

Creation in the Thought of Francis and Bonaventure:

Foundation for a 21st Century *Spirituality of Matter*

Introduction

*This world's no blot for us,
Nor blank; it means intensely and it means good:
To find its meaning is my meat and drink.*

Robert Browning puts these words into the mouth of a Franciscan, Fra Lippo Lippi. For Saint Francis creation did “mean intensely” because it pointed to a good and loving God. However, there are scientists today who say that the universe is meaningless, that humans are the outcome of blind chance and that our consciousness and feelings are purely the result of biochemistry. Is there any place in the modern world for a belief that the universe has meaning, for a spirituality of matter? This dissertation will argue that a Franciscan spirituality of matter, based on the thought of Francis and Bonaventure, is in tune with the modern scientific world-view and can be the basis of a spirituality of matter for the 21st century.

Methodology

Francis left few writings, mainly prayers and instructions to his Brothers, but there are many stories about Francis and nature. Indeed, Francis is widely known outside the Church because of his love of animals; most garden centres will yield at least one statue of Francis with birds. In attempting to determine Francis’ own spirituality of matter I have chosen three things to examine, each of which occurred at an important stage in the saint’s life; the meeting with the leper, the sermon to the birds and his great song the Canticle of Brother Sun. From these I will identify key themes.

In contrast to Francis, we have a considerable body of written work attributed to Bonaventure. In this dissertation it is not possible to consider all the original sources in searching for Bonaventure’s teaching on matter. I will look at general themes in Bonaventure which develop upon the themes of Francis’ spirituality of creation. Although I mainly rely on secondary sources, I look specifically at the first two chapters of the *Itinerarium*, as that work was directly inspired by the spiritual experience of Francis as well as providing an excellent overview of Bonaventure’s integrated approach, blending logic, metaphysics, symbolism and mysticism (Cousins ‘Coincidence’, 3).

I then examine the current scientific world-view, in particular deriving from cosmology and particle physics, and consider whether, and how, this spirituality of matter of two medieval saints has relevance in light of this world-view. In conclusion, I look at how Franciscan spirituality could be a basis for a spirituality of matter for the 21st century.

Abbreviations used

- 1C Vita Prima (First Life)
- 2C Vita Secunda (Second Life)
- ER Regula non bullata (The Earlier Rule)
- Itin Itinerarium Mentis in Deum (The Soul's Journey into God)
- LP Legenda Perugina (The Legend of Perugia).
- L3C The Legend of the Three Companions
- LF Fioretti (Little Flowers of St Francis)
- LMin Legenda Minor (Minor Life)
- LM Legenda Maior (Major Life)
- MP The Mirror of Perfection
- RA De Reductione Artium ad Theologiam (On the Reduction of Arts to Theology)
- T The Testament

Discussion

I. Background

1. Christian approach to nature

Stories of affinity between saints and animals go back to the Desert Fathers (Ward, 43-4). The Celtic saints followed in this tradition (Armstrong, 31-2). It is important to note that this was not seen as a mere sentimental attachment, but as the restoration in Christ of these holy ones to the original status of the first Adam in creation, “but in a right order, in which man is in control and is the crown.” (Ward, 44).

The orthodox Christian view, based on the Bible and the Incarnation, is that matter, God’s creation, is good and can participate in salvation (Powell, 16). However, throughout the history of the Church there has been a recurring dualist theme, viewing spirit as good and material things as bad. This can be traced to the influence of Greek philosophy, particularly platonism and Neoplatonism, on the thinking of Hellenic Christians in the early Church (Latourette, 122-3). While movements which stress this theme have generally been considered heretical, they have left traces in Christian thought. For example, Saint Augustine’s Manichean roots left him ambivalent towards matter (Cousins 1983, 179). At the time of Francis, Catharist sects holding dualist views were growing rapidly (Armstrong, 27).

2. Twelfth century views of nature

Francis was born towards the end of the 12th century. That century can be viewed as a period of renaissance and technological revolution (Chenu, 3; 39).

In the early Middle Ages, the approach to nature had been heavily allegorical; in the 12th century this began to be replaced by direct observation. This is demonstrated by the carvings in the great cathedrals of the century, such as Chartres, in which appear naturalistic depictions of leaves, fruit and flowers, and of men and women, apparently based on living individuals, going about their everyday business (Chenu, 232-233). Previously such carvings would exclusively have been of mythical beasts and heroically stylized or grotesquely distorted human figures.

3. Chivalry

Francis in his youth was clearly influenced by the tradition of chivalry and the troubadours (Mulholland, 231). The ideals of chivalric behaviour included largesse, in which the higher gives to the lower while preserving the self-respect of both, and noblesse oblige, a mutual regard for and mutual care of those serving together, even though from different social levels (Sorrell, 69-74). The troubadour tradition included pure devotion to a noble lady, which we see in Francis’ devotion to ‘Lady Poverty’ (Mulholland, 229-230).

II. St Francis of Assisi

1. Sources

Francis was a man of action, who was not interested in formal theology. To a great extent his theology and his spirituality must be discerned from what he did (Arnold & Fry, 85). Here we run up against the problem of hagiography; how much is historical and how much is interpretive myth?

A. Source material

Although there are a few writings generally accepted as being by Francis, most of our knowledge about the saint comes from the writings of others. The earliest account of his life is the *First Life* by the Franciscan Thomas of Celano, who had met Francis although he was not one of the early companions, written shortly after Francis' death. In 1244 the Order collected material from those still alive who had known Francis. Although the original collection does not survive, it is possible that at least some of it is found in the document discovered in 1922, called *The Legend of Perugia*. It is also possible that the work known as *The Legend of the Three Companions* derives from this act of collection. In about 1246 Celano wrote a longer *Second Life*, which uses this material. *The Mirror of Perfection* appears to derive from the *Legend of Perugia* but also has material in common with the *Second Life*. Perhaps the best known accounts (but less reliable, Sorrell, 7) of Francis' life are the *Major Life* of 1266 by Bonaventure and the fourteenth century *Little Flowers of St Francis*.

B. Reliability of sources

The stories told about Francis in these works cannot be accepted uncritically. As Armstrong says: The early biographers on which their successors rely were under strong pressures to depict him acceptably. From the time of his death he was the subject of propaganda campaigns. (2)

For example, Bonaventure's *Major Life* was written when he was Minister General of the Order and trying to deal with the conflict that had arisen over how literally the teachings of Francis were to be followed, particularly as relating to poverty. These were intended to be the official version of the life of Francis for the Order and orders were given to destroy all other biographical materials.

Of the three things I have chosen to examine, Francis' authorship of the *Canticle* is unquestioned (although exactly what he meant by it is another matter, discussed below). The story of his encounter with the leper appears in the earliest sources, and its importance to his spiritual development is authenticated by his *Testament*, again clearly attributed to Francis himself. The sermon to the birds is a little more problematic, and the origins and reliability of this story are discussed below.

2. Francis and Creation

A. The meeting with the leper

Francis' Testament begins: The Lord granted me, Brother Francis, to begin to do penance in this way: While I was in sin, it was very bitter to me to see lepers. And the Lord Himself led me among them and I had mercy upon them. (T 1-2)

Leprosy was believed to be highly contagious, so all physical contact with lepers was shunned (Spoto, 57-8). The extreme disfigurement of lepers in the advanced stages of the disease made them physically repugnant. Leprosy represented sin and the distorted features the effect of sin on humankind (Bernard, 1).

The first stirrings of the conversion process had begun in Francis before the meeting with the leper. The dream in Spoleto had turned him from dreams of knightly glory to serving the Lord (LM 1:3). Then, on a pilgrimage to Rome, he changed clothes and roles with a beggar outside St Peter's, and began a concern for the poor (LM 1:6).

Francis shared his contemporaries' fear of lepers ; indeed, as one of Assisi's 'gilded youth' he probably had a terror of anything that could damage his looks and social standing . Shortly after returning from Rome, he encountered a leper while riding outside Assisi. He knew he had to conquer his fear and follow Christ, who touched and healed lepers. Francis dismounted and kissed the hand held out for alms. Immediately his bitterness was transformed to sweetness of soul and body, a metaphor for the resulting transformation of his life(Schumuki, 247).

