transform Infrared (FTIR) and a series of mechanical tests designed to measure breaking strength of the fibers to tell the age. The Shroud of Turin is exponentially connecting every element of Jesus’ life, death and resurrection.

²³ Mauro, J. "New Technology Suggests Shroud Of Turin Is 2000 Years Old." *Aleteia*, 22 Apr. 2022, aleteia.org/2022/04/22/new-technology-suggests-shroud-of-turin-is-2000-years-old/.

Environmental Data for Ground Temperature and Conditions

With the review of the Jewish calendar and astronomical calculations, scientists narrowed the year down to two possible candidates for the Passover Jesus died, 30AD and 33AD. “The day and date of the crucifixion are known with a fair degree of precision. But the year has been in question.”²⁴ In 2012, according to a new geological study published in the International Geology review, Geologist Jefferson Williams and other scientists put forward the date of Friday, April 3, in the year 33 as the best fit for Christ’s crucifixion. The data to support this was found due to changes in our climate; the Dead Sea has receded allowing more detailed soil and core samples to be studied.

a.) Environmental Research and Studies

The Ein Gedi Spa beach is adjacent to the Dead Sea that is only 13 miles from Jerusalem. Seismic activity in the region was determined and additional data was collected on layers of soil. What the Geologist searched for was one event reported to occur on the day of Jesus’ Crucifixion: An Earthquake. The Gospels recorded an earthquake event of which one example is, “And behold, the veil of the sanctuary was torn in two from top to bottom. The earth quaked, rocks were split, [...]”²⁵ To determine earthquake activity in the region of Jerusalem, geologist, Jefferson Williams and colleagues Markus Schwab and Achim Brauer of the German Research Center for Geosciences, studied three core samples from Ein Gedi Spa Beach. By looking at the Varves, which is sediments layered annually, at least two major earthquakes affected the core samples. In 31 BC a widespread earthquake occurred. Between 26 and 36 AD seismic event happened in that timeframe, contributing to and matching the Jewish calendar with astronomical calculations.

²⁴ Williams, Jefferson. "New Study Reveals Exact Date Jesus Was Crucified, Scientists Claim." *The Christian Post*, 25 May 2012, www.christianpost.com/news/new-study-reveals-exact-date-jesus-was-crucified-scientists-claim.html.

²⁵ Matthew. The New American Bible. The Gospel of Matthew 27:51

Yet, a second event was recorded by the Gospels: Darkness. “From noon onward, darkness came over the whole land until three in the afternoon.”²⁶ “It was now about noon and darkness came over the whole land until three in the afternoon [...].”²⁷ So, around 2017 geologists started a more detailed search with soil samples from the Dead Sea compared to recent samples from Mexico. Reason being is that the darkness was not caused by an eclipse of the sun. By using the April 3rd date in year 33AD and astronomical calculations, there wasn’t an eclipse of our sun for Jerusalem. Nevertheless, consideration should be given to the many prophecies, for example: “The sun will be turned into darkness, and the moon into blood, at the coming of the day of the Lord, the great and terrible day”.²⁸ “I clothe the heavens in mourning and make sackcloth their vesture”.²⁹ There is also secular data on the day in question becoming Dark. Roman historian, Rufinus of Aquileia, who wrote the Eusebius’ Ecclesiastical History, describes Lucian of Antioch’s defense given to Maximus. Lucian was put to death by martyrdom in 312 AD and his defense was for a search to be done of historical records held in Roman archives. These Roman records would confirm that the darkness described in the Gospels at the Crucifixion of Jesus of Nazareth did happen, and Lucian of Antioch’s words were recorded by Rufinus of Aquileia, “Search your writings and you shall find that in Pilates time, when Christ suffered, the sun was suddenly withdrawn and darkness followed”.³⁰ Having a Roman historian confirm the event of darkness at the time of Jesus’ Crucifixion as stated in the New Testament proves that other records of antiquity did exist other than the Bible.

The question as to what caused the darkness required additional investigations if the prophecies and written reports are to be true about the darkness throughout the afternoon. There wasn’t an eclipse of the sun on that day; however, there was a Lunar eclipse just after sunset. In 1872, J. R. Hind published a paper and noted “moon was eclipsed on the generally received date

²⁶ Matthew. The New American Bible. The Gospel of Matthew 27:45

²⁷ Luke. The New American Bible. The Gospel of Luke 23:44

²⁸ Joel. The New American Bible. The Book of Joel 3:4

²⁹ Isaiah. The New American Bible. The Book of Isaiah 50:3

³⁰ Rufinus, Ecclesiastical History, Book 9, Chapter 6 Ussher, J., & Pierce, L. (Trans.)(2007). Annals of the World [p. 822]. Green Forest, AR: New Leaf Publishing Group.

