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Abraham Kuyper's view of the natural sciences

ABSTRACT

This paper examines Kuyper's view of the natural sciences. For Kuyper science is by design a unique creature of God, it flourishes within society, it grows and develops. It is part of creation, so even if there were to have been no fall, we would still have science. The fall, however, has impacted on science to an unimaginable extent. Science is independent of both church and state, thus science must be allowed to flourish unhampered by both. Science, for Kuyper, involves thinking God's thoughts after him. There are two kinds of science and two kinds of people: normalists and abnormalists – what makes the difference is regeneration or palingenesis – this is Kuyper's antithesis. Common grace is important for science without it the post-fall decline of science would be absolute. Strands of scholasticism are identified in Kuyper's approach.
Keywords Kuyper, natural science, sciences, antithesis, common grace

1. Introduction

The polymath Abraham Kuyper (1837-1920) was a statesman, a theologian, a church reformer, a journalist and more, but he was not a scientist, at least as we understand the term scientist today. He did, however, write about science. This is not surprising as science is an important part of culture and when Kuyper wrote science was beginning to become an all-embracing worldview, particularly in the form of evolutionism. Darwin's *On the Origin of Species* (1859) has not long been published and Ernst Haeckel (1834-1919) and Herbert Spencer (1820–1903) among others were applying Darwin's ideas to society, a position that became known as Social Darwinism. I will explore in more detail Kuyper's approach to evolution in a subsequent paper; here I will focus on his approach to the natural sciences in general.

Kuyper was well read in science and scientific theories and seemed to keep up with many of the scientific developments as well as the history of science. He was, for instance, aware of the conflicts within science regarding homeopaths and allopaths, Darwinists and anti-Darwinists among others (*LoC*, 131).

There are three major sources for Kuyper's approach to the natural sciences. One of his Stone Lectures, *Lectures on Calvinism* (Kuyper, 1931- henceforth *LoC*), was on science; several chapters in his *Common Grace* volume 3 dealt with it (Kuyper, 2020 – henceforth *CG3*);[1] and in his *Principles of Sacred Theology* (henceforth *PST*), he develops his view of theology as a science and in doing so discusses in some detail in the section on "The organism of science".

1 This has been published separately as *Wisdom & Wonder* (henceforth *W&W*) (Kuyper, 2011).

Several scholars have reviewed and evaluated Kuyper's view of science these include van Woudenberg, 1999; Dooyeweerd, 2013; Ratzsch, 2013; Klapwijk, 2013a; Anderson 2003; Grönum and van Rensburg, 2014. Ratzsch (2013, 323) is correct that Kuyper nowhere gives "a formal, detailed philosophy of science" although there are "there are bits and hints in many different places".[2] There is also an added complication as Klapwijk observes: "Kuyper's concepts are far from always consistent, even with respect to science, theology, and the university" (Klapwijk, 2013, 223).

The term science has taken a specific meaning particularly in Britain and North America.[3] In many European countries it has a broader scope and included not only the physical and natural sciences but also the human sciences, such as sociology, law, linguistics, philosophy and so on. It is in this way that Kuyper understands science. In his discussion regarding science the term science could often be replaced by the term scholarship – the term is that broad. Though many of the examples he uses are from the natural sciences.

Kuyper did not hold to the view that science was objective, unified and a cumulative enterprise - unlike his contemporary B.B. Warfield. Kuyper was neither captivated nor enchanted by Enlightenment science (Heslam, 1999:11).

Kuyper sees science as a God-given cultural activity which is to be done in dependence on God and his Holy Spirit. It is not an autonomous activity, it is not a body of knowledge independent of God (cf Bishop, 1993).

