Love and the Cosmos:

Trinitarian Perspectives on Science

with T. F. Torrance and C. S. Lewis

by Kerry V. Magruder

Are you interested in discussing sections of the draft?

Contact kvmagruder@gmail.com for the latest version.

Cover photo montage:

- Background stars: Photograph by Stephen Folmar (El Stevo13, Flickr), taken at Black Mesa, Oklahoma, during the 2014(?) Okie-Tex star party. Used with permission.
- C. S. Lewis (left): *** need credit and permission ***
- T. F. Torrance (right): *** need credit and permission ***
- Painting: Michael Barfield, "Child's Scarlet Christ" (19##), used with permission.

Introduction

1. Parable

> "The Birth of Christ is the *eucatastrophe* of Man's history. This story begins and ends in joy. It has pre-eminently the inner consistency of reality. This story is supreme, and it has entered history. It is pre-eminently (and infinitely, if our capacity were not finite) high and joyous. There is no tale ever told that men would rather find was true, and none which so many sceptical men have accepted as true on its own merits. To reject it leads either to sadness or to wrath." – J. R. R. Tolkien[1]

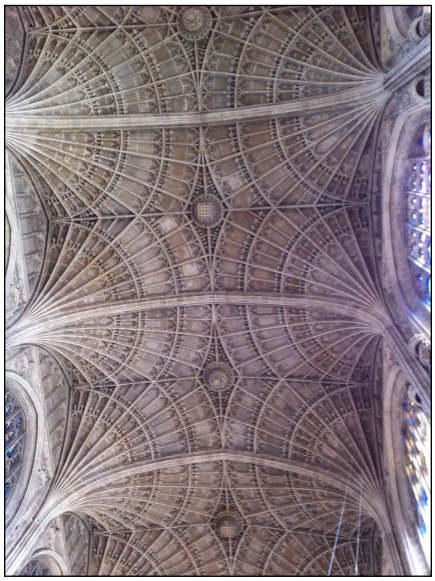


Figure 1: King's College Chapel ceiling. Cambridge University[2]

Imagine that you have just attended in person the annual Christmas Eve *Festival of Nine Lessons and Carols* at King's College, Cambridge. The soaring beauty of the music amplified beneath that vaulted ceiling reflects the astonishing claim of the Christian faith that the God who created the universe entered space and time and was born in a manger, lived among us, and then rose from the tomb to bring us life forevermore. Imagine that you genuinely believe all of this, and that you have spent a good part of your life reflecting on the mystery of Christian faith, that the greatest gift of God comes to us "not as an idea, not as a concept, not as a mere word, but as Word made flesh" to redeem and sanctify this creation.[3]

---

1. Montage of quotes from J. R. R. Tolkien, "On Fairy-Stories," in *The Tolkien Reader* (New York: Ballantine Books, 1966), pp. 33-90, particularly pp. 85-90. Tolkien's neologism *eucastrophe* etymologically means "joy" (*eu-*) + "great disruption" (*-catastrophe*), that is, a great turning around of all things with unexpected joy.

2. The King's College Chapel ceiling takes its inspiration from a forest canopy as seen from the ground. If cathedral architecture generally expresses a human understanding of our place in the universe, how might this be particularly meaningful for a biologist? For a cosmologist?

3. *Carols from King's, 60th Anniversary Edition* DVD (Cambridge, The Choir of King's College, 2015).

A few days later you are conversing with a friend at The Eagle pub, the site where Francis Crick and James Watson unveiled their model for the structure of DNA, only a minute's walk east from King's College and just north of the renowned Cavendish Laboratory where James Clerk Maxwell served as the first Director and extended his work on electromagnetism. Later that afternoon you walk by Magdalene College, where C. S. Lewis concluded his distinguished academic career, on your way to view manuscripts of Isaac Newton and Charles Darwin held in the Cambridge University Library.

Now, in the pub with your friend, your conversation touches upon all of these topics, moving seamlessly between faith and science.

Or does it?

Figure 2: The Eagle Pub (above); Magdalene College (right). Cambridge University.

The aim of this book is to show how that might be, and what such unfragmented conversations might look like.[4]

The title suggests the scope of the work: "Love and the Cosmos"... "Trinitarian"... "Perspectives on Science"... "With T. F. Torrance and C. S. Lewis."

Stephen Cleobury, Director. Filmed 14 December 2014 by the BBC. Quotation from the Bidding Prayer, as transcribed in the enclosed booklet, p. 6. The Bidding Prayer alludes to John 1:14: "And the Word became flesh and lived among us, and we have seen his glory, the glory as of a father's only son, full of grace and truth" (NRSV). A recurring theme in the theological essays of Dorothy L. Sayers arises from her discussion of the "shock of the Incarnation" and of modern belief in it. Cf. Sayers, *Creed or Chaos?* (London: Methuen & Co., 1947), and Crystal Downing, *Subversive: Christ, Culture, and the Shocking Dorothy L. Sayers* (Minneapolis: Broadleaf Books, 2020).

4. The point of the parable, expressed directly, is that just as this book assumes the broad tradition of Nicene Christianity, so it also assumes a posture of affirming widely accepted and enduring scientific knowledge, in order to throw light on what it means to participate in both communities.

2. "Love and the Cosmos…"

A Trinitarian vision of natural science (and what we are here for) is one of *love and the cosmos*. There are at least four dimensions in which this is so:

- *Doxological love*: Is the daily experience of the reality of every creature and every aspect of the natural order, when received with wonder, humility and gratitude, a practice of love?
- *Cognitive love*: Is the way we come to know something according to its own reality and nature an exercise of love?
- *Ethical love*: Is what we do with our knowledge a practice of love?
- *Eschatological love* (or, the hope of love): Is the natural world, the cosmos in which we live, a school in which we might learn to love? And a place that will end in love?

Far from being merely an emotion, love is an openness to embrace what is real other than ourselves. In the same way, the three Persons of the Triune God made us real, not just a projection of themselves, and turned outward from themselves to embrace us, along with all creation, in order to bring us to share in their divine commuinion.

The mystery of *love and the cosmos* is the musical score accompanying the entire book.[5]

3. "… Trinitarian …"

Although Trinitarian theology reached an ancient pinnacle with Athanasius and the Councl of Nicaea in the fourth century, from the standpoint of the history of Christian theology, the 20th century witnessed a "Renaissance of Trinitarian theology" following the work of Karl Barth.[6] Trinitarian theology does not denote a mental assent to the Trinity as an abstract doctrine or secondary belief. Nor does it refer to approaching the Trinity as an intellectual puzzle or a speculative argument in metaphysics. Rather, Trinitarian theology refers to an ineradicably personal approach to theology that arises out of the revelation of God in Christ. Through the Incarnation God reveals himself as an eternal communion of love between the

5. Don't read with the soundtrack on mute; keep returning to the chapel at King's College. We will return to this discussion in Chapter 1, Section 4: "Love and the Cosmos," on pp. 14-16.

6. Some of the leading theologians in the Trinitarian renewal after Barth were Dietrich Bonhoeffer, Karl Rahner, Hans Urs von Balthasar, Jürgen Moltmann, Robert W. Jenson, John Zizioulas, Catherine Mowry LaCugna, Elizabeth Johnson, Lesslie Newbigin, Colin Gunton, Thomas F. Torrance, and James B. Torrance. Although not theologians, C. S. Lewis and Dorothy L. Sayers also played prominent public roles. For the complex currents of 20th-century Trinitarian theology, see Christoph Schwöbel, "The Renaissance of Trinitarian Theology: Reasons, Problems, Tasks," in *Trinitarian Theology Today* (Edinburgh: T&T Clark, 1995); Stanley J. Grenz, *Rediscovering the Triune God* (Minneapolis: Fortress, 2004); Thomas A. Noble and Jason S. Sexton, eds., *The Holy Trinity Revisited: Essays in Response to Stephen R. Holmes* (England: Paternoster, 2015); and Veli-Matti Kärkkäinen, *The Trinity: Global Perspectives* (Louisville: Westminster John Knox, 2007). For examples of Trinitarian theology before Barth, see Elmer M. Colyer, *The Trinitarian Dimension of John Wesley's Theology* (New Room Books, 2019) and Thomas F. Torrance, *Scottish Theology: From John Knox to John McLeod Campbell* (#1996-598). For a classic examination of the ancient theology of Nicaea, see Thomas F. Torrance, *The Trinitarian Faith: The Evangelical Theology of the Ancient Catholic Church* (#1988-489).

