

# Articles

## SPIRIT AND CREATION

by Sjoerd L. Bonting

*Abstract.* The theology of the Third Person of the Trinity, the Holy Spirit, is not only a rather neglected but also a very diffuse subject. The neglect stems from the priority that was given in the early centuries to Christology. The diffuseness of pneumatology may well be a result of the bewildering variety of ways in which “spirit” or “Spirit” (Hebrew *ruach*, Greek *pneuma*) appears in the Bible. I attempt to bring the various activities ascribed to the Spirit under one heading, transmission of information, and then to see what can be learned from modern science about the role of the Spirit in creation. I suggest a distinct role of the Spirit in creation, jointly with but different from that of the Logos. Other occasions of a concerted action of Spirit and Logos are seen in the birth of Christ and the eschatological event. All of this leads to a trinitarian definition of creation.

*Keywords:* creation; creative agent; eschatology; information; *Logos*; pneumatology; Spirit; Trinity.

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“No primary Christian doctrine has been left so undeveloped dogmatically,” yet “the Bible is the Book of the Spirit,” wrote Wheeler Robinson (1928, 1, 5). Although there existed a vivid awareness of the Spirit in the early church (as shown by 302 references in the New Testament and 195 in the Old Testament), there was little activity in pneumatology—the doctrine of the Spirit—in the first four centuries, when Christology was the major topic of discussion (McGrath 2001, 307–18). Medieval theology did little to enrich or expand the doctrine of the Spirit, and the same can be said for the Reformers (Loder and Neidhardt 1992, 26–31).

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In recent years renewed attention has been paid to pneumatology, leading to new articulations of the doctrine of the Spirit and its application to other theological topics (Green 1975; Pinnock 1996; Kärkkäinen 2002; Edwards 2004). Amos Yong (2005) recently presented an overview of sixteen ways in which the category of *spirit* has been used in the dialogue between theology and the sciences.

In this essay I pursue this matter further in an attempt to see whether science can aid us in defining the function of the Spirit. I first review the biblical teaching about the activities of the Spirit and its theological development. This is followed by an analysis of these data in order to find a common denominator for the various activities ascribed to the Spirit, which leads to a discussion of the Spirit functioning as a transmitter of information. I then consider what modern cosmology can contribute to our understanding of the work of the Spirit in creation. Finally, I describe three occasions for a concerted action of Spirit and Logos (God's Word): in creation, in the birth of Christ, and in the eschatological event. Together this provides a proposal for an enhanced pneumatology.

#### BIBLICAL ASPECTS

Scripture speaks more about the function than about the nature of the Spirit. A survey of the biblical references shows that a bewildering variety of activities is ascribed to the Spirit (Green 1975; Dunn 1996; Schmaus 1981). The findings are shown rather fully in order to prevent personal bias in the selection of a common denominator for the activities of the Spirit.

*Old Testament (OT).* In the OT *ruach* can stand for wind, breath and spirit. As "wind" it refers to the natural phenomenon but with the religious connotation of power of God (for example, the wind dividing the Red Sea, Exodus 14:21). It is distinguished from the human spirit (*nephesh*). The power of God's Spirit is thought to be associated with the heroic feats of men such as Joseph (Genesis 41:38), Moses (Numbers 11:17), Gideon (Judges 14:6), and Samson (Judges 14:6) and to rest on kings such as David (1 Samuel 16:13). It is thought to inspire ecstatic forms of prophecy (1 Samuel 10:6; 19:24). As "breath" *ruach* stands for the source of life (Genesis 2:7; Job 34:14f.; Psalm 104:29f.; Ezekiel 37:7–10). In postexilic writings *ruach* is seen as inspiring prophecy (Isaiah 59:21; Ezekiel 2:2; 8:3; Hosea 9:7; Micah 3:8), and also as God's presence (Psalm 51:11). The Spirit of God occasionally is praised as the cause of salvation for all the people of God (Psalm 51:12f.; Psalm 143:10) and as a guarantee of God's fidelity (Isaiah 59:21). The Spirit is seen as resting on the coming Messiah (Isaiah 11:2; 32:15; 42:1) and through him will be poured out on all the faithful (Isaiah 32:15; 44:3; Ezekiel 11:19; 36:27; 37:14; 39:29; Joel 2:28ff., Zechariah 12:10), leading to conversion (Ezekiel 36:25ff.).