Observation is the basis of science – what we measure, weigh and count, according to Kuyper, provide a kind of certainty. But, although science is based on observation, observation is not science. Observing microbes under a microscope is no more an act of science as observing a cow in a pasture (*PST*, 134). In a telling passage Kuyper rejects a full-blown empiricism:

> All human intercourse is founded on this fact, as is also all observation, and consequently all scientific knowledge, which is built up on observation; and this fact falls away at once if faith does not work in you to make your ego believe in your senses.
>
> This is so true, that the most exact science properly begins its scientific task in the higher sense only when observation is finished. To observe bacteria or microbes is by itself as little an act of science as the perception of horses and cows pasturing in the meadow. The only difference between the two is, that horses and cows in the meadow are perceptible with the naked eye, and bacteria and microbes can be observed only with the reinforced eye. (*PST*, 134)

Thus, for Kuyper, science begins when observation has finished (*PST*, 134). In brief Kuyper's approach could be summarised accordingly: science is by design a unique creature of God, it flourishes with society, it grows and develops. It is part of creation, so even if there was no fall, we would still have science. The fall, however, has affected science. Science should be independent of both church and state, science must be allowed to flourish unhampered by both. Science, for Kuyper, involves thinking God's thoughts after him. There is an antithesis at work in science as there are two kinds of science and two kinds of people: *normalists* and *abnormalists* – what makes the difference is a "spiritual rebirth" or *palingenesis*. Common grace is important for science without it the post-fall decline of science would be absolute.

2 Ratzsch gives one of the most comprehensive overviews of Kuyper's philosophy of science in the list mentioned – he however, focuses primarily on PST and Evolution; little discussion is given to Kuyper's *Common Grace.*

3 In *PST* Kuyper notes that "In England … science, in its absolute sense, is more and more the exclusive name for the natural science; while the honorary title of 'scientific' is withheld from psychological investigations" (*PST*, 91)

In what follows I shall expand on this; first by using the framework of creation, fall and redemption.[4]

2. Creation, fall and redemption

Science for Kuyper is a creature of God. It roots are in creation not in the fall. Although the fall did impact both science and human scientific activity. The effects of the fall on science, in part, were mitigated by common grace.

2.1 Creation

Science is by divine design, a unique creature of God.

Science is part of creation. Seen this way, however, science is then also "an invention of God, which he called into being as his creation" (*CG3*, 531). It is Kuyper writes – echoing the synodical report written by Herman Bavinck – a '"unique creature of God"' with its own principle of life' (*CG3*, 523).

If there was no fall we would still have science

Science, unlike the state or the institutional church, belongs to the realm of creation not the realm of redemption (particular grace). As Kuyper puts it: "Without sin there would be no state, and apart from sin there would have been no Christian church, but there would have been science" (*CG3*, 524).

However, as we shall see the fall has had an effect of science (§2.2 below).

Science flourishes within society

Science as a creature of God is to "develop in freedom" (*CG3*, 523). This flourishing Kuyper sees happening in stages: an emergence until adult hood is reached and then a full-grown stage where it becomes self-sufficient. In the first stage the support of the government and the church was needed – now it has become more mature and should be independent of both the church and the state and should no longer be submissive to either; but neither should it seek to dominate them. *Science should now have an independent character*. This is consistent with his view of sphere sovereignty. Science has an independent character and it has "a calling independent of the state and the church" (*CG3*, 524).

The growth and development of science Kuyper attributes to common grace. Despite the fall, science is able to prove fruitful and aid progress. This rather rosy view of science, however, this may in part be coloured by the cultural assumptions of his time.

Science is a communal activity

For science to grow and develop, it needs collaboration – science is not an individual activity.

> Science in this exalted sense originates only through the cooperation of many people. It advances only gradually in the generations that come on the scene, and thus only gradually acquires that stability and that rich content that guarantee it an independent existence, and begins to appear only in this more general form as an influence in life. (*CG3*, 530)

Science is thinking God's thoughts after him.

4 I will also endeavour to let Kuyper speak for himself – hence the copious quotes from his writings.

Everything expresses God in some way and for Kuyper that includes science. This notion rests on three truths:

1. Clarity of God's thoughts existed before creation
2. God has revealed his thoughts in creation
3. God created in humans the capacity to grasp, reflect and arrange these thoughts in a totality expressed in creation

In this way, then, we obtain knowledge when these three truths that fit together. First, the full and rich clarity of God's thoughts existed in God from eternity. Second, in the creation God has revealed, embedded, and embodied a rich fullness of his thoughts. And third, God created in human beings, as his image-bearers, the capacity to understand, to grasp, to reflect, and to arrange within a totality these thoughts expressed in the creation. The essence of human science rests on these three realities. Some aspects of this are problematic in that they betray a scholastic tendency within Kuyper – see below §7.2.

