CHAPTER TWO

A SCIENCE OF ANCIENT SACRED TEXTS?

One of the most reprinted debates in philosophy, that might also contain the shortest contributions, was started by Anthony Flew in 1975 (cf. Flew et al 1984). In his brief article, Flew challenged “religious intellectuals” to admit that some evidence might count against their religious assertions through which they purport to convey information about the world. If, as they usually do, they refuse to allow any evidence to count against a fundamental Christian assertion like, “God loves us as a father loves his children,” the assertion becomes meaningless, a vacuous proposition that conveys no information about anything.

Flew’s challenge to “theological utterance” was based on his appropriation of Karl Popper’s principle of falsification. For Popper, a philosopher of science, any statement or theory could be considered scientific if it is open to falsification. For Popper this meant that it must be possible to specify in advance what kind of evidence would falsify such a statement. For a statement to assert something about the world, it has to say what is the case and what would count as evidence against the statement being true. If everything is compatible with a particular assertion, then in effect it is saying nothing.

Flew took Popper’s principle of falsification and instead of using it to demarcate science from non-science, he used it to demarcate meaningful from meaningless statements. Unless the conditions can be specified under which a statement will not be true, the statement is meaningless, that is, it tells us nothing more about anything. Flew used this criterion of meaningfulness and applied it to religious assertions. He argued that religious intellectuals react in two ways when confronted with evidence seemingly at odds
with a central Christian assertion, such as, "God loves us as a father loves his children." Their first reaction is to admit that contrary evidence looks bad, but then firmly state their belief that some explanation exists that will save appearances so that God will still be like a perfectly loving father. When they fail to find that explanation, their second reaction is to refuse to allow any evidence as sufficient reason for admitting their assertion about God as a loving father is meaningless. They rather start qualifying their assertion by saying that God's love is not like human love, and so on. As a result of multiplying such qualifications, Flew says religious assertions become vacuous and die "a death of a thousand qualifications."

Flew's argument has been criticised in various ways. Despite the many flaws in his argument and the shortcomings in the debate, Flew's challenge provides a useful starting point for a defence of the use of ancient sacred texts in theology and for an explanation of the nature of the scientific status of theology.

Flew's challenge comes from a philosopher inviting theologians ("religious intellectuals") to a public debate on whether their beliefs are scientifically justifiable and rationally acceptable. He issues an explicit challenge to the meaningfulness of central Christian beliefs, saying in effect that unless theologians can prove otherwise, their beliefs are vacuous. Flew's challenge contains two assumptions. One is that cross-disciplinary debates between philosophers and theologians are possible and the other that a public debate about the meaningfulness of religious beliefs is valuable. In science, many people today deny theology such intellectual status that would make it a worthy partner in interdisciplinary dialogue. In politics, religion is treated as a private affair that ought not to be discussed in the public sphere. These two issues are linked, as a theology with an accredited scientific status ought to be able to engage in dialogue through rational arguments with other scien-
tists in the academic world and with citizens of different convictions in the public sphere.

I want to respond to two issues raised by Flew’s challenge. The first issue that I want to follow up is to what extent theology is scientific, i.e., to what extent the methods, contents, theories, and criteria of theology are scientifically acceptable. The second issue concerns Flew’s conclusion that theology dies a death of a thousand qualifications. This conclusion suggests that qualifying any religious assertion inevitably places Christians on a slippery slope towards vacuous, meaningless statements. I want to turn this view around by claiming that theology comes alive through a thousand qualifications. Rather than embarrassing theology by making its assertions empty and nonsensical, the qualifications that I propose make theology vibrant and intellectually appealing.

In what follows, I will show why and how I judge a science of ancient sacred texts of the Bible to be viable and intellectually acceptable. If I succeed, then the ancient sacred texts will not only be relevant to contemporary ethical issues, but a fully developed Christian ethics on poverty and wealth will have to be taken seriously in the public worlds of science and politics. In this chapter I will first discuss the fundamental role of hermeneutics as science of interpretation that enables theology to deal in an intellectually satisfying way with ancient sacred texts. Next I judge whether theology as science functions similarly to other contemporary sciences. In a final section I deal with the Achilles heel of theology as science, that makes it a prejudiced, committed, but also liberatory science.

1. The Oddity of Theology as Science of Ancient Sacred Texts

At the centre of Christian theology as science is a collection of ancient sacred texts referred to by Christians as the Bible. No other ancient sacred texts are studied, except in cases where they may cast light on the Bible or
aid in its interpretation. No other religious experiences are studied other than those reported in the Bible or generated by the Bible, unless such experiences again may aid in better understanding or communication of the contents of the Bible. Why this exclusivist focus? This focus results from the central role assigned to the Bible in the Christian Church where it is believed to be the authoritative Word of God to human beings.