In the intertestamental wisdom writings the role attributed to the Spirit diminishes, and Spirit is in a few places equated with Wisdom (Wisdom of Solomon 1:6; 7:22; 9:17). In rabbinic Judaism and the Targums the Spirit is above all the spirit of prophecy but is also seen as a pledge of the resurrection of the dead.

Association of the Spirit with creation is limited to the lifegiving action of God's breath (Genesis 2:7; Job 33:4) except for the questionable interpretation of Genesis 1:2b (more on this later). In the OT the Spirit appears to be seen as God's presence and intervention but not as a person.

*New Testament (NT).* In the NT *pneuma* is used for spirit as the equivalent of the OT *ruach*. It is sometimes (24 times) used for evil spirits (for example, Matthew 8:16; Mark 1:26f.; Luke 4:36; Acts 19:12f.) but most frequently for God's Spirit (250 times). John the Baptist proclaimed that the outpouring of the Spirit was near, and the one who was coming (Jesus) would as bearer and dispenser of the Spirit (John 1:26) baptize in Spirit and fire (Matthew 3:11; Luke 3:16; John 1:33). After his baptism by John, Jesus was driven by the Spirit into the desert to be tested (Mark 1:12). Jesus proclaimed that the eschatological Spirit, the power of the end, was already at work through him in his words and deeds (Matthew 12:28). It can be said that the Spirit was the moving power behind every activity of Jesus. His recognition of the divinity of the Spirit made him see opposition to the Spirit as the unpardonable sin (Mark 3:29f.; Matthew 12:31f.; Luke 12:10). This is illustrated in the story of the death of Ananias and his wife Sapphira (Acts 5:1ff.): because the church is led by the Spirit, their lie was an offense against the Spirit (Acts 5:9). Jesus promised the Spirit to his disciples during his absence (Acts 1:8) and when they would be in tribulation (Mark 13:11; John 14:15–17).

Pentecost was the outpouring of the Spirit on the disciples, their baptism in the Spirit (Acts 1:5), which turned them into fearless witnesses to Christ (Acts 2:1–11). They experienced this as the definitive bestowal of salvation, the fulfillment of the OT promises. With Pentecost the era of the Spirit begins for the church; henceforth the Spirit guides the church and inspires all within it. The Spirit is the lifegiver in marking the beginning of the Christian life (Acts 8:14–17; Galatians 3:2f.; John 3:3–8; 6:63), which looks toward fulfillment in the resurrection on the last day (2 Corinthians 1:22; Ephesians 1:13f.). The Spirit brings a personal relationship with God, fulfilling Jeremiah's hope (Jeremiah 31:31–34), and makes worship and obedience free, vital, and spontaneous (Romans 2:28f.; Ephesians 2:18; Philippians 3:3). The Spirit of the new age builds community as it works through all its members (Acts 2:17f.; Romans 8:9), thus uniting a group of diverse individuals into one body (1 Corinthians 12:13; Ephesians 4:3f.; Philippians 2:1). John emphasizes the personal nature of the Spirit as the *paraclete* (helper, advocate, comforter) who represents Christ during his absence (John 14:16f., 25f.) and who pleads for us (1 John 2:1). All

four Gospels express this in the story of the descent of the Spirit in the likeness of a dove at Jesus' baptism (Matthew 3:16; Mark 1:10; Luke 3:22; John 1:32).

