CREATION AND DESIGN IN THE THOUGHT OF SIR WILLIAM DAWSON

by

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ABSTRACT

In 1859 Darwin's On the Origin of Species presented a compelling argument for evolution that was to challenge the fundamental beliefs of Christianity. It was incompatible with the idea of a supernatural, designing, and providential God; and it raised doubts about the Bible's inspiration by contradicting the Genesis account of creation. Some Christians reconciled their faith to the theory of evolution, while others rejected it as atheistic. This thesis examines the reaction of Sir William Dawson (1820-1899), the Canadian natural historian and Christian apologist, who rejected evolution as atheistic and spent the latter part of the 19th century campaigning against it.

Dawson was a Paleyite who believed in the designing God and the literal word of Genesis. He found evolution incompatible with this belief and countered it by constructing a scientific theory of creation. This study explores the nature of his Paleyism and how it led him to defend the doctrine of creation as a theory which preserved belief in the designing God and corroborated the Genesis cosmogony. It also places his reaction to evolution in the context of Canadian thought on this issue.
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"Why, do you not say yourself that the sky and the birds prove God?" "No." "Does your religion not say so?" "No. For though it is true in a sense for some souls whom God has enlightened in this way, yet it is untrue for the majority."

Pascal
INTRODUCTION

In 1859 Darwin's *Origin of Species* presented a compelling argument for evolution that was to challenge the fundamental beliefs of Christianity. The naturalism and randomness inherent in the proposed evolutionary process was incompatible with the idea of a supernatural, designing, and providential God. Moreover, the idea of derivation raised doubts about the Bible's inspiration by contradicting the Genesis account of a creation which had culminated in Adam, who had been made in the image of God. Although many Christians reconciled their faith to evolutionary thought, others refused either to surrender their trust in the literal word of Genesis or to accept a seemingly absurd and purposeless universe. From this camp came several apologists who defended orthodoxy against evolution because they saw it as a revolutionary view of life totally at odds with Christianity.

Among the prominent defenders of the faith was Sir William Dawson (1820-1899). One of Canada's leading intellectuals, Dawson was an active Presbyterian apologist and a highly qualified natural historian. A dynamic man, he built his reputation by writing prodigiously, by involving himself in many scientific and religious associations, and by building McGill University into a distinguished institution during his principalship from 1855 to 1893. His country recognized his abilities when, in 1882, the Marquis of Lorne appointed
him the first president of the Royal Society of Canada. Dawson was also well-known internationally. Among his friends were such men as Charles Lyell, Louis Agassiz, and Asa Gray, all of whom were outstanding scientists and principal figures in the evolution controversy. Leading scientific societies around the world often honoured his contributions. Dawson, for example, on separate occasions held the prestigious presidencies of both the British Association for the Advancement of Science (1886-1887) and its American counterpart (1882-1883).

In addition to being a respected scientist Dawson was also an acknowledged apologist for creation. For example, the Evangelical Alliance and the Victoria Institute (a society of apologetic Christian scientists) often requested papers and lectures from him. Even Principal McCosh of Princeton College begged Dawson to accept the geology chair at that institution in his capacity as a scientist who could defend the faith. McCosh admitted to Dawson in a letter that "We feel it to be of vast importance not only for ourselves but for the country to have you in the United States to guide opinion at this critical time."¹

Despite Dawson's importance as a Christian scientist in the evolution controversy, there has been little first-rate scholarly work done on him. The only recent work worth noting is C. O'Brien's *Sir William Dawson: a Life in Science and Religion* (1971), which competently describes Dawson's scientific controversies. O'Brien recognized that Dawson felt terribly threatened by evolution, but

¹Letter, J. McCosh to J. W. Dawson, Apr. 4, 1875, McGill University, Archives, Dawson papers.
he did not explore his subject's religious make-up sufficiently to explain why evolution was totally unacceptable to him and why he so actively defended creation.

Dawson was a Paleyite who reconciled his science and religion in a faith founded on God's two revelations: the Bible and nature. He assumed that the Bible was literally true and that science could verify it when it touched on natural subjects. He also assumed that God's creation was imbued with purpose and design which science could examine in order to prove the existence of a divine designer. He found the major evidences of this in biology. Zoological and botanical systems of classification revealed a whole natural order of hierarchical arrangements and repeated patterns and functions. The history of animal life showed the planned progressive introduction of species. Every animal and plant exhibited complex adaptations to its environment. Dawson believed that all this evidence of design and contrivance proved the divine designer.

Darwinism threatened this belief by reducing purpose and design to the results of random and limitless variation as controlled by the law of natural selection. Adaptations resulted from the clash of variation and environment. The natural order which systems of biological classification revealed was explained by the variation of groups of species away from like progenitors. Similarity of type was due to continuity of inheritance. Furthermore, the progressive introduction of life was quite simply proposed as evidence for evolution. Darwin offered a sufficient natural explanation for Dawson's evidences of God and then challenged the very idea of an intelligent designer by introducing randomness as a real factor in
nature.

Dawson opposed evolution primarily because it was antithetical to the foundations of his faith: nature and the Bible. Mere chance was incompatible with Dawson's belief in a designing and intelligent God. Naturalism, though less significant, entailed the elimination of the biological evidences of faith and removed God as an ordering principle in nature. Because Dawson interpreted the Genesis creation narrative as a type of natural theology which spoke of the designing creator God, he also found evolution to be incompatible with it.