Science is part of unified coherent organic whole

This is in keeping with Kuyper's declaration that "not one part of our world of thought can be hermetically separated for the other parts." It is all God's creation and it all belongs to him. Natural sciences are part of the whole of the sciences – theology included. The role of philosophy, argues Kuyper, is "to construct the human knowledge, which has been brought to light by all the other sciences, into one architectonic whole, to show how the building arises from one basis" (*PST*, 614).

However, then came the fall.

2.2 Fall

The fall results in a change in the whole cosmos, the whole of creation. The creation is no longer what it was created to be. The world is now abnormal. Those who reject the fall see the world as being normal. This distinction between normal and abnormal is an important one for Kuyper – it will be developed subsequently.

Without the fall and sin: "The cosmos would have been before us as an open book". However, that is not now the case. For those who maintain that sin has had no effect on the creation it is "natural … to represent science as an absolute power…". The result is either to limit science to the "exact sciences", or to "interpret it as a philosophic system after whose standards reality must be distorted" (*PST* 91). However, the fall and sin has also changed the nature of the world but also of science:

> Sin is what lures and tempts people to place science outside of a relationship with God, thereby stealing science from God, and ultimately turning science against God. The flower of true science possesses its root in the fear of the Lord, grows forth from the fear of the Lord, and finds in that fear of the Lord its principle, its motive, its starting point. If through sin a person is cut off from this root that proceeds from the fear of the Lord, the inevitable result must be that such a person will present as science something that is a facade without any essence. (*W&W*, 51)

It also affects our understanding:

> The distinction between the true science and the false science lies not in the arena where people perform their investigations, but in the manner with which they investigate, and in the principle from which people begin to investigate. Sin has not only corrupted our moral life, but has also darkened our understanding. (*W&W*, 52)

However, even a broken mirror can assist in seeing things:

> Therefore, we can postulate that the mirror of our consciousness became cracked by sin, and the reflection of the world on that cracked surface would provide us with a knowledge of the world that is not altogether incorrect. (*W&W*,63)

Sin has an effect not only on science but also on the scientist.

> The disorganisation which is the result of sin consists not merely in the break in the natural life-harmony between us and the cosmos but also in a break in the life-harmony in our own selves. (*PST*, 112)

Scientists like us all are subject to self-delusion and self-deception (*PST*, 107), as Kuyper puts it: "Ignorance wrought by sin is the most difficult obstacle in the way of all true science" (*PST*, 114).

Consciously or unconsciously, self-interest affects moral differences. We all see things from a certain perspective, "Everybody preaches for his own parish" (cited in *PST*, 110). Roman Catholics view the Reformation very differently to Protestants. A Dutch historian will view the naval battles with the English very differently from an English historian. This "darkening of our understanding" caused by sin (*PST*, 110), however: "Does not mean that we have lost the capacity of thinking logically, for as far as the impulse of its law of life is concerned, the logica has *not* been impaired by sin" (*PST*, 110).

The higher and lowers sciences – an increasing subjectivity

Kuyper recognised some differences between what he termed the lower sciences and the higher sciences. For Kuyper the lower sciences were the subjects such as mathematics, physics, chemistry and biology; the higher sciences were psychology, sociology, law and so on. The lower sciences such as mathematics and the physical sciences are less subject to subjectivity. The higher sciences are more so. There is an increasing subjectivity, this is he sees is a consequence of the fall.

2.3 Redemption

Science can also become a tool of common redemption – obviously it is not a means of salvation. (Although some may have seen it that way.) Common grace working with science may redeem some aspects of the fall and sin.

> In the ordination of God's common grace, science is also one of the most powerful means for combating sin together with the error and misery flowing from sin. Science practiced in the Lord's name functions as an antidote to the poison of sin, but not as if science would ever possess the power to effect the transition of any person's soul from death unto life. The instrument that God has ordained for that kind of transition is faith, and this saving faith can arise only from the re-creation of a person's soul, namely, from regeneration, which God himself imparts within the secrecy of the soul without us and without any instrument. For that reason, science does not belong to particular grace, nor can it belong there, but occupies its own place in that glorious work of common grace that restrains sin, error, and misery in their manifestations. (*CG3*, 520)

Some areas in which science may provide a common redemption include, according to Kuyper, the treatment of diseases, the fostering of social order, an improvement in the standard of living, and managing natural forces such as hurricanes, earthquakes and volcanic activity.