B. The sermon to the birds

This tale occurs at another turning point for Francis, after he agonized as to whether he should be solely devoted to contemplative prayer. He sought advice from trusted friends, who encouraged him to continue preaching. He immediately set out on a mission. Coming across a large group of birds of various species he preached to them, addressing them as brothers , and exhorting them to praise their Creator who cared for them. The birds stayed still, apparently listening attentively. They did not fly off until Francis had blessed them and given them permission to depart.

This story sounds like a typical invention of a medieval hagiographer, and Armstrong (57-60) suggests that, even if based on an actual incident, it was embellished in even the earliest source. Others accept the story as true; Sorrell (61, Appendix III) gives detailed reasons why the first account, in 1C 58, can be accepted as accurate .

C. The Canticle

The Canticle, his best known work, was written towards the end of Francis' life, after he had received the stigmata. He was virtually blind and in constant pain. The immediate reason for its composition was an assurance of eternal life Francis received after a sleepless night, made miserable by pain and an infestation of mice (House, 268). The preferred chronology is that of the Legend of Perugia, which gives a three stage composition (Sorrell, 98). The main body relating to nature (Strophes 1- 25) was composed in San Damiano in the winter of 1224-5, after the imposition of the stigmata and immediately following a vision in which Francis was assured of eternal life. The next four strophes were composed to stop a quarrel between the bishop and the mayor of Assisi. The strophes on "Sister Death" were composed on his death bed.

The Biblical and liturgical influences on the Canticum are evident, in particular Psalm 148 and the Benedictus, both of which Francis must have said regularly in reading his breviary (Sorrell, 99; Armstrong, 224-5). However, the Canticum is different in that the named creatures are not just listed, but are given familial titles and described (Leclerc, 4-5).

The poem is written in the Italian that he spoke, one indication that he intended that his friars should use it in their preaching (Frugoni, 150). The repeated refrain is "Laudato si, mi Signore", "praise to you, my Lord". The first time this appears (Strophe 5) it is followed by "con tutte le tue creature", "with all your creatures", but thereafter it is followed by "per". This word could be variously translated "for", "by" or "through", and there has been much debate on the exact meaning (Spoto, 203). Each of these could be what Francis meant. If translated as "for", Francis would be thanking God for these creatures, something we know he frequently did. Translated as "by", the term expresses agency, Francis is bidding the creatures to praise their Creator. The sermon to the birds is an example of him doing that. Translating per as "through" means God is seen and praised through his creation, the approach of exemplarity which is discussed below (Cousins 1981, 86-88). Because he chose to express himself in poetry, with its inherent ability to encompass layers of meaning, it is possible Francis intended all three (Cousins 1981, 88).

3. Francis' Spirituality of Matter

We will first see what can be discovered about the underlying spirituality of Francis in each of these examples, then attempt to draw together a systematic spirituality of matter.

A. The leper

At the end of his life Francis declared that his aim was always to follow the example of Jesus Christ. This incident is an early example of Francis literally doing what he knew Jesus had done. Indeed, the disappearance of the leper in later versions of the story was probably meant to indicate that this leper was an appearance of either an angel or Christ himself.

This incident changed Francis' view of lepers, and, as is shown by his later actions, other outcasts of society such as the very poor and robbers. In humility he saw that they were his equals and were equally loved by God (Arnold & Fry, 36). He showed them practical love, and took joy in so doing.

Following Christ's example, Francis viewed all people, without exception, as brothers and sisters, thus making an interconnected web of all humanity. This extended to non-Christians; Francis exhorted his friars who were going to the Moslems to live the Gospel and to make themselves "vulnerable to their enemies" (ER XVI). He acted on this himself when he went to preach to the Sultan in the middle of the Fifth Crusade (1C 57; LM 9:8).

B. The sermon to the birds

Having accepted that all other humans are brothers and sisters, Francis now addresses sentient creatures as if they had human understanding. He calls them brothers (or sisters). He exhorts the birds to praise and love their Creator because he clothes them, gives them the freedom of the air and feeds them, echoing Christ's message to his followers (Matt 6:25-34). This approach treats the birds as members with us of God's family. The earth was created as much for them as for us and both birds and humans should praise and thank their creator (Armstrong, 60). This sense of kinship extended to all other living creatures (LM 8:6).

Francis also addresses the birds as 'noble'. This indicates that he was thinking in terms of chivalry and its ideals (Sorrell, 71). This use by Francis of chivalric address to creatures indicates that he is including them in the scheme of largesse and noblesse oblige, that he and they are all fellow servants of the Great King .

C. The Canticle

In this work, the mature Francis extends the inherent brotherhood and sisterhood of humanity to all creation, inanimate as well as sentient (Pozzi, 19). Heavenly bodies, weather, water and fire are brought into the family .

The Canticle celebrates creation as good and beautiful, in contrast to dualist teachings (Spoto, 203). It is beautiful and good because it reflects the beauty and goodness of its Creator. The sun is expressly said to bear God's likeness, while the moon and stars are described as "clear and precious and beautiful", attributes of God who is seen in all creation. Weather, water, fire and earth are seen as agents through whom God provides for humankind.

The primary function of this good creation is to praise its Creator. In the alternative readings of the Canticle, this is praise by the creatures and praise by mankind through and for the creatures. Inherent in the Canticle is the idea of humans acting on behalf of the inarticulate part of creation by giving praise on its behalf (Armstrong, 242). There is a strong sense of the interconnectedness of all creation; Doyle (1980, 40) says the Canticle is like the Rublev Trinity in that it holds out an invitation to participate in a network of loving relationships which provides an underlying unity to everything that is.

We have seen that Francis lived at a time when a largely allegorical approach to nature was being gradually replaced by a more direct, observational approach. The question therefore arises as to what extent Francis is using these elements of creation in a symbolic manner rather than a direct observational reference. The titles of "brother" and "sister" and the adjectives used indicate that these are not simple descriptions of material objects (Leclerc, 11). There is clear use of symbolism; some commentators think this symbolism is more than the Biblical symbolism common to medieval thought (Leclerc, 15-17). Delio 1992 calls the Canticle "a song of Christ mysticism". Leclerc (xi) believes the work to be deeply symbolic, expressing an inner journey to the depths of the soul . The adjectives use show a symbolic use of chivalry (Mulholland, 232-233).

The Canticle does not refer to the category of living but insensate creation, the plants, except as the products of our Sister, Mother Earth. However, there is evidence that Francis viewed them in the same way. He rejoiced in flowers and preached to fields of flowers or grain, woods and vineyards (1C 80). He showed practical care by exhorting friars when cutting firewood to leave part of the tree to sprout again and to leave a part of the garden uncultivated for the wild flowers (MP 118).

Celano sums up:

He called all creatures by the name of “brother” and “sister”. In a singular way never experienced by others, he saw into the secrets of creatures with penetrating vision, as one who had already passed “into the freedom of the sons of God.” (1C 81) The last phrase is a quotation from Romans 8:21, Paul’s vision of the cosmic outworking of salvation and redemption, the restoration of creation to its intended, pre-Fall state.

D. Summary

From these examples, I believe that we can see the development of two major themes in the spirituality of St. Francis in relationship to creation and matter.

(i) God the source of creation

It is clear that Francis was not the mere sentimental animal lover of popular art; his vision of creation was firmly rooted in his love for God and his dedicated following of Christ (Armstrong, 6-7). It is also clear that Francis was no dualist. He understood that matter, created by the God who is “all good, supreme good, totally good” (The Praises to be Said at All the Hours, Armstrong & Brady, 102), must itself be good.

From this understanding flow two consequences:

(a) Interconnection of all creation

The events discussed above show the development of Francis’ understanding of the interconnectedness of all creation. Starting with his realization that lepers and other outcasts were his equals, he came to regard all humans, rich and poor, Christians and Moslems, holy and sinful, as brothers and sisters because all are children of the same Heavenly Father. The family circle then extends to birds and other sentient creatures, giving them equal dignity with humanity in praising God and seeing their essential role in the manifestation of God in creation. Finally, Francis sees that everything that God created is a member of the family and a source of praise and glory to the Creator. All matter is interconnected because it all derives from the same source.

