

## **Module 1 Class Notes by Paul Flaman:**

### **Neuroscience and Christian Theology: An Introduction**

(**note:** the PowerPoint slides for Module 1 summarize these. These class notes here do not include an introduction to the class module for the actual class including related video links, some specific directions for students taking the class, and so forth.)

#### **Discussion Questions**

1. What are the assumptions of most neuroscientists? Is each necessary or optional, and why?
2. Must someone who takes neuroscience seriously be a materialist?
3. What are some different views today of the Bible, of Jesus Christ? Which views are closest to your own, and why?
4. What is theology, Christian theology? What are some ways that Catholic, Orthodox and Protestant forms of Christianity are similar and different?
5. How are the methods and assumptions of neuroscience and Christian theology different? Are there any similarities?
6. What critiques and challenges do the disciplines of neuroscience and Christian theology pose to each other? Are these disciplines complementary? Is there a unity of knowledge and truth?

#### **An Introduction to Neuroscience**

Neuroscience defined broadly is the study of the role of the brain in human psychological experience and behavior. For an introduction to brain structures and functions see, for example, Heather Looy's "A Brief Primer on Neuroscience" (2004) and "Brain Basics: Know Your Brain" (NINDS 2012), which are both listed in the references and available online.

#### **How do we think about the body-brain?**

While the brain is of central interest in scientific approaches to questions of personhood, it is important to remember that, as neuroscientist Antonio Damasio says, “We are embodied, not just embrained” (Damasio, 1994, 118). That is, the brain is an organ isolated from the world; it requires a body through which to receive inputs and enact its decisions on the world. Personhood, as we shall see, is thus not merely a matter of brain function, but much more—it is related to the ways in which we are fully embodied, and fully embedded in a physical and sociocultural context.

One way to conceive of the brain is as an organ with an anatomy, a physiology, and associated functions, like a liver or pancreas. Current discussions tend to focus on “localization of function”—there are parts of the brain that are specialized for certain functions. This contrasts with the “brain as a whole” view, that most functions are distributed across relatively larger regions of the brain. Emerging from evolutionary approaches to mental function, this localization view leads to a “modularity of mind”: mental functions are understood as highly specific, genetically-determined “programs” that have been naturally selected because they solved recurring adaptive problems over evolutionary history. The environment (both physical and social) simply triggers, or selects, particular programs; once selected, the programs mainly run automatically. But an important shift in views of the brain has been occurring: the brain is increasingly seen as a dynamic organ, shaped in interaction with the environment over an individual’s lifetime. This is not an infinite flexibility, but neither is brain function completely predetermined by our genes.

The brain is preprogrammed to create certain kinds of representations of reality such as spatial 3-D maps, animate objects versus inanimate objects, color, shape, intention, etc. These pre-representations interact with inputs from experience to produce functional representations of

reality. We still have localization of function, and genetically-determined tendencies to process information in particular ways, but we are moving toward a far more dynamic picture.

Further, the whole-brain view is re-emerging as neuroscientists discover a complex hierarchical structure to mental function. Only the simplest processes are localized in a “pure” sense; most mental functions involve multiple systems integrated at various levels, and those functions that we consider most characteristic of humankind—self-awareness, will, judgment, imagination, episodic memory—do indeed involve much of the brain.

Why are these pictures of brain function important? Because in our culture the neurosciences and related fields have an unprecedentedly strong influence on how we perceive ourselves, our human nature, our personhood. As we use the languages of biology, genetics, and neuroscience to speak of our identity and experience, how does our self-understanding change? Are we able to continue to see ourselves as agents, or are we shifting to view ourselves as merely complex machines? Relevant to this question, in parts of this book below, we will consider whether or not we have not only brains but also minds and souls.

## **Neuroscience in our Culture**

A look at recent headlines in newspapers and television shows such as *Discover*, *The Nature of Things*, and *Nova*, plus “health” updates, illustrates an interest in the brain and the growing influence of neuroscience. Why is there so much interest? What questions are we hoping to answer? Are many disillusioned with religion and philosophy, and putting their trust in science? In the Middle Ages theology was regarded as the queen of the sciences with philosophy, including natural philosophy (an older name for what we now call science) as its handmaid. While one still finds these disciplines in universities today, departments of science

typically are much larger. In our modern pluralistic society many regard religion and philosophy as merely a matter of opinion. Is there a “materialist” shift? Do philosophy and theology still have an important role in our culture or should they continue to have an important role today?

The growing impact of neuroscience is related to our society investing “science” with great authority. Human sciences like genetics, neuroscience, and psychology are well-funded and productive, with lots of data, lots of theories, and lots of power. Neuroscientists (and scientists in related fields) are not only encouraged, they are *asked* and *expected* to speculate about the implications of their research for our understanding of who we are. Consider the following quotes by some well-known scientists.