Paul sees Christ as being active through the Spirit (Romans 8:9; Galatians 4:6; Philippians 1:19), but makes a distinction between Christ and Spirit (Romans 5:1–5). Jesus is now present to the believer only in and through the Spirit. The roots of trinitarian thinking are evident in Paul's recognition that we experience through the Spirit a relation to the Father (Romans 8:15f.; Galatians 4:6) and to the Son (1 Corinthians 12:3). This is eloquently summarized at the end of his second letter to the Corinthians (2 Corinthians 13:13). To let the church grow to full maturity in Christ, Paul recommends the exercise of the *charismata*, the gifts of the Spirit (1 Corinthians 12): wisdom, knowledge, faith, healing, working of miracles, prophecy, discerning of spirits, speaking in tongues, the interpretation of tongues, but the greatest of these is love (1 Corinthians 13). He encourages a full use of the *charismata* (1 Thessalonians 5:19), but when order in the church is threatened he regulates them (1 Corinthians 14:34). The Spirit works in our personal prayer (Romans 8:26). The church and the individual Christian are a temple of the Spirit (1 Corinthians 3:16; 6:19). The Spirit is the giver of eternal life, who overcomes our mortality (Romans 8:10–11; Galatians 6:8). The Spirit brings liberation from the law (Romans 8:2) as well as sanctification (2 Thessalonians 2:13) and is manifest in ethical behavior (Galatians 5:22–26). But we must accept the gifts of the Spirit and be receptive to the Spirit. It can be said that in Paul's thinking the Spirit is even more central than justification.

#### THEOLOGICAL DEVELOPMENT

As already mentioned, pneumatology has remained an underdeveloped area of theology. The doctrine of the Spirit always lagged behind Christology (Schmaus 1981) and centered more on the nature than on the function of the Spirit, as becomes clear from the following brief account of the development of pneumatology.

In the Patristic period the nature and relationships of the Spirit were studied. Theophilus (180) equated Word and Spirit under the concept of the Wisdom of God, but this view did not prevail. The baptismal formula at the end of the Gospel of Matthew (28:19), probably a second-century insert, shows the beginning of trinitarian thinking. Athanasius (350) maintained the divinity of the Spirit against the *Pneumatomachoi* (fourth-century heretics who denied the full Godhead of the Spirit) and concluded that the Spirit shares in the divine substance. Gregory of Nazianzus (380) described the inner life of the Trinity as a *perichoresis*, a moving around within the Trinity, while the Cappadocian fathers spoke about a "relational quality." One of them, Basil of Caesarea (370), spoke of a *koinonia* (communion) of the Spirit with the Father and the Son. Arius questioned the

divinity of the Spirit in maintaining that the Spirit was created by the Son. This teaching was attacked by Athanasius and condemned at the Council of Constantinople (381), which defined the Spirit as “the Lord and giver of life, who proceeds from the Father, and is worshipped and glorified with the Father and the Son.” The Roman synod under Pope Damasus I (382) emphasized the divinity of the Spirit without speaking about the function. Didymus (d. 398) claimed that the functions specific to the Spirit establish the Spirit’s divinity. If the Spirit is responsible for creating, renewing, and sanctifying God’s creatures, he reasoned, the Spirit could not be a creature and must share in the divine nature.

Augustine (400) saw the Spirit as the bond of love and unity between the Father and the Son. As God’s gift to us, the Spirit unites us to God and to each other, thus bringing about the unity of the church, which is the temple of the Spirit. Thomas Aquinas (1260) did not contribute significant new insights in pneumatology. In medieval and later theology the Spirit’s relation to grace was considered, with the question whether the Spirit was to be seen as an entity or a person. Peter Lombard (1150) identified grace and Spirit, but this was generally rejected in the thirteenth and fourteenth centuries.

The Nicene Creed, as adopted at the Councils of Nicea and Constantinople, speaks about the Spirit “who proceeds from the Father.” The Synod of Braga (675), wishing to emphasize the equal position of Father and Son, added to this phrase the words “and the Son” (Latin *filioque*). This was taken over by synods in Gaul and Italy and later ratified by Pope Benedict VIII (1014) at the insistence of Emperor Henry I. This unilateral act of the Latin church was resented by the Greek church, causing patriarch Photius (1078) to reject the insertion and to declare the procession of the Spirit “from the Father alone” to be a major dogma. The *filioque* clause thus became a theological argument in the longstanding political and ecclesiastical disputes between Rome and Constantinople, leading to a schism that has never been healed. I prefer to abandon the ideas of *filioque* and the preexisting Christ (while maintaining the preexistence of the Logos), because their acceptance leaves a meager role for the Father, who then seems to be overtaken by the Son who creates and also sends out the Spirit.