(b) Salvation of creation

This interconnectedness is carried through into salvation. Romans 8:18-25 teaches that all creation was involved in the Fall and will be involved in the redemption. In his interactions with creation, Francis was seen as approaching humanity’s original relationship with animals and harmony with all creation (LM 8:1; Sorrell, 53). The priestly role humanity should play towards the rest of creation is also seen in Francis’ actions. For example, at the end of the sermon to the birds, they did not leave until had made the sign of the cross over them and given them permission to depart, like the end of Mass .

(ii) Creation as a ladder to God

The Canticle begins by acknowledging the transcendence of God; “no man is worthy to mention your name”. This humble acceptance opens up creation as a way we can learn of and come to God (Leclerc, 44) . Celano says that Francis saw the beauty of God in things :

Everywhere he followed the Beloved by the traces he has impressed on all things; he made for himself a ladder whereby he might reach the throne. (2C 2:165).

This supports the reading of *per* in the Canticle as meaning ‘through’; God can be seen and understood through his creatures, which naturally leads to praise.

(a) Symbolism

How can a transcendent God be seen through material things? The Canticle shows that Francis understood that this was by symbolism and analogy. “Sir Brother Sun” is said expressly to resemble God through its radiance and splendour. There is symbolism in the use of ‘precious’, an adjective often used by Francis in connection with the Eucharist, to describe the moon and stars (Leclerc, 76-7) and water (Leclerc, 102-3)

Symbolism played an important role in Francis’ spirituality of matter. Much of his sympathetic treatment of creatures was inspired by direct Biblical or religious symbolism. Francis had a particular reverence for creatures that symbolized God or Christ or the ideals of the Franciscan order (LM 8:6; Sorrell, 48). There was symbolism in his treatment of his fellow men; in his encounter with the leper he saw the leper as an image of God’s Kingdom, while his act symbolised God’s love towards the leper (St. John 204).

(b) Union with God

The last stanzas of the Canticle, dealing with peacemakers and death, seem incongruous if this work is seen only as a song praising God for creation. However, the relevance of these stanzas can be seen if we remember that the Canticle arose directly from divine assurance to Francis that he had eternal life. Francis’ love for nature resulted from his love for God and his longing to imitate Christ,. Acting as a peacemaker is truly imitating the Lord of Peace, while death is the route to final and complete union with God.

III Saint Bonaventure

1. Background

A. Life of Bonaventure

Bonaventure was born in the early 13th century in Bagnoregio, Italy. In about 1234 he entered the University of Paris and stayed there for over 20 years as student and professor. It is not certain when he entered the Franciscan Order, but his theological studies were carried out as a Franciscan. He continued his academic career at the University of Paris until 1257, when he was elected Minister General.

He became Minister General at a difficult time for the Order. His predecessor had been ordered by the pope to resign because he was considered heretical. The Order was divided into two camps, the Spirituals who held that Francis' ideals should be retained without change or compromise and the group who felt that the Order should move on. Although Bonaventure inclined towards the second view and was criticized by the Spirituals, he did manage to hold the Order together.

He remained Minister General until early 1274, becoming a cardinal in 1273. He took an active part in the Council of Lyons but died suddenly on July 15 1274, just before the end of the Council.

B. Bonaventure and Francis

It is most unlikely that Bonaventure ever met Francis, but his early life was greatly influenced by the saint. As a child he fell seriously ill but recovered after his mother prayed to Francis (L Min 8:579). He probably received his preliminary education with the friars in Bagnoregio (Hayes 1999, 16).

Bonaventure was greatly impressed by Francis. Hayes (1994, 45) puts it very strongly: "...without a St. Francis of Assisi there would have been no St. Bonaventure as we know him." The influence was two-fold; Bonaventure provides a theological reflection on the meaning of Francis' life and experience, and the spiritual experience of Francis is an important foundation of Bonaventure's theological system (Hayes 1994, 45).

C. Other Influences on Bonaventure's thought

Bonaventure studied theology under various Franciscans in the University of Paris, in particular Alexander of Hales. From Alexander he received the Christian Neoplatonic tradition coming from Augustine, Pseudo-Dionysius and the Victorines (Cousins 1983, 176). His doctrine of the Trinity was close to that of the Greek Fathers, who emphasized the dynamic and relational nature of the Trinity based on the Father as the ultimate source (Calisi, 126-127). The relevance of this view of the Trinity to Bonaventure's spirituality of matter is discussed below.

Reading Bonaventure's works, the primary importance of Scripture and its deep effect on his thinking are obvious. Knowledge of God comes from the study of Scripture,

nature and the soul, but Scripture, the element closest to God, provides illumination for the others (Tavard, 33).

D. Theological foundations of Bonaventure's spirituality of creation

There are two foundations to Bonaventure's theology and spirituality of matter; the Trinity and the centrality of Christ. Cousins ('Coincidence', 49) compares these to the two towers of a Gothic cathedral, providing the culmination and distinctive design of Bonaventure's thought.

1. Trinity

At the heart of matter is a dynamic, loving, relational Trinity. All creation flows from this dynamic fecundity of goodness and love, which means that everything in creation reflects to some extent its Creator (Edwards, 719). However, because of sin we cannot read the book of nature to find its Author until our eyes are opened by grace and by revelation (Delio 2001, 61-62).

2. Christ

In Bonaventure's model of the Trinity the three persons represent three aspects of origin; the one who is origin only, the one who is originated only and the one who is both origin and originated. This last, the Son, therefore takes a central position in this pattern (Hayes 1994, 58). Christ is also the centre of creation as having a relationship with creation through the Incarnation (Scheaffer, 268). The centrality of Christ is the essence of Francis' life and teachings (Cousins 'Coincidence', 65).

3. Spirituality of matter in Bonaventure

The presence of God in all creation is so strong in Francis' thought that it is not surprising it is at the heart of Bonaventure's teachings on creation (Hellmann, 14). Bonaventure provides a concise summary of his theology of creation in the last section of *De Reductione*; all creation contains knowledge of God to be unlocked by faith and Scripture (Hayes 1996, 33).

Bonaventure summarised the theme central to his thought: "*This is the whole of our metaphysics: It is about emanation, exemplarity and consummation; that is, to be illumined by spiritual rays and led back to the supreme Being.*"

(Hex 2,17)

In relation to matter, emanation means that everything in creation has its origin in God, from whom it proceeds; having been created it reflects God as its divine exemplar; and finally is consummated by returning to God who is its ultimate end (Scheaffer, 262). However, the primary emanation, exemplarity and consummation are within the Trinity (Bowman 1975, 182).

A. Emanation and consummation

1. Within the Trinity

Bonaventure's doctrine of emanation derives directly from his understanding of the Trinity. The source of emanation is the fecundity of the Father, and the source of this

fecundity is love, self-transcending and self-communicative (Cousins 'Coincidence', 52). This fecundity is first expressed within the Trinity, through the generation of the Son as Image and Word (Cousins 'Coincidence', 54). Bonaventure follows Richard of St Victor in arguing that perfect love requires a third person, the Holy Spirit who emanates from both the Father and the Son and together with them represents the three modalities of love (Hayes 1994, 58). The Holy Spirit, the love between the Father and the Son, is the consummation of the inner life of the Trinity (Bowman 1975, 183).

2. From the Trinity

This love then overflows from the internal emanation within the Trinity to the external emanation of creation (Hayes 1994, 62). Ennis (133-134) neatly summarises this: "Creation is just the logical spatiotemporal consequence of God's eternal goodness". Because creation originates from the Trinity, it shares the Trinity's dynamic process of interpenetrating relationships. (Delio 1998, 35).

Just as emanation can be seen as a descent of creation from God, a spreading-out into the material world, so consummation (also called 'reduction') is a gathering-together of all created things in a returning ascent to God (Schaefer 1961, 310-311). For Bonaventure, the fate of all created matter is tied to the destiny of humankind (Hayes 1981, 16). The return to God of creation comes about through the human journey back to God (Delio 2001, 59). Humanity shares its material nature with the rest of creation, which is intended to serve humanity in its journey towards its ultimate destiny and therefore share in that destiny (Hayes 1994, 111).