Father, Son and Spirit. Trinitarian thinking is Christ-centered, with the Incarnation as the starting point. Every area of doctrine organically connects to, and is grounded upon, the Trinitarian communion of God revealed in the Incarnation of Jesus Christ. The Trinity therefore serves not as an isolated doctrine but as a grammar of theology, a way of thinking that searches out the natural connections between every doctrine and the revelation of God in Christ.

The renewal of Trinitarian theology has not proceeded without significant reflection on its ramifications for the natural sciences. Some of the perspectives on science we explore are the following:

1. The goodness of the physical, material creation.[7]
2. Relational being; that things are what they are not in and of themselves but as embedded in relations with others.[8]
3. Stratified reality; a holistic vision of a reality with such depth that it transcends reductionism.[9]
4. Divine freedom to love; that the natural order is not necessary but contingent, and ultimately an arena of divine action in faithful lovingkindness.[10]
5. Semantic realism (or *kata physin* knowing[11]); that actual knowledge of reality outside ourselves is possible, however difficult it may be to attain.[12]

---

7. This perspective resonates with the theological affirmation that the eternal Son of God assumed a physical body in the Incarnation, raised a physical body to a new creation of indestructible life in the Resurrection, and includes all creation with him in his Ascension and Second Advent.

8. This perspective resonates with the theological affirmation that the three persons of the Trinity cannot be defined in isolation, but have their very being in relation with one another. They have their being in communion. Similarly, in the revelation of God in Christ, when we know the Son we also know the Father and Spirit, for they are in one another.

9. This perspective resonates with the theological affirmation that Jesus of Nazareth is fully human and yet also fully divine. His presence with us as fully human does not diminish his transcendence as deity.

10. This perspective resonates with the theological affirmation that the natural order was freely established by the three persons of the Triune God who together in love not only freely created it from nothing but sustain it and are even now working in it in covenant faithfulness, and will bring it to loving fulfilment in a New Creation.

11. *Kata physin* literally means knowing "according to nature" (*kata* = "according to"; *physis* = "nature"); that is, developing a method of knowing according to the nature of the object being known. Torrance, citing use of the term *kata physin* by the Nicene theologians, adopts it as the fundamental principle for scientific realism.

12. This perspective resonates with the theological affirmation that once we realize that we have come to truly know the Eternal God in his Incarnate Son, we are compelled to acknowledge that we are called to know and love all that is real, including his creation (and including his teachings on *ethical love* such as the Sermon on the Mount in Matthew 5-7).

Such perspectives are "Trinitarian" in that they are associated, for the Christian, with reflection on Trinitarian faith.[13]

An under-appreciated historical phenomenon is that the early church developed its doctrine of creation not on its own as an isolated topic in theology, but through sustained theological reflection on the Incarnation.[14] This book explores what it might mean today for Christians again to ground their thinking about science and nature in the foundational theological perspectives of the Incarnation, Resurrection, and Trinity. Rather than focusing on current issues *per se*, our objective is to articulate deeper perspectives that arise from a Trinitarian theological instinct for science. To help Christians develop such an instinct is the chief aim of the book.

A Trinitarian approach to natural science regards the Nicene achievement in theology as paradigmatic for theological science in both content and method. *Substantively*, it explores how a Christian understanding of creation is deepened when we begin with a Christological focus. It is in the Person of Christ, anointed with the Spirit, that the divine nature was joined to human nature. The Incarnation reframes the relations between God and Nature, placing all creation on a new basis. It then searches out creaturely analogies, echoes, or resonances with the Triune communion of love. *Methodologically*, it identifies aspects of theological science that are evident in the Incarnational and Trinitarian theology of Nicaea, and then considers whether those aspects of theological science have counterparts in how the natural sciences work.[15] To approach the natural sciences in view of inquiries like these is a way of developing a Trinitarian theological instinct for science.[16]

---

13. The preceding footnotes indicate the theological reflections with which the stated perspectives on science resonate. These perspectives on science and others are developed throughout the book; cf. Appendix D: "Perspectives," beginning on p. 977.

14. For example, reflection on the singularity of the Incarnation made plausible the corollary tenet of the singularity of *creatio ex nihilo*. The doctrine of creation is best understood in light of the Incarnation, rather than as a prologue to it. Thomas F. Torrance, *The Ground and Grammar of Theology* (#1980-369); and Thomas F. Torrance, *The Christian Frame of Mind: Reason, Order, and Openness in Theology and Natural Science* (#1989-505).

15. A prime example is the principle of *kata physin* knowing; cf. note 11 on p. iv.

16. We will return to this discussion of Trinitarian theology in Chapter 1, Section 4: "Love and the Cosmos," on pp. 14-16.

4. "... PERSPECTIVES ON SCIENCE..."

Figure 3: Night sky at Black Mesa, Oklahoma. Photograph © Stephen Folmar. Used with permission.

> "The heavens are telling the glory of God;
> and the firmament proclaims his handiwork.
> Day to day pours forth speech, and night to night declares knowledge.
> There is no speech, nor are there words; their voice is not heard;
> yet their voice goes out through all the earth,
> and their words to the end of the world.
> In the heavens he has set a tent for the sun,
> which comes out like a bridegroom from his wedding canopy,
> and like a strong man runs its course with joy.
> Its rising is from the end of the heavens, and its circuit to the end of them;
> and nothing is hid from its heat." (Psalm 19:1-6 NRSV)

For believers, our experience of the night sky (Figure 3) may prompt a hymn of praise like we find in the first half of Psalm 19. An ancient metaphor describes the Bible and nature as two books: the book of God's Word and the book of God's Works. The Psalmist expresses the two

books on an experiential level by associating in a single song verses 1-6 on the order of the heavens (quoted here), and verses 7-14 on the "law of the Lord." The implication of these verses appearing in a single Psalm is that, in the experience of the Psalmist, there is no disharmony between the two books. Let's call this openness to the sheer reality of the two books "doxological love" (Table 1).[17] It is the arena spoken of above as the daily experience of openness to the reality of every creature and every aspect of the natural order, received with wonder, humility and gratitude.

God's Word	<– Doxological Love –>	God's Works

Table 1*: Doxological love conjoins the Two Books*

The worshipper who enjoys this unity of the two books on the day-to-day experiential level of doxological love will be concerned to demonstrate, whenever possible conflicts arise, that the two books are not in fact contradictory as may first appear, but are actually compatible as doxological experience suggests (Table 2). This is a traditional function of Christian apologetics.[18]

God's Word	<– Doxological Love –> (Compatibility)	God's Works

Table 2*: In light of doxological love, believers seek to show that the two books are compatible*

But are the two books related on a level beyond that of doxological experience? Rightly understood, do the two books speak in harmony? Is there more that might be said other than that they are compatible and not contradictory? If so, how do we go about rightly understanding them and reading them together?

Two contrasting answers are the concordist and perspectival approaches (Table 3).

Concordist	Perspectival
Two Books, One Language	Many Books, Many Languages
The two books are related by direct correspondence of information or content	The two books are related by meta level perspectives

Table 3*: Perspectival vs Concordist approaches*

For concordism the book of God's Word and the book of God's Works are written in the same language, perhaps on facing pages, and may be directly collated together so that the Bible, in effect, becomes a direct adjunct to science textbooks (Table 3, left column).

17. We will return to discuss this further in Chapter 1, Section 5: "Doxological Love," on pp. 16-26.

18. See, for example, Bernard Ramm, *The Christian View of Science and Scripture* (Grand Rapids, Michigan: William B. Eerdmans Publishing Company, 1954).