Nevertheless, the doctrine of the Trinity with the Spirit as a divine Person in unity with the Father and the Son has been universally held since its formulation at the Council of Constantinople. In my further discussion I accept this tenet, noting nevertheless that the development of pneumatology sketched here has not provided us with much insight in the function of the Spirit.

#### SEEKING THE COMMON DENOMINATOR

As already demonstrated, the Bible presents us with a great variety of activities of the Spirit. In the early OT writings the Spirit appears as an elemen-

tal, even demonic, power, leading to heroic feats and ecstatic prophecy, but also as the giver of biological life (breath of God).<sup>1</sup> In the later OT writings the Spirit is a divine presence, resting on the coming Messiah, and a guarantee of God's fidelity and of salvation. In the NT the Spirit plays a much more dominant role as the moving power behind Jesus, after whose resurrection and ascension the Spirit represents Christ and pleads for us as our advocate. On Pentecost the Spirit is poured out on the disciples, from there on building and guiding the community and being in communication with the church. The giver of spiritual as well as eternal life, the Spirit bestows various gifts (*charismata*) on the faithful, sanctifies us, and lifts our communal and individual prayers to God. It is important to keep in mind that for the Spirit to work in us and in the church, we must be receptive.

Five functions of the Spirit can thus be distinguished: (1) life giver; (2) unifier; (3) revealer; (4) sanctifier; (5) advocate. How to bring these five functions of the Spirit under a common denominator? I suggest that the term *communicator* could cover all five functions: communicating biological, spiritual, and eschatological life; communicating unity and love from God to creatures; communicating God's message in prophecy and scripture; communicating sanctity to human creatures; and communicating as counselor between God, both Father and Son, and humans. All of these activities appear to be covered by the term *God the Communicator*. In the terminology of present-day information theory, the Spirit functions as a transmitter of information—from God to us and from us to God.

Before exploring this conclusion in more detail a few words need to be said about the relationship between the Spirit and creation.

One text often has been interpreted as indicating a role of the Spirit as a creative agent: Genesis 1:2b, in its traditional translation "the Spirit of God hovering over the waters." However, the question is whether *ruach* stands here for spirit or for wind. After an extensive discussion, Claus Westermann concludes that (1) there is no reason to separate v. 2b from v. 2a; (2) taking v. 2b as the first work of creation clashes with the further narrative in Genesis 1 where each section begins with "and God said," indicating the Logos, God's Word, as the creative agent; (3) the verb *merachefet* means "flutter," "flap," "shake," which indicates that *ruach* here means "wind" rather than "spirit" (in Hebrew the verb determines the meaning of the noun); (4) the term *ruach elohim* occurs nowhere else in the OT with *merachefet* or similar verb, either as "wind of God" or as "spirit of God," so *elohim* is probably used as a superlative of *ruach*—"mighty wind"; (5) comparison with Egyptian cosmogony reinforces the idea that v. 2b is part of the description of the primordial chaos, the situation before creation begins (Westermann 1994, 106–8). The translation then becomes "a mighty wind swept over the face of the waters." Others concur in this translation (Richardson 1953, 48; McCasland 1962; De Fraigne 1963, 33–35; Berkhof

1973, 166), and recent Bible versions use this translation or list it as an alternative.<sup>2</sup>

This pleads against seeing the Spirit as the creative agent in the way that the Logos is presented in Genesis 1:3–31, as read in the light of John 1:1–4. There God’s powerful Word (Logos) is the agent by which God calls all aspects of his creation into being, indicated by the repeated phrase “God said” (vv. 3, 6, 9, 11, 14, 20, 24, 26). This is confirmed in three other places: Psalm 33:6 (“By the word of the Lord the heavens were made . . .”), Isaiah 55:11 (“so shall my word be that goes out from my mouth . . . it shall accomplish that which I purpose . . .”), and Hebrews 11:3 (“By faith we understand that the worlds were prepared by the word of God . . .”). In the time of Jesus, the Jewish philosopher Philo saw the Logos as the chief power of God, *energeia*, through which the world was made (“Logos” 1972).<sup>3</sup> Likewise, Maximus the Confessor (580–662) defined the *logoi* of creation as the energies of God, as distinct from the essence of God (Thunberg 1985, 137–43).