Theology studies various dimensions of the ancient sacred texts in the life of the Christian Church. Some of the dimensions are ways to interpret these ancient sacred texts (Old and New Testament Studies), their use in formulating the doctrines of the church (Systematic Theology), how to implement the contents of these texts in the daily life of the contemporary church (Theological Ethics and Pastoral Theology), ways of communicating the message of these texts to people who do not yet accept its truth (Missiology), and the history of the church as different models that embody varying interpretations of the ancient sacred texts (Church History) (cf. Eybers 1982: 14–16).

The most fundamental task for theology is to understand the meanings of its ancient sacred texts. Thereafter follows imaginative re-interpretations and creative applications of those meanings in contemporary contexts. On this basis, we can distinguish between two kinds of theologians in terms of the level of skill they employ when interpreting the Bible (cf. Jonker 1998: 6–9). Specialised interpreters use sophisticated methods of interpretation focused according to a specific hermeneutic theory. Competent interpreters are experienced readers knowledgeable about interpretative issues concerning the ancient sacred texts of the Bible. They know what kinds of questions to ask and are sensitive listeners to the voices of the texts. Theological ethicists would fall in this category.
If an intellectual challenge to the scientific status and meaning of theological assertions is to be met, the oddity of theology’s scientific status must be explained. The oddity is that Christian theology has been institutionalised as legitimate intellectual discipline at universities for centuries despite its exclusivist focus on ancient sacred texts dominating the Christian tradition. The dominant, powerful role of the Christian Church in the Western world ensured that its interests were studied and its leaders got an education at institutions of higher learning. Assigning exclusive value to these texts rests on a choice based on a kind of faith prescribed by those same texts. Thus, theology as intellectual discipline is grounded on a choice to live in relationship with the God of the texts. Although good reasons can be given for this choice (cf. Van Huyssteen 1986: 176), no rationally convincing arguments exist that are acceptable to sceptics. Furthermore, those texts are not studied as mere literary texts from an ancient era, but given authority to have dominant voices in the orientation and values of theology and the everyday life of the church. Can this be scientific?

The oddity of theology as science can be explained through a discussion of three issues, namely, the central role of interpretation as characteristic of theology as science of ancient sacred texts, the way theology functions similarly to the complex functioning of the other sciences, and the nature of theology as a committed, liberatory science.

The contents of the ancient sacred texts comprising the Christian Bible form the central issues studied by theology. What are the contents of these texts and why are they considered to be so important?

1.1 The Issues of Theology

The contents of the ancient sacred texts comprising the Bible deal with issues arising from universal human experiences. These issues concern human experiences that occur in all humans at some point in their lives. Satis-
factory discussions of these experiences are not yet forthcoming from any of the sciences besides theology and adequate answers to the perplexities raised by such experiences are hard to come by, other than those given by religion. The wisdom of the explanations given for these experiences and the answers to the perplexities contained in the ancient sacred texts of the Bible continue to fascinate millions of people, partly because these texts claim to be from God and partly because of their rich and manifold contents. As a result theology as intellectually disciplined way of articulating the meaning and relevance of ancient sacred texts has a large interested audience, although ministers of religion often are the conduits mediating, transferring, and transmitting the results of theological research.

What are these universal human experiences that the ancient sacred texts of the Bible deal with? The obvious issue that sacred texts ought to deal with is whether any god exists. The question arises from various typical human experiences that are not limited to any culture, society, or historical epoch. Such experiences include the following:

- Humans sometimes experience the breathtaking complexity, overwhelming grandeur, and magnificent wonders of our world. Whether through the everyday experience of our senses or through the amplifying visions of the sciences, humans become aware of their insignificance in comparison to their experience of exquisite beauty and magical intricacies. Where does this world come from? Did somebody make or create it? If so, who? If so, why? Where do I fit in? These questions still grip humans today, as it did thousands of years ago.

- Experiences of beauty, grandeur, and wonder have their opposites in experiences of complete devastation, radical evil, and tragic misfortune. Throughout human history floods and droughts have wreaked havoc in human lives through loss of human and animal life and disruption of food production. Earthquakes, storms, and volcanoes kill people and destroy property. The harsh life of food chains in the animal kingdom and the
disturbing evil of humans witnessed in social conflicts like war and the abuse perpetrated in family life upset many. Survivors of these experiences question the meaning of a world where people suffer intensely from the failings of nature and culture. Is there a way to find any meaning in such events? Is there a God who plans them? If there is a good God, why does the god allow such events to occur? Humans still ask these questions every day, like they did ever since they acquired language.

- The worlds of living beings – especially the more complex ones, humans in particular – abound with love. The self-sacrificing love of mothers for children is touching. The first love of a teenager is exhilarating. The deep love of an elderly couple is moving. The love between friends is exciting. The love between humans and animals is special. What is love? What is similar about different kinds of love? Is there a pure form of love? Why are we so fascinated by, and do we have such need for love? Awareness of various modes of love and its limitless possibilities raises questions about its true characteristics and perfect manifestations today as it has through centuries.