**Francis Crick:** “We are nothing but a pack of neurons.”(1994, 3)

**James Watson:** “We used to think our fate was in our stars. Now we know, in large part, that our fate is in our genes.”(in Jaroff 1989)

**Michael Persinger:** “God experiences are becoming potentially more dangerous in a world living with the threat of nuclear nightmare. Who would you rather have with his finger on the button? A person who realizes that (God) experiences are neurological? Or someone who believes in an afterlife?”(in Regush 1995, 71)

**V.S. Ramachandran:** “Have you ever wondered why some jokes are funny and others are not, why you make an explosive sound when you laugh, why you are inclined to believe or disbelieve in God....? Surprisingly, we can now begin to provide scientific answers to at least some of these questions. Indeed...we can even address lofty “philosophical” questions about the nature of the self: Why do you endure as one person through space and time? What does it mean to make a choice or to will an action? And more generally, how does the activity of tiny wisps of protoplasm in the brain lead to conscious experience?”(Ramachandran and Blakeslee 1998, 9)

**Simon LeVay:** “People will ask of some trait, ‘Is it psychological or is it biological?’ By that they generally mean ‘Is it some nebulous state of mind resulting from upbringing and social interactions, or is it a matter of genes and brain chemistry?’ But this is a false distinction, since even the most nebulous and socially determined states of mind are a matter of genes and brain chemistry too.”(1993, xii)

**Richard Restak:** “To what extent am I anything other than my brain? ... My way of coping has been to fashion a simple mantra I repeat silently from time to time: ‘My brain and I are one. My brain and I are one.’”(1993, 13)

**George Paxinos:** “But as a neuroscientist and psychologist, I have no use for the soul. On the contrary, all functions attributable to this kind of soul can be explained by the workings of the brain.” (2016)

**David Kyle Johnson:** “Although not everything about how the brain works is fully understood, it is now undeniable that all mental activity is a direct result of brain activity. Not only has personality been pulled from the realm of the non-physical soul into the realm of the physical brain, but everything that was once the purview of the soul—emotions, language, decisions, sensation, memories, personality—is now known to be the purview of the brain.” (2013)

Is this fair? What can neuroscience tell us about ourselves, and what can it not tell us?

To answer that question, we need to look at what neuroscience really is, and where we sometimes inappropriately extend its authority.

## **Assumptions of Scientific (including Neuroscientific) Research**

### **1. Scientific Method—Empirical**

Empirical relates to what we can observe and measure. When we want to understand or explain something, scientists propose solutions: hypotheses or theories. Often an explanation points to some underlying, invisible entity, property, or “law” that cannot be observed directly, but that helps us make sense of many observations. For example, we explain a lot of fossil and genetic data related to the diversity of species of life and change over millions of years by the theory of evolution even though we rarely directly observe the process of evolution. For another example, increased activity, insulin secretion, salivation, stomach growling, seeking out and consumption of edible substances are explained by a concept called “hunger”. The concepts are organized into theories about how they relate to other concepts and potentially explain our experience of the world. Scientific theories are tested through systematic observation under

controlled conditions. A theory is a “good” theory if it: a) helps us predict what will happen in the future; b) helps us explain related observations and phenomena; and c) is the simplest way to accomplish this (cf. the principle of parsimony). The principle of parsimony is widely preferred, that is, it is better to explain something in the simplest manner possible. However, simplicity is not necessarily an indicator of correctness or correspondence to reality.

Scientific progress involves a circular, iterative process of theorizing, predicting, making observations, modifying the theory, making more observations, etc. This is a self-correcting process in which we check whether our ideas are correct by testing them against experience. It is a public, communal process. The results of scientific research are generally published so that other scientists can read and test them, and perhaps offer alternative explanations of the data. It is not a good scientific theory if other people cannot test it or cannot make the observations you made (cf. empirical verification).

Consider the case of David, described by neuroscientist Ramachandran, as an example of one kind of neuroscientific research. David suffered a head injury and no longer acknowledged his parents as his own (Capgras’ Syndrome). Even though they looked the same to him he considered them to be imposters. According to a Freudian explanation, the accident released repressed sexual desire for one’s parent but since it is socially forbidden to be sexually attracted to one’s parent, the person must not really be his parent. Ramachandran did some more research and discovered that David did not acknowledge his parents when he saw them but he did when he talked to them on the telephone. He concluded that this additional data showed that the Freudian explanation of Capgras’ syndrome is inadequate. Ramachandran theorized that one needs to have an appropriate emotional response to acknowledge one’s parents as one’s own. He suggests that in David’s case brain damage resulted in a disconnection of parts of the brain

related to visual input and emotions but not with auditory input and emotions. He then set out to test this prediction by having David view pictures of his parents and of strangers while sensitively measuring his autonomic nervous system responses (essentially a lie-detector test). Unlike healthy people, David showed no distinctive emotional reaction to the images of his parents compared to the strangers, thus supporting Ramachandran's theory (Nova 2001, Oct. 23). Nevertheless, we cannot know whether or not Ramachandran's theory is the best explanation of David's symptoms until we have further observations on other people. Is a particular brain region vital for the ability to recognize one's parents or one's self? Is the self somehow connected to the properties or functions of the brain? We cannot simply look at one case and say, "See, he had damage here and here, therefore that region must do this." How do we know that this would not happen anyway, or that this person's brain is organized differently from others, or that they experienced psychological / emotional problems as a result of their accident, or that it is just coincidence? So, neuroscience is a science which relies on systematic empirical observation to test and refine theories that try to explain how the nervous system is related to our psychological experience and behavior.