B. Exemplarity

This concept has its roots in Plato's philosophy that material things are simply shadows of a transcendent reality, Ideas. Christians adapted this by placing the realm of these Ideas in the mind of God (Hayes 1994, 73). The divine ideas are expressive, giving rise to creation (Bowman 1975, 182). An exemplar is the model of the thing made and is the active side of expression (Bowman 1975, 184)

Bonaventure inserts exemplarity into the centre of the Neoplatonic flow of emanatio and reductio (Hayes 1996, 7). Exemplarity is central to Bonaventure's thought on matter, because it is the key to unlocking the meaning of creation (Carpenter, 61-62). The world can be compared to a mirror reflecting God, or to a stained glass window through which the divine light shines in different colours and shapes (Hayes 1999, 66).

1. Within the Trinity

As God himself is the exemplar of all else, so the entire Trinity is an exemplar at one level. However, the second person, the Son and Eternal Word, is the primary self-expression of the Father and so can be seen as the pre-eminent exemplar from whom the exemplarity of all creation derives (Tavard, 59). Indeed, the true meaning of creation can only be read through faith in Christ and conformity to his likeness (Hayes 1994, 84).

2. From the Trinity

The overflowing love of the Trinity expresses itself outwardly in the diversity of creation, every creature deriving from an idea of the Word. Creation thus has a role in this wider circle of exemplarism analogous to the role of the Word within the Trinity; it reflects the Trinity although in an incomplete and partial manner (Bowman 1975, 185).

3. Images of God in creation

The doctrine that all creatures, in reflecting divine power, goodness and wisdom, are vestiges of God originates from Augustine (Cousins 'Coincidence', 45). However Bonaventure, influenced by Francis who took joy in creation, considerably developed this doctrine. He saw creation reflecting God in four ways; as shadows, vestiges, images and similitude (Cousins 'Coincidence', 115). All traces of God in creation must be imperfect and incomplete because God alone is perfect and complete. Shadows, vestiges and images show this imperfection and incompleteness in various ways, for example by degree of proximity to the Creator. Shadows are the most remote, a distant and confused image of God. Vestiges are still distant but more distinct, while images, which involve deliberate imitation, are both close and distinct. (Gilson, 211). Another distinction is the sort of knowledge of God that can be derived from study of each type. The only knowledge that can be derived from a shadow is that God exists. Vestiges give knowledge of the three divine attributes which, although belonging to the entire Godhead, are traditionally appropriated more particularly to one of the Persons. However, images more fully reveal the Trinity through the Trinitarian structure of the soul. (Tavard, 61).

These categories are not mutually exclusive. While only beings with souls (angels and humans) can be images, they are also shadows and vestiges because God is their cause. Similarly, animals can be both shadows and vestiges. (Gilson, 212).

4. Symbolism and order

The Victorines' teaching on the importance of religious symbolism to theology was adopted by Bonaventure (Zinn, 143). He used a rich symbolism to express Francis' instinctive understanding of creation as the expression of God's goodness (Rout, 33), and it is central to his understanding of exemplarity. We can only understand reality when we see the symbolic nature of material things (Hayes 1981, 59). This theology of exemplars allows us to see the world as matter but also as manifestation of the spirit (Zinn, 168). Hayes sums up Bonaventure's teaching: *Since all things are made according to their pattern in the divine mind, all things bear the mark of their divine origin. They are, in effect, symbols of what they are not, pointing away from themselves to their divine source. All things are analogies.* (1981, 14-15)

A modern reader of Bonaventure is struck by the emphasis put on numbers as symbolic. For Bonaventure number was an important exemplar, as demonstrated by the presence of beauty in things arising from proportion (Spargo, 38). The number one was viewed as containing all other numbers, symbolising the creative primacy of God (Scheaffer, 282). Bonaventure often emphasises the number three; for example, he compares the sun to the Trinity; the sun has being, splendour and heat while God is the source of being (the Father), splendour (the Son) and heat (the Holy Spirit) (Doyle, 77). Other important numbers in Bonaventure's numerology are six, which represents completion followed by rest (RA 7) and seven.

Bonaventure was influenced by the theme of hierarchy found in the writings of Pseudo-Dionysius (Hayes 1981, 14). There is hierarchy in everything, starting with the Trinity. Order in creation is both vertical and horizontal (Hellmann, 85). Vertical order relates to proximity to the Divine nature, and knowledge of this order leads upwards to God (Hellmann, 105). Horizontal order is found within each creature as the traces of its origin in the Trinity and is based on its relationship to its creator (Hellmann, 106-108).

For Bonaventure, the concept of order includes mutual relationship and connection between creatures and is the manifestation of divine wisdom (Schaefer 1960, 291; 306). In the ordering of all creation, humanity holds the central place, part of the material world through being embodied but uniquely able to enter a personal relationship with God through having a spirit. (Schaefer 1960, 279). However, sin causes disorder, so the spiritual journey is a quest for the restoration of God's order (Hayes 1994, 120).

C. Emanation, exemplarity and consummation - the circle

Bonaventure visualised the movement from emanation, through exemplarity to consummation as a circle, the same circle being fulfilled in man's journey to eternal life (Schaefer 1960, 263-264). At the centre of that circle is Christ (Hayes 1981, 50), the centre of a circle being defined by two lines intersecting at right angles, the cross.

Another image often used by Bonaventure is that of water. God's overflowing love is compared to a fountain from whence flows the vast river of creation into the ocean of the world. Like water, creation takes many forms and, like an ocean, is deep and has many levels of meaning. (Hayes 1981, 13). Just as the rain falls to fill the rivers which flow into the sea, then returns from the sea to the atmosphere to fall again as rain, so is the flow of creation from God, through the world and back to God (Hayes 1981, 49).

Delio 2001 (55) summarises the meaning of this theme: *The beauty, order and harmony of creation signified to Bonaventure that this created world is not simply a stage for human activity or a backdrop to human longings, but that the whole of creation has meaning and purpose. It comes from God, reflects the glory of God, and is intended to return to God.*

D. The journey into God through creation

For Bonaventure, the mysteries of creation are the route whereby we are led to an encounter with God (Hayes 1999, 54)

In the Prologue to the Itinerarium, Bonaventure describes how, seeking peace and rest from the stress of being Minister General (Cousins 'Introduction', 19), he retired to Mount Verna to contemplate how the soul ascends to God. He recalled the vision Francis saw there when he received the stigmata, a seraph with six wings in the form of a crucified man (ML 13:3). Bonaventure saw how that vision represented the road by which Francis reached union with God (Itin Prologue:2). The six wings symbolize the steps that lead to God, who can only be reached through the Crucified (Itin Prologue:3). The lower two wings represent creation, the middle two the soul and the upper pair God himself (Cousins 'Coincidence', 78).

1 The first stage – seeing God through things

We cannot make this ascent without divine help. Bonaventure dramatically illustrates this; man is bent over by sin and so cannot see the light of heaven unless he is straightened by grace through Jesus Christ (RA 1:7).

Once we can see, exemplarity provides a ladder for the spiritual journey to God (Cousins 'Coincidence', 58). The first step on the ladder is to see the whole created world "as a mirror through which we may pass over to God, the supreme Craftsman." (Itin 1:9). Bonaventure surveys how God is revealed through each of the sevenfold properties of creatures; origin, magnitude, multitude, beauty, fullness, activity and order (Itin 1:14). All creatures are capable of leading the mind to God, so that what is learned of God through sensible things can be carried over into the world of unseen intelligible things (Itin 2:11).

2. The second stage – seeing God in things

Bonaventure describes the three step process by which we sense, apprehend and then judge external objects. These three steps are vestiges in which we can see God. Apprehension of a likeness which points back to its source points to Christ, the Likeness of the Eternal Light. As the process of apprehension leads the mind back to the object, so Christ leads us back to the Father. In this way things which generate a likeness of themselves are mirrors reflecting the eternal emanation of the Son from the Father. (Itin 2:7). The sensation of pleasure arises from the perception of beauty arising from proportionality and unity in multiplicity (Bowman 1973, 560). Thus, the beauty and variety of creatures points to the beauty and unity of God (Bowman 1973, 561).