Consider God's promise to Abraham recorded in Genesis 22:17:

> "I will indeed bless you, and I will make your offspring as numerous as the stars of heaven and as the sand that is on the seashore." (Genesis 22:17 NRSV)

In commenting on this verse, the preeminent young Earth creationist Henry Morris displayed a concordist habit of mind when he wrote that

> "the stars and the sand are of about the same order of magnitude in number. This fact could not have been discovered by men without the telescope; so it constitutes one of the many remarkable examples of modern scientific truth found in the pages of the Bible long before scientists could have learned them by the scientific method."[19]

As in this example, concordism aims to positively correlate biblical statements directly with scientific information. Concordism seeks to discern a direct correspondence between the language of the Bible, on the one hand, and the content of science, on the other (Table 4).

God's Word (Bible statements)	<– Information –> (Concordism)	God's Works (Science statements)
• Number of Abraham's offspring (Genesis 22:17)		• Number of stars (astronomy) • Number of grains of sand on the seashores (geology)

Table 4*: With concordism, information on the same level mediates the Bible and science*.

We will encounter many examples of concordism gone awry in our historical case studies, for it often fails to remain open to the actual reality of either domain and thus falls short of doxological love.[20]

On a closer look, Psalm 19 offers a clue that things are not so simple:

> "Day to day pours forth speech, and night to night declares knowledge. There is no speech, nor are there words; their voice is not heard." (Psalm 19:2-3 NRSV)

---

19. Henry Morris, *The Genesis Record* (San Diego: Master Books, 1976), p. 384. The same equivalence was noted by Hugh Ross, an old Earth creationist, in a number of his writings.***

20. One of the hallmarks of compatibilist approaches to the two books is a humility that welcomes multiple competing interpretations. When this is missing, it is an indicator that one has slipped into a concordist rather than a compatibilist mode of interpreting biblical references to natural phenomena. See below, Chapter 14, Section 5: "Genesis 1," on pp. 462-486; and Chapter 8, Section 5: "Galileo, the Bible, and Science," on pp. 234-239.

Verse 2 affirms that the natural order of the heavens pours forth speech, yet verse 3 obscures the matter by implying that it does so without words that can be heard, at least in the same way as the law of the Lord expounded later in the Psalm. In what I interpret as an interesting take on the two books metaphor, and an implicit allusion to verses 2-3, Torrance habitually comments that the natural sciences offer "mute speech" in praise of the Creator. The creation's speech must be interpreted by natural science (in this case, astronomy), on the one hand, and by dialogue with theological science, on the other. The scientist and theologian in concert act to give voice to the creation's silent praise, as intimated in this Psalm. To give voice to the creation's silent praise is a central aspect of humanity's role as priest of creation, in Torrance's view.[21]

This leads us to the perspectival approach to reading the two books. In contrast to concordism, an approach based on perspectives cautions that the books are written in different languages (Table 3, right column). Indeed, there may be as many books as there are sciences, each science reading the language of creation in its own tongue. Torrance cited Albert Einstein:

> "We are in the position of a little child entering a huge library filled with books written in many languages. The child knows someone must have written those books. It does not know how. The child dimly suspects a mysterious order in the arrangement of the books but doesn't know what it is. That, it seems to me, is the attitude of even the most intelligent human being toward God.…"[22]

In a perspectival approach, complex acts of reading, interpretation, and translation are required to bring the books to bear upon a common story. Instead of simply juxtaposing information from the books, as if they were statements on one and the same level (A), reflection and investigation in theology and the natural sciences will be required to discover, on a meta-level (B), perspectives which jointly illuminate and connect the books (Table 5).

B. Theological science	<– Perspectives –>	B. Natural science
A. God's Word (Bible)	<– Doxological Love –>	A. God's Works (Natural phenomena)

Table 5*: Perspectives mediate mutually beneficial dialogue between different domains on a meta level. Level A in grey; Meta Level B in blue*

21. ***Cf. Torrance, "Priest of Creation," chapter 1 of GGT. Acceptance speech for the Templeton Prize in 19##.*** For Torrance's comments on the mute speech of the creation see, for example, his *Calvin's Doctrine of Man* (#1949-022), pp. 35, 40, 42, 170; *The Christian Frame of Mind* (#1989-505), pp. 34, 113; *Divine and Contingent Order* (#1998-623), p. xi; *Theological and Natural Science* (#2002-TFT-3), pp. 91, 116; *When Christ Comes and Comes Again* (#1957-109), p. 88; *Christian Theology and Scientific Culture* (#1980-368), p. 111, 117-118; and *Reality and Scientific Theology* (#1985-450), pp. 52, 59, 90. For a relevant discussion, see *Ground and Grammar of Theology* (#1980-369), pp. 111-112.

22. Albert Einstein; quoted in T. F. Torrance, "Einstein and God," in *Theological and Natural Science* (#2002-TFT-3), p. 24. See below, pp. ***

In Table 5, on the scientific level (B), the middle column might represent any perspective on science mentioned above (pp. iii-v). The right column of level B might be any natural science with which the perspective resonates, and the left column of level B any understanding of Trinitarian theology with which the perspective resonates.[23]

B. Theological science: *Trinitarian being-in-communion*	<– Perspectives –> *Relational being*	B. Natural Science: *Field theories & Relativity*
A. God's Word (Bible)	<– Doxological Love –>	A. God's Works (Natural phenomena)

Table 6*: Meta level: Relational being.*

For example, the perspective of relational being (Table 6) resonates with Trinitarian being-in-communion (ch. 13) in theological science (left column), and with the field theories of Michael Faraday and James Clerk Maxwell and the theory of relativity of Albert Einstein (ch. 14) in natural science (right column). In another example (Table 7), the perspective of contingent order resonates with both divine freedom to love (ch. 15) in theological science, and with the contingent history of the universe (ch. 14), of life on Earth (ch. 24), and of the Earth itself (ch. 16) in natural science.

B. Theological science: *Divine freedom to love*	<– Perspectives –> *Contingent order*	B. Natural Science: *Geology Evolution Big Bang cosmology*
A. God's Word (Bible)	<– Doxological Love –>	A. God's Works (Natural phenomena)

Table 7*: Meta level: Contingent order.*

The resonance of a perspective between theological science and natural science establishes a place of common ground where mutual dialogue between them may occur. Both theological science and natural science retain their disciplinary integrity, and yet discover (perhaps to their surprise) that a mutually beneficial, critical and constructive dialogue may open up between them, mediated by the meta-level perspectives.

For both theology and natural science to flourish, as we attempt to read across the two books, we need to nurture a deep-seated instinct, disciplined intuition, or scientific imagination, shaped by long practice and deep reflection. That is all part of drawing out the perspectives in the first place, and of bringing them into dialogue across domains.

23. Cf. footnotes #7 through #12 on pp. iv-iv.

Movements between the two books cannot be specified by rules, or be determined *a priori*, but require development of such an instinct in each science, *a posteriori*. Perspectives arise not from some higher metaphysical realm but within each domain, after the fact. They must be worked out within the practices and norms of the particular areas of science involved. Similarly, any association between a perspective and its correlate understanding in another science is not a simple collation of statements, nor a logical implication, nor is it necessarily a conscious or deliberate research strategy. Rather, the cross-level correlations, resonances, or harmonies, are established after the fact.[24]

Movements between the two books might go in either direction. For instance, the discovery of a perspective like relational being or contingent history in natural science might prompt theologians to give greater attention to an area of theological science which was lying in relative neglect at the time, or vice versa. As we read the two books, the discovery that there happens to be an overlap of shared perspectives is a manifestation of the surprising intelligibility of the universe. Case studies will prove of heuristic value, and in-depth historical studies are needed.

Any perspective will also resonate vertically, with the level of doxological experience. A sense of wonder only increases with discoveries on a meta level. As Aristotle admonishes his readers:

> "We therefore must not recoil with childish aversion from the examination of the humbler animals. Every realm of nature is marvellous...."[25]

For Aristotle, even the lowliest animals are beautiful to the one who understands their causes. Similarly, we seek to hold any meta level perspective closely together with the day-to-day experience of *doxological love*.

Searching out these perspectives is a manifestation of the *cognitive love* spoken of above, *i.e.,* coming to know something according to its own reality and nature.[26]

---

24. Given that perspectives on science arise within and belong to multiple domains, whether theological science or natural science, it might be misleading to refer to them as "theological perspectives." For clarity, when I refer to a "Trinitarian perspective on science" I am not wishing to imply that the perspective belongs exclusively to theology, but only mean that I am focused on explicating resonances between perspectives on science and Trinitarian theological affirmations. The perspective does belong to theology, just not exclusively, for it also belongs to other sciences, arising from each domain *kata physin*. To make our language more confusing, the word "perspectives" has other usages as well. For example, I will refer to "historical perspectives on science" when exploring light thrown on science by case studies in the history of science. I trust which use of "perspective" is intended will be clear from the context.