- Experience of true love deepens the effects of experiencing and observing intense pain, suffering, and need of living beings, especially humans. The intense pain of damaging physical wounds, the deep suffering of the loss of loved ones or deeply cherished ideals, and the desperate need for food or love can radically upset people’s trust in concrete human beings who could have made a difference, or in abstract normative ideals like justice and compassion that ought to inspire loving care. The degree of pain, the depth of suffering, and the extent of need can overwhelm people with a sense of desperation. Why should some suffer so much more than others? Why are so many people in pain? If some live in utter luxury, why should others die without food and shelter? Can there be a caring, loving God in a world where millions of people mourn their loss, fight through pain, and struggle to live with unfulfilled needs? Regardless of whether there is a God, who is responsible for taking care of despondent
and wretched people? The contradictions of a world with plenitude and deprivation, love and suffering, pain and delight are puzzling and perplexing. How to make a significant difference amidst seeming hopelessness becomes bewildering, as people through the ages have felt.

- The wonders of our world and the beauty of love intersect with the radical evils and intense suffering in every person’s life at some point. Many people rightly feel that their share of evil and suffering is too high above the human average. Even for the more fortunate ones the question mostly arise as to their place in this world. What is my role in life? What is the meaning of this world? How does my life fit into this world? What is the meaning of my own life?

The ancient sacred texts embodied in the Bible deal with these intensely interesting and deeply disturbing issues and provide intriguing answers to most of them. The texts have held their fascination for humans as they are supposedly from a divine origin, were written as different kinds of literature spanning many centuries, and come from an ancient culture. Moreover, believers judge that these texts merely refer to, and inadequately describe, human experiences of God. The richness of what it means to meet God and experience Him and His work, cannot fully be captured in human language (cf. Van Huyssteen 1986: 179).

Theology as science aims to understand and convey the meanings that these texts have for fundamental human issues such as the origin and meaning of the world, the meaning and purpose of human life, and how humans ought to live. The meanings of these texts are used to make human life more intelligible and to better understand our world and our place in it. The most fundamental issue for such a science is how to interpret these texts to let their voices speak authentically millennia after they were written. What exactly does the problem of interpretation involve in this case?
1.2 Theology and Interpretation

The fundamental problem of understanding ancient sacred texts emerges when texts are distinguished from speech. Persons involved in living speech are present to the situation, surroundings, and circumstances of the speaker (Ricoeur 1991: 107). The environment or world of the speaker is familiar, enhancing the meaning of what it said. The spoken words refer to events, persons, or objects that are near enough in physical, temporal, or cultural distance that a speaker can point to them by an act of showing or through the use of words (Ricoeur 1991: 108). Speech thus becomes fully meaningful to its hearers. Problems of understanding can be addressed immediately through dialogue where interlocutors communicate through questions and answers, statements and responses.

Texts differ in important respects from living speech (cf. Ricoeur 1991: 106–119). The fundamental defining characteristic of texts is that they are the fixation of discourse. This is done by persons who choose to write down their thoughts instead of using speech to express them to a target audience. The writing of a text is separated from the reading thereof, as they occur at different times and places. In the case of the ancient sacred texts of the Bible the distance in time is already thousands of years. With writing and reading separated, no dialogue between author and readers occurs, no questions and answers as in ordinary conversation is possible. Readers are now confronted with the loss of the circumstances, environment, and situation of the author. The reference of the text cannot be determined that easily through acts of showing or explanatory words anymore (Ricoeur 1991: 148–149). In the case of the ancient sacred texts of the Bible, the cultural worlds of different peoples living in different eras must be reconstructed to be able to retrieve something of the world in which the text was written.

The processes of interpretation aim to overcome the various distances between our contemporary world and the world of the ancient sacred texts of
the Bible. To establish the meaning of the ancient sacred texts of the Bible through interpretation is complex. These texts were written in languages that are now dead, that is, they do not anymore exist in the form they were used in those texts. The grammar of the languages and the meanings of their words must be retrieved. The texts were written in different styles and genres (Eybers 1982: 15). The various socio-cultural worlds with political, economic, and social systems unfamiliar to contemporary readers must be reconstructed to understand the background of the texts and references the first readers were assumed to identify easily (Lohse 1991: 3). The texts originated in ways that texts are not often produced today. Some were used as elements in the worship of a religious community. Others were directed to specific audiences. Most expressed religious traditions and in turn were creatively interpreted to renew traditions. Some texts had authors who compiled the texts from other texts and edited them for theological purposes. These purposes were linked to the situation and nature of the readers, of whom very little information survived. These texts were thus not written as theological treatises, but as messages directed to the religious needs of ancient Israel and the early Christian communities (Lohse 1991: 3; Schrage 1988: 5; Kaiser 1983: 25). Archaeology provides a few answers to the social and cultural backgrounds of the readers, through attempting to find indications of the habits, practices, and values current in their world through other ancient texts and artefacts that have survived.