#### SPIRIT AND INFORMATION

How does the Spirit transmit information? I suggest that science can help us to answer this question, since we are dealing here with a process that takes place at least partly in our world. However, we must distinguish carefully between direct and metaphorical language (Bonting 2004, 365–71).

Wolfhart Pannenberg proposes that the Spirit operates as a divine field of force according to the physical field theory developed by Michael Faraday for the explanation of the long-distance effects of electric and magnetic forces (Pannenberg 1994, 76–136). However, this “field theory” of the Spirit has been criticized by several authors. Colin Gunton says that describing the Holy Spirit as a divine field of force depersonalizes the third person of the Trinity (1998, 161–62). Mark Worthing points out that according to current physical understanding the fields and lines of force in the field theory are not a physical reality but a metaphor, in contrast to what Faraday claimed (Worthing 1996, 120–24). In identifying the work of the Spirit with Faraday’s field theory, Pannenberg erroneously suggests that all forces in the cosmos can be reduced to a single field of force that determines all changes in the cosmos. It is an example of the confusion that can arise when metaphors are treated as reality.

Another attempt to obtain enlightenment from science is the Strange Loop model of James E. Loder and Jim Neidhardt (1992). They proceed from the *perichoresis* notion of Gregory of Nazianzus for the relational movements within the Trinity. The Strange Loop, also called a Möbius band, is a mathematical figure derived from topology, a branch of mathematics. Although this may provide a metaphor for the interaction of the

Persons within the Trinity, it does not give us more insight into the functioning of the Spirit.

Jürgen Moltmann gives the Spirit a near monopoly in creation, neglecting the role of the Logos. Actually, he is speaking of the lifegiving action of the Spirit, since he bases his claim on Psalm 104:30, "When you send forth your spirit [*ruach*], they [the animals] are created" (NRSV). From this text Moltmann concludes: "This presupposes that God always creates through and in the power of his Spirit. . . ." Then he suddenly brings in Wisdom, quoting Proverbs 8:22–31, but ends saying "this Wisdom of creation and the concept of creation in the Spirit are still awaiting theological development even today" (Moltmann 1991, 9–13).

I suggest that, rather than seeing Wisdom as a person (which is suggested only in a very few places in the Wisdom literature), we should see wisdom as a quality of God's creative work. Moltmann also disregards the scientific evidence indicating that some 9 billion years of God's creative activity preceded the appearance of the first living organisms.

In order to understand the manifold activities of the Spirit I propose that a more suitable metaphor is the virtually instantaneous worldwide transmission of information (text, numerical data, images, voice) in digitized form through the Internet. The variety of information that can be transmitted in this way parallels the variety of actions attributed to the Spirit in the Bible. The lifegiving action of the Spirit (Genesis 2:7; Ezekiel 37:1–10) can be compared to the possibility of activating from our workplace an apparatus in our home. The Spirit acting as a unifier finds a parallel in the effect of a message posted on the Internet, which, being read by many, may lead to group action. Our communal and individual prayers are transmitted to God by the Spirit as an e-mail message is transmitted to an addressee anywhere in the world.

The interaction of spiritual "information" with our mind is beginning to be understood through neurobiological research. Incoming information triggers nerve impulses in the neuronal networks in our brain. Depending on the type of information, these impulses are processed in different parts of the brain. Meditation activates first the frontal cortex (site of attention and concentration) and then the limbic system (site of processing powerful feelings), while the parietal lobe (sense of orientation in space and time) is deactivated (Newberg 2003). To conduct the impulse from one neuron to the next in the network, neurotransmitters are needed. One of these, serotonin, operates in the neuronal activity that determines our mood. Depression is associated with low serotonin levels and can therefore be treated with a serotonin re-uptake inhibitor such as Prozac. Dean Hamer (2004) found that an active form of the VMAT2 gene, which codes for a serotonin-releasing enzyme, is associated with a high spirituality score on the Temperament and Character Inventory, while persons with a mutated form of the gene have a low score. This suggests that God's spiritual



information, transmitted by the Spirit acting as revealer, sanctifier, and advocate, is received and processed by the biological substrate of our mind, by neuronal networks and neurotransmitters.