Regeneration – being born again – is essential for scientists. It enables a believer to see things differently from the nonbeliever. Being able to see in full colour we see the world differently to someone who is colour blind, or can only see in black and white. This is the basis for Kuyper's two kinds of people, two kinds of science distinction.

3. Two kinds of people/ two kinds of science

In *PST* chapter III, the "Twofold development of science" in §48 entitled "Two kinds of people", and §48 "Two kinds of science". Kuyper boldly states: "'regeneration' breaks humanity in two" (*PST*, 152). In essence what Kuyper is describing is that regeneration makes a difference to the way we see the world and the way in which science is performed:

> What we mean is, that both parts of humanity, that which has been wrought upon by palingenesis and that which lacks it, feel the impulse to investigate the object, and, by doing this in a scientific way, to obtain a scientific systemization of that which exists. (*PST*, 155)

There is an antithesis between these two kinds of people, between those who have experienced regeneration and those who have not, ie the "spiritual" person and the "natural" person.

> To the extent that results are governed by factual observation, obtained by weighing and measuring and counting, all scientific researchers are equal. As soon as people move above this lower kind of science, however, to higher forms of science, at that point the personal subject makes a contribution, in terms of which the difference between the "natural" man and the "spiritual" man comes into play. This phenomenon is definitely not restricted to the science of theology, but is present in every spiritual science, including the philosophical framework for the natural sciences. (*W&W*, 79)

> It is clear that with its antithesis between a "natural" man and a "spiritual" man, Scripture is not merely referring to a person who does and another who does not take Holy Scripture into account. Its pronouncement goes much deeper by positing the distinction between having and not having received the Spirit of God. (*W&W*, 80)

In *LoC* he distinguishes between abnormalists and normalists. Again, this difference arises from the regeneration of the scientist. This is the activity of the inward work of the Holy Spirit through particular grace. Such regeneration means that the light of special revelation can now be seen in and through common grace. And yet he sees no split between Christian and non-Christian science at the lower levels (there is only one logic), yet this split becomes apparent at the higher levels. But then he sees the antithesis working at all levels.

If regeneration, palingenesis, made no difference then this "leads to the rejection of the Christian religion" (*PST*, 154). Regeneration by the Holy Spirit, means that the Christian sees things from a different perspective and are "impelled by different impulses" (*PST*, 154). This inevitably affects the sciences. As Kuyper puts it:

> But we emphatically assert that these two kinds of people devote their time and their strength to the erection of two different structures, each of which purposes to be a complete building of science. If, however, one of these two is asked, whether the building, on which he labors, will truly provide us what we need in the scientific realm, he will of course claim for himself the high and noble name of science, and withhold it from the other. (*PST*, 156)

4. Common grace

Without common grace the decline of science post-fall would be absolute. Common grace provides an explanation for scientific and cultural developments by non-Christians. It also provides a rationale for the involvement of Christians in so-called "secular realms". How else can we explain the works of Socrates, Plato and Aristotle? What it does not do is provide a basis for the Christianisation of culture and society – despite what Engelsma (2016) maintains.

It also counteracts the repercussions of the fall.

> Apart from common grace, the decline of science would have become absolute without that illumination by the Holy Spirit. Left to itself, sin progresses from bad to worse. Sin makes you slide down a slope on which no one can remain standing. Anyone who ignores common grace can come to no other conclusion than that all science done outside the arena of the holy lives off appearance and delusion, and necessarily results in misleading anyone listening to its voice. Yet the outcome shows that this is not the case. (*W&W*, 52)

> We can explain this only by saying that although sin does indeed spread its corruption, nevertheless common grace has intervened in order to temper and restrain this operation of sin. (*W&W*, 53)

> Has sin resulted in our inability any longer to think logically? Has sin induced in us an inability to perceive what exists and occurs around us? Does sin place a blindfold over our eyes so that we no longer see or observe? Absolutely not. (*W&W*, 54)

Sin moves the focus on the microscope, common grace re-adjusts it.