of the Crucifixion, AD 33, April 3rd.³¹ This was based on the April 3rd date in 33AD being one of the possible dates for the Crucifixion. Unfortunately, the accuracy of historical astronomical calculations was off, largely due to faulty studies on earth's change of rotation over the centuries. So, in 1872, it was stated that the blood moon eclipse was *not* visible in Jerusalem. Then in 1981, the British scientist, Colin Humphreys, who was teaching at Oxford and acutely aware of improvements to historical astronomical calculations, revisited J. R. Hind's results. With the help of Oxford's astrophysicist, Graem Waddington, they discovered that the Lunar eclipse was in fact, visible in Jerusalem. Their findings were published in the same scientific journal that had published Hind's study one hundred and eleven years earlier.³² NASA's Java script Lunar eclipse data sheets that are online,³³ will accept input for the lunar eclipse of 3 April 33 AD. The partial eclipse in Jerusalem was right after sundown and the immediate moonrise showed the Umbral portion of the moon eclipsed for the first 10 minutes. The eclipsed portion was near the top leading edge and was the first thing visible as a blood red moon.

By 2017 studies done on ancient earthquakes, soft-sediment deformation within Seismogenic slumps of the Dead Sea Basin, Dead Sea laminated sediments, Palynology and Radiocarbon dating of lacustrine sediments have created the possible answer for darkness coming over Jerusalem on 4/3/33. Along with secular and biblical records, Dust Geologist Dr. Ken Pye presents possible additional evidence for the afternoon turning dark. Comparing a recent example of a dust cloud kicked up by an earthquake in Mexico, Dr. Pye and Geologist Jefferson Williams noticed that the Holocene Dead Sea seismites have a thin dark flat lying fine grained layer of sediment on top. After review under an electron microscope at Cambridge University, Williams, concluded that the layers were proximal dust deposits and earthquakes probably kicked up dust clouds that then settled atop the seismite. A dust storm would easily block the sun for several hours. Additionally, Jefferson's colleague Dr. Suzanne Leroy published a technique in 2016 which determined the Dead Sea layer was deposited in the Spring. This is

³¹ Hind, J. "Historical Eclipses, 251." *NATURE, ILLUSTRATED JOURNAL OF SCIENCE*, vol. 6, no. May to October, 1872, p. 251,

<https://doi.org/https://archive.org/details/nature61872lock/page/n11/mode/2up>.

³² Humphreys, C., Waddington, W. Dating the Crucifixion. *Nature* 306, 743–746 (1983).

<https://doi.org/10.1038/306743a0>

³³ NASA. <https://eclipse.gsfc.nasa.gov/JLEX/JLEX-AS.html>. Lunar Java Script eclipse data

based upon airborne pollen assemblages present in any given layer. The pollen on top of a seismite layer can identify the season, just by examining the pollen. The dust on top of seismite can distinguish seismic or non-seismic origin.³⁴

b.) Comparison of Regional Temperatures, Current and 33AD

Most unpretentious scientists agree that the world is averaging temperatures that are 1.5 degree Celsius higher than the pre-industrial age that started in the late 1800s. With that in mind, knowing conditions on the ground in Jerusalem, some 2,000 years ago, can only be estimated by comparing data from today to studies that give us insight into historical weather. The most comprehensive study completed was in 1998 when the first quantitative assessment of a past warming period was performed at a high altitude. The scientists performed an isotopic analysis of the sediments from Hausberg Tarn, a lake on the slope of Mt. Kenya, some 4,350 meters high. Being within close proximity of mountain glaciers, this collected data gave evidence of past changes in the climate and plays a crucial role in determining the climate system throughout our planet.

The study found that there was a rapid and significant warming of lake water by 4 degrees Celsius. This warming period lasted several centuries between the years 350BC and 450AD. The scientists also stated in their paper that the warming on Mt. Kenya was probably part of a global climatic phenomenon because this warming of lake water occurred in the same period of time that had warming for the Swedish part of Lapland, the southern Yukon Territory and Alaska. "Our findings show that the climate can warm up suddenly without any connection to human activity,"³⁵ stated research leader Prof. Aldo Shemesh, head of the Environmental Sciences and Energy Research Department at the Weizmann Institute of Science.

³⁴ Williams, Jefferson. "Using Dust and Pollen to Sleuth the Origin of Lacustrine Seismites." *Paleoseismicity*, 27 Mar. 2017, paleoseismicity.org/using-dust-and-pollen-to-sleuth-the-origin-of-lacustrine-seismites/#more-8567.

³⁵ Shemesh, Aldo Prof. "Sudden Climate Warming Took Place 2,000 Years Ago." *ScienceDaily*, August 19, 1998.