25. Aristotle, *Parts of Animals*,*** Book I.5, 645a5-25:

26. We will resume this discussion of meta-level perspectives in Chapter 1, Section 6: "Meta Levels," on pp. 26-28, in Chapter 12, "Case Studies: Interdisciplinary Relations," and in Chapter 19, "Perspective: Stratified Reality."

5. "… WITH T. F. TORRANCE AND C. S. LEWIS"

T. F. Torrance, at the University of Edinburgh, was one of the 20th-century's leading Trinitarian theologians. C. S. Lewis, at Oxford and Cambridge, was one of the century's most distinguished literary scholars. One was a Scot, one was Irish; both were trained in philosophy and the history of ideas. Both interacted with numerous scientific contemporaries, although neither was a scientist *per se*. Their perspectives on science are helpful for many reasons:

- They are two of the most highly regarded 20th-century Christian writers.
- Each wrote in the Nicene theological tradition of Athanasius.
- Each wrote prolifically on Christianity and natural science.
- Each engaged in what Lewis called "rehabilitation," a sympathetic reading and recovery of writers through the ages.
- Each brings into our view an illuminating intellectual context — Lewis with Oxford, Cambridge, and the Inklings, and Torrance with his Scottish and ecumenical traditions.
- Their books are not textbooks, but classics, for life-long learning and enjoyment.
- Many report that reading their books is an intellectually exhilarating, life-changing experience.
- Each spoke anchored in the Church, for the sake of the world.

Torrance and Lewis model a constructive engagement with the natural sciences which can be of help to many today. Despite marked differences in life experiences, professions, church participation, and modes of writing, their perspectives on science mutually reinforce one another to a remarkable degree. Throughout the book, each perspective is illustrated from both. Lewis and Torrance serve as concrete exemplars, in their own distinctive ways, of how to appreciate and practice each one. Sustained conversation with Torrance and Lewis throws vivid light on each perspective; as if on a walking tour with them, we will view each hill and dale from several varied angles.

Learning to look at science with Torrance and Lewis will benefit anyone interested in theology and science, including not only scientists and students in scientific disciplines but also seminary students and pastors who work with scientists and creation workers in their congregations.[27]

Like Christianity, natural science is an inescapable part of our global culture. Yet few graduate students in the sciences enjoy an adequate opportunity to integrate their faith and learning in a holistic way, and few seminary students enjoy an adequate opportunity to

27. By "creation worker" I mean any activity or occupation involving regular contact with nature, from someone who loves gardening to an amateur astronomer, bird-watcher, mountain hiker, avid fly-fisher, or aquarium keeper. The nurse or farmer, wildlife painter or park ranger may not be considered scientists by many definitions, but are included as conversation partners here.

prepare themselves for the pastoral issues they will encounter involving faith and the natural sciences. Some Christian leaders today imagine the relations between the natural sciences and Christian faith only in terms of co-opting science for apologetic use, or of constructing some form of foundationalist natural theology, or of conducting a separatist program of confessional science. Worse still, some promote confrontation as the normative Christian stance toward natural science. Even if we set aside the more egregious caricatures of science and Christian faith, we often fail to imagine what integration and coherence might look like.[28]

C. S. Lewis and T. F. Torrance are of immense help in crafting a more holistic vision. They themselves engaged in profound and sustained dialogue with science old and new. For both of them, the Christian life entailed an ongoing personal and intellectual repentance, an evangelism of the mind, in which we develop and refine a Trinitarian theological instinct. Theology does not occur in an intellectual or cultural vacuum, but in God's world in critical and constructive partnership with natural science. We who are Christians are called to think Christianly about all of life, which includes engaging in mutual dialogue with the natural sciences in light of our Trinitarian faith.[29]

6. AIMS AND READERSHIP

With such an approach, then, Christians may comprise the majority of those who choose to read this book. Nevertheless, it is also written for scientists and others, *whether Christian or not*, who genuinely seek to understand what the Christian faith might mean for the pursuit of natural science.[30]

The book is not written to persuade non-believers, whether secularists or adherents to other religious traditions, to convert to the Christian faith, nor does it argue for the pursuit of science along separate confessional lines.[31] This is a work of integration, not apologetics. For that reason it may interest many in evangelical Christian circles who are looking for an alternative framework to a culture-wars approach to science. It is an endeavor intended to

---

28. The popular television show "Young Sheldon" frequently highlights how ill-prepared many pastors are today to engage a culture in which the natural sciences play an integral role. Similarly, many scientists today find themselves ill-prepared to engage deeply religious communities in the modern world.

29. We will resume this introduction of Lewis and Torrance in Chapter 1, Section 7: "Why Focus on T. F. Torrance and C. S. Lewis?," on pp. 28-40.

30. In this approach, I am encouraged by Nicholas Wolterstorff, *Religion in the University* (New Haven: Yale University Press, 2019), and Miroslav Volf and Matthew Croasmun, *For the Life of the World: Theology that Makes a Difference* (Grand Rapids, Michigan: Brazos Press, 2019).

31. An operational definition of confessionalism in this sense (which is *rejected*) might be if a scientist who is a Christian would seek to form a scientific research team comprised on the basis of whether the members are Christians in preference to the quality of their work as scientists *per se*. To the contrary, diversity of faith perspectives should be acknowledged as of value among scientific research teams along similar lines as diversity of gender, race, class, and nationality. This is not relativism or tribalism; rather, the pursuit of objective reality is best served by a pluralistic strategy in which teams with diverse perspectives strive to reach a common consensus that overcomes the blind spots and filters of each participating community. See "Reversing Incurvatus in se," pp. 290-294. An analogous point arises with multidisciplinary research teams; cf. Chapter 12, "Case Studies: Interdisciplinary Relations."

foster a mutually supportive dialogue between Christians, scientists, and people of any faith — populations whose members overlap to an oftentimes under-appreciated degree.[32]

Nearly a quarter of the world's population claim allegiance to some form of Christianity in the Nicene tradition.[33] Professing Christians residing outside of Europe and the United States number more than twice as many as those living within those two continents.[34] Thus it may be expected that Christians will make up a significant portion of the scientists of the future, particularly in the Majority World. Rather than dismissing Christianity outright as either hostile to or irrelevant for science, or as likely simply to disappear amidst a rising tide of science-fueled atheism, it is worthwhile for scientists, science educators, and science administrators to consider what resources this historic and global faith offers for the benefit of science.

This book assumes something like Charles Taylor's account of our secular age as arising not as a triumph of atheism due to the ongoing subtraction of religious belief from modern society, but rather as the historical emergence of a public sphere characterized by religious and non-religious pluralism.[35] Given such an understanding of the religious complexity of the modern age, an acute need arises for dialogue in the public sphere about the relations between science and the religions of the world. This book contributes to that dialogue from the standpoint of Trinitarian Christianity. It is intended to be read by people of any faith and by those without any religious tradition who are interested in that dialogue.

Ideally, this book would take its place alongside "Perspectives on Science" volumes comprised of insider accounts from other religious traditions. For indeed, none of the perspectives on natural science listed above are exclusively Christian. To take three examples: first, that the

---

32. Cf. Elaine Howard Ecklung, David R. Johnson, Brandon Vaidyanathan, Kirstin R. W. Matthews, Steven W. Lewis, and Robert A. Thomson, Jr., *Secularity and Science: What Scientists Around the World Really Think About Religion* (Oxford, Oxford University Press, 2019). One of the four major claims of this sociological study is that (p. 8): "Around the world, there are more religious scientists than we might think. The scientific community is more religious than many people believe."

33. As of mid-2019, perhaps 1,864,141,000 people profess Christianity, compared with a total global population of 7,714,577,000. Center for the Study of Global Christianity (CSGC), Gordon-Conwell Theological Seminary, https://gordonconwell.edu/wp-content/uploads/sites/13/2019/04/StatusofGlobal Christianity 20191.pdf (accessed May, 2022).