> If I focus the microscope for a student and he changes the lens or the adjustment so that he sees nothing, the blame for not being able to see is his, not mine. This is exactly what we did when we fell into sin. Having no right to complain, we should rather be grateful that it pleased God to help us in this helpless situation by readjusting the microscope through common grace so that we can at least see something, even if not with the former clarity. (*W&W*, 74)

5. The limitations of science

Kuyper was well aware of the limits of science. It is unable, for example to prove or disprove the existence of God: "Every effort to prove the existence of God by so-called evidences must fail and has failed" (*PST*, 112).

All scientists search for truth – "to champion the truth" (*PST*, 17). Despite the differences and conflict between scientists – each would claim the other is wrong. Science, Kuyper claims, is unable to "settle this dispute". He goes further:

> To believe that an absolute science in the above-given sense can ever decide the question between truth and falsehood is nothing but a criminal self-deception. (*PST*, 118)

To the extent that science clings to the visible and the observable, it cannot even entertain the question of the origin, coherence, and destiny of things (*W&W*, 71).

As well as in his work on common grace, and the *Principles of Sacred Theology*, Kuyper devotes the fourth of his 1889 Stone Lectures on Calvinism and science (For a discussion on all of Kuyper's Stone Lectures see Heslam (1998)).

6. Lectures On Calvinism

In his lectures he makes four key points. Each point is an apologetic for the role of Calvinism in science (*LoC,*110).

1. Calvinism fostered a love for science
2. It restored science to its proper domain
3. It delivered science from unnatural bonds
4. A solution for the unavoidable scientific conflict.

Within Calvinism, Kuyper writes, there is "an impulse, an inclination, an incentive, to scientific investigation" (*LoC*, 110). Calvinism has fostered science. He looks to history to back this up. He focuses on the events that led up to the establishment of the University of Leiden, a university of the sciences – a place where science flourished. It was the Dutch that invented the telescope, the microscope and the thermometer. Instruments that were crucial for empirical science. Although, he denies that "mere empiricism in itself is the perfect science". (*LoC*, 112)

Predestination also provides a strong motive for science. This recognises that the cosmos is a creation rather than an accident; it is a "building erected in a severely consistent style" (*LoC*, 114).

If it were not:

> There is no interconnection, no development, no continuity: a chronicle but no history. (*LoC* 114)

And there could be no science.

In Calvinism we find "one Supreme will in God, the cause of all existing things, subjecting them to fixed ordinances and directing them towards a pre-established plan" (*LoC*, 115)

Without this there could be no science: "God's decrees are the foundations of the natural laws" (*LoC*, 115)

Faith in unity, stability and order is foundational to science:

> Without a deep conviction of this unity, this stability and this order, science is unable to go beyond mere conjectures, and only when there is faith in the organic interconnection of the Universe, will there be also a possibility for science to ascend from the empirical investigation of the special phenomena to the general, and from the general to the law which rules over it, and from that law to the principle, which is dominant over all. (*LoC*, 115-116)

His second point was that "Calvinism restored to science its domain". What does he mean by this?

It was common grace that "threw open to science the vast filed of the cosmos …". He notes that Christianity is soteriological – in that it is concerned with personal salvation. However, that is not the whole story. Sadly, the "*cosmological* significance was lost or of sight". The result was a neglection of "the world of God's creation" (*LoC*, 118). It resulted in a dualism of heaven/ earth of soul/ body and so forth. This dualism Kuyper argues "is by no means countenanced by the Holy Scriptures" (*LoC*, 118). It is this dualism that was undermined by Calvinism. Science could be a legitimate area for Christian ministry.

> In keeping with this, the final outcome of the future, foreshadowed in the H. Scriptures, is not the merely spiritual existence of saved souls, but the restoration

> of the entire cosmos, when God will be all in all under the renewed heaven on the renewed earth. (*LoC*, 119)

The contempt for and of the world is rejected by Calvinism," the temporal and cosmically things" are no longer undervalued:

> Cosmically life has regained its worth not at the expense of things eternal, but by virtue of its capacity as God's handiwork and as a revelation of God's attributes. (*LoC*, 120)

Having established the role of Calvinism in restoring the position of science he goes on to discuss the role of common grace.