The past two decades have been providing physical evidence to support the findings from the sediments of lake Hausberg Tarn. As Norway's glaciers are receding due to our current changing climate, human artifacts are being released from their frozen containment. Arrowheads, tunics, tools and sandals. The study and dating of these items go back to matching warming periods 2,000 to 1,500 years ago. In 2022, a 1,700-year-old arrow was discovered by archaeologists. "It is probably the best-preserved arrow we have found so far,"³⁶ stated Lars Pilo, an archaeologist at the Department of Cultural Heritage, Norway. Additionally, history speaks of the Roman Empire expanding northward into Scotland during this warmer weather timeframe.³⁷

Currently, average temperatures in Jerusalem around noon in early April range from 63 to 82 degrees Fahrenheit, however, the overall approximate range for the past twenty years currently is between 45 and 93 degrees Fahrenheit. This is based on a review of recorded temperatures for Jerusalem in April by Time and Date, as well as Weatherspark.^{38/39}

After converting a high temperature of 93 degrees Fahrenheit from 2010 in early April at 6 am in the morning, we have 33.9 degrees Celsius as the high for today's times. We can now use the results from the isotopic analysis of the sediments in lake Hausberg Tarn, an increase of 4 degrees Celsius could be added to the current high temperature of today to estimate what the temperature would have been 2,000 years ago. The results would be 37.9 degrees in Celsius or 100.2 degrees Fahrenheit in Jerusalem 2,000 years ago for the month of April. Adding 4 degrees Celsius to current temperatures is to acclimate to higher ground temperatures that would be 4,350 meters below the Hausberg Tarn lake on Mt. Kenya two thousand years ago.

Sadly, studies like the one at Hausberg Tarn, never receive media attention because a positive narrative doesn't make money like repetitive specials on doom and gloom. As an Environmental and Energy Scientist I have had to deal with pretentious scientists, politicians,

³⁶ Geggel, Laura. "Iron Age Arrow Found on Norway Mountain Still Has Feather Fletching on It." *LiveScience*, 12 May 2022, www.livescience.com/iron-age-arrow-norway-mountain.

³⁷ Johnson, Ben. "The Romans in Scotland." *Historic UK*, www.historic-uk.com/HistoryUK/HistoryofScotland/Romans-in-Scotland/

³⁸ TimeAndDate, <https://www.timeanddate.com/weather/israel/jerusalem/historic?month=4&year=2023>

³⁹ WeatherSpark, <https://weatherspark.com/h/s/98866/2022/0/Historical-Weather-Spring-2022-in-Jerusalem-Israel#Figures-Temperature>

and media, who distort the truth by omitting key facts. This is all done in the name of greed. The media loves doing specials and articles that have controversy and offer no conclusion. By leaving an open end, they pave the way to do another special or a follow up documentary that will sell more money-making commercials and advertisements. The details and facts that would bring any possible conclusion are deliberately left out because making money is more important than helping the world. Dr. Mark Fairchild, author of *Christian Origins in Ephesus & Asia Minor* has proven wrong, many times, those who are captious to faith. "The media is often quick to hype controversial findings, but slow to report the objections of scholars."⁴⁰

The knowledge of the contributing factors of temperatures ranging around 38 degrees Celsius at noon in April can be applied to shortening the survival time on a cross and to expedite the decomposition of a body after death. From the Shroud of Turin, we see no evidence of any decomposition on Jesus' body. Now, because of the study at Hausberg Tarn, I feel obligated to present new possibilities when linked to what we read in John's Gospel. This is the only Gospel to use the plural 'burial cloths' as in relationship to the Sudarium that covered Jesus' head, the shroud, and the long narrow piece probably used to wrap and hold the shroud closed. We must note, that John was the only Apostle who stayed with Jesus at the foot of the cross. He is the only apostle that did not die a martyr. The words John used in his Gospel (20: 5-7) for when he and Peter entered the tomb are most significant. Translated to Greek we have *Othonia Keimena*, meaning a collapsed, empty Shroud. The words describe a cloth strip and a large cloth (*Sindon*). Additional description tells of the Sudarium "rolled up by itself in a separate place."⁴¹ A Sudarium was used to cover Jesus' face while waiting, dead on the cross, for Pilate to get confirming news that Jesus had died. A Sudarium is a cloth that was tied around the necks of Jewish men and kept there for the purpose of wiping sweat from one's face. Almost every man probably wore one at the time of Jesus because of the quantitative assessment we now know of for that past warming period. An interesting point about John being the only disciple at the foot of the cross, other than Joseph and Nicodemus that were dressed appropriately for Rabbis, one can assume that John probably gave up his Sudarium to cover Jesus' face as they waited for Pilate's permission to remove the body.

⁴⁰ Fairchild, Mark Ph.D. "The Search For Jesus." *USA TODAY*, 19 Oct. 2013.

⁴¹ John. The New American Bible. The Gospel of John 20:7

Human Behavioral Studies Showing Relationship to Time When Under Stress

A positive outlook and observances that prevent, avoid, or remove stress is the best first step toward good mental, physical and spiritual health. Clergy around the world deal with normal stress factors from family, friends and community. However, they also watch over their flock which bring upon them additional stress from many who are confiding in them. Studies show that this amount of stress is beyond average for any person and is successfully dealt with repeatedly when keeping the Sabbath. A higher quality of life and spiritual well-being is significantly related to when people are keeping the Sabbath, sleeping well, conduct relaxing activities and have social support.⁴² When done correctly, this allows clergy to manage the extra stress constantly placed upon them.

a.) Definition of Time

Time is a subject studied in mathematical calculations and a subject of scientific investigation. With space travel we have recently witnessed how gravity and speed distort our perception of time. Albert Einstein's theories of relativity still hold true. I consider time as a means, made up by humankind, to measure the coming and passing of events, and as a continuum absent of spatial dimensions which scientific literature has presented for years.