34. As of mid-2019, the number of Christians in Europe (550 million) and North America (231 million) totals 781 million, compared with 1,635 million elsewhere — Africa (620 million), Asia (390 million), Latin America (600 million), and Oceania (25 million). "Status of Global Christianity, 2019."

35. Charles Taylor, *A Secular Age* (Cambridge, Massachusetts: The Belknap Press of Harvard University Press, 2007). For an overview of Taylor's complex argument see James K. A. Smith, *How (Not) to be Secular: Reading Charles Taylor* (Grand Rapids, Michigan: Wm. B. Eerdmans Publishing, 2014). Space does not permit us here to debate Taylor's thesis nor to rehearse the immense literature to which it has given rise, but we will return to some of its ramifications in "Charles Taylor, Social Imaginaries," pp. 617-619. This book regards pluralism as an expression of the Trinitarian perspective of contingent freedom. Pluralism reflects the contingent freedom which God bestowed on the creation as a reflection of his own divine freedom to love. In this perspective, belief cannot be coerced but is a free response.

physical universe was created good is a tenet of many indigenous religions; second, a holistic vision of reality that transcends reductionism receives widespread support from diverse faith traditions[36]; and third, a commitment to epistemological realism of some kind, however arduous it may be to achieve, is shared in common with practically all humanity on at least a practical level. In addition, atheists and non-Trinitarian theists may similarly emphasize relational being or the contingency of the natural order. Here we explore how for Christians these and other perspectives resonate with the theological instinct of Trinitarian faith, but they may also equally arise on non-Trinitarian grounds and be partly or fully shared by adherents of other religious and non-religious traditions.

While perspectives are not exclusively Trinitarian, neither are they homogenous or univocal. A hum of metaphysical ambiguity surrounds them.[37] Important variations arise in how they are put into actual practice across intellectual traditions. Consider the ancient question of whether God had any choice when creating the universe. In Part VII, we explore how Theists and Trinitarians have alike answered yes to that question, affirming a perspective of contingent order over against necessitarian views (Table 8). Yet the Trinitarian emphasis on divine freedom to love differs in interesting ways from a mere assertion of the almighty will of the Creator.

Did God have a choice when creating the universe?		
Deist, Pantheist, Pagan	**Theist**	**Trinitarian**
No. Natural order is necessary. Mind of God.	Yes. Natural order is contingent. Will of God.	Yes. Natural order is contingent. Divine freedom to love.

Table 8*: Perspectives vary across intelletual traditions, 1.*

A similar example arises with the question of whether there is any meaning for our place in the universe. While Deists (in the company of Pagans and Pantheists) affirm a perspective of

36. Including the interesting examples of secular humanism and dialectical materialism. See, respectively, Stephen P. Weldon, *The Scientific Spirit of American Humanism* (Ithaca, New York: Johns Hopkins University Press, 2020); and Richard Levins and Richard Lewontin, *The Dialectical Biologist* (Cambridge, Massachusetts: Harvard University Press, 1987). ***cross-reference later discussion***

37. Even what is meant by "metaphysics" is ambiguous. I have refrained from calling the perspectives on science "metaphysical perspectives" because of widespread and conflicting usages of that phrase in the historiography of science, which would make it misleading to adopt here. Moreover, in the present discussion, perspectives must be rooted in both sciences which they connect, and from which they arise *a posteriori*. In contrast, writers on "metaphysical principles" in science often regard them as prior somehow to any scientific inquiry. Perspectives on science in this work are not essentially philosophical or metaphysical in that sense, yet they do create a space for multidisciplinary dialogue which is of interest to philosophers and metaphysicans as well as scientists, theologians, and historians of science. All are welcome to the public house; none may claim to be the exclusive proprietors of it. In "The Foreigner at Home," Robert Louis Stevenson wrote of the "hum of metaphysical divinity" surrounding "the very cradle of the Scot" who grew up ready to debate the meaning of "to glorify God and enjoy him forever," the Westminster Catechism's obscure but noble answer to the meaning of life. Stevenson, *The Scottish Stories and Essays*, ed. Kenneth Gelder (Edinburgh: Edinburgh University Press, 1979), p. 238.

general design, Trinitarians and Theists alike discern a hidden, historical providence extending even to the particulars of existence (Table 9, as we explore in Part X).

Is there meaning for our place in the universe?		
Atheist	**Pagan, Pantheist, and Deist**	**Theist and Trinitarian**
No. There is no meaning (except what we make of it)	Yes. Design (General Providence)	Yes. Historical Providence (Particular Providence)

Table 9*: Perspectives vary across intelletual traditions, 2.*

Sometimes subtle differences in meaning have proven quite significant in the history of science.[38]

Christian readers may resolve to work toward the following outcomes from this book:

1. Converse with scientists and creation workers about their vocational callings in order to gain experience that will help make churches safe and welcoming places for those who practice, or who wish to pursue, any of the fields of the natural sciences, including geology, evolutionary biology, healthcare, technology and engineering, agriculture, and conservation.
2. Critically analyze misconceptions that underlie the most common caricatures of an allegedly inevitable conflict between religious faith and modern science such as the flat Earth myth, science and superstition in ancient Babylonian astronomy, Copernicus and the Earth's motion in the heavens, the trial of Galileo, the immensity of the universe, the plurality of worlds, the age of the Earth, Darwin and evolution, and the Church and ecology, in order to learn from the church's past mistakes and also to be able to assist persons, unbelievers and believers alike, who are working through analogous issues today.
3. Develop and demonstrate a practice of thinking theologically about God and nature, or faith and reason, according to a Trinitarian theological instinct that reasons from a Trinitarian basis and goes beyond responding in an ad hoc manner to misconceptions about Christianity and science.

38. The terms Atheist, Pagan, Pantheist, Deist, and Theist (upper-case) are here used in a non-pejorative sense to refer to models of reality (or models of God and Nature). These models are introduced in Chapter 5, "Perspective: Thinking About Science and Religion," and explored in more detail in Chapter 17, "Perspective: Imagining Models of God and Nature." Members of religious traditions may hold views attributed to the different models in various combinations; for example, a Jewish or Muslim theist (lower case) may hold to perspectives here labeled Trinitarian, or a Christian theist may hold to perspectives here labeled Deist, Pagan, or Pantheist, while an avowed atheist may share much in common with the Pantheist or Pagan models. The models provide a heuristic set of conceptions and terms not to sidestep but to clarify the complexities found in every religious (and non-religious) tradition.

4. Develop and articulate a "relational natural theology" which arises naturally and organically from the nature of the gospel and the doctrines of the Incarnation and the Trinity. That is, to practice drawing out the implications of the Incarnation and the Trinity for a Christian perspective on love and the cosmos.
5. Describe and explain select perspectives on faith and science held in common by T. F. Torrance and C. S. Lewis.
6. Practice reading well by adopting strategies appropriate to the nature of the text, such as close reading for the dense prose of T. F. Torrance and brisk literary reading for the Ransom Trilogy of C. S. Lewis.
7. Enter into discussions with others, believers and non-believers alike, in a science and religion reading group.

Regarding #7, given the historical association of evangelical renewal and increasing literacy, one sign of a healthy local church or faith community would be the presence of active reading groups. My hope is that this book might inspire readers to launch discussion groups devoted to science and religion. Specific reading recommendations are suggested along the way. In addition, at the end of every chapter, questions for reflection are provided to promote discussion. These questions would be ideal for interdisciplinary reading groups comprised of practitioners and students spanning the natural sciences, the humanities, and ministry in faith communities.

7. Book Overview

After this brief introductory chapter, the overall structure of the book is sequenced in parts designated by Roman numerals. Each part contains two or more chapters which together comprise a single thematic unit. The first chapter of each Part introduces a perspective with its theological context. The second chapter of each part illustrates that perspective with one or more case studies, past or present. As you read, establish a breathing rhythm: inhale (perspective) and exhale (case studies). The book is designed around repeated dialogue between Trinitarian perspectives and various case studies in the natural sciences.

The parts also follow an overall sequence. Later chapters refer back to and build upon earlier parts. The various chapters are best read in sequence.