## **2. Rational**

Neuroscience, like all sciences, does not just use observation. Scientists think about their observations; they interpret them. They think systematically, according to accepted rules and assumptions—this is rational thought. Rational thought must be logical. For science, rational thought must be consistent with the observations, but almost always more than one theory is consistent with the observations. Certain kinds of explanations are ruled out ahead of time: for example, a theory that proposes that a mental illness is due to demonic possession is generally

not taken seriously by modern scientists. Science is a culturally embedded process since scientists generally work within accepted paradigms of explanation such as those that are a product of Western education. Scientific reasoning does not come naturally to us. For example, when you let go of a pen and it falls to the floor we attribute this to gravity. But, has anyone seen gravity? Nevertheless, whatever theory, or story, we create as we attempt to organize and explain our observations, it must follow accepted rules of reasoning and fit within accepted frameworks. Theories that challenge existing frameworks are relatively rare. Even more rarely are they sufficiently powerful at accounting for the observations and generating fresh predictions that are subsequently confirmed that they replace the traditionally-accepted paradigm (Kuhn 1970). Even then, the reasoning must be sound.

### **3. Materialism / Naturalism: Methodological and Philosophical**

Science studies the natural world. Questions of meaning, purpose, what ought to be, are beyond science. A widespread assumption among neuroscientists is that the only reality is material (physical) reality; that there is no supernatural reality, no immaterial substance (like a god, or a soul). Why do neuroscientists tend to be materialists? Some are methodological materialists: they do their research as if there was nothing but material reality. This is necessary because science is based on observation, and all we can observe directly is material reality. Many believe that things beyond the material may be real, and belief in them is useful and important, but they have nothing to do with the kinds of questions scientists are interested in and able to study. For example, if God exists we cannot put him<sup>1</sup> under a microscope. Many

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<sup>1</sup> By referring to God with the masculine pronoun “him” or “he,” I do not mean to imply that the infinite invisible nonmaterial God, the Supreme Being, is literally male. God per se does not have a material body and is neither male nor female. Traditional Christianity, however, affirms that God became incarnate in Jesus of Nazareth, a human being who was male and among other things received the Jewish male circumcision. Jesus also often spoke of God



scientists take a step further into philosophical materialism, believing that there is nothing but material stuff (see, e.g., Dawkins 2006). If you can explain observations in a satisfying way solely in terms of material reality, then why make things more complicated by adding an immaterial reality that you cannot study anyway? Although philosophical materialism is common among scientists, it is not required to do science. It is actually a faith position since it cannot be proven (see, e.g., Polkinghorne 1999; and McGrath 2007).

#### **4. Non-Teleological**

Another assumption held by many but not all scientists today is that reality is non-teleological. According to this view, which is related to materialism, there is no ultimate “purpose” to reality. Reality simply emerges and organizes itself because the physical universe has the particular character that it does. There is no directing hand, no creator, no sustainer, nothing outside the system that could intervene or even that set it all in motion. This assumption is also not required to do science, but it is held among many. An example of a scientist who does not hold this assumption is a colleague of mine at St. Joseph’s College, the University of Alberta, Dr. Denis Lamoureux, a professor of science and religion.

#### **5. A Few Conclusions Regarding Assumptions and Neuroscience**

Science (including neuroscience) is built on assumptions such as those described above. Some assumptions are necessary to do science such as: there is a real world, it is orderly, and we humans are capable of learning about it. What sorts of explanations are you willing to consider, materialist only? Is immaterial reality a possibility? Is it helpful in explaining the observations?

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as his Father and he taught us to pray to Our Father in Heaven. “Father” here is used in a symbolic sense. Following this usage of Jesus I refer to God in this book when appropriate as “he” or “him”—also for simplicity sake compared to some alternatives.

One general “rule” of science is to keep theories as simple as possible: parsimony. For many that means that we should just rule out ahead of time any explanation that involves immaterial stuff. And in fact most very successful theories have assumed just that. It works! But the requirement that we must explain everything solely in terms of purposeless properties of a material universe means that our theories get unnecessarily complicated. Are our experiences of free will, conscious self-awareness, choosing, intending, of God, etc., lies or illusions that our brains create because somehow believing in things that are not actually true is adaptive? Or, are they properties of human nature that reflect reality? (see Deacon 2011)