Humans can become involved with time to the extent of an obsession, or be completely oblivious to what time may be upon them because they ignore the realities around them. Any one person may have a philosophy about time and both negative or positive emotions can manifest. Some people may become locked into having regret for past actions or live in fear of the future because the ultimate conclusion is death and their image or idea of death is not a positive one.

⁴² Proeschold-Bell, Rae J. PhD. "Relationships between Sabbath Observance and Mental, Physical, and Spiritual Health in Clergy." *Duke Global Health Institute, Duke Center, Durham, NC 27708-0392*, 16 Dec. 2016, divinity.duke.edu/sites/divinity.duke.edu/files/documents/chi/Hough_formatted.pdf.

All this information or definition of time brings us back to our relationship with time and if we have key elements in our lives such as social support, sleeping well and keeping the Sabbath for a higher purpose in life, we would not fear time ticking away. We will not see death as an end, but as a new start. New theories in Physics present some information that can be used to speculate about Jesus' resurrection bringing his body to a higher form of existence, not a lower form.⁴³ All our bodies move toward a break down or decay as we grow older and our bodies continue the decay process after death. This was discussed by Jack Sacco in an EWTN interview conducted by the Global Catholic Network located in Alabama, USA. Those of faith, know Jesus conquered death. After His resurrection, we read in the Gospels how both time and space had no more bearing on Him. One example would be when Jesus appeared to the couple on the road to Emmaus, seven miles from Jerusalem as reported in Luke's Gospel, 24:13 to 35. After Jesus broke bread with the couple at their house in the evening, Jesus vanished once the couple realized to whom they were speaking. Then that same evening, a few moments later, John reports in his Gospel, 20:19 that Jesus appeared to all of them in the locked Upper Room. Jesus had risen to a higher state of order where time and distance had no bearing upon Him.

For us still living on Earth with our rationale of time, we must realize that no matter what our definition or philosophy of time is, adding stress into the equation, only has one outcome: All our perceptions of time will be distorted.

b.) Roman / Jewish Time Recognition

A very important factor is to recognize how time was told in regards to a day 2,000 years ago. Ancient Rome divided the day into twelve hours of night and twelve hours of day. This inherently causes time telling issues with the year's changes in the Earth's rotation around the Sun. Daylight hours were not the same length as nighttime hours at different times of the year. However, the hours were the same length during an Equinox.

⁴³ The Nobel Prize, 1980 Physics Nobel Prize Jointly Awarded to Drs. Cronin and Fitch, <https://www.Nobelprize.org/prizes/physics/1980/summary>

In midsummer, a daylight hour was about one and a half hours long and in midwinter, the daylight hour was only 45 minutes long. Thus, in midsummer 2,000 years ago, 9am would be the third hour of the day. Midday or Noon was the sixth hour of the day, the ninth hour of the day was 3pm. The same terminology was used at night, so Midnight was the sixth hour of the night.⁴⁴

This method of telling time was also used by the Jewish people. The Gospels demonstrate this way of telling time. A way mostly done by the Sun's position in the sky. The only two methods for reading the time, other than the sun's position, was a Sun dial or water clock. Neither were available in Jerusalem 2,000 years ago. During the Israelite monarchy, they divided time into days, weeks, months and years. The days and nights were divided into hours as previously stated. The only difference was that the Romans measured from midnight to midnight and the Jews measured from sundown to sundown.⁴⁵

c.) Conducted Studies and Results

Human behavioral studies for when humans are under stress and trauma show a change in that person's relationship to time. Time perception is distorted when stress or trauma is added to everyday human behavior. The realization for the amount of time passing is particularly damaged when adding stress and trauma to the equation of trying to determine a timeframe.

Humans lose track of time for many reasons and this phenomenon has to be examined in order to have a better understanding of the time passed between Jesus dying on the cross and His Resurrection. The first major issue is the telling of time mostly from the sun's position in the sky. Even the Gospels have the word 'about' used in the translations of sentences telling the time when Jesus was on the cross. All of Jesus' loved ones that were with him at the foot of the cross

⁴⁴ Adamah. "Ancient Everyday – Telling Time in the Roman World." *Eagles and Dragons Publishing*, 1 Jul. 2017, eaglesanddragonspublishing.com/ancient-everyday-telling-time-in-the-roman-world/

⁴⁵ Harris, M. D. (2013, September 29). *Timekeeping in the Ancient Mediterranean and Near East*. MD Harris Institute. <https://mdharrismd.com/2013/09/29/timekeeping-in-the-ancient-mediterranean-and-near-east/>

had to endure a sky getting darker and darker from dust clouds caused by an earthquake. An earthquake probably with several ‘after shock’ earthquakes.