This Introduction together with Chapter 1, "Trinitarian Theological Instinct," introduce the overall rationale of the book. Read together, they form the essential prologue. Think of this Introduction as the orientation on the first day of class. Then Chapter 1 picks up the main themes of this Introduction and fleshes them out a little more. Uniquely, it has three historical case studies, which explore science and *history* (chapter 2), science and *religion* (chapter 3), and science and *scripture* (chapter 4).

In Part II, "Thinking about Science and Religion," we clarify some common terms and introduce several different "models of reality" (or of God and Nature). In the case study chapter, we explore Copernicus and the motion of the Earth to consider what difference our perspective makes.

In Part III, we look at the nature of language and its relation to reality, and then apply those insights to biblical interpretation and the life, works, and trial of Galileo.

In Part IV, we consider popular accounts of "the scientific method" and find them wanting. We then reflect on "incurved science," how science can go bad despite the best of methods. We consider how to begin to reverse the "incurving" and recover a path of *cognitive love*.

In Part V, we dive into realist epistemology, or how we know, which Torrance called *kata-physin* knowing, that is, knowing "according to nature," or adapting our ways of knowing to the nature of what we are trying to know. We will see that this manner of knowing is ineradicably personal, requiring an ongoing practice of *cognitive love* that is continually open to the reality of the other as it becomes more adequately disclosed to us. We then illustrate *kata-physin* knowing by returning to the world of Galileo and looking more closely at interdisciplinary relations between art, astronomy, music, and theology in Tuscany about 400 years ago.

In Part VI, we look at *being* in light of the doctrine of creation from nothing, and *relation* in light of the Trinity. We apply those perspectives to modern physics and cosmology, to the work of James Clerk Maxwell and Albert Einstein, and the Big Bang, with a side-glance at lessons learned from historical efforts to interpret the first chapter of Genesis.

In Part VII, we examine divine freedom to love and its ramifications for contingent order and contingent history, noting the corollaries of contingent intelligiblity and contingent freedom. We then explore how those perspectives were expressed in the discovery of geohistory, that is, the contingent history of the Earth.

In Part VIII, we return to the models of God and Nature initially encountered in Part II, to consider them more fully in their own right. We apply them by reading *Out of the Silent Planet*, the first volume of the Ransom trilogy by C. S. Lewis.

Part IX is devoted to the stratified or multi-leveled nature of reality, as we have encountered above and will introduce further again in chapter 1. A meta level explains the "reason why" for what we already know on an experiential basis or as a given from some other authoritative source. The perspective of stratified reality explains how the reality given to us possesses astonishing depth across many levels or dimensions, even before we begin to search out those dimensions through appropriate disciplinary investigation, as the disciplines emerge through an open-ended historical process of differentiation. The perspective of stratified reality equips us to explore a full circumference of reality, and to avoid the impoverishment of vision brought on by a deficiency of scientific imagination or various forms of scientism and reductionism. Expressed another way, thinking in terms of levels and meta levels helps us maintain a close connection between *cognitive* and *doxological love*.

In Part X we consider dualism, that insidious root of so many cultural splits. We seek a deeper understanding of how it is manifested in the dilemma of design versus historical providence in nature.

In Part XI, we bring together the many strands of previous weeks to reconsider in a Trinitarian light the often contested issues of natural theology and evolution. Natural

theology becomes transformed in light of Part V, "Knowing Reality," and Part X, "Overcoming Dualism." A view of evolutionary creation draws together the theologically attractive perspectives of Part VII, "Contingent Order and Contingent History," and Part X, "Overcoming Dualism."

Finally, in Part XII, we explore the related concepts of humanity as the image of God and the priest and king of creation. In light of *ethical love*, we consider science and stewardship, the nature of technology, and the church and ecology, while revisiting the alleged Christian roots of modern science. We conclude on an Easter note of the Resurrection and the New Creation, the hope of *eschatological love* which animates all our knowing and each of the other loves.

Twelve Parts	
Perspective	Case Studies
Part I: Thinking Theologically	
Ch. 1. Trinitarian Theological Instinct	Ch. 2. The Flat Earth Myth
	Ch. 3. Babylonian Astronomy
	Ch. 4. The Magi and the Star
Part II: Thinking about Science and Religion	
Ch. 5. Thinking about Science and Religion	Ch. 6. Copernicus
Part III: Thinking about Language, Thinking about Reality	
Ch. 7. Language and Reality	Ch. 8. The Galileo Affair
Part IV: About Method	
Ch. 9. "The Scientific Method"	Ch. 10. Incurved Science
Part V: Knowing Reality	
Ch. 11. Knowing *Kata-physin*	Ch. 12. Interdisciplinary Relations
Part VI: Being, Relation, and Genesis 1	
Ch. 13. Being and Relation	Ch. 14. Relational Physics (and Genesis 1)
Part VII: Contingent Order and Contingent History	
Ch. 15. Divine Freedom & Contingent Order	Ch. 16. Geohistory
Part VIII: God and Nature	
Ch. 17. Imagining God and Nature	Ch. 18. Reading *Out of the Silent Planet*
Part IX: Stratification of Reality	
Ch. 19. Stratified Reality	Ch. 20. Reality in Many Dimensions
Part X: Overcoming Dualism	
Ch. 21. Dualism	Ch. 22. Dilemmas of Design
Part XI: Natural Theology and Evolution	
Ch. 23. Natural Theology	Ch. 24. Evolution
Part XII: The Priest of Creation and the New Creation	
Ch. 25. Priest of Creation	Ch. 26. The New Creation

Table 10*: Organization of the Book*

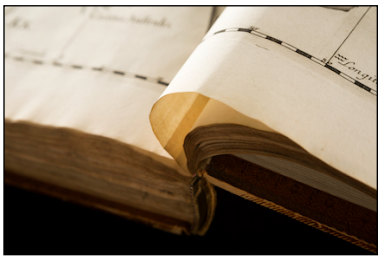
Figure 4: Staircase to the OU History of Science Collections

Think of each part as a single level on a staircase. A given topic, like *kata-physin* knowing or stratified reality, may be introduced in one part but wait to receive full attention in a later chapter. So the parts and chapters are best read in sequence, as every chapter builds upon the perspectives introduced in previous parts, creating an ever-climbing spiral of inter-linked, holistic understanding. Just as this Introduction anticipates Chapter 1, which circles back around the same topics in greater depth, so no chapter or part stands on its own. By the end of the book, you will have acquired and put into practice a Trinitarian theological instinct for the natural sciences.

Chapters open and close with several standard elements. Each chapter begins with an icon, a scripture, and a prayer, all intended to prepare one's heart and mind to be receptive to the reading of the text. Each chapter concludes with sections for "Classic Texts," "Further Reading," "Reflect and Discuss," and a "Doxology." Classic Texts suggest a practical place to begin reading relevant works of enduring value. After the list of Classic Texts, items highlighted in Further Reading suggest the best next steps to follow to advance beyond the basic discussion in this book. Then each chapter offers questions for individual reflection and group discussion. Finally, a liturgical prayer, a hymn, or a song invites us into a concluding moment of worship and meditation.

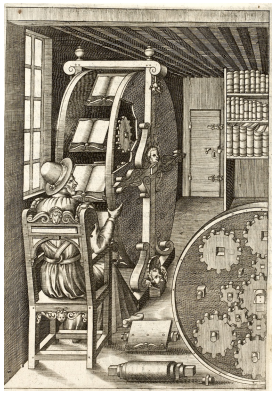
Close Reading #1: C. S. Lewis, "Preface" to *Mere Christianity, pp. 5-12.*

[When this close reading icon (right) appears,[39] it indicates passages from classic texts which are meant to be closely read alongside this book.]

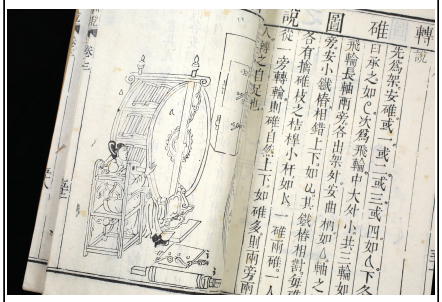


The list of Classic Texts at the conclusion of every chapter also indicates any writings by Torrance and Lewis that were given close readings in the chapter. Wherever they occur, they are indicated by a tag such as "Close Reading #1," accompanied by an open book icon in the right margin. Following along those closely-read passages is integral to the logic of this book, but the long passages are not reproduced here. Keep such titles open on a rotating book wheel beside you (Figure 5). Why not order your own copies now? A subsidiary objective of this book is preparation for life-long reading of Lewis and Torrance.