Can a neuroscientist avoid materialism? Well, no and yes. You have got to be a methodological materialist in order to do the research; that is, you cannot build into your specific hypotheses things that you can never test scientifically. For example, you cannot develop a theory that claims that “An intelligent agent must have created the process of evolution.” Either that intelligent agent is part of the creation, and therefore accessible to science (but then where is the evidence for it?) or it is outside of creation, and therefore “supernatural” and inaccessible to science. But science is not just about “the facts.” The “facts” always emerge in a context. Why did you ask that question and not this one? Why did you look there and not here for answers? And the “facts” are always interpreted. So neuroscience is not intractably materialist in some ultimate way. Holding different assumptions will lead to (some) different questions, different observations, and different interpretations. For example, John Eccles was a distinguished neuroscientist who believed in an immaterial mind. This led him to study neural communication in a manner that revealed certain observations that had gone unexplained previously, and to interpret those observations in terms of an immaterial reality. While his theory is not widely accepted among neuroscientists, it is an example of how a neuroscientist can be seriously

nonmaterialist (see, e.g., also Beauregard 2007). The point is that everyone brings a set of assumptions—sometimes referred to as a worldview—to their encounters with the world. Scientists are no exception.

This does not mean that all scientific theories are equally good, and are no different from myths or religious accounts of the same phenomena. Theories vary in how well they account for the reality we observe and experience. It is not just a matter of opinion or belief. We can avoid complete relativism. But opinions and beliefs do shape the research and its meanings, and because all data must be interpreted, the data almost always underdetermine the theory. That is, there are usually several ways we can weave a story with the data we have; partly by selecting some data and not others (for good reasons) and partly by rearranging the data we do have in creative ways. Consider an analogy. Suppose you have 5 pieces of a 5,000 piece puzzle but you do not have the original picture. Finding a few more pieces may lead you to revise your theory about the puzzle. With science we never have all the pieces.

When Einstein was asked, “Do you believe that absolutely everything can be expressed scientifically?” he replied, “Yes, it would be possible, but it would make no sense. It would be a description without meaning—as if you described a Beethoven symphony as a variation in wave pressure” (cited in Born 1966).

## **Is Science “Objective”?**

According to Michael Shermer, “Science is not simply a database of unconnected factoids, but a set of methods aimed at building a testable body of knowledge open to rejection or confirmation.”(2003) Good thinking is not purely objective and neutral and human thinking cannot be. Scientists test ideas against the real world. Science involves observation and

reasoning, and draws on intuition, authority and tradition. It is very conservative. Consider the great scientist Isaac Newton saying, “If I have seen further it is by standing on the shoulders of Giants.”(1675) Science always occurs in community which involves language, cultural values, interpretive paradigms, faith communities. Related to language, for example, science today has become so specialized that scientists in one sub-field may have difficulty talking to scientists in another sub-field. With regard to cultural values and science consider, for example, how large amounts of money are spent on potentially very profitable drugs and their effects, whereas sparse amounts are spent on researching some other areas with fewer lucrative opportunities. Science is also always done for community.

Thus, the view that science is purely objective is a myth. Seeking such “pure objectivity” leads to objectivism which “portrays truth as something we can achieve only by disconnecting ourselves, physically and emotionally, from the thing we want to know”(Palmer 2007, 51) Consider treating a human being as an amoeba, an object. Compare also scientism, believing that science is the only legitimate way of knowing and that it is truly objective. Any “ism” is generally too much of a good thing, taking something good too far. Wisdom and understanding need more than “objectivity.”

For the ancient Greek philosopher Plato “truth” belonged to the immaterial world, of which this world is a mere shadow. Below under “Christian theology” we will consider the Christian view which understands Jesus as God-incarnate, God with us. Jesus spoke of himself as “Truth” (Jn 14:6). In this view truth is relational and embodied in the person of Jesus.

Richard Dawkins in *The God Delusion* (2006) considers science to be rational, but faith / religion to be irrational. He says faith is “believing something without good reasons to do so.” Dawkins caricatures belief in God as equivalent to belief in the tooth fairy. Alister and Joanna

McGrath, *The Dawkins' Delusion* (2007), is an example of a Christian critique of Dawkins' atheism. Science inherently involves faith: in an orderly world; in human ability to discover that order; in untestable assumptions underlying theory; in hypotheses, theories and paradigms; and in the goals, applications and interpretations of data. Consider our analogy above as science like finding a few pieces of a puzzle without seeing the whole picture. The data "underdetermine" the theory. Science is a form of "story telling" (see Postman 1993). If we consider the history of science including such things as alchemy and astrology, then we can appreciate that science is often "irrational." Neuroscientists based on observations at the time once considered it a fact that adult brains do not generate new neurons. Today based on further observations we know that this is not the case. Concerning our modern theories, we should keep in mind that in fifty years scientists may consider some of these theories as backward. Is science "progressing" in the sense that our knowledge is becoming increasingly complete and accurate, or is our knowledge simply "changing"? Or, is it some combination of the two?

Being rational does not require us to be materialists or atheists. A more mature view of faith understands it as above reason in a sense, not contradictory to reason but grounded in reason. The story of science fits into a more comprehensive story. This is also true of religious "stories" such as Christianity, Buddhism and atheism.