In theology’s attempt to understand the ancient sacred texts of the Bible, various subdisciplines have emerged with aims of studying the origin, genesis, and background of these texts. These processes of interpretation by various subdisciplines are claimed to be intellectually justified and of a scientific nature. After noting what these disciplines can provide on the author, the genesis of the text, the socio-cultural period, and the possible readers, theologians focus their attention on the further analysis and interpretation of Biblical texts. Which Biblical texts? Many theologians today argue that the
final Biblical text accepted as canon by the Christian Church should be the focus of theology (Hays 1996: 14; Hasel 1991: 113; Kaiser 1983: 27). All attempts at dissecting the origins of this collection of texts have failed to gain general acceptance. All that remains is to work with those texts available as the canon, the authoritative set of texts judged by the Christian church to be the Word of God.

Theologians relate the research results presented by various subdisciplines studying the cultures, historical settings, languages, archaeological evidence, and genesis of the ancient sacred texts of the Bible to detailed analyses of the ancient sacred texts themselves. Analysing the genre and style of a text (Bible book), determining its internal coherence and structure, and figuring out the dominant themes and motifs are typical tasks done by scholars studying the Old and New Testaments. Linking the interpretation of one text to other texts in the Bible’s collection of ancient sacred texts is an overlapping function between theologians studying the Old and New Testaments and systematic theologians intent on formulating and testing Christian doctrine. To link the meanings of the ancient sacred texts of the Bible with contemporary life is the task of various theological disciplines.

Theologians generally respect the integrity of ancient sacred texts by trying to minimise misunderstanding based on deliberately distorting parts of those texts or through ignoring relevant aspects of those texts (Van Veuren 1993: 115–119). Not only do they aim to capture the meaning the texts had for their original readers, but they suggest ways the contents of those texts can be appropriated by current readers (Lohse 1991: 3). These aims discipline them to be faithful to what they perceive as the original intentions of the texts and to stay within the determinate range of semantic possibilities offered by each text (Hays 1996: 8). Offering new interpretations of texts are akin to proposing a new hypothesis to be tested (Van Veuren 1993: 138). Theology must be open to critical scrutiny and intersubjective evaluation of its pro-
posed interpretations. These interpretations are judged to be fallible, tentative, and imperfect – therefore they are always revisable (cf. Van Huyssteen 1999: 262).

Testing an interpretation in this case means to judge whether all relevant textual material have been considered and whether the interpretation adequately explains the meanings of the texts. Good interpretations are accompanied by arguments in support thereof, drawing on textual evidence for empirical support. Interpreters can be held accountable for their interpretations. They must therefore present evidence and arguments in defence that can be rationally evaluated by readers affected by, or interested in, their readings of texts (Cf. Du Toit 1998: 52, 53). The interpretations given by theologians are thus “answerable to canons of critical inquiry defensible within the various arenas of our common discourse” (Van Huyssteen 1998: 225).

Theologians assume that ancient sacred texts have relevance to socio-cultural contexts far removed in time and distance from their author or original audience. As a result these texts can influence people outside the original situation they were created for. For these reasons, as articulated by Ricoeur (cf. Van Veuren 1993: 133–142), theologians take ancient sacred texts of the Bible seriously. Many contemporary theologians emphasise the importance of listening carefully to each individual text to determine its unique “voice” (Houlden 1973: vii, 2). Theologians value an approach that allows the diversity of texts to display their variety of messages directed to different original audiences. To force all ancient sacred texts of the Bible into a synthetic account of unity based on some imaginative, artificial construct is rejected outright. The question whether there is an underlying unity or dynamic centre to either one of the testaments or the Bible itself is approached cautiously. Suggestions for working out such proposals converge on a loosely “bottom up,” inductive approach. Discerning patterns of recurring themes
and motifs should be based on evidence gathered through prior analyses and interpretations of individual texts (Bible books).

The difficulties involved in finding a suitable characterisation of the unity underlying the diversity of ancient sacred texts already suggest that these texts are not easily judged to be compatible with a central focus decided upon beforehand by a theologian. If these texts differ significantly in content, how should theologians deal with that? Throughout history the major answer was to either forcibly harmonise such texts, or to ignore problematic ones by focusing on the texts considered to capture the central themes of the Bible. Is this the most appropriate way of dealing with the plurivocality of this collection of ancient sacred texts?

The answer is no (cf. Schrage 1988: 3; Hasel 1991: 155–157). Even single texts (a Bible book) can be plurivocal. The plurivocality of a single text can be understood in the following way. Texts can be interpreted in different ways (Rosenau 1992: 41). Multiple interpretations of the same text make some people uncomfortable. In a sense, the phenomenon of differing interpretations is normal when taking the nature of texts into account. Most literary texts can sustain many interpretations, generated in part by the text and in part by the readers. Texts are often plurivocal. Interpreters find it difficult not to privilege some voices in the text over others, resulting in competing interpretations based on which parts of texts are given priority. Besides plurivocality, texts often contain stresses, strains, and contradictions that might be openly acknowledged or be hidden from view (Rosenau 1992: 37–38; Olivier 1993: 253). Authors often justify group interests through their texts, support power relations in a society, or ignore issues inimical to their favourite people (Du Toit 1998: 45). For these reasons interpreters must explore contradictions, expose ideological positioning, and point to what are being left out and ignored (Du Toit 1998: 53; Olivier 1993: 253; Rosenau 1992: 36–37). Deconstructing texts in this way illuminates the way they were con-
structured and excavates the possibilities and meanings embodied in the text (Mortley 1991:97).