Receptivity to the Spirit can also be described with the model. When I unhook my computer from telephone or cable, I cannot receive or send e-mail messages or reach the Internet. I may have a wireless connection to the Internet by means of a so-called airport card, but this card must be tuned to the telephone or cable modem in order for me to receive or send messages. Likewise, our mind must be tuned to the Spirit in order to receive the Spirit's messages. The operation of evil spirits, assumed in many of the healing acts of Jesus, can be described in Internet terminology as "spam," unwanted messages of frequently dubious quality that we receive on our screen.

The various activities of the Spirit can thus be understood metaphorically as the transmission of information through the Internet. Once this information reaches our frontal cortex (the equivalent of the airport card in my computer), it is processed by neuronal networks in the brain to elicit awareness and feeling.

#### SPIRIT AND CREATION: CONTRIBUTION OF SCIENCE

The idea of an initial, non-incarnate Logos as God's *energeia*, through which God calls all aspects of creation into being, fits very well with modern cosmological theory, which tells us that the cosmos originated in a tremendous explosion, the Big Bang. Although the theory cannot explain the origin of this explosion, it must have required a very large amount of energy, more than  $10^{22}$  kilowatt-hours ( $10^{22}$  stands for 1 followed by 22 zeroes). This energy served partly as the kinetic energy for the expanding fireball and partly for conversion to the primeval matter, quarks and gluons, from which arose the light elements, hydrogen, helium, and lithium (Bonting 2002, 13–37). In theological terms, it is reasonable to assume that this energy has been provided by the powerful, energetic Logos. This onetime insertion of energy sufficed for the cosmic and biological evolution of the universe. Solar energy (deriving from the energy of the initial explosion) provides for the development and maintenance of life on Earth.

Information, in the form of the laws of nature, the four physical forces, and the fundamental constants, was required to order the brute explosive force into a creative process. This information cannot have been brought in at the instant of the Big Bang ( $t = 0$ ), as indicated by information theory and by quantum-gravity theory. In information theory an equation, relating information content to the entropy (the physical measure for disorder) of the developing cosmos, shows that at  $t = 0$  the information content was zero, and thereafter increased (Stonier 1990, 38–41, 70–72). Current quantum-gravity theory suggests that at  $t = 0$  there can have been no information present (Hogan 2002a). This theory poses that at the quantum

level (which applies to the very early universe) the information content is limited to 1 bit per square Planck distance ( $=10^{-35}\text{m}$ ;  $10^{-35}$  stands for 1 divided by 1 followed by 35 zeroes) (Musser 2002; Hogan 2002b). So information can only have been brought in shortly after the explosion. This must have happened just before the start of the "inflation," the very fast expansion lasting only  $10^{-30}$  sec that increased the diameter of the universe from  $10^{-30}$  m to about 10 cm. This inflation determined the entire further course of the cosmos: (1) within a fraction of a second the formation of the first elementary particles, quarks and gluons; (2) within 3 minutes their combination to form the light elements hydrogen and helium; (3) after 300 million years the condensation of hydrogen and helium to form the first stars that in millions of years produced all chemical elements and ejected them in their death struggle (supernova-explosion) as a cosmic dust cloud, from which (4) after 9 billion years our Sun and Earth were formed. A simple calculation shows that immediately before inflation the cosmos, with a diameter of  $10^{-30}$  m, could contain at most 10 gigabits of information. Although less than what current computer hard disks can hold, this amount of information could certainly have contained the physical laws and fundamental constants needed to initiate inflation and guide the further cosmic evolution.

Theologically speaking, this information would have been brought in by the Spirit. So here is what seems to be a crucial and distinct role for the Spirit as a creative agent, acting in cooperation with the Logos but separated in time by a fraction of a second. Without the benefit of our scientific knowledge, Irenaeus foresaw this in his statement "The Son and the Spirit are the two hands of God by which he created all things,"<sup>4</sup> except that I substitute the non-incarnate Logos for the Son. We may characterize their actions as transmission of energy by the Logos and of information by the Spirit in a concerted fashion.