## **An Introduction to Christian Theology**

The English word "theology" comes from two Greek words, *theos* meaning God and *logos* meaning word, explanation, science. Compare the word biology which comes from the Greek words *bios* meaning life and *logos*. Theology thus etymologically means "science of God." In line with the classical understanding of theology as "faith seeking understanding," the

great Christian theologian St. Augustine of Hippo held that “knowledge of God not only presupposes faith, but faith also restlessly seeks deeper understanding.”(Migliore 2004, Ch. 1) For the person or a people who believes in God it is natural to try to understand God better. Theology is an integrative discipline which seeks to understand not only God better but also everything else, for example, human persons, better in relation to God. Theologians today also generally try to integrate what they believe with our knowledge related to human experience, the various human sciences, and philosophy, reflecting critically on these.

There are various types of theology related to different religious faiths such as Judaism, Christianity and Islam. Some also speak of natural theology related to philosophical reasoning about God and everything else in relation to God. Persons who do not adhere to a particular religious faith tradition may, however, develop their own personal theologies as they seek to understand their beliefs better. This book, *Neuroscience, the Person and Christian Theology* [or alternate title see title page above], focuses mainly on Christian theological understandings of the person in relation to Christian faith.

At the heart of the Christian faith is the belief that the second person of the Triune God, the Word or Son of God, became incarnate in the human being, Jesus of Nazareth, who lived on earth from about 4 B.C. to 30 A.D. Christians who hold to this traditional Christian faith generally understand Jesus Christ to be fully God and fully human. Jesus is the fullest revelation of God to the human race. He is seen as normative to our understanding of both God and ourselves (see Rahner 1992, 63-65). Christians also generally believe that the Bible, the Jewish scriptures and the Christian New Testament, are inspired by God in some real sense (see 2 Tm 3:16). Related to this, the Bible continues to be a primary source for Christian theology. Today there are various Christian perspectives.

## Various Contemporary Christian Perspectives

Many Christians today accept the Apostle's Creed including the phrase, "I believe in one, holy, catholic and apostolic church." The word "catholic" comes from two Greek words, *katos* meaning "according to" and *holos* meaning "whole". A number of early Christian writers contrasted the true Church as "catholic," in that it accepts the whole of God's revelation, with various heresies which pick and choose what to believe (see, e.g., St. Ignatius of Antioch and St. Irenaeus in FEF, vol. 1). Today Christians generally accept the meaning of "catholic" church in the sense of holistic or universal, that is, Christ's Gospel or Good News is for all human beings and his Church, the People of God, is made up of people of all nations and races. The largest Christian denomination today is called the "Catholic" Church, with a capital "C". This includes not only Roman Catholics but also Catholics of other rites who are under the authority of the Roman Pontiff, the pope.

The Orthodox churches today comprise another major branch of Christianity. The schism in the Eleventh Century separated the Orthodox churches in the East from Rome. The Orthodox churches have much in common with the Catholic Church since they accept the Ecumenical Councils (councils of bishops convened under the authority of the pope) that took place up until the schism as authoritative but not the ones that the Catholic Church held after the schism.

Protestantism began in the Sixteenth Century with reformers such as Martin Luther and John Calvin. They were critical of certain abuses in the Catholic Church. In general they emphasized the authority of the Bible, rejected the authority of the pope and threw out certain traditions which they did not see as having a clear biblical basis. Today one also finds various perspectives within each Christian denomination such as more conservative or traditional versus

more liberal or revisionist approaches. The Gospel of John 17:21 reports Jesus as praying for the unity of his disciples. Related to this, in recent decades many Christians including recent popes and many other church leaders have participated in an Ecumenical Movement which works for the unity of Christians.

## **A Christian Understanding of Divine Revelation**

In this introduction to Christian theology we should also consider briefly a Christian understanding of God's revelation, interpreting the Bible, and the relationship of the Bible to Tradition and the Magisterium of the Church. The treatment of these here is not meant to be comprehensive but introductory, to explain some essential points succinctly.

Since Christian theology seeks to understand better what Christian faith affirms with regard to God and everything in relation to God including human persons, we should consider here a few presuppositions of the Christian world view. Christians, who follow Jesus, believe in a personal God who has chosen to reveal certain things to us human beings. To understand this, consider a commonly used analogy of human persons. How do we get to know what another person thinks and feels; what they are like as a person? We cannot discover these things by putting the person under a microscope or by other empirical scientific methods. Rather, we get to know a person including their thoughts, feelings and character from what their words and actions reveal. From human experience we know that some human persons sometimes lie or practice deception in other ways. We know that we cannot believe what everyone says. The person's actions can undermine or confirm what they say. For example, if our friend says they care for us and their actions including their thoughtful, kind and helpful ways confirm this, we generally will conclude that they are trustworthy and that it is reasonable to believe what they



say. Today there are many claims of God's revelation to human beings. Convinced Christians believe they can put their faith in Christian revelation, in part because God's actions confirm the words. Jesus' identifying himself as being God was confirmed by many extraordinary miracles and his own bodily resurrection following his bodily death. Christians also regularly experience God's love and grace or help in their lives (see Chapter 9 below) which confirm other biblical messages.