Once the plurivocity in single texts have been explored, the plurivocity of the Old and New Testaments has to be explored similarly (Hays 1996: 1–3). If significant contradictions and oppositions are found, they should not be harmonised at all costs, as it could distort individual voices and limit our understanding of the diversity of views in the Bible (Hays 1996: 187). Rather, they could provide creative tensions stimulating research and debate in new directions. Especially fruitful is to trace intertextual relationships between different texts, locating traces of interaction and influence that can explain differences and similarities.

Although there might be many contradictions in and between sacred texts, the contents of the ancient sacred texts of the Bible revolve around certain foundational events and fundamental values which have an integrative function. The foundational events in the Old Testament include God’s creation of the world and various aspects of the communal life of Israel, such as the founding fathers, the exodus from Egypt, the conquest of Palestine, the kingdom of Israel, the exile, and the post-exilic period. The New Testament revolves around the birth, life, death, and resurrection of Jesus Christ, the planting and growth of the church, and the future recreation of the world by God. In both testaments a strong focus on individual lives illuminates all aspects of human life pleasing to God and not.

The fundamental values are expressed in the Ten Commandments, the summary thereof by Jesus in the Great Commandment, the reinterpretation of the Old Testament Law by Jesus, and to a lesser extent the Sermon on the Mount. These fundamental values combine with the foundational events to form a kind of canon within the canon that ought to play a fundamental, dominant, and guiding role in interpretation. They can play this role, because
they constitute the main issues the ancient sacred texts of the Bible are concerned with.

The interpretation of the collective meaning of the ancient sacred texts of the Bible is fraught with dangers. Theologians are sensitive not to use a dogmatic or philosophical scheme that makes selective use of the contents of all texts. They prefer an approach that listens to each text's individual meanings. They then proceed in search of patterns in those meanings that might be joined together to establish central themes (Hays 1996: 188–190, 292; Schrage 1988:3; Hasel 1991: 113). This project is made easier by the foundational events that these texts describe, interpret, comment upon, and refer back to throughout most of these texts. At least the authors are often referring to the same events, although with different emphases. This project is also made more difficult by the foundational events that the authors describe, interpret, comment on, and refer back to. The authors of the ancient sacred texts of the Bible describe these events from different perspectives, emphasise different aspects thereof, interpret them with varying purposes in mind, and draw implications from them that are not the same. They do so in different situations, for varying audiences, and in a variety of literary styles.

The resulting texts often have complex intertextual relationships with one another, sometimes they deal with the same events, some presuppose the contents of others, or they interpret other texts in their attempts to deal with new events and situations (cf. Hays 1996: 306–307; Olivier 1993: 251; Rosenau 1992: 36). As a result the collection of 66 ancient sacred texts of the Bible have complex criss-crossing interrelationships that form a macro context that mutually determine and shape their meanings. To search for an underlying bond between the texts of the Old and New Testaments can be combined with an approach that takes seriously the rich theological variety of those texts. This search need not imply forcing or distorting the many different witnesses of the ancient sacred texts into one conceptual scheme (cf. Hasel 1991: 114).
When theologians today read the ancient sacred texts of the Bible they are not the first people to do so. These texts have had a *Wirkungsgeschichte* (working history, history of influence) through centuries of Christian and Israelite existence (cf. Du Toit 1998: 46; Van Veuren 1993: 124–133). The texts have created communities of believers with intellectual traditions through which they emphasised certain aspects of some of those texts and excluded others. These traditions are transmitted from one generation to the next, creating a *Vorverständnis* (pre-understanding) in those who are readers of these texts. As a result they develop a *Vorurteil* (prejudice, pre-judgement) which inclines them to look for textual evidence supporting their already acquired interpretations (Hays 1996: 209). Fortunately, ancient sacred texts have their own voices and therefore stand in persistent and creative tension to the communal traditions that foster standard interpretations (Hays 1996: 8). These texts can therefore continually engender new interpretations of themselves that can modify existing interpretative traditions.

The interpretation of texts enables readers to understand themselves better or differently, thereby allowing the fusion of textual interpretation with self-interpretation (Ricoeur 1991: 119). Good interpretation succeeds to overcome cultural and other distances to enable readers to experience the meaning of a text as being contemporary and relevant now (Ricoeur 1991: 119). When this happens, the semantic possibilities of the text can be enacted or realised (Ricoeur 1991: 119). Close reading of a text, detailed analysis, and interpretation of its meaning open up new horizons and possibilities to readers. Readers respond through appropriation of possibilities leading to modified self-understandings or different choices and behaviour. Rejections of the possibilities offered by the text and refusals to consider fusion with the text’s horizons also occur. Nevertheless, awareness of the new possibilities offered by the text already changes readers, regardless of their response to them (cf. Van Veuren 1993: 122–123).
The ability of texts to open up new possibilities depends on the universal phenomenon that humans have intellectual "horizons." Gadamer coined this metaphor to describe the contents of human minds that determine individuals' perspectives on everything they deal with and mediate their understanding of everyday affairs (cf. Van Veuren 1993: 124–133). Such horizons can be narrow or broad. Horizons are never constant, but constantly changing. By contact with other intellectual horizons, individuals can modify their own through a more or less creative fusion of horizons. The degree of creativity is determined by the way in which the perspectives of a new horizon are incorporated — whether the new horizon is critically evaluated and independently woven into the reader's existing horizon, or uncritically embraced and allowed to displace the existing horizon.