3. Imitation of Christ

Exemplarity is the ground of Bonaventure's spirituality of the imitation of Christ. Because all creation flows from the relationship between the Father and the Son, all creation is profoundly relational. Therefore our spirituality must be relational, the process of becoming like the prime Exemplar and thus sharing in the divine nature through a relationship with Christ (Hayes 1981, 60-61).

3. Bonaventure's development of themes from Francis

(i) God the source of creation

Francis' instinctive understanding is clothed by Bonaventure with Trinitarian based doctrines of emanation and exemplarity (Carpenter, 64-65). Bonaventure likened Francis' discernment of God's image in creation to rivulets leading back to "that Goodness which is their fountain-source" (LM 9:1).

(a) Interconnection of all creation

Bonaventure's understanding of the Trinity as dynamic and relational, combined with the doctrines of emanation and exemplarity, gives a theological basis for Francis' experience of the interconnectedness of all creation. The reflection of a relational Trinity in matter means that fundamentally creation is about relationship (Delio 2001, 56-7). Reflecting a dynamic Trinity means that creation itself is dynamic; matter is not lifeless and inert but is subject to change. The possibility of change means that

everything is in a state of potentiality, so creation is a continuing process (Delio 2001, 57-58).

(b) Salvation of creation

Because Christ is the centre, in the fullness of time through salvation all creation will return to that Centre, “the fullness of him who fills all in all.” (Eph 1:23). This is the spirituality of reduction, in which the fate of creation depends upon humanity’s relationship with God (Rom 8:19-23; Delio 2001, 59).

(ii) Creation as a ladder to God

The *Itinerarium* shows that for Bonaventure, as for Francis, the meaning of creation is intimately connected with the spiritual journey towards God (Delio 1992, 21). The Franciscan journey is bound up with the recognition of God in creation. Creatures and the human soul act as rungs on a ladder leading to the mystical knowledge of and unity with God that Francis achieved on Mount Verna when he received the stigmata (Cousins ‘Introduction’, 23-24).

(a) Symbolism

Francis’ use of symbolism in his spiritual understanding of creation is generally direct and simple. Bonaventure’s use of symbolism is complex to the point where it may seem artificial to modern readers. Gilson (204-205) argues that the complex symbolism used by Bonaventure when discussing creation is not a game or mental illusion. Rather, it is rooted deep in the heart of his Franciscan thinking about significance of creatures as exemplars of God. The ‘being’ of creation is analogous to, rather than identical to, the ‘being’ of God; Gilson calls this the “law of universal analogy” (207). Bonaventure, like Francis, saw beneath the huge diversity and apparent disorder of created things the strands of analogy, the exemplarity that interconnects all created things and reunites them in their Creator (Gilson, 229). This can be likened to the works of an artist; while each individual work tells us a little about its creator, looking at the whole corpus we get a more extensive understanding of the artist (Hayes 1994, 74). Symbolism is a bridge from matter to the transcendent world (Carpenter, 66).

(b) Union with God

Bonaventure in the *Legenda Maior* presents the life of Francis as a model of the spiritual journey (Hayes 1994, 118) and Francis as the exemplar of Christ mystics because he saw Christ in creation and used created things as a ladder to climb to his Beloved (LM 9:1; Delio 2001, 62-63). Having been conformed to Christ, as signified by the stigmata, Francis through union with God saw creation in its true relationship with the Creator and entered into the harmony enjoyed in Eden (Delio 1992, 7).

The spiritual journey also echoes the circle of emanation, exemplarity and return. We are created by God; through the exemplarity of creation, the life of Francis and the life of Christ we return to God through mystical union (Hayes 1994, 118). Indeed, man, in returning to God through a true understanding of the significance of creation, becomes the mediator for the consummation of the rest of creation in God (Bowman 1973, 563).

IV Is the Spirituality of Matter of Francis and Bonaventure Relevant Today?

Can we today adopt a spirituality formed in the medieval world-view? Can we adapt it to twenty-first century Western culture? Our world-view is strongly shaped by science and technology.

1. Scientific thought in the modern period – from determinism to chaos

A. The scientific revolution

The father of the scientific method, Francis Bacon, required scientific study to begin with objective observations of data, made without presupposition or prejudice. From these observations, by a process of deduction explanatory theories are put forward, which are then tested by further objective observations and thereby refined or rejected (Duce, 13). In practice, it is impossible to operate without some presupposition; at the most basic level, there has to be an assumption that all nature obeys laws which are invariant with time and within our observable space (McGrath, 125). For Bacon and Newton and their contemporaries, this assumption was supplied by their belief that what they observed was created by a rational and unchanging God (Davies 2003, 147-148). They also believed that we could learn about the invisible God through visible creation, guided by God's self revelation through Scripture (McGrath, 53; 141-142).

B. Deism and determinism

The next generation of thinkers, led by Descartes and Leibniz, began to challenge the need for revelation, and looked to build an intellectual system (theology as well as science and philosophy) based purely on reason, ushering in the Age of Reason (McGrath, 58-61). Starting with Newton's mechanical explanation of the universe, rationalists rejected divine intervention in its running (McGrath, 16-19). By the mid-nineteenth century, educated Europeans viewed the world as comprised of discrete particles (atoms), whose motions and interactions were governed by a set of mechanistic laws. This view was 'deterministic', meaning the future state of any system could in theory be predicted from an accurate knowledge of the current state, and 'reductionist', i.e. the behaviour of any system is determined by the combination of the behaviours of each of its individual components (Tilby, 15). It was also 'realistic', the assumption that scientific theories describe the world as it actually is, independent of the observer (Barbour, 66).

C. Relativity

The beginning of the twentieth century saw the first cracks in this world-view. Unexpected results from experiments designed to measure the speed of light between two observers moving relative to each other resulted in the theory of relativity. Time is no longer absolute; the speed of light is the same for all observers regardless of their movement (Hawking, 20-21).

D. Quantum Physics

About the same time, Planck explained observations of the radiation from hot bodies by suggesting that radiation is emitted in discrete packets, called quanta. One outcome of this 'quantum' theory is the uncertainty principle, which states that it is not possible to accurately measure both the position and the speed of a particle; this was the death knell of determinism and reductionism at an atomic level (Hawking, 54-55). Indeed, the very act of observation affects the thing being observed, challenging realism. From this uncertainty principle, quantum mechanics was derived to describe the behaviour of elementary particles, in the same way Newton had developed mechanics to explain the macroscopic world. Instead of the definite measurements of Newton's system, quantum mechanics deals in probabilities, introducing inevitable unpredictability into science (Hawking, 55-56). Planck's theory means that light, usually thought of as waves, in some ways behaves like particles. Quantum theory tells us the reverse is true, particles like electrons can also behave like waves.

E. Chaos theory

Reductionism, as well as determinism, has come under attack at the macroscopic level through chaos theory. This is the study of complex systems, such as the weather, the networks in our brains and the pattern on a butterfly's wing, whose behaviour cannot be predicted by purely mathematical analysis of the behaviour of the individual components (Coveney & Highfield, 13-15).

2. Franciscan spirituality of matter and modern science

The issue is not whether Francis and Bonaventure anticipated modern science, nor whether their creation theology reaches the same answers as science. The question is whether the main themes of their spiritual and theological approach to matter, identified above, are sufficiently aligned to our contemporary world view so as to be a valid basis for a spirituality of matter for today.

Science cannot answer the metaphysical questions about the ultimate source and purpose of the universe. The two major themes of Francis and Bonaventure, that God is the source of all creation and that all creation is intended as a ladder to God, are a matter of faith. However, we can see whether or not the underlying themes, such as the interconnection of all creation, emanation and consummation, and exemplarity, are consistent with modern scientific thought.

A. Interconnection

Chaos theory shows that the interactions of the individual units of a complex system lead to the emergence of coherent collective phenomena; "the whole is more than the sum of its parts" (Coveney & Highfield, 7). This tendency to organize and create complexity seems to be inherent in matter (Coveney & Highfield, 10-11). This dynamic state of interconnection also means that the behaviour of one unit of the system can have dramatic effects elsewhere, such as the famous "butterfly effect", the possibility that a butterfly beating its wings in Brazil could lead to a tornado in Texas (Coveney & Highfield, 170).