Given the totality of sin how do the unregenerate excel in many things? The answer for Kuyper is common grace. Common grace has "arrested sin in its course in order to prevent the total annihilation of [God's] handiwork". (*LoC*, 123) Common grace does not "kill the core of sin, nor does it save unto eternal life, but it arrests the complete effectuation of sin…" (*LoC*, 123-124).

Thus Calvinism makes permissible the scientific enterprise and does not limit Christians to theology. Common grace is the means whereby the unregenerate can make scientific developments. Common grace removes the "interdict, under which secular life has been bound …"

Thus the domain of science is a legitimate domain for Christians to engage in.

Thirdly, Kuyper shows that Calvinism has advanced the "indispensable liberty" of science. Liberty, of course, does not mean there are no restrictions. As Kuyper states "a fish lying on dry land is perfectly free, *viz*. to die and perish…" (*LoC*, 126).

For many years there were only two dominant powers: the church and the state. The Calvinistic Reformation, Kuyper maintained, freed the universities from church control and thus gave science a freedom it didn't previously have.

His final point was that Calvinism was able to find the solution to the so-called conflict between science and faith.

Kuyper maintained that "every science in a certain degree starts from faith". What did he mean by this?

In *LoC* he notes the conflicts between scientists and scientific theories, be it between Darwinists and anti-Darwinists, between formalists and realists, between van Humbolt, Jacob Grimm and Max Muller in linguistics. The main conflict he sees as being between "those who hold to a confession of the Triune God and His Word, and those who seek the solution of the world-problem in Deism, Pantheism and Naturalism" (*LoC*, 131). The conflict is thus not between faith and science, as Kuyper puts it: "Such a conflict does not exist". Rather faith is integral to science:

> Every science in a certain degree starts *from faith,* and, on the contrary, faith, which does not lead to science, is mistaken faith or superstition, but real, genuine faith it is not. (*LoC* 131)

He goes on to list several areas where faith is evident in the scientific enterprise. These include:

- Faith in self-consciousness
- In the accurate working of our senses
- In the correctness of the laws of thought
- In something hidden behind the special phenomena
- In the principles from which we proceed.

These, he notes, "are indispensable axioms, needed in a productive scientific investigation, do not come to us by proof, but are established in our judgment by our inner conception and given with our self-consciousness". (*LoC*, 131)

The conflict is not then between faith and science, "but between the assertion that the cosmos, as it exists today, is either in a *normal* or *abnormal* condition." (*LoC* 132)

This distinction – and Kuyper is keen on making distinctions – is an important one. It is rooted in the notion of the antithesis and in what he terms palingenesis.

The difference is between those who have been regenerated by the Holy Spirit and those who are not. For Kuyper, regeneration makes a difference. This is why there are two kinds of people. We all start from a faith position – the Christian faith makes a difference to how the world is seen. The world as it is not normal but abnormal, it has been affected by the fall. The way things are is not normal, it has not always been this way. The Christian faith will affect how see reality, how we interpret data, even if it may not make a change in the way we measure or weigh things.

All scientists may make the same observations, the same reading on a scale or thermometer, and because of common grace may come to the same conclusions. But science starts not from observations but from faith (*LoC*, 131).

7. Evaluation

7.1 Strengths of Kuyper's position

There are many strengths in Kuyper's position. He provides a basis for Christian involvement in the sciences. He ably shows how Calvinism enabled the flourishing of science and that it was not inimical to it. He, thus, shows that science and the engagement of science could be a Christian ministry.

He took seriously the sovereignty of God over the sciences, the effect of sin on the creation, he affirmed the creator/ creation distinction, he saw the need for a distinctively Christian approach to the sciences not least because our starting points affect our view of things.