The trauma from all the events since Thursday night at the Passover meal with Jesus the Christ, must have been surreal to them and had to weigh heavily upon each follower of Jesus in their own way. All of them had their comprehension capacity abbreviated, thus causing them to see and think the day had progressed much faster than reality.⁴⁶ The following facts added major contributing elements to each individual having their comprehension abridged:

- 1.) The hourly time telling for the month of April now had to incorporate a slightly longer period of time for each hour, compared to just a few weeks ago when the hour of a day was shorter.
- 2.) Jesus’ love ones were crying or hiding, soldiers were yelling, corrupt people were swearing, and darkness lurked among the sounds from an earthquake and wind. Everyone at the foot of the cross had little sleep and probably no food or water causing, dehydration in the heat from a warming period that lasted between 350BC and 450AD.
- 3.) As previously presented in this paper, Nature added the ingredients for a harrowing experience from an earthquake or quakes and this earthquake kicked up a dust storm that lasted at least 3 hours based on the Gospel reports of the sky growing dark from about noon to three in the afternoon. The sounds from an earthquake and the winds that fueled the dust storm worked in tandem with decreasing visibility and irritation of eyes to cause additional confusion.
- 4.) Consideration must also be given to when the hour of Jesus’ passing was written and noted. The time would have been based upon the brightness of the daylight. So, to mark the event’s occurrence as the sun was blocked since midday with the daylight diminishing in the sky, the day must have seemed older than what it really was by an estimated time ranging between 30 to 90 minutes. Therefore, the possibility that Jesus gave up his Spirit before the ninth hour or 3pm is very likely. Perhaps as early as 1:30 in the afternoon, because when Jesus was placed on the

⁴⁶ Stetson C, Fiesta MP. "Does Time Really Slow Down during a Frightening Event?" Eagleman DM, PLoS ONE 2(12); e1295., 2007, <https://doi.org/10.1371/journal.pone.0001295>

cross, that hour was probably earlier than assumed by witnesses. Especially since we see the use of the word “about” in the Gospels. One example, “It was now *about* noon and darkness came over the whole land...”⁴⁷

From the data provided by human behavioral studies we see a distortion in one’s perception for the amount of time passing when under stress. The amount of time distorted will vary from person to person. Thus, leaving us with an insurmountable task to ascertain the actual times for Jesus being nailed to the cross and giving up His spirit.

⁴⁷ Luke. The New American Bible. The Gospel of Luke 23:44

Hypothetical Transpirable Time From Death on the Cross to the Resurrection

In the book, *A Doctor at Calvary*, by Pierre Barbet, M.D., a complete discourse is made for the causes of a rapid death. Jesus was tortured beyond all others that were crucified and chapter three places a solemn mood upon the reader. Reading this chapter places all the mental and physical torture Jesus suffered for us, into a perspective that is overwhelming. If we add the heat of the day to our Lord's suffering, one's spirit cries out as if we were on our knees at that cross.

“All that we have so far examined constitutes the courses of weakness and pain, which would have only been able to accelerate the agony.” “(...) we might even say that tetany and asphyxia, of which for a doctor there can be no doubt, prove that the imprints on the shroud confirm with reality; this body died the death of a crucified body.”⁴⁸

Having a reasonable hypothetical time for when Jesus died on the cross needs another element that confirms reasons and evidence that Jesus died faster than normal for a person being crucified. Before presenting estimated times for Jesus' death and Resurrection, we first shall examine civil time two thousand years ago and the cause of an early death on the cross.

a.) Civil Time for Jerusalem, April 3, 33AD

We are all familiar with civil time in our modern day. The statutory time scales designated by civilian authorities are used to tell the local time indicated by clocks. Merriam-Webster states that Civil Time is “clock time reckoned in mean solar hours, minutes, and seconds and commonly divided into 12-hour periods beginning alternately at midnight and noon of each civil day.”⁴⁹

⁴⁸ Barbet, Pierre MD. *A Doctor at Calvary*. *Allegro Editions*, 1953. pp. 74, 78.

⁴⁹ “Civil time.” Merriam-Webster.com Dictionary, Merriam-Webster, <https://www.merriam-webster.com/dictionary/civil%20time>. Accessed 24 Aug. 2023.

This method of tracking time with clocks that count seconds and minutes, did not exist for the events in question. As previously discussed, time was managed for the Jews, from sun up to sun down and a new day started at sun down. For the average person two thousand years ago, there wasn't always a consensus for the exact time of day. As for the time at night, a complete consensus was probably never possible.