There are, however, two other ways in which the Spirit appears to be involved in creation. The first is as lifegiver and breath of God. Reformulating Genesis 2:7 in the light of our present knowledge of prebiotic and biological evolution, we may say that the Spirit brought life to the first organisms that developed some 3.5 billion years ago and subsequently to all other organisms evolving from the proto-organisms, including humans. The capricious course of cosmic and biological evolution suggests that God allowed the continuing creation to develop with a great degree of freedom. The second is in influencing "chaos events" to keep the evolving creation on track to the goal set by its Creator. It is now recognized in chaos theory that so-called nonlinear systems, including the solar system, the earthly atmosphere and all living beings, will in their development in time encounter a fork in their path (Gleick 1987). The system can then follow one or the other leg of the fork. Because there is no energy difference between the two legs, both ways are equally likely. We cannot predict

which leg will be followed, and thus we call this a chaos event. But this also means that a minute influence, one bit of information, can make the system follow one rather than the other leg. With John Polkinghorne (1995) I suggest that this may be the opening God has reserved to correct where necessary the course of the freely evolving creation without violating any of the physical laws God laid down in the beginning. It can be shown that this is physically possible, although it is unlikely that we shall ever be able to “catch” God influencing a chaos event (Bonting 2005, 115–22). Apart from the very small energies and times involved, we simply do not know the various parameters of the affected systems with sufficient accuracy to be able to detect such interventions. Theologically speaking, we may say that the Spirit will transmit the information necessary for the influencing of a chaos event.

#### CONCERTED ACTION OF SPIRIT AND LOGOS

It appears to me that there are four important occasions when Logos and Spirit acted in concerted fashion:

1. Creation. In the previous section I presented arguments for assuming that in creation the Logos brought in the energy for the Big Bang, followed a fraction of a second later by the Spirit bringing in the information needed to transform the explosion into an orderly process of cosmic evolution.

2. Prophecy. The Spirit transmits the content of the prophetic message, while the Logos gives it the power that makes the hearers receive it as a Word of God. The same probably can be said of ecstatic experiences of the Spirit, such as at Pentecost and in the church resulting from this event.

3. The birth of Christ. The birth stories of Matthew (“the child conceived in her is from the Holy Spirit,” Matthew 1:20) and Luke (“The Holy Spirit will come upon you, and the power of the most High will overshadow you; therefore the child to be born will be holy,” Luke 1:35 NRSV) suggest that the Spirit conceives the child Jesus as the Christ. In contrast, the Gospel of John has the incarnation of the Logos in Jesus of Nazareth, which makes him the Christ. Can these two conflicting accounts be reconciled? The virgin state of Mary in the accounts of Matthew and Luke has led to the belief that the Spirit impregnated Mary. However, this is questionable on biblical, biological, and theological grounds. The virgin birth of Jesus is mentioned nowhere else in the New Testament. Matthew refers to the messianic text in Isaiah 7:14, which uses the Hebrew word *almah*, young woman of childbearing age, married or unmarried. But the much later Greek translation in the Septuagint, used by the New Testament authors, translates *almah* with the word *parthenon*, young virgin. Our knowledge of biological conception tells us that it is impossible to have a fully human male born without fertilization of the ovum by the sperm of a human father, as Arthur Peacocke has convincingly argued

(1993, 275–79). The theological development in the early church in the line of Justin Martyr (c. 150) —> Athanasius (c. 350) —> Gregory of Nazianzus (c. 380) —> Council of Chalcedon (451) led to the conviction that the savior of humankind has to be fully human as well as fully divine.<sup>5</sup> Therefore, John’s account of the incarnation of the Logos has served as the basis of the Christology developed in the early church. However, a partial reconciliation (disregarding the mode of conception) of the two accounts seems possible if we consider that in addition to the divine power (Logos) Jesus received the wisdom of God (expressed in Jesus’ insightful teaching) through the Spirit.<sup>6</sup> In this way we have here another occasion for a concerted action of Spirit and Logos.