He identified the role of faith in science – unfortunately, this is not fully developed – and identifies the supposed conflict between science and faith as being fallacious as every science presupposes faith. The conflict between science and faith Klapwijk describes as a pseudo-conflict (Klapwijk, 2013: 223ff). The conflict model has dominated the relationship between science and religion for decades. It is one of many models proposed for the way science and religion may relate (see, for exaple, Bishop 2000). Kuyper saw the error of the conflict view of science and religion – he realised and advocated the view that both science and religion rested on faith and were derived from worldviews.

As such Kuyper's views predate the insights of Michael Polanyi who also came to see the role of the personal and faith within science. Herman Dooyeweerd also took seriously the role of faith commitments within the scientific enterprise. It was then Dooyeweerd following in Kuyper's line, who developed Kuyper's insights into a Christian philosophy.

Kuyper also saw the limits of science – it was an important but not all-important role in unlocking knowledge and wisdom. He rejected strict empiricism and saw that faith, not observation was the starting point for science.

As well as a rejection of strict empiricism Kuyper also rejected Kantian idealism. Knowledge was more than rational thought. The revelation of God and his creation is also important – this in part justifies the two kinds of people and two kinds of science he advocated. The Christian faith does make a difference.

Common grace provided a biblical framework in which to appreciate and appropriate the developments of science made by non-Christians. It also provided a basis for Christian involvement in the sciences. The antithesis, however, revealed that Christians and non-Christians have different starting points and thus the need for a distinctly Christian approach to science.

7.2 Weaknesses of Kuyper's position

Common grace and the antithesis provided a basis in which to provide an understanding of Christian and non-Christian approaches to science. Common grace without the antithesis would diminish the effect of *palingenesis*. The antithesis without common grace could result in Christian isolation or separatism. Both common grace and the antithesis are essential to a Christian approach to the natural sciences. However, the relationship between the two was left ambiguous and undeveloped in Kuyper (see, for example, Zuidema 2013; McConnel 2013).

There are some areas in which Kuyper was unable to escape dualistic and scholastic traits. I will focus on two below.

Thinking God's thoughts

Dooyeweerd identified two streams within Kuyper's thought – a Reformational and a scholastic stream (Dooyeweerd, 2013). We see Kuyper's scholastic strand in his notion of "thinking God's thoughts after him". For Kuyper "divine thinking is embedded in all of creation" (*CG3*, 527), he develops this point:

> God's thoughts constitute the core of the essence of things, and it was the divine intention to prescribe for created things their manner of existence, their form, their principle of life, their destiny, and their progress. (*CG3*, 527)

This reflects a logos doctrine and has neo-platonic overtones (see for example, the discussion in Klapwijk, 2013a; Dooyewerd, 2013,[5] Anderson, 2003).

Kuyper poses an important question:

> The only question is whether we human beings are gifted with a capacity to reflect that thinking of God. (*CG3*, 527)

And there lies the rub. Kuper thinks that humans as a microcosm of the cosmos can – I would maintain, that we can only know what God has chosen to reveal. We cannot know God's thoughts only what he accommodates to us (see for example, Clouser, 2005, 219-233) This also reflects a semi-mysticism that is implicit within Kuyper (see, for example, Vander Stelt, 1973; van der Walt, 2015).

> In this way, then, we perceive three truths that are related: first, *the full and rich clarity of God's thoughts existed in God from eternity;* second, in the creation God has revealed, embedded, and embodied a rich fullness of his thoughts; and, third, God created in human beings, as his image-bearers, the capacity to comprehend,

5 Dooyeweerd asserts: "The scholastic line mainly expresses itself in the view of soul and body, the theory of the logos and in the idea-realism, while the modern influence manifests itself in the various subdivisions of Kuyper's philosophy of science which bears the stamp of critical realism" (2013, X).

> reflect upon, and construe as a unity these thoughts expressed in creation. Indeed, the very essence of human science rests on these three realities. (*CG3*, 528)

It is this first point that reflects Kuyper's scholasticism (italics my emphasis). Such a position also fails to take into account the noetic effects of the fall – something that elsewhere Kuyper advocates.