After researching charts published, both private and governmental, for the sun's sunrise and sunsets in Jerusalem two thousand years ago, I found various calculations providing different answers. The earth's rotation and position to the sun was not the same as today, thus various adjustments are made for calculations to create a timeline of our sun's movements two thousand years ago. The National Oceanic and Atmospheric Administration's (NOAA) Sunrise and Sunset calculator I found to be the most reliable.

b.) Probable Significant Injury and Cause of Early Death

An important element to confirm or at least provide evidence for, is that Jesus died very quickly on the cross. Establishing evidence for this will steer our estimates for the time of death on the cross and the amount of time that transpired until Jesus' resurrection.

A lecture entitled, *The Forensic Pathology and The Shroud*, was given at Ateneo Pontificio Regina Apostolorum in Rome by Professor Luigi Rodella, MD, MSC from the University of Brescia, Italy. He discussed the physical injuries Jesus suffered: punched, cap of thorns, hit by a reed or stick, flogged, falling, dehydration, broken cartilage in the nose, scraps, nail wounds, nerve damage, blood lost, swollen eye, dislocated shoulder, and a postmortem spear wound. All these wounds would lead toward asphyxia and shock in time. However, Jesus died much sooner than normal from these wounds as presented in Mark's Gospel. "Pilate was amazed that he was already dead. He summoned the centurion and asked him if Jesus had already died. And when he learned of it from the centurion, he gave the body to Joseph."⁵⁰

⁵⁰ Mark. The New American Bible. The Gospel of Mark 15: 44 - 45

Nevertheless, the question remains, why did Jesus die sooner than expected on the cross? Doctor Rodella's lecture discussed the evidence on the Shroud showing the marks on Jesus' shoulders from carrying the Patibulum (cross beam) while his hands were tied to that beam. Any fall without the means to use your hands to prevent hitting the ground would cause great harm because of the weight of the Patibulum. Various sources estimate the crossbar to be around 70 to 90 pounds or 32 to 41 kilograms. The damage to the tip of Jesus' nose that is shown on the Shroud of Turin, as well as the broken nose cartilage and dislocated shoulder, all indicate that the possible reason for these injuries could be from a fall with a heavy crossbeam across the shoulders. Any fall would slam face and chest into the walkway made of large stones. Along with a 90 pound crossbeam on Jesus' back, that fall or falls, could have caused chest trauma. An injury that could have started a lesion of the aorta. This lesion would have manifested. We have descriptions from the Gospels that match the reaction to the pain from an aorta artery rupturing. The pain of an aorta rupturing is well known,⁵¹ and so is the reaction of a strong cry or scream before dying. This reaction is consistent with the Gospels. "But Jesus cried out again in a loud voice, and gave up his spirit."⁵² "Jesus gave a loud cry and breathed his last."⁵³ From these descriptions, the Shroud of Turin, and medical data, we can conclude that Jesus died quickly because His Aorta ruptured.

c.) Estimated Time of Death on the Cross

The data presented in this discourse to determine the date of April 3, 33, the darkened skies, mental awareness, lack of sustenance, environmental factors, the issues with Roman and Jewish time telling, human behavior reactions, and Jesus' condition on the cross, hypothetically concludes Jesus probably gave up his Spirit before the reported ninth hour or 3pm. Nevertheless, the spirit of 3pm being the Lord's hour shall never change. For telling time the way time was told two thousand years ago, there really is no matter.

⁵¹ Thoracic aortic aneurysm. Mayo Clinic <https://www.mayoclinic.org/diseases-conditions/thoracic-aortic-aneurysm/symptoms-causes/syc-20350188> Accessed 25 Aug. 2023

⁵² Matthew. The New American Bible. The Gospel of Matthew 27: 50

⁵³ Mark. The New American Bible. The Gospel of Mark 15: 37

In regards, to establishing a better understand of the time passing for Jesus and His loved ones on April 3, 33 AD, the removal of Daylight Saving Time from any equation must be done first. This was done first before using NOAA’s Solar Calculator,⁵⁴ the remaining input data is as follows:

CITY: Jerusalem, Israel

LATITUDE: 31 Deg.; 47 Min.; 0 Sec.

LONGITUDE: -35 Deg.; 14 Min.; 0 Sec.

OFFSET TO UTC: - 2

Month: April; Day: 03; Year: 0033

APPARENT SUNRISE: 5:25 AM

SOLAR NOON: 11:41:36

APPARENT SUNSET: 5:59 PM

Immediately a notation should be made for the apparent time recognized as high noon by witnesses in Jerusalem on April 3, 33AD. Every witness citing the time of high noon was actually 19 minutes early based upon NOAA’s Solar Noon calculation of 11:41 AM.

With the reported information about Jesus being on the cross ‘about’ noon, “It was now *about* noon and darkness came over the whole land...”.⁵⁵ This can be acceptable to acknowledge the likelihood that the actual time Jesus was nailed to the cross was in the late morning and not yet high noon.