There is also interconnection at the most microscopic level of matter. For classical physics, the position and speed of an object were largely independent and could be measured. While this is still true for relatively large objects (like billiard balls), for elementary particles the uncertainty principle means that position and speed are connected. Even stranger, if two connected elementary particles are emitted and travel in different directions, each seems to 'know' if an observation is made on the other. This is called "quantum entanglement", and recent experiments show that it can produce effects measurable on a macroscopic scale (Brooks, 32-33). Davies 1983 says of the fundamental structure of matter: *...there is a strong holistic flavour to the quantum aspects of the nature of matter: interlocking levels of description with everything somehow made up of everything else and yet still displaying a hierarchy of structure.* (163)

'Interconnection with structural hierarchy' could well be a summary of Francis' and Bonaventure's spiritual approach to matter.

B. Emanation and consummation

It is now widely accepted that our universe, both matter and time, had a beginning, the "big bang" (Hawkin, 50). Starting from what physicists call a "singularity" (a dimensionless geometrical point) of intense energy, the universe has expanded and evolved to what we can see today. The end of the universe is less certain; expansion could continue at the same rate indefinitely until all that remains is a very thin, cold soup of atoms, or at some time gravity could reverse the expansion and everything will finally come back to that singularity, the "big crunch" (Drees, 245-246). Recent observations indicate that the acceleration may be increasing, so in the end everything would be torn apart, "the big rip" (Chandra). Any of these would be the end of any meaningful universe.

Regardless of the fate of the entire universe, there is a circle of emanation and consummation in the life of stars. As a result of the cooling of the early universe and the effects of gravity, the first generation of stars was born by the condensing of the basic matter, hydrogen. Under the effect of gravity the cores became sufficiently hot to set off nuclear reactions, creating helium and then heavier elements up to iron (including carbon) whilst generating huge amounts of energy. Finally the chain of nuclear reactions began to slow, and the stars came to an end – some of them in a spectacular explosion known as a supernova. This scattered the star's contents into space, including the carbon atoms that had been created. From these new stars formed, including our own sun and its planets. "Every atom of carbon in every living being was once inside a star, from whose dead ashes we have all arisen." (Polkinghorne, 72) These stars, too, have a life cycle, and eventually our sun will die (Davies 1983, 200-201).

C. Exemplarity

Doyle gives a twentieth century version of the Canticum, listing such things as energy, quasars, quarks and DNA (Doyle 1980, 188-189). There are numerous ways in which Bonaventure's Trinitarian doctrine of exemplars can be applied to aspects of creation revealed by modern science.

One example is the structure of the atomic nucleus. In 1932 the nucleus of an atom was shown to be comprised of two kinds of particle, the proton and the neutron, which are very similar except that the proton has a positive electrical charge (Hawking, 64). These particles could not be held together by the known forces of gravity and electro-magnetism, and it was found that they were held together by the constant exchange of particles christened 'prions' (Davies 1983, 149). In the 1960's it was shown that these protons and neutrons were themselves made up of other particles, named 'quarks'. There are many different kinds of quarks; at least six categories called 'flavours' (up, down, strange, charmed, bottom and top) and for each flavour there are three 'colours', red, green and blue (these are just labels, invented by physicists with a quirky sense of humour). Protons and neutrons are each made of three quarks, one of each colour; protons have two up quarks and one down quark, neutrons two down and one up (Davies 1983, 152-154). The quarks are held together by a force called the "strong nuclear force". This is believed to be effected by the constant interchange between the quarks of other particles called "gluons". Gluons only bind together particles when the resulting combination has no 'colour', ie has one each of red, green and blue quarks (Hawking, 72-73). Isolated quarks are not observed; they are always combined to make up other particles.

What vestiges of God can be seen in this? Bonaventure would surely have picked out all the triads; three quarks making up a proton or neutron, three colours, three pairs of flavours. The requirement for one of each of the three colours, with the result having no colour, points to the diversity and unity in the Trinity (Powell, 102). The constant exchange of gluons and prions, making dynamism essential to the existence of the basic stuff of matter, reflects the dynamic Trinity held in unity by the constant exchange of love. It seems that quarks are not isolated monads but are inherently relational, so, if they are the fundamental building blocks of matter, "created reality is through and through relational" and reflects the relational character of the Trinity (Hayes 2001, 69).

At the other end of the scale, research on the early stages of the universe after the 'big bang' has indicated that the structure which resulted in the stars and galaxies arose from harmonic waves, incredibly deep sounds like the note from an organ pipe (Hu and White, 46-49). This brings to mind John 1:3, the Word of God as the source of all creation.

D. The importance of symbol and number

Bonaventure and Francis teach that we are using symbols and analogies when we look for reflections of God in matter. Science also uses analogies to talk about matter (Polkinghorne 1991, 20). The use of 'models' to examine aspects of a complex system, or to describe things which are not directly observable, is an established part of scientific methodology (McGrath, 144-149).

The concepts of 'wave' and 'particle', realities at the macroscopic level, at the fundamental level of matter are just analogies. They are used to describe aspects of entities which can simultaneously behave like waves and particles, an impossibility in our normal experience. Similarly, theology can require the use of apparently incompatible models, for example the divinity and humanity of Jesus Christ (McGrath, 169) Recent experiments have caused light and matter to interact in a way that the result is indescribable; researchers can only describe the resulting state as what it is

not, neither light nor matter (Reich, 32), apophatic language familiar to Bonaventure (e.g. *Itin.* 7:5).

The scientific method uses mathematics as the basis of science , which requires an acceptance that there is order, mathematical order, in nature (Davies 2003, 149). The basis of mathematics is number. Although Bonaventure used number in a symbolic rather than mathematical way, it was based on his belief that creation was ordered in reflection of the divine order.

Conclusion

1. Francis and Bonaventure are relevant today

The Age of Reason regarded medieval mystics as ignorant and superstitious; Voltaire mocked Francis as a “raving lunatic” (Doyle 1980, 1). Our world has been shaped by the Enlightenment, including its emphasis on reason, the individual, technological progress and property rights (Doyle 1980, 3-4).

Just as quantum physics undermined the deterministic view of matter, the horrors of the 20th century (two world wars, the Holocaust, the atomic bomb, apartheid, ethnic cleansing) began to undermine faith in human and technological progress and showed the dangers of unchecked individuality.

Not surprisingly, it was the environmental movement that began the rehabilitation of Francis from superstitious religious fanatic to patron saint of the environment. However, I would argue that Franciscan spirituality is relevant to more than just environmental concerns, important as they are. As discussed above, it is consistent with other areas of science. It is also relevant to globalisation, a dominant theme of recent years. For most of human history my neighbour was one of a geographically limited and relatively small group; today my ‘neighbour’ can be anywhere in the world, a starving child in Africa, an abused woman in Afghanistan, an earthquake victim in Turkey. As Francis came to understand, we are all interconnected. Globalisation has also demonstrated acute problems arising from human individualism, such as destruction of the rainforests and the concentration of wealth, food consumption and energy use in a few countries to the detriment of the rest.

2. A spirituality of matter for the 21st century

Francis and Bonaventure were interested in creation not as a matter of curiosity but as the basis of spirituality, as a ladder to God. Can we today find a ladder to God through the Franciscan approach to matter?

A. Finding God in creation

In the discussion above a couple of examples are given of finding vestiges of God in matter as described by science. The challenge to Christians today is to look for the traces of God in the world revealed by modern science, and to see in this world a reflection of the dynamic Trinity held in unity by love.

There is a long tradition in Christianity of putting faith and science in an adversarial relationship. Under this way of thinking, if science comes up with a model of reality contrary to revelation or established doctrine, then science must be rejected (Hayes 1997, 9). Examples of this are the conflict between the Roman Catholic authorities and Galileo over heliocentrism, and modern fundamentalist rejection of evolution. Another approach is to treat the realms of science and religion as being completely unrelated realms of human thought (Hayes 1997, 9-10). This saves theologians from having to deal with areas of conflict between science and doctrine,

but at the expense of making God irrelevant to the study of his creation. It also causes a schizophrenic world-view for believers; the world looks one way on Sunday and different the rest of the week (Hayes 1997, 10).