I once served on a jury for a case in which a seven-year old girl and her nine-year old sister testified that a twenty-year-old man had sexually abused the younger girl. The girl's hymen was consistent with her description of the assault but its condition could also be attributed to other things. The medical examination was too long after the fact to detect semen, etc. From an empirical scientific perspective, it was not possible to prove that the girls were telling the truth. And yet, a twelve-person jury of different backgrounds concluded that the man was guilty beyond a reasonable doubt, implying that they believed that the girls' account or "revelation" of the sexual abuse was true, that it had really happened. So, from human experience we can see the limits of empirical scientific knowledge and the important role of personal revelation and faith.

According to the traditional Christian view, although God revealed certain things to the human race before Jesus, for example, through the Old Testament Jewish prophets, God most completely revealed himself to us through Jesus, who is God incarnate (see, e.g., Jn 1:14 and Heb 1:1-2). Jesus, including his life and message, are normative when comparing any other claims of God's revelation. Christian faith that God most fully revealed himself to the human race in Jesus does not mean that non-Christians cannot know anything about God or how we should live. For example, although the Apostle Paul was aware that some people act in ungodly

ways and suppress the truth, he also says: “Ever since the creation of the world his [God’s] eternal power and divine nature, invisible though they are, have been understood and seen through the things he has made. So they are without excuse.”(Rom 1:18-20 NRSV) In his view, God’s moral law was not only revealed through Moses and other prophets of God, but is also written on human hearts. Thus, it is possible for humans to discover and do the right thing, what the moral law requires, even if they have not heard of God’s revelation of his moral law through the Jewish and Christian scriptures (see Rom 2:12-16).

As a Christian, who like the Apostle Paul believes in the Gospel, the Good News of salvation in Jesus Christ (see Rom 1:16), I also have had experiences which confirm what the Apostle Paul says about non-Christians. I have met some who having been moved by the beauty of nature including the awesomeness of the human brain, and so forth, believe in God. I know some non-Christians who are basically decent and morally good human beings. Although human beings can know something about the mystery of God and morality without divine revelation, there is a real advantage to hearing God’s revelation and accepting it in faith. Consider, for example, the pre-Christian great Greek philosophers Plato and Aristotle. They came to understand certain things about God and morality, but they also made some mistakes and neither of them, at least in their writings, came to appreciate God as personal and a mystery of infinite love. God’s revelation can help both very educated and less educated people to know essential truths about God and morality with more certainty and less error than left to their own devices. God’s revelation does not contradict but illumines human experience and reason.

Those who come to accept the traditional Christian faith understand Jesus, his life and teaching, as normative for persons of all nations and human cultures (see Mt 28:16-20). With regard to Jesus’ call to share his teaching with people of all nations, many Christians today

realize that some serious mistakes have been made, for example, with our North American indigenous peoples. Some sought not only to share with them the Good News of God's love and salvation but also to "convert" them to European culture. Today many Christian leaders speak of "inculturation." This view sees all human cultures as a mix of good and evil. While the good should be appreciated including insights about God and morality that are already present in a culture, every human culture can benefit from being transformed to conform more fully to the Good News of God's love and truth revealed in Jesus Christ.

The question of how to share this Good News with others is also important. Mt 11:25-26 reports Jesus saying that God reveals himself not to the "learned and clever" but to "little children."(NJB) It seems that the point here is not to shun education since some believing Christians such as Thomas Aquinas, John Calvin and Hans Urs von Balthasar were very learned. Rather, if one considers oneself learned and clever it is difficult for anyone including God to teach the person new things. On the other hand, it is easy for God and others to teach the person who, in spite of how much they know, humbly realizes how little they really know and is open to learning more like little children typically are. 1 John 4:7-8 reads: "...everyone who loves is born of God and knows God. Whoever does not love does not know God, for God is love."(NRSV) Although those who do not love may understand some things about God intellectually, they will not know the real personal God who is love in a deeply experienced personal way.

## **Biblical Interpretation**

For Christians including Christian theologians the question of interpreting the Bible is very important. Not everyone views the Christian Bible in the same way today. For example, an

educated atheist would view the Bible as a collection of some ancient Jewish and early Christian human literature. Believing Christians generally understand the Bible to be the Word of God in some real sense. Among these some try to interpret all or most of the Bible literally, whereas others interpret all or most of it more symbolically.

Catholic teaching holds that the Bible was written by human beings who both: 1) wrote as true human authors; and 2) were inspired by God.(see Lk 1:1-4; 2 Tm 3:16; and *Dei Verbum*, nn. 11-13, in Vatican II) Many non-Catholic Christians agree with this. With regard to 1), a correct interpretation of what the human authors of the Bible understood and meant to say is facilitated by a careful study of the texts in their original languages, Hebrew and Greek, taking into account their historical and cultural contexts. Those who do not know Hebrew and Greek especially can learn much from biblical commentaries, dictionaries, etc., which have been prepared by good biblical scholars for wider audiences. Today it is widely agreed that the various parts of the Bible were written over about 1300 years, from about 1200 B.C. to 100 A.D. It also seems that at least some of the biblical authors used some materials from earlier oral traditions and/or written sources.