To estimate the time Jesus died on the cross, all the contributing factors presented in this paper must be considered. Various estimates can be made, but what all estimates will have in

⁵⁴ Solar Sunrise and Sunset Calculator. The National Oceanic and Atmospheric Administration’s (NOAA) <https://gml.noaa.gov/grad/solcalc/sunrise.html>. Accessed 7 Aug. 2023

⁵⁵ Luke. The New American Bible. The Gospel of Luke 23:44

common, is that Jesus died on the cross before 3pm. This commonality is ascertained by following all the collected information that are contributing factors to Jesus dying earlier.

The major factors for assuming the time of day was later than reality are: the dust storm making the day seem darker and older than what it actually was for them, the ongoing turmoil, mental stress and anguish, dehydration from the lack of water when a warming period had temperatures much higher than what they are today.

Trying to keep track of time after Jesus' crucifixion, an earthquake, a dust storm, no food or water, and the stress to request that Jesus' body be turned over to the family in order to bury Jesus before sunset is a great deal more overwhelming than we may first think. Reviewing and just thinking about what had to be done to bury Jesus is exhausting. The following tasks were left to three men (Joseph, Nicodemus, and John) and four women (Mary, Jesus' mother, Mary Magdalene, Mary, the mother of James and Joses, and Salome) all at the foot of the cross and perhaps at least two other women could have been nearby to help. Tasks such as:

- Send word to Pilate that Jesus died, and the family requested the body for burial
- A soldier/messenger leaves Golgotha for Antonia Fortress. Pilate sends for the centurion
- Walking travel time, on that day through the streets of Jerusalem, would be strenuous
- Perhaps John offers his sudarium (sweat) cloth that was tied around his neck to cover Jesus' face as they wait for Pilate's permission to remove Jesus' body
- Request/Receive permission from centurion to cover Jesus' face with the sudarium
- Pilate wants proof of death, Centurion returns and uses spear to confirm Jesus' death
- Dealing with the trauma of witnessing the spear wound to Jesus' side
- Centurion travels again to Antonia Fortress to report back to Pilate
- Dealing with the stress of waiting
- Centurion returns again with Pilate's permission to turn over the body
- Dealing with the anguish of removing Jesus from the cross
- Lamenting over Jesus would have occurred, especially if His mother Mary held Him in her arms at the foot of the cross
- Joseph of Arimathea leaves to purchase a pure linen cloth and prepare a nearby tomb

- Joseph returns with the linen cloth, but has no means to hold the cloth in place when they place Jesus' body on the cloth in the tomb
- Perhaps, after much discussion, the centurion helps by using the edge of his sword to cut off the approximate four inch wide strip from the linen cloth
- Nicodemus brings oils to anoint the tomb's stone and the linen cloth / shroud
- They did not wash Jesus' body as Joseph and Nicodemus were fully attuned to Jewish burial traditions
- Jesus' body is carried to the tomb and finger prints from the person holding Jesus' feet are left in the blood at the bottom of Jesus' feet. (This is visible on the Shroud in Turin)
- Evening would be already upon them, but probably darker sooner, due to remnants of the earlier dust storm
- Jesus' body is placed on top of the bottom half of the shroud resting on the stone
- The top half of the shroud is placed over Jesus and held in place by the strip of linen
- The Sudarium is rolled up and placed 'upon' Jesus' head,⁵⁶ with proper translation
- Time for Mary, Jesus' mother, to sit with her Son's body
- Time for possible discussions or arguments about guarding the tomb
- The tomb is closed and sealed at sunset shown to be 5:59 pm by NOAA solar calculations

Stating Jesus gave up His spirit before 3pm is logical and the extra time would have been needed to accomplish and deal with all of the tasks listed above. However, reason/science will not be able to afford us an exact time, only various estimates for Jesus' death. Therefore, since this paper is for the University of Science and Faith I will use Faith to establish a logical time.

God has provided us with relationships between events and numbers. Two significant numbers are three and forty. With inserting the presented data from this paper, reason would require an earlier than a 3pm time for Jesus dying on the cross, but the science is insufficient to provide an exact time. Faith on the other hand affords us the number forty to work with for our calculations, after ascertaining the time of Jesus' Resurrection.

⁵⁶ John. The New American Bible. The Gospel of John 20: 6-7

d.) Estimated Time of Resurrection, Easter Morning

By removing Daylight Saving Time from the equation when using NOAA's Solar Calculator,⁵⁷ the remaining input data is as follows:

CITY: Jerusalem, Israel

LATITUDE: 31 Deg.; 47 Min.; 0 Sec.

LONGITUDE: -35 Deg.; 14 Min.; 0 Sec.