Not only humans, but their intellectual products like texts also contain horizons. Interpretation reconstructs these textual horizons and sets up an encounter between text and readers with the possibilities of fusion or rejection. In the case of ancient texts interpretation mediates between past and present with the hope of creating a new, broadened intellectual horizon. Through reading and interpretation of texts readers become aware of the outline and boundaries of their own intellectual horizons. They become aware of the differences between their horizon and the one contained in the text and start an internal dialogue on how to deal with those differences. Where awareness of their own horizons that are different from those in the text leads, depends on the readers' relation to the text.

Many people who read the ancient sacred texts of the Bible readily submit to what they believe are the divine authority of those texts. In this case they allow the text power over their lives to challenge their intellectual horizon and are easily prepared to modify their intellectual horizon. In other cases, readers are critical toward the claims to divine authority and place themselves in
a position of power over the text, evaluating and rejecting the intellectual horizon embodied in the text. Regardless of the power relations that readers set up between themselves and the text, some texts have the ability to either communicate their message despite the negative attitude of readers, while in other cases texts fail to do so despite the humblest submission.

The relation of power between reader and text is important. When readers assume too much power over the text, they can violate texts by reading parts of them out of their appropriate context, ignoring the socio-historical context of texts, not taking into account their characteristics, and refusing to acknowledge the links texts have with other texts. When readers allow texts too much power over their lives, they do not put their own questions to texts, never critically examine them, do not ask what texts justify, repress, or ignore, and do not limit their validity by placing them in proper context. Appropriate reading strategies might oscillate between these two extremes and will vary according to the purposes of reading and the kind of texts at hand (Hays 1996: 305).

Can theology be a science, with interpretation of ancient sacred texts as its core activity? If concerns about the interpretation of ancient sacred texts of the Bible are at the heart of theology, can theology qualify for the intellectual status of a science that produce reliable results that must be taken seriously?

2. Theology as Complex Human Science

Is theology a science comparable to other (human) sciences? To answer this question, I will evaluate the practice of theology as science, as outlined above, in terms of a conception of science. I present a view of science based on an appropriation of the theoretical framework of the sciences of complexity. The new sciences of complexity modify and deepen our everyday understanding and interpretation of science. Recent developments in
these sciences indicate that we might be on the threshold of startling new developments that could invigorate several sciences in exciting ways. The development of complexity theory with applications across a wide range of disciplines promises to deal with intricate issues and intractable problems (Stein 1989: xiii), develop theories capable of linking sciences across disciplinary boundaries (Stein 1989: xv), and modify the dominant reductionist approach to problem-solving in vogue since the advent of Newtonian science (cf. Cilliers 1993: 4, 5; Casti 1994: 273; Waldrop 1992: 13).

I want to interpret science as a complex system in order to provide a better understanding of science as currently practised. Murray Gell-Mann (1994: 266) claims that "learning and thinking in general exemplify complex adaptive systems at work" and adds that human creative thinking is perhaps the best expression of those skills. If Gell-Mann's remark is true, one could suspect that science as prime example of human thinking, learning, and creativity should be the most complex system on earth. Whether or not that is true, at least an attempt at explaining science as complex system seems justified.

I present a philosophy of science based on ideas drawn from the study of complex adaptive systems. As a result of the spectacular expansion in scientific disciplines, witnessed in the exponential growth of the number of scientists and scientific institutions in the twentieth century, I believe science can be characterised as a complex system. I want to interpret the processes of science through which scientists themselves determine what counts as good science. This characterisation of science as complex system can give an answer to the question why the different sciences are so successful in solving growing numbers of problems and correcting their own mistakes. I argue for three conceptions of science, i.e., a minimal conception of science shared by all sciences, an intermediate conception of science where sciences cluster together on the basis of their shared interests and similarities,
and a maximalist conception of science determined for each individual science by the community of scientists in that specific discipline.

The major issue is whether theology as science functions similarly enough to other sciences dealing with comparable objects of study to qualify as science. By pointing to the various dimensions of the functioning of science as complex system, theology's scientific status can be judged.

2.1 Basic Rules Lead to Complex Behaviour

I want to provide a first level of analysis of what science is by suggesting a minimal conception of science. This conception is based on the following four rules that are common to both human and natural sciences and are responsible for generating the complexities of modern science. These rules guide the human quest for intelligibility and optimal understanding of the worlds around and within us (Van Huyssteen 1997: 13). They are as follows (cf. H.W. Rossouw 1993: 95–97).