To understand an author correctly it is important to appreciate what type of literary form they have used. Consider, for example, different genres used today such as scientific writing, historical writing, fiction, poetry, news and sports reports, etc. Biblical scholars generally speak of a variety of literary forms within the Bible including prehistory, theological history, parable / story, poetry, and so forth. In the light of the complex reality of the Bible, it is therefore important to avoid making sweeping generalizations such as that the whole Bible is fiction or allegory or literal history. Good interpretation also appreciates any literary conventions an author may have used such as idioms of the time. For example, when Jesus is reported as saying

that no one can be his disciple unless one hates one's father, mother, wife, children, etc. (see Lk 14:26), biblical scholars generally understand this as a type of Jewish idiom of the time. Since Jesus also called us to love everyone, Jesus is not really asking us to hate anyone but to love God more than even our family members (see, e.g., Benedict Viviano, NJBC, 42:71). Appreciating literary forms and conventions, etc., is not about watering down what an author said but is helpful to understand what the author actually understood and meant to say. Whether interpreting an author or a speaker, it is also helpful to keep in mind principles of good communication such as not projecting onto someone else what one wants them to say but listening to try to understand what they have actually said and meant to say.

Interpreting the various books and passages of the Bible correctly is also facilitated by other relevant information such as related non-biblical texts of the time (e.g., the Qumran Scrolls), related archaeological findings (e.g., regarding Ebla), and so forth. With regard to all of this it is good to appreciate the important work of biblical scholars. At the same time it is important to keep in mind that biblical exegesis and hermeneutics are human sciences. Some conclusions are more widely agreed upon or certain whereas others are more disputed or tentative. Like other human beings, biblical scholars also have certain presuppositions and agendas which will influence their work and writing. For example, a biblical scholar who presupposes that there is no God is likely to interpret a text that describes a resurrection appearance of Jesus quite differently than another biblical scholar who believes in God and believes that at times God performs miracles (see Polkinghorne 1998, pp. 92-3).

With regard to 2) above, the biblical authors being inspired by God, and trying to understand what God intended to communicate through these human authors, it is important to consider each biblical passage in the context of the whole Bible. This relates to the belief that

God is omniscient and would never contradict himself. It is also important to keep in mind God's progressive revelation which reflects a wise divine pedagogy. Just as no human teacher can teach everything at once, so too, God revealed certain things about himself, who we are, and his plan for our salvation, in stages. With regard to this, Christians see some things in the Old Testament as incomplete or partial. These were completed and brought to fulfillment in Jesus (see, e.g., Mt 5:17-48). Since the biblical authors were inspired by God through the Holy Spirit, according to Christian faith it is important to approach the Bible prayerfully. We should be open to the same Holy Spirit, asking and allowing God to help us to understand and appreciate better what he wants to communicate to us through the biblical texts (see *Dei Verbum*, n. 25, in Vatican II).

### **Tradition, Catholic Teaching, Ecumenism and Theological Method**

The Second Vatican Council of the Catholic Church teaches that Scripture (the Bible) is to be understood together with Tradition and the Magisterium of the Church. What does this mean? The word "tradition" means "what is passed on." Mt 15:3-6 reports Jesus as warning against using certain human traditions to nullify God's Word. With regard to "the proclamation of the good news," however, the New Testament author of 2 Thessalonians calls Christians to "stand firm and hold fast to the traditions that you were taught by us, either by word of mouth or by our letter" (2:14-15 NRSV). Theologian Yves Congar distinguishes between human traditions and divine Tradition. With regard to human traditions consider, for example, theological traditions related to Chrysostom, Augustine of Hippo, Aquinas, Luther and Calvin. Divine Tradition means the whole of the Gospel, the Good News of Jesus Christ that is passed on. John 16:12 reports Jesus as saying to the disciples during his last supper with them: "I still

have many things to say to you, but you cannot bear them now. When the Spirit of truth comes, he will guide you into all the truth.”(NRSV) The Holy Spirit has enlightened not only the original disciples of Jesus but also others who have been open to him throughout the history of the Church. In line with this and related to Tradition, the Catholic Church affirms that “with the help of the Holy Spirit” there is “a growth in insight into the realities and words that are being passed on” (*Dei Verbum*, n. 8, in Vatican II). For example, there has been a growth or development in understanding and articulation of not only who God and Jesus are but also of what it means to be a human being / person created in the image of God. Since the Holy Spirit is God’s Spirit, he never contradicts what God has revealed but rather helps us to understand divine revelation better.