39. The Close Reading icon is a photograph of Elisabeth and Johann Hevelius, *Firmamentum Sobiescianum sive Uranographia* (Gdansk, 1690; "The Firmament of King Sobiesci, or Map of the Heavens"), courtesy the History of Science Collections, University of Oklahoma Libraries.



Book wheel in Ramelli (1588)[40]



Book wheel in Schreck (1630, reprint 1830)[41]

Harvard astronomer Harlow Shapley at his rotating table[42]

Figure 5: Rotating book wheels

With which classic texts should you start?

For Torrance, begin with "Theological Instinct" (#2002-TFT-4); *Space, Time and Resurrection* (#1976-331); and *The Trinitarian Faith* (#1988-489). After those, add *The Ground and Grammar of Theology* (#1980-369) and *Divine and Contingent Order* (#1998-623). These are the titles that will receive closest attention here. In general, Torrance sources are here cited by "McGrath number" (e.g., #1976-331). Use any McGrath number to find the record for the first edition at *tftorrance.org* (e.g., *tftorrance.org/1976-331*). That record provides links to all known later editions, translations, digital editions, and original audio lectures, as well as to booksellers via LibraryThing, Amazon, Bookfinder and AbeBooks.

For Lewis, begin with the Ransom Trilogy (*Out of the Silent Planet*; *Perelandra*; *That Hideous Strength*); *The Problem of Pain*; *The Abolition of Man*; *Mere Christianity*; *God in the Dock*; and *Miracles*. Each of these are available in multiple editions.

Obtaining all these titles may seem a bit of a gamble, but think of it as a long-term investment. Keep in mind that passages from these works are closely read here not only for their own sake in this context, but also to prepare you to engage these works in their entirety on your own. They are classics of enduring value not merely because of information they

40. Agostino Ramelli, *Le diverse et artificiose machine* (Paris, 1588). Ramelli's book wheel is reminiscent of the Buddhist prayer wheels developed centuries earlier in China; cf. pp. 141ff.

41. Johannes Schreck, *Marvellous Machines of the Far West* (Japan, 1830); reprint of 1630 Chinese edition. Schreck brought a copy of Ramelli with him when he traveled to Beijing.

42. Mildred Shapley Matthews, *Shapley's Round Table: A Memoir by the Astronomer's Daughter* (Bookbaby, 2021). *** Need credit and permission to use this image***

impart, but because they will reward patient and repeated reading with ever-new levels of understanding. This book will help you get started with them.

In all brief quotations reproduced here, italic formatting reflects italics in the original classic text. Square brackets indicate words or phrases not in the original passage, but which are supplied by me for interpretation or context.

8. Caveats and Clarifications

This book may appear rather long for an introduction to its topic, but it is not as intimidating as it may appear. The length is in part due to the effort made to keep it accessible.[43] It is written in varied formats drawn from public lectures and exhibitions rather than specialist writing. In public lectures, the most effective presentation is often holistic, where concepts are briefly introduced and then developed with ever-increasing depth in a spiral progression. In exhibitions, abundant visual objects (or, in exhibit catalogs, illustrations) are accompanied by concisely-worded text. The abundant illustrations not only make the book more approachable, but are to be taken seriously in their own right as virtual exhibit objects conveying cognitive content visually in and of themselves.[44] These approaches are adopted here in preference to the format of a typical academic monograph. Take a piece of blank card stock and use it to hide the footnotes as you turn each page! The text may be read through without reference to the footnotes.[45]

Nevertheless, diverse readers will wonder at the short-schrift accorded their favorite topics. Theologians will be frustrated that the theology is elementary and introduced with infinitessimal speed. Scientists, similarly, will feel frustration mount that the scientific concepts remain at a most basic level, explained in only a cursory fashion, and leave off with an account that is hopelessly out of date. Both are correct, as are any philosophers or historians with similar impressions!

The goal of a synthetic work like this is *not* to present cutting-edge developments in the participating fields. Indeed, that strategy might pose a positive distraction if the aim is to create lasting pathways between them that invite readers from diverse disciplines to begin to explore beyond their own areas of expertise. Indeed, the whole work is intended as a way to *start* rather than to finish *multi-disciplinary* conversations characterized by mutual respect and

43. Pausing to explain technical jargon which is tacit for any discipline necessarily imparts to multi-disciplinary texts a greater length than texts addressed to a single disciplinary readership. As the Oklahoma statesman and wit Will Rogers put it, "We're all ignorant, just of different things." Consequently, this book is written at a more demanding level than popular writing. Instead of being written for non-experts, it is written for experts in different fields who wish to better appreciate one another.

44. For a discussion of visual thinking, when images play a cognitive rather than a merely ornamental role, when both texts and visual representations must be read together in combination, see my "Galileo's Telescopic Discoveries: Thinking Visually in the History of Science," October 21, 2022, invited keynote presentation, IEEE Vis 2022 conference, Oklahoma City, Oklahoma, https://youtu.be/DF7kt4R-LIk.

45. Those more academically inclined may read the footnotes, which are supplied rather than endnotes to facilitate entry into scholarly discussion. Consider adopting a hybrid reading strategy by going back to explore select footnotes of interest after completing a first reading of any chapter without them.

attentive listening. Imagine the convening of a reading group comprised of a theologian, a philosopher, an artist, a historian, and several practitioners all of different natural sciences; this book then represents their mutual introductions and conversations over the first year or so of meetings. If this book persuades any readers that it would be worth their time to seek out conversation partners from other disciplines for ongoing dialogue, then it will have achieved a major purpose.

Rather than trying to impose a uniform writing style, I have retained the original character and format of each chapter as much as possible in the belief that a variety of approaches is appropriate to the dialogue and the subject matter. Many of the case studies originated as public presentations, or as rare book exhibits, or as lectures for history of science courses (or in most cases, all three together). The perspective chapters originated as presentations to Christian university audiences, as lectures to seminary students, or as presentations at Christian retreats. Some readers might even decide to read through all the perspective chapters first, or all the case studies first, depending on their interests.

Much of the substantive content comes from the history of science. This material may be new to both scientists and theologians, so each may feel in this respect that they are on an equal footing, or at least an equally disadvantaged one. But this belies a larger question: why pay so much attention to the past? While positive answers to this question are offered in the first chapter,[46] it is not out of place here to observe that historical perspectives on science are cultural in character rather than chiefly technical. The history of science views the arts and sciences in all of their culturally-rich and mutually-shaping relations. Nowhere is this more evident than in elucidating the manifold relations of science and religion. Conversations on faith and science are impoverished whenever such historical perspectives are deficient. In addition, drawing frequent applications to the history of science helps make concepts more concrete and more instructive than discussions in the abstract tend to be. Moreover, there are advantages for critical thinking when one proceeds unencumbered from entanglement in the distracting polemics of the current moment.

One caveat that should be clear from from all this nevertheless deserves explicit mention at the outset. Although I am by profession a historian of science, and this work draws upon the history of science for many case studies, it is not a monograph in the history of science any more than it is a work of theology or of natural science. Rather, this is a work of multi-disciplinary integration.[47]

With respect to the history of science, most of the case studies are presented on the level of a public presentation or an undergraduate honors course. While they are all grounded in a familiarity with primary sources (particularly with the original rare books in the History of Science Collections), very little is based on new specialized research. Rather, I here seek merely to make the more modest contribution of crafting a high-level overview of some of the Trinitarian perspectives on science that were shared by T. F. Torrance and C. S. Lewis. I

46. We will return to this discussion in Chapter 1, Section 3: "Why Study the Past?," on pp. 10-14.

47. We will return to this discussion in Chapter 1, Section 2: "What Kind of Book is This?," on pp. 4-10.

hope that bringing these perspectives together in one place might provide a springboard for future in-depth historical studies, by myself and others, which to this point are made more difficult by the lack of a synthetic framework or general thematic overview. So to my professional colleagues I would simply suggest that they read this study as a prolegomenon intended to stimulate future and badly-needed in-depth historical research.[48] It is a remarkable oversight that few studies of Lewis or Torrance in their contemporary intellectual contexts exist in the literature of the history of science.[49] If this work should spur any future student to further investigations in the history of science and religion, I would be delighted.