1. Use specialised problem-solving. Humans are continually involved in problem-solving and science is a specialised way of solving problems. In science problems are solved through research. In scientific research a variety of specialised “instruments” are used to deal with research problems, such as theories, hypotheses, technical equipment (microscopes, measuring instruments, and so on), and methods (interviews, experiments, observation, etc.)

2. Justify your findings. No findings in science will be accepted if scientists do not provide reasons or evidence in support of them. Findings are as strong as the justifications that fellow scientists can accept.

3. Refer to previous work. In every scientific discipline scientists are part of a history of intellectual developments that have preceded them. To produce acceptable scientific results, scientists must demonstrate that they have noted and are building on the important contributions of their predecessors.
4. Convince your scientific community. No intellectual work can count as a new scientific contribution if it is not accepted by fellow scientists. To produce new scientific results scientists must convince their colleagues that their work was done according to appropriate methods, that all relevant previous work was taken into account, and that their findings fit in with current, firmly established knowledge.

These four basic rules are applied by scientists to different fields of study, where different aspects of reality and various kinds of problems are studied. In the process of their application, the basic rules are specified and elaborated. Their specification and elaboration depend on the nature of the objects being studied and the results of the meshing of the rules with the subject matter under investigation. The nature of the objects studied, assumed by scientists to be intelligible and open to rational exploration (Van Huyssteen 1997: 219), have a major influence on the development of any science. There is no doubt that theologians follow these rules. They use specialised methods for solving intellectual and other problems, they do justify their findings, they continually refer to work of other theologians, and they have to convince other theologians of the value of their work to get published, read, or quoted. Theologians also assume that the object of their study, namely, the ancient sacred texts of the Bible, are intelligible and open to rational exploration.

Aristotle, one of the greatest scientists ever (cf. Dunbar, 1994: 37–40), argued in his Nichomachean Ethics that his discussion of ethics will be adequate if it has as much "clearness as the subject-matter admits of, for precision is not to be sought for alike in all discussions" (Aristotle 1925: 2, 3). His argument is that the ethical actions he is investigating exhibit much variety and fluctuation and therefore he must be content to speak of his subject with premises that indicate the truth "roughly and in outline." An educated person would expect no more, as such a person knows to look for precision in each
class of things "just so far as the nature of the subject admits." Conversely, Aristotle says, an educated person would not foolishly accept probable reasoning from a mathematician, nor demand demonstrative proofs from a rhetorician (Aristotle 1925: 3).

Aristotle's argument that the degree of precision possible in a science depends on the nature of the subject matter studied is still valid today. His point can be illustrated by remarks made by an economist, Brian Arthur, trying to explain the economy as a complex adaptive system (cf. Waldrop 1992: 141, 151, 255). Arthur argues that the economy is like the biosphere that is always evolving, changing, and exploring new territory (Waldrop 1992: 255). The difficulty of the science of economics is that the objects of study are imperfectly smart agents who are exploring their way "into an essentially infinite space of possibilities" (Waldrop 1992: 151). Arthur's comparison of the complexities that economics have to deal with in comparison to those of physics are worth quoting in full:

"We call our particles 'agents' – banks, firms, consumers, governments.... Our particles in economics are smart, whereas yours in physics are dumb. In physics an elementary particle has no past, no experience, no goals, no hopes or fears about the future. It just is. That's why physicists can talk so freely about 'universal laws:' their particles respond to forces blindly, with absolute obedience. But in economics, ....our particles have to think ahead, and try to figure out how other particles might react if they were to undertake certain actions. Our particles have to react on the basis of expectations and strategies... that's what makes economics truly difficult" (Waldrop 1992: 141).

From Arthur's description of the objects of study in economics, it is clear that similar precision as in physics would be virtually impossible, thus excluding also similarly strong causal explanations and accurate predictions of the be-
haviour studied. This does not imply that scientific advances — new techniques for observation, new findings, new explanatory theories — cannot transform the degree of precision possible in a field of study.

Theology faces several handicaps in terms of the degree of precision it can reach. Very few important results rest on any kind of measurement and many subdisciplines study languages, cultures, and worlds that have stopped to exist hundreds of years ago, providing precious little information to work with. A further complication for precision in theology is the fact that texts allow multiple interpretations and that complex arguments are needed to establish which interpretations best capture the meaning of a complex text, or set thereof. The fact that a text also sets limits to its possible interpretations and that arguments can be made by reference to aspects of the texts, or subsidiary subdisciplines, enable theology to reach a reasonable degree of precision, commensurate with its subject matter.

2.2 Complex Systems Gather Information about Their World

One of the major capabilities of complex systems is their ability to gather information about the environment and store it for future use (Cilliers 1994: 18). The process of gathering new information is crucial for most sciences. Through new techniques of observation, new findings, and new explanatory theories scientists collect, analyse, and interpret data about the worlds around us and within ourselves. The sciences deal in diverse ways with different kinds of subject matter in the process of the gathering of data. The creative methods and ingenious techniques devised by scientists for observation, analysis, and interpretation of researchable problems concerning different objects of study are worth illustrating with two examples drawn from the natural sciences and theology.