4. Eschatology. Current cosmological theory tells us that in about 24 billion years the cosmos will go to complete degradation, leaving only an immaterial cloud of photons (Seife 2003). This view is based on the assumption of a “closed” universe in the sense that it receives no energy and information from an external source. The biblical vision of the new kingdom to be brought about by Christ implies that the incarnate Logos acts in providing the energy necessary to deflect the cosmos from its route to complete degradation to the way of fulfillment. As in the initial creation, this would also require information transmitted by the Spirit in order to provide the “laws” for the new kingdom. Thus it seems that in the eschatological event there is another occasion for a concerted action of Spirit and Logos. Because the action is on the huge cosmos, the Spirit can now act simultaneously with the Logos.

Taken together, all of this provides us with a trinitarian definition of creation from its initiation to its fulfillment. The Father acts transcendently through the non-incarnate Logos in empowering the creation (Need 2003).<sup>7</sup> The Spirit is immanently active in communicating the information needed for the initial creation, continuing creation, and eschatological transformation. The Son as the incarnate Logos provides the energy required for the eschatological transformation. Thus we may recognize an essential and distinctive role for each of the three members of the Trinity in the total creation process without needing to invoke any personifications beyond what is taught by the Bible and tradition and without confusion of the role of the Second and Third Persons of the Trinity.

#### CONCLUSIONS

From a review of the biblical sources I propose a common denominator for the multiple activities of the Spirit: God the Communicator, transmitter of information.

From information theory I derive a metaphoric explanation of the mechanism of operation of the Spirit in the Spirit’s multiple activities in the world and in our communal and individual lives as Christians.

From the textual study of Genesis 1:2b I conclude that this text is unlikely to refer to a creative activity of the Spirit. However, from cosmological theory and information theory I derive an essential and distinct role of the Spirit in creation as information transmitter, in concerted action with the Logos as energy provider, separated in time by a fraction of a second. In addition, the Spirit acts as lifegiver in the origin and evolution of life. A concerted action of Spirit and Logos is also seen in prophecy, in the birth of Christ, and in the eschatological event.

Thus, from a consideration of theological and scientific data, I derive an expanded pneumatology and a trinitarian model of creation and eschatology.

## NOTES

1. This raises the question whether science has not already explained "life." We can define the characteristic activities of a living cell or organism, such as metabolism, growth, reproduction, and some form of responsiveness and adaptation. We have isolated thousands of genes, enzymes, hormones, and other substances necessary for these activities and determined how they function. Yet, we are still unable to create a living cell in the laboratory.

2. Insisting that *ruach* in Genesis 1:2 stands for "spirit" while accepting that this verse refers to the initial chaos leads to strange conclusions. In the Kabbala (Jewish mysticism) it is assumed that an excess of God's spirit overflowed into the space from which God withdrew for creation. This produced a demonic spirit acting in the world being created. Karl Barth (1950, 119) similarly claims that *ruach elohim* in Genesis 1:2 is not the Holy Spirit but a caricature of the Spirit, a horrendous entity associated with *tohu wabohu*, the initial chaos.

3. Note that energy in its present physical meaning was not yet known to Philo. The physical concept of energy as a measure of the capacity to do work was first introduced in the seventeenth century by Galileo and further developed by Newton; heat was identified as a form of energy by Helmholtz and Joule around 1840. Thus we should not simply identify *energeia* with the present physical concept of energy.

4. Irenaeus, *Adversus haereses* 4.20.1.

5. Compare this with a psychotherapist, who, however highly qualified, can bring healing only when relating to the patient as a fellow human.

6. Justin Martyr interpreted the words "and the power (*dunamis*) of the Most High" in Luke 1:35 as referring to the Logos.

7. Stephen Need concludes that "the (non-incarnate) Logos is the pre-existent instrument of creation moving in its own realm of creation *until* its incarnation in Jesus in v. 14" (emphasis added). This rules out the idea of a preexistent Christ, who would not be fully human and thus unable to be the savior of humankind.

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