If we are to be honest in our belief that the universe was created by God, and that the Christian gospel is relevant at all times and in all cultures, then we must find a way of providing some coherence between our faith and our secular environment (Hayes 1997, 10-11). I argue in this dissertation that the Franciscan approach of seeing God in creation, understanding that everything exists because it emanates from the overflowing love and life of the Trinity and looking for the vestiges and images of God in everything that we know about creation, can be the basis of providing such coherence.

C. The Trinity

The key to this theology and spirituality of creation is the Trinity. Hayes (1997, ix) argues that there is need for a contemporary theology of creation, Gunton (95) says this theology must be based on creation in relation to the Trinity. Edwards (30-31), arguing that we can view the universe “as unfolding ‘within’ the Trinitarian relations of mutual love”, finds Bonaventure’s doctrine of Trinitarian emanation “a rich resource for a contemporary theology of creation”. If creatures participate in the Trinitarian life, as Bonaventure insists, then their being must be intrinsically relational and hence everything is interconnected (Powell, 125).

D. A life-affirming spirituality for today

The popularity of New Age and similar spiritualities shows a hunger for something more than a purely rationalist ‘scientific’ explanation of the world and our place in it. Unfortunately, in the popular mind Christianity tends to be associated with an ascetic, world-denying outlook which only values life after death.

The Church has an opportunity in this century to rebalance this distorted view and to feed this spiritual hunger with the gospel of the Lord of Creation who came “eating and drinking” (Matt. 11:19) and who spoke about flowers and birds. I have tried to demonstrate that a Franciscan spirituality of matter can provide a basis for an attractive spirituality for today. Francis can again preach to the birds and the ordinary people, dancing, singing and playing his imaginary violin (2C:127).

BIBLIOGRAPHY

TRANSLATIONS

Armstrong, Regis J. and Brady, Ignatius C., 1982, *Francis and Clare: The Complete Works*, Paulist Press, Mahwah N.J.

Armstrong, Regis J., Hellmann, Wayne J.A. and Short, William J. eds., 1999-2001, *Francis of Assisi: Early Documents*, New City Press, New York

Cousins, Ewert H., 1978, *Bonaventure: The Soul's Journey into God; The Tree of Life; The Life of Francis*, Paulist Press, Mahwah N.J.

Hayes, Zachary, 1996, *Works of Saint Bonaventure: On the Reduction of the Arts to Theology*, The Franciscan Institute, St Bonaventure, N.Y.

Okey, Thomas, 1963, *The Little Flowers of St. Francis*, Everyman's Library, J.M.Dent & Sons Ltd, London, 1-180

Riffel, Claude, 1962, 'Vita Prima: the First Life of Saint Francis of Assisi' in *Early Franciscan Classics*, St Anthony Guild Press, Paterson N.J., 7-147

Salter, E. Gurney, 1973, *St. Bonaventure's Life of St. Francis*, Everyman's Library, J.M.Dent & Sons Ltd, London, 303-397

Steele, Robert, 1973, *The Mirror of Perfection*, Everyman's Library, J.M.Dent & Sons Ltd, London, 183-300

BOOKS

Armstrong, Edward A., 1973, *Saint Francis: Nature Mystic. The derivation and significance of the nature stories in the Franciscan Legend*, University of California Press, Berkeley

Arnold, Duane W.H. and Fry, C. George, 1988, *Francis: A Call to Conversion*, Triangle SPCK, London

Barbour, Ian, 2000, *When Science Meets Religion*, HarperSanFrancisco, New York

Brother Bernard SSF, 1986, *Open to God: The Franciscan Life*, Fount, London

Carpenter, Charles, 1999, *Theology as a Road to Holiness in Saint Bonaventure*, Paulist Press, Mahwah N.J.

Chenu, M.-D., 1997, *Nature, Man and Society in the Twelfth Century: Essays on New Theological Perspectives in the Latin West*, Taylor, Jerome and Little, Lester K., tr. and ed., University of Toronto Press, Toronto

Clayton, Philip, 1997, *God and Contemporary Science*, Edinburgh University Press,

Edinburgh

Cousins, Ewert H., 1978, *Bonaventure and the Coincidence of Opposites*, Franciscan Herald Press, Chicago

Coveney, Peter and Highfield, Roger, 1995, *Frontiers of Complexity: The Search for Order in a Chaotic World*, Faber & Faber, London

Davies, Paul, 1983, *God and the New Physics*, Penguin, London

Delio, Ilia, 1998, *Crucified Love: Bonaventure's Mysticism of the Crucified Christ*, Franciscan Press, Quincy N.Y.

Delio, Ilia, 2001, *Simply Bonaventure: An Introduction to His Life, Thought and Writings*, New City Press, Hyde Park, New York

Doyle, Eric, 1980, *St Francis and the Song of Brotherhood*, George Allen and Unwin, London

Drees, Willem B., 1990, *Beyond the Big Bang: Quantum Cosmologies and God*, Open Court, La Salle, Illinois

Duce, Philip, 1998, *Reading the Mind of God: Interpretation in Science and Theology*, Apollos, Leicester

Edwards, Denis, 1999, *The God of Evolution: A Trinitarian Theology*, Paulist Press, New York

Frugoni, Chiara, 1995, *Francis of Assisi: A Life*, Bowden, John tr., 1998, SCM Press Ltd, London

Gilkey, Langdon, 1959, *Maker of Heaven and Earth: The Christian Doctrine of Creation in the Light of Modern Knowledge*, University Press of America, Lanham, M.D.

Gilson, Etienne, 1938, *The Philosophy of St. Bonaventure*, Trethowan, Illyd and Sheen, F.J., trs., Sheed & Ward, London

Green, Julien, 1983, *God's Fool: The Life and Times of Francis of Assisi*, Heinegg, Peter, tr. 1985, Fount, London

Gunton, Colin, 2003, *Father, Son and Holy Spirit: Toward a Fully Trinitarian Theology*, T&T Clark, London

Hawking, Stephen W., 1988, *A Brief History of Time: From the Big Bang to Black Holes*, Bantam, New York

Hayes, Zachary, 1981, *The Hidden Center: Spirituality and Speculative Christology in St. Bonaventure*, Paulist Press, New York

Hayes, Zachary, 1997, *A Window to the Divine: A Study of Christian Creation*

Theology, Franciscan Press, Quincy, Ill.

Hayes, Zachary, 1999, *Bonaventure: Mystical Writings*, Crossroad Publishing Co., New York

Hayes, Zachary, 2001, *Gift of Being: A Theology of Creation*, Liturgical Press, Collegeville, Minn.

Hellmann, J.A. Wayne, 2001, *Divine and Created Order in Bonaventure's Theology*, Hammond, J.M. trans., The Franciscan Institute, St. Bonaventure, N.Y.

House, Adrian, 2001, *Francis of Assisi*, Pimlico, London

Latourette, Kenneth Scott, 1975, *A History of Christianity: Volume 1 Beginnings to 1500*, (Revised ed.) HarperSanFrancisco, New York

Leclerc, Eloi, 1970, *The Canticle of Creatures Symbols of Union: An Analysis of St. Francis of Assisi*, O'Connell, Matthew J., tr., 1976, Franciscan Herald Press, Chicago

McGinn, Bernard, 1998, *The Presence of God: a History of Christian Mysticism VolIII, The Flowering of Mysticism: Men and Women in the New Mysticism (1200-1350)*, Crossroad, New York

McGrath, Alister E., 1999, *Science and Religion: An Introduction*, Blackwells, Oxford

O'Murchu, Diarmuid, 1997, *Quantum Theology*, Crossroad Publishing Company, New York

Peacocke, Arthur, 1993, *Theology for a Scientific Age: Being and Becoming – Natural, Divine and Human*, SCM Press, London

Polkinghorne, John, 1991, *Reason and Reality: The Relationship Between Science and Theology*, SPCK, London

Polkinghorne, John, 1994, *Science and Christian Belief: Theological Reflections of a Bottom-Up Thinker*, SPCK, London

Powell, Samuel M., 2003, *Participating in God: Creation and Trinity*, Fortress Press, Minneapolis

Brother Ramon SSF, 1994, *Franciscan Spirituality: Following St Francis Today*, SPCK, London

Ratzinger, Joseph, 1959, *The Theology of History in St. Bonaventure*, Hayes, Zachary tr., 1971, Franciscan Herald Press, Chicago

Rout, Paul, 1996, *Francis and Bonaventure, Triumph*, Ligouri, Miss.