The two examples show how the object of study and the nature of the problem under investigation usually dictates the methods and techniques for ob-
servation and gathering of data. The examples illustrate the ways in which scientists design appropriate tools for investigating particular subject matter. The examples are the exploration of Mars and the interpretation of the meaning of an ancient sacred text, in this case, the book of Revelation.

The recent exploration of Mars is interplanetary science done by a global team of scientists. The exploration is an example of large-scale scientific research funded by government, done by a large interdisciplinary research team led by the Jet Propulsion Centre at NASA, in collaboration with associates from scientific institutions across the globe. Representatives of several sciences had to co-operate to enable Pathfinder and its rover, called Sojourner, to do its observations on Mars. To get the Pathfinder spacecraft to Mars required knowledge provided by physics and cosmology to enable the craft to land within a 60 km diameter after a journey of 190 million kilometres. Further scientific knowledge from mathematics and physics was needed to enable the spacecraft to decelerate from the 26 200 km/h it was travelling when entering the atmosphere of Mars to the 37.6 km/h it travelled when hitting the Ares Vallis (Mars Valley). The protection against extreme heat when entering the atmosphere of Mars, as well as the parachute, rockets, and air bags enabling a soft landing are further proofs of sophisticated scientific knowledge and technology required for the mission.

Pathfinder and Sojourner made meteorological, geological, and visual observations on Mars. Meteorological observations were made by instruments measuring windspeed, temperature, and the quality of air. Geological observations were made by an Alpha Proton x-ray Spectrometer that can detect the presence of minerals through reading the characteristic emissions projected by specific elements contained in Martian rocks. Magnets mounted on Sojourner attract magnetic dust which can be analysed by the spectrometer. Visual observations were made of rocks, patterns on the soil, geological formations, and interactions between the Martian surface and its atmos-
sphere. Sets of stereoscopic cameras enabled scientists to estimate depth, height, and distance of the pictures taken of Mars. All these observations had to be digitally encoded and sent to earth via radio signals. Large dish antennas collected these signals and sent them to JPL in Pasadena, Calif., via satellite or cable. These coded signals were decoded by computer, projected by means of video technology, and made available on the Internet.

The technology required for making these observations on Mars and the scientific knowledge behind the whole project are staggering. Several sub-disciplines of physics are involved, as well as sophisticated mathematical techniques for complicated calculations. Geology and meteorology are deeply involved, as are computer science and different engineering sciences. The scale of the project is so large that dozens of scientists were involved besides the multidisciplinary team at JPL in Pasadena.

Many people doubt the scientific status of disciplines studying ancient sacred texts such as the Bible. However, scientists in these disciplines are similarly creative in devising methods and techniques and similarly adept at utilising the results of other scientific disciplines for understanding the meaning of even the most obscure ancient sacred text. To decipher the meaning of the notoriously difficult apocalyptic text of Revelation in the New Testament, theologian Jan A. du Rand (1993a, 1993b, 1996a, 1996b) approaches his research problem in ways similar to those of the scientists discussed above. He assumes that Revelation is intelligible, open to rational exploration, and has meaning as a whole.

Du Rand's focus is on understanding the meaning of the text of Revelation. As methods he employs textual analysis, literary analysis (aided by insights from musicology), historical analysis, narrative analysis, theological analysis, and the methods of Greek grammar and syntax. With these methods he searches for patterns and structures in the text of Revelation. He interprets
the text as a meaningfully artistic whole through identifying a Leitmotiv, defined as a theme that is "modified on subsequent appearances to represent or symbolise an idea in a dramatic work" (Du Rand 1993a: 304). The idea of a Leitmotiv is complemented by the musicological term, basso ostinato, that he defines as a "short phrase or melody that is repeated over and over in the bass parts" with the function of binding the composition together (Du Rand 1993a: 301).

Du Rand explores the role of concepts like "Zion" and "Spirit" by tracing their meanings in related texts within Jewish religious traditions and through determining their links and contrasts with other parts of Revelation, as well as their function and meaning within the broader theological narrative of Revelation itself. As a result he presents a multitude of textual references to his scientific community as evidence for his interpretation of the concepts "Zion" and "Spirit."

Almost inseparable from these textual analyses are his attempts to place the text within various contexts, leading him to discover intertextual links with texts from the Old Testament, ancient Jewish and Greek literature, and other New Testament texts. He further contextualises Revelation within the history and religious traditions of Israel, the ancient Near East, and early Christianity. His interpretation of the meaning of Revelation rests on the way he activates a multitude of textual evidence to become an intertextual event.

These examples demonstrate the extraordinary ability of scientists to devise new sensors for detecting and observing phenomena and events in the world in order to gather information for adequately modelling the world. Theologians, as demonstrated in the example, do so as well. They continually look at their subject matter with new eyes.