If we consider various human Christian traditions today we will see that while there is generally much in common, there are also some views that contradict each other. This can lead to confusion among Christians as to what God has actually revealed on some matters. With regard to this Catholic faith affirms that God has provided a way for Christians to know with certainty essential matters of faith and morality. This concerns the role of the Church’s Magisterium, the living teaching office of the pope and bishops united to him, who are the legitimate successors of Peter and the other apostles whom Jesus chose. Jesus commissioned the Apostles to teach in his name, that is, to hand on his teaching faithfully. He promised to be with them until the end of time (see Mt 28:16-20). Since the original Apostles died, the Catholic Church and some others understand this promise to be fulfilled in their successors. Among other things, the early Christians were faithful to the teaching of the Apostles (see Ac 2:42; compare, e.g., also Mt 16:15-19; Mt 23:2; and Heb 13:7-9 and 17-18). According to a Catholic perspective, Christians today are called to be faithful to the teaching of the pope and bishops

united to him on matters of faith and morals, when they are teaching as successors of Peter and the Apostles in the name of Jesus.

The pope and bishops are understood to be aided in carrying out their responsibilities by the Holy Spirit, who gives them a “charism” of truth. They are not above the Word of God, which they like others receive from Scripture and Tradition. Their role and responsibility is to teach it faithfully. With the “charism” of truth they can give an authoritative interpretation of the Word of God with regard to matters of Christian faith and morals. They do not have any special competence with regard to questions of empirical science including neuroscience. Nor do they have a monopoly of truth. Their own judgment can mature by listening to the insights of others who are open to the Holy Spirit (see, e.g., *Lumen Gentium*, Ch. 3; and *Dei Verbum*, n. 10; in Vatican II).

Today there are many divisions among Christians including Christian theologians. These divisions are contrary to the will of Jesus who prayed for the unity of his disciples (cf. Jn 17:21). In recent decades there has been a movement of Ecumenism which seeks to contribute to the fulfillment of Jesus’ prayer. Ways of working toward a fuller unity include making Jesus’ prayer for unity our own, and by engaging in honest dialogue in the spirit of Jesus’ commandment to love one another as he loves us (see Jn 15:12-13). In this way we will welcome Jesus to be spiritually present in our midst (see Mt 18:20) as “Truth” (see Jn 14:6) and the light of the world (see Jn 1:1-14), as the one who can help us to grow, individually and together, also in our theological understanding.



With regard to the question of method in theology, just as a good scientific theory does not dismiss any relevant empirical data, a good Christian theological theory does not dismiss any relevant data from the Bible and human experience including moral and spiritual experience. A Catholic theologian would also consider relevant data from various human Christian traditions trying to discern what is true, inspired by the Holy Spirit and part of divine Tradition. Moreover, a Catholic theological perspective considers relevant Catholic teaching. Although the various human disciplines have their respective methods, there is a unity of truth according to Catholic teaching and many others (see, e.g., John Paul II 1998; and Polkinghorne 1999). Catholic and many other theologians seek to integrate the various fields of human knowledge with what they believe God has revealed to us. Developments in the various sciences including neuroscience and Christians being exposed to other philosophies and cultures (including other religious cultures) often raise new questions for Christians and theologians. Developments in theology often result from honest attempts to reconcile one's faith with these new questions, not to ignore them but to face them and address them as well as one can.

## **The Interaction of Science and Religion**

Some ways to view the interaction of science and religion are: conflict, independence, consonance and critical realism (see Polkinghorne 1999, Ch. 1). In the conflict view either science (e.g., neuroscience) or religion (e.g., Christianity and Christian theology) tell us the truth of who we are. The other is considered wrong. Some consider science as the only meaningful way to understand human nature; whereas others see religion as the only way to understand human nature. I consider this to be an oversimplification of both fields.

With the independence view science (e.g., neuroscience) tells us how we are physically constructed and function; religion (e.g., Christianity and Christian theology) tells us why we

exist, our purpose and meaning. Gould describes science and religion as “nonoverlapping magisteria” (1997). But, in actuality science including neuroscience affects religious including a Christian theological understanding, and religion including Christian theology affects scientific including neuroscientific interpretation. For example, developments in neuroscience and related sciences have resulted in more appreciation in theology that we are embodied persons. Various types of religious experiences have also become the focus of scientific including neuroscientific research with a variety of hypotheses and interpretations (see much of the material in this book including chapters 8-10).

According to a consonance view science and religion can enrich and illuminate one another. This is my view which will be exemplified in this book which considers the person from the perspectives of both neuroscience and Christian theology. Both involve assumptions, interpretations, community, and creativity. Both are “partners in the great human quest to understand reality” (Polkinghorne 1998, 20). The challenge is how to bring them together since they use different languages, concepts, and methods. I support an approach to consonance called critical realism—this view is supported by many Christians who are scientists including Dr. Heather Looy (who helped me develop the course on which this book is based), Dr. Denis Lamoureux (a colleague of mine and expert on Science and Religion), and John Polkinghorne. While we human beings can have some genuine knowledge of reality not everything is simply as it appears to us. In this view both neuroscience and Christian theology provide truths about reality including the reality of human persons. This contrasts with a purely relativistic view. Both science and religion are communal and interpretative, and if we are humble we will appreciate that at least some of their conclusions are tentative and subject to change.

The following figure is related to Galileo's idea of two books: the book of Scripture involves God's special revelation to us whereas the book of nature involves God's general revelation to us. It illustrates the mutual illumination of science and theology. Both science and religion involve interpretation.