OFFSET TO UTC: - 2

Month: April; Day: 05; Year: 0033

APPARENT SUNRISE: 5:22 AM

SOLAR NOON: 11:40:52

APPARENT SUNSET: 6:00 PM

The data above for April 5, 0033 presents a sunrise at 5:22am. April 5, being the Sunday after Holy Friday, April 3, 0033 for the Crucifixion of Jesus. This first day of the week, Sunday, actually started at sundown on Saturday according to the Jewish tradition of telling time. So, the third day began at sundown. However, NOAA's Solar Calculator is based upon midnight being the start of the next day. Nevertheless, I am using 'sunrise' on the first day of that week for Jesus' resurrection based on the following:

“Very early when the sun had risen, on the first day of the week, they came to the tomb.”⁵⁸

⁵⁷ Solar Sunrise and Sunset Calculator. The National Oceanic and Atmospheric Administration's (NOAA) <https://gml.noaa.gov/grad/solcalc/sunrise.html>. Accessed 10 Aug. 2023

⁵⁸ Mark. The New American Bible. The Gospel of Mark, 16:2

“After the sabbath, as the first day of the week was dawning. Mary Magdalene and the other Mary came to see the tomb.”⁵⁹

“But at daybreak on the first day of the week they took the spices they had prepared and went to the tomb.”⁶⁰

“On the first day of the week, Mary of Magdala came to the tomb early in the morning, while it was still dark, and saw the stone removed from the tomb.”⁶¹

By estimating that Jesus died on the cross at the earlier time of 1:22 in the afternoon, that would be one hour and thirty-eight minutes before 3pm. I hypothetically select the time of 1:22pm because when used with the sunrise on April 5, 0033 at 5:22am, we have an estimated answer based upon faith and the reverent number of 40. Thus creating 40 hours between death on the cross and Jesus' Resurrection.

⁵⁹ Matthew. The New American Bible. The Gospel of Matthew, 28:1

⁶⁰ Luke. The New American Bible. The Gospel of Luke, 24:1

⁶¹ John. The New American Bible. The Gospel of John, 20:1

Conclusion

The details about the times being discussed carry the most significance and importance. As humans we see in the details, relatable aspects of our lives. Thus, the amount of time is relevant, especially since Jesus teaches us that time and space are of no matter when we have the promise of eternal life. However, the details are important and understanding what Jesus' love ones had to grasp, work through, and deal with, from Holy Friday to Easter morning is crucial for all of us. Even Dr. Einstein wrote, and is quoted in a book that is about the Universe and Dr. Einstein, on how important details are for the general public to know. "It is of great importance that the general public be given an opportunity to experience – consciously and intelligently – the efforts and results of scientific research. It is not sufficient that each result be taken up, elaborated, and applied by a few specialists in the field. Restricting the body of knowledge to a small group deadens the philosophical spirit of people and leads to spiritual poverty."⁶² The prevention of science and faith working on the same team seems to be a worldwide secular effort. Yet, science has continuously added strength to faith and perhaps that is what many scientists do not care to see.

In an EWTN interview with Jack Sacco, I noted one last piece of information from Physics. The Global Catholic Network presented that "Evidence on the Shroud shows the body wrapped within had no signs of decomposition. The body seemed to have started a process to a higher order or re-order of sub atomic molecules. Instead of disorder, we see a move toward a higher natural order or super order. The body can no longer support the Shroud on top, so the cloth 'falls through' the body. It is also important to note that this theory stating that the body becoming energy did not cause the resurrection; but rather the resurrection caused the energy." The estimated time for this to occur among the molecules of a body approximately six feet tall, is 36 to 40 hours.

⁶² Barnett, Lincoln. *The Universe and Dr. Einstein, Revised Edition*, Bantam Books, 1948, Forward p. 9

BIBLIOGRAPHY

Barbet, Pierre MD. *A Doctor at Calvary*. Allegro Editions, 1953.

Barnett, Lincoln. *The Universe and Dr. Einstein, Revised Edition*, Bantam Books, 1948.

Blomberg, Craig L. *The Historical Reliability of John's Gospel, Issues & Commentary*, IVP Academic Publisher, 2011

Conte, Ronald. *The Day of the Crucifixion: Friday, Nisan 14. Catholic Public Domain Version of the Bible*, 2012, <https://doi.org/Roman Catholic moral theologian and translator>.

Fairchild, Mark, Ph.D., *Christian Origins in Ephesus & Asia Minor*, Published by Hendrickson Publishers, 2nd Edition, 2017.

Jackson, John PH.D. *The Shroud of Turin, A Critical Summary of Observations, Data, and Hypotheses*. 1st ed., *The Turin Shroud Center of Colorado*, 2017.

Kvesuc, Ivana. "New Study Reveals Exact Date Jesus Was Crucified, Scientists Claim." *The Christian Post*, 25 May 2012.

Kennedy, D. James. *Risen Indeed, Evidence for the Resurrection*. Coral Ridge Ministries, 2005.

Pitre, Brant. *Jesus and the Last Supper*. Eerdmans Publisher, 2015

Rinaldi, Peter s.d.b. *When Millions Saw The Shroud, Letters From Turin*. Don Bosco Publications, 1979.

Holy Bible, The New American Bible. Fireside Bible Publisher, 2000 - 2001.

Shellenberger, Michael. *Apocalypse Never, Why Environmental Alarmism Hurts Us All*, HarperCollins Publisher, 2020.

Wilson, Ian. *The Blood and the Shroud*, The Free Press Publisher, 1998.