Finally, another caveat arises with the term *evangelical*, for which there are at least three different meanings: American, historical, and Trinitarian.

First, evangelical here is not used in the American political sense in which it refers to a neo-Fundamentalist church associated with nationalist and white-supremacist ideologies.[50]

Second, in a more expansive historical and global context, evangelicalism encompasses reform movements through the ages including the Reformation, the 18th-century Great Awakening, and the 19th-century abolitionist and global missionary movements.[51]

---

48. An example of such an in-depth historical study is Bruce Ritchie, *James Clerk Maxwell: Faith, Church, Physics* (Edinburgh: Handsel Press, 2024).

49. The academic literature of the history of science is indexed by the Isis Critical Bibliography, ed. Stephen P. Weldon, sponsored by the History of Science Society and updated annually. It is available online at *isiscb.org*. In August 2022, excluding primary sources and considering only secondary studies, there were only 2 hits for C. S. Lewis and 1 for Torrance. This oversignt is currently being rectified.

50. Tim Alberta, *The Kingdom, the Power, and the Glory: American Evangelicals in an Age of Extremism* (New York: HarperCollins, 2023); Kristin Kobes Du Mez, *Jesus and John Wayne: How White Evangelicals Corrupted a Faith and Fractured a Nation* (New York: Liveright Publishing, 2020); and Russell Moore, *Losing Our Religion: An Altar Call for Evangelical America* (New York: Sentinel, 2023).

51. A usual historical starting point is the five-volume History of Evangelicalism Series edited by David W. Bebbington and Mark A. Noll; e.g., David W. Bebbington, *The Dominance of Evangelicalism: The Age of Spurgeon and Moody* (Downers Grove, Illinois: InterVarsity Press, 2005), which describes historical evangelicalism as a "quadrilateral" of activism, conversionism, biblicism, and crucicentrism. More recently, see Mark A. Noll, David W. Bebbington, and George M. Marsden, *Evangelicals: Who They Have Been, Are Now, and Could be* (Grand Rapids, Michigan: Wm. B. Eerdmans Publishing, 2019). On the global evangelical church, see Lamin O. Sanneh, *Disciples of All Nations: Pillars of World Christianity* (Oxford: Oxford University Press, 2008); Philip Jenkins, *The New Faces of Christianity: Believing the Bible in the Global South* (Oxford: Oxford University Press, 2006); and Mark A. Noll, *The New Shape of World Christianity: How American Experience Reflects Global Faith* (Downers Grove, Illinois: InterVarsity Press, 2010). It is important to note that denominational affiliation is not an indicator of evangelicalism in this second sense. For example, on any account, John Stott would rank as one of the most prominent leaders of evangelicalism in the second half of the 20th century, and he remained an Anglican all his life. (For an introduction to Stott, see Thomas A. Noble and Jason S. Sexton, eds., *British Evangelical Theologians of the Twentieth Century: An Enduring Legacy* [London: Apollos, 2022], which also includes a chapter on Torrance.) Moreover, to abandon the term "evangelical" in this second sense because of its corruption and co-option by white American nationalist neo-fundamentalists would constitute an act of imperialist linguistic hegemony, a further act of colonial exploitation, depriving self-described evangelicals outside of America and in the Majority World of their own history and identity. As part of its ongoing repentance, in solidarity with the global church, the American church needs to reclaim the term evangelical while confessing its many failures and oversights with respect to the injustices of uncritical

Third and more fundamentally, however, evangelical is an ecumenical description of the Nicene tradition in which doctrine and prayerful devotion are entertwined.[52] At its root, it refers to the *evangelium*, the good news of the Incarnation, the *eucatastrophe* to which Tolkien referred, and the gospel which Lewis and Torrance served.[53] Karl Barth writes:

> "What the word 'evangelical' will objectively designate is that theology which treats of the *God of the Gospel*.... Evangelical theology is concerned with Immanuel, God with us! Having this God for its object, it can be nothing else but the most thankful and *happy* science!"[54]

A church, people, or community is evangelical, Incarnational, or Trinitarian in this third sense, then, to the precise extent to which it expresses the holistic vision of a world charged

---

accumulation of wealth, the injustices of racism which divide evangelicalism from black and indigenous churches, and the injustices of colonialism which corrupt global missions. In addition to seeking reconciliation in these areas, evangelicals need to repent of deep-seated habits of conspiracy thinking, patriarchy, and Christian nationalism, and also a generally superficial posture toward the natural sciences. It is my belief that Trinitarian theology offers a way forward for renewal of the evangelical movement.

52. Torrance devotes his entire first chapter, "Faith and Godliness," to this theme in Thomas F. Torrance, *The Trinitarian Faith: The Evangelical Theology of the Ancient Catholic Church* (#1988-489). Cf. p. 17: "An outstanding mark of the Nicene approach was its association of faith with 'piety' or 'godliness' (εὐσέβεια or θεοσέβεια), that is, with a mode of worship, behaviour and thought that was devout and worthy of God the Father, the Son and the Holy Spirit. This was a distinctively Christian way of life..."

53. Greek εὐαγγέλιον (*euangelion*) is etymologically "joy news." For "eucatastrophe" see Tolkien's epigram to this Introduction. In his "gospel" (Old English for "good news"), Luke echoed the Priene Calendar Inscription which employed the term *euangelion* to proclaim the universal peace of the reign of Caesar Augustus. For evangelical Christians thereafter, the joy at the heart of the Incarnation has been seen as the true source of peace in contrast to worldly kingdoms and powers. Evangelicalism in this sense cuts across Christian traditions; one may speak of evangelical Lutheran, Reformed, Anglican, Orthodox, and Roman Catholic believers. Thus, Tolkien's essay "On Fairy Stories" represents an evangelical sensibility toward literature in the sense used here for an evangelical approach to science. On Tolkien's Roman Catholic faith, see Holly Ordway, *Tolkien's Faith: A Spiritual Biography* (Elk Grove Village, Illinois: Word on Fire Academic, 2023); and Ralph C. Wood, *The Gospel According to Tolkien: Visions of the Kingdom in Middle-Earth* (Louisville, Kentucky: Westminster John Knox Press, 2003). For an interesting reflection on the Priene Calendar Inscription and the gospel of Luke see "The Historical and Theological Framework of the Nativity Story in Luke's Gospel" by Pope Benedict XVI in *Jesus of Nazareth: The Infancy Narratives* (New York: Image Press, 2012), pp. 58-66. C. S. Lewis' *Mere Christianity* represents this evangelical and ecumenical focus on the Nicene tradition rather than church affiliation more narrowly conceived (see Close Reading #1, on p. xxi). Although Torrance was rooted in the evangelical movement in the second sense, Lewis and Torrance were both solidly evangelical in this third sense.

54. Karl Barth, *Evangelical Theology: An Introduction* (New York: Holt, Rinehart and Winston, 1969; reprinted Grand Rapids, Michigan: Wm. B. Eerdmans, 1979), p. 5 and 12. See also Thomas F. Torrance, *Karl Barth: Biblical and Evangelical Theologian* (#1990-517).

with the glory of God manifest in the manger, incarnate in human flesh, and proclaimed to the shepherds by the angels on that first Christmas night.

How to do science in such a world is the subject of this book.

"Welcome, all wonders in one sight!
Eternity shut in a span,
Summer in winter, day in night,
Heaven in earth, and God in man!
Great little One, whose all-embracing birth
Lifts earth to Heaven, stoops Heaven to earth."
Richard Crashaw, "In the Holy Nativity of our Lord"[55]

55. Richard Crashaw (1612/3-1649), *The Complete Poetry of Richard Crashaw, Edited With an Introduction and Notes By George Walton Williams* (New York: W. W. Norton & Company, 1970), p. 83. Spelling modernized.