Short, William J., 1999, *Poverty and Joy: The Franciscan Tradition*, Darton,

Longman and Todd, London

Spargo, Emma J.M., 1953, *The Category of the Aesthetic in the Philosophy of Saint Bonaventure*, Franciscan Institute, St Bonaventure N.Y.

Sorrell, Roger D., 1988, *St. Francis of Assisi and Nature: Tradition and Innovation in Western Christian Attitudes toward the Environment*, Oxford University Press, Oxford

Spoto, Donald, 2002, *Reluctant Saint: The Life of Francis of Assisi*, Penguin, London

Tavard, George H., 1954, *Transiency and Permanence: The Nature of Theology According to St. Bonaventure*, The Franciscan Institute, St. Bonaventure, N.Y.

Tilbey, Angela, 1992, *Science and the Soul*, SPCK, London

Williams, Rowan Clare, 2003, *A Condition of Complete Simplicity: Franciscan Wisdom for Today's World*, Canterbury Press, Norwich

ARTICLES IN BOOKS

Bowman, Leonard, 1973, 'Bonaventure and the Poetry of Gerard Manley Hopkins' in *S. Bonaventura 1274-1974 Vol III*, Collegio S, Bonaventura, Rome, 345-359

Cousins, Ewert, 1978, 'Introduction' in *Bonaventure: The Soul's Journey into God; The Tree of Life; The Life of Francis*, Paulist Press, Mahwah N.J., 1-48

Cousins, Ewert H., 1981, 'Francis of Assisi and Bonaventure: Mysticism and Theological Interpretation' in *The Other Side of God: A Polarity in World Religions*, Berger, Peter L., ed., Anchor Press, New York

Cousins, Ewert H., 1983, 'Francis of Assisi: Christian Mysticism at the Crossroads' in *Mysticism and Religious Traditions*, Katz, Steven T. ed., Oxford University Press, Oxford, 163-190

Davies, Paul, 2003, 'The Appearance of Design in Physics and Cosmology' in *God and Design: The Teleological Argument and Modern Science*, Manson, Neil A., ed., Routledge, London, 147-154

Dolan, Gerald M., 2000, 'Words of Hope in Troubled Times: Francis of Assisi in the Presence of the Mystery of the Trinity' in *In Solitude and Dialogue: Contemporary Franciscans Theologize*, Carrazzo, Anthony M., ed., Franciscan Institute, St. Bonaventure, N.Y., 9-45

Emerton, Norma, 1994, 'Arguments for the existence of God from nature and science' in *Science and Theology: Questions at the Interface*, Rae, Murray, Regan, Hilary and Stenhouse, John, eds., T&T Clark, Edinburgh

Ennis, Hyacinth J., 1974, 'The Place of Love in the Theological System of St. Bonaventure in General' in *S. Bonaventura 1274-1974 Vol IV*, Collegio S, Bonaventura, Rome, 9-145

Hammond, Jay M., 2001, 'Order in the Itinerarium mentis in Deum' in *Divine and Created Order in Bonaventure's Theology*, The Franciscan Institute, St. Bonaventure, N.Y., 191-271

Hayes, Zachary, 1994, 'Bonaventure: Mystery of the Triune God' in *The History of Franciscan Theology*, Osbourne, Kevin M, ed., The Franciscan Institute, St. Bonaventure, N.Y., 39-125

Javelet, Robert, 1974, 'Reflexions sur l'Exemplarism Bonaventurien' in *S. Bonaventura 1274-1974 Vol IV, Collegio S, Bonaventura, Rome*, 349-370

Osbourne, Kevin M., 1994 'Alexander of Hales' in *The History of Franciscan Theology*, Osbourne, Kevin M, ed., The Franciscan Institute, St. Bonaventure, N.Y., 1-38

Nemetz, Anthony, 1973, 'The Itinerarium Mentis in Deum: The Human Condition' in *S. Bonaventura 1274-1974 Vol II, Collegio S, Bonaventura, Rome*, 553-570

Schumacher, Marigwen, 1973, 'Mysticism in Metaphor' in *S. Bonaventura 1274-1974 Vol II, Collegio S, Bonaventura, Rome*, 361-386

Ühlein, Gabriele, 'Creation: A Franciscan Conversion Conversation' in *In Solitude and Dialogue: Contemporary Franciscans Theologize*, Carrazzo, Anthony M., ed., Franciscan Institute, St. Bonaventure, N.Y. 47-72

Ward, Benedicta, 1980, 'Introduction' in *The Lives of the Desert Fathers: The Historia Monachorum in Aegypto*, Russell, Norman, tr., Cistercian Publications, Kalamazoo, 3-46

Zinn, Grover A. Jr., 1973, 'Book and Word. The Victorine Background of Bonaventure's Use of Symbols' in *S. Bonaventura 1274-1974 Vol II, Collegio S, Bonaventura, Rome*, 143-169

ARTICLES IN JOURNALS

Bowman, Leonard J., 1975, 'The Cosmic Exemplarism of Bonaventure' in *The Journal of Religion* 55, 181-198

Brooks, Michael, 2004, 'The weirdest link' in *New Scientist*, 27 March 2004, 32-35

Calisi, Maria, 2001, 'Bonaventure's Trinity: Revelation of an Intensely Personal God' in *The Cord* 51, 125-137

Delio, Ilia, 1992, 'The Canticle of Brother Sun: A Song of Christ Mysticism' in *Franciscan Studies* 52, 1-22

Doyle, Eric, 1974, 'Ecology and the Canticle of Brother Sun' in *New Blackfriars* 55, 392-402

Edwards, Denis, 1999 'The Ecological Significance of God-Language' in *Theological*

Studies 60, 708-722

Gamberoni, Sylvia Marie, 1998, ‘“The Canticle of Brother Sun” A Theology of Creation’ in *The Cord* 48, 285-291

Hu, Wayne and White, Martin, 2004, ‘The Cosmic Symphony’ in *Scientific American* February 2004, 44-53

Johnson, Timothy J., 2002, ‘Reading Between the Lines: Apophatic Knowledge and Naming the Divine in Bonaventure’s Book of Creation’ in *Franciscan Studies* 60, 139-158

Mulholland, Séamus, 2001, ‘The Canticle of the Creatures: A Reflection on Creative and Artistic Influences’ in *The Cord* 51, 228-233

Nothwehr, Dawn M., 2000, ‘Cosmic Mysticism, Cosmic Christ, Cosmic Mutuality’ in *The Cord* 50, 125-137

Pozzi, Giovanni, 1985, ‘Canticle of Brother Sun: From Grammar to Prayer’, Hagman, Edward, tr., 1990, in *Greyfriars Review* 4, 1-21

Reich, Eugenie S., 2004, ‘Into the Dark State’ in *New Scientist*, 22 May 2004 32-35

Schaefer, Alexander, 1960, ‘The Position and Function of Man in the Created World According to Saint Bonaventure’ (1st part) in *Franciscan Studies* 20, 261-316

Schaefer, Alexander, 1961, ‘The Position and Function of Man in the Created World According to Saint Bonaventure’ (2nd part) in *Franciscan Studies* 21, 233-382

Schumucki, Octavian, 1986, ‘The Mysticism of St. Francis in the Light of His Writings’ McCormick, Ignatius, tr., 1989 in *Greyfriars Review* 3, 241-266

St. John, Donald P., 1979, ‘The Symbolic Spirituality of St. Francis’ in *Greyfriars Review* 39, 192-205

ARTICLES ON WEB SITES

Galaxy Clusters and Dark Energy: Chandra Opens New Line of Investigation on Dark Energy, 18 May 2004, <http://chandra.harvard.edu/photo/2004/darkenergy>

Bubb, Jeffrey, 2001, ‘Quantum Entanglement and Information’ in *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/entries/qt-entangle>

Johnson, R. Colin, 2004, ‘Quantum entanglement demonstrated, quantum gate, computer could be next’ in *EE Times*, 6 May 2004, <http://www.eetimes.com/article/showArticle.jhtml?articleId=1990004>