Higher and lower sciences

If Kuyper had developed his view the role of faith in science – he may have concluded that faith and worldviews impact on all of scientific activity rather than having an increasing effect as one moves from the mathematical sciences (lower sciences) to the human sciences (higher sciences). This can be seen from the work of Dooyeweerd – see figure 1 (from Russell, 2020): Mathematical statements such as 2 x 2 = 4 has meaning only within a mathematical framework (such as formalism, logicism, nominalism and so forth) each of these depend on responses to a philosophical view of reality, with the answers to questions such as the origin, coherence and totality of all which are answered in terms of ground motives (Dooyeweerd, NCTT, 1, 47-38).

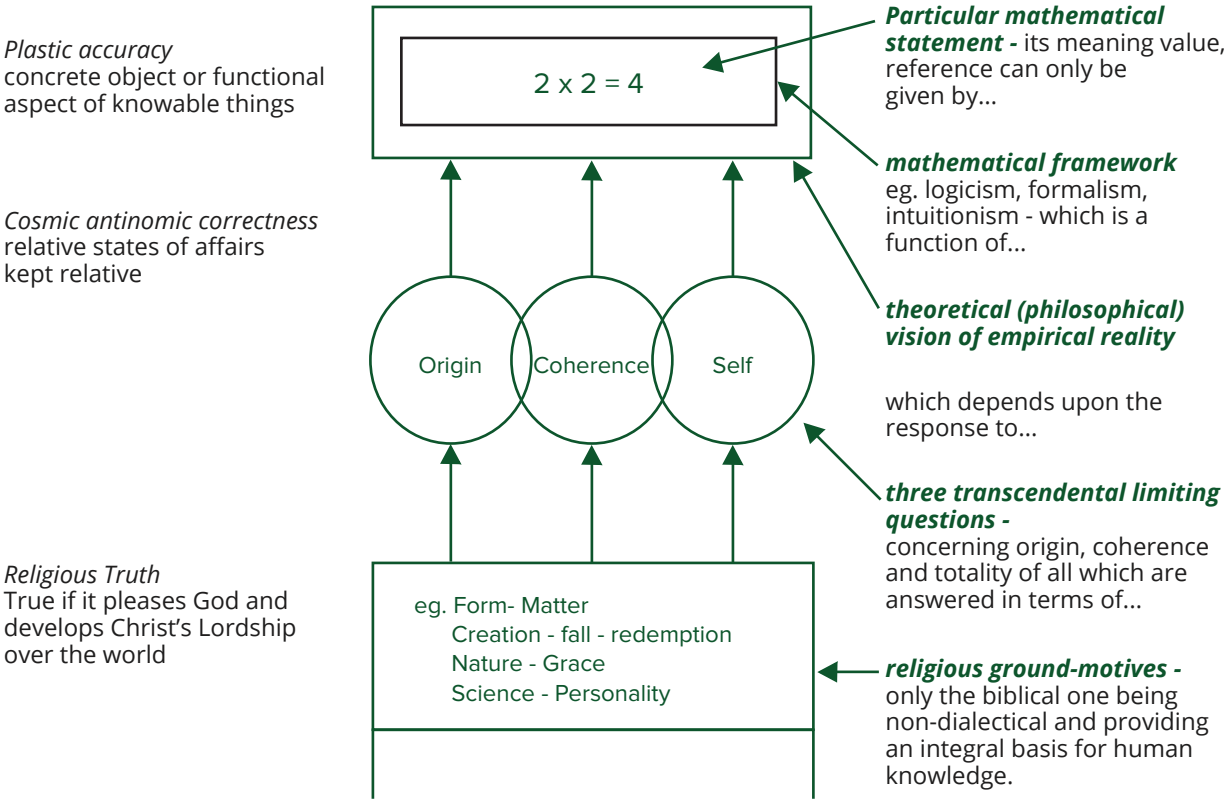

Figure 1. Source Russell (2020, figure 22).

Mathematics as the typical lower science is thus not immune to faith beliefs (Clouser, 2005; see also Bishop, 1996 and 2001-02). The question of what is a number has different responses depending on the worldview or ground-motive of the respondent.

8. Conclusion

Although Kuyper's approach to the natural sciences shows elements of scholasticism, he does provide a solid foundation for a distinctively Christian approach to the natural sciences. One that does justice to sphere sovereignty and to the antithesis and common grace, even though their relationship is left ambiguous by Kuyper. His creational view of science avoids the extremes of idealism and empiricism.

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