This thesis explains why Dawson was an ardent opponent of evolution. Chapter I describes and analyses his religious viewpoint as it stood before the publication of the *Origin*. Chapter II describes those aspects of evolutionary speculation which were to prove antithetical to the foundations of this viewpoint. Chapter III presents Dawson's perception of these problems. It establishes that randomness and naturalism were the elements he found unacceptable in evolution; and it places Dawson in the context of other Canadian thought on the same issues. Chapter IV presents Dawson's response to the challenge of evolution, namely his attempt to form a scientific theory of creation. It also places this response in the context of other Canadian solutions to the same problem.
CHAPTER I
DAWSON'S PALEYITE FAITH

As Dawson battled the theory of evolution because it was incompatible with his faith, it is necessary first to examine the kind of faith he had before broaching his reaction to evolutionary speculation. Dawson was a Paleyite who reconciled science and religion in a highly rationalized faith which was based on the Bible and natural theology. As this Paleyism was fully developed before the publication of the *Origin of Species*, in 1859, it will be best to examine it as then fashioned. Before the *Origin* Dawson had reconciled Scripture and science in a harmonization of the Genesis cosmogony with geology, and he had constructed a natural theology on the evidences of design provided by biology and palaeontology. After presenting the background of Dawson's career, this chapter describes Dawson's Paleyite heritage and his continuation of this tradition as it stood before the *Origin*.

I. Background

Dawson was born on October 13, 1820, in Pictou, Nova Scotia, to staunch Presbyterian parents. After passing much of his younger years scurrying around the local coalfields searching out geological specimens, he was enrolled in the local Pictou Academy for his
secondary education. The Academy had been founded by T. McCulloch with the intention of training Presbyterian ministers and providing a higher education for the local dissenters. Although it was small and impoverished it managed to send forth hundreds of clergymen, doctors, and scholars into the community. Dawson attended the Academy for four years and received a liberal education which included his favorite subject of natural history. As a student he must also have experienced strong religious influences, for when he graduated he set himself to studying "Hebrew and allied subjects" and gave serious thought to entering the ministry.¹

The pull of science, however, was greater on Dawson than that of the church. In 1840 he set off for Edinburgh in order to study natural history with Robert Jameson (1774-1854), who was a leading geologist and a conservative Presbyterian under whom Charles Darwin had also studied. In 1841 Dawson returned to Pictou because his father had run into financial difficulties. As chance would have it, however, Charles Lyell, England's most important geologist, visited Nova Scotia in the same year and became acquainted with Dawson. They quickly became friends, and Lyell engaged his junior as a guide in an exploration of the Nova Scotia coal-fields. Dawson remained in Nova Scotia until 1846, when he returned for a final year of studies with Jameson in Edinburgh.

His student days behind him, Dawson set to work building a career. In 1850 he was appointed superintendent of education for Nova Scotia and spent three years touring and organizing that colony's schools. His next appointment was to a commission regulating the affairs of the University of New Brunswick, and in 1855 he was
appointed principal of McGill, a position he held until 1893.

McGill was an impoverished and poorly managed institution when Dawson arrived. The grounds were dilapidated, and even the Arts building itself had been abandoned. He was, however, undeterred and immediately set to the task of building McGill into a university which, by the time of his retirement, had gained international standing. Dawson involved himself in every aspect of his institution's growth. He taught natural history, helped with financing, and in 1857 founded the McGill Normal School which was to supply the teachers to train the students who would attend the university.

In spite of his deep involvement with McGill, Dawson maintained a severe regimen of research, writing, and lecturing on geological, biological, anthropological, and religious subjects. Because he was capable and prolific in each of these areas, his name became increasingly recognized. In 1881 he both received the Lyell award from the Geological Society of London and also was made a companion of St. Michael and St. George. In 1883 he was knighted, and the next year his alma mater of Edinburgh conferred upon him the honorary degree of Doctor of Laws. While these commendations brought public honour, Dawson's abilities had also provided him with the less tangible but more important respect and friendship of many major scientific opinion makers such as Louis Agassiz and Asa Gray.

Dawson's scientific successes had not arisen out of a vacuum. Much 19th century scientific work was done by the members of the many scientific societies and promulgated in their journals. Dawson was a member of the leading societies in Canada and the major figure in his own city's Natural History Society. Moreover, he was one of the
prime movers behind the formation of the Royal Society of Canada, which was established in 1882. But Canadian science was still young, and the most significant studies were carried out by the English scientists. Accordingly, Dawson frequently visited England where he was a member of the major societies and a contributor to their journals. Among others, he was a fellow of both the Geological Society of London and the Royal Society of England.

Dawson's pursuit of science was perhaps equalled by his defense of Christianity, where again he had an international reputation. In Canada he was involved in such organizations as the YMCA, the Montreal Auxiliary Bible Society, the Quebec Women's Christian Temperance Union, and the Canada Sunday School Union. He was frequently called on to lecture on religious topics, and at McGill he often made it a habit to invite students home for discussions on Biblical subjects. His international activities included memberships in both the Evangelical Alliance and the Victoria Institute. He was Canadian vice-president of the Alliance and contributed papers to its 1873 meeting in New York as well as the Jubilee Conference of 1896. The Victoria Institute, which was a British association of scientists dedicated to "reconciling any apparent discrepancies between Christianity and Science," considered Dawson to be one of their more important members.

Requests for Dawson's aid in defending the faith came from near and far. In 1894 he was invited to the sixth Council of the Presbyterian Alliance in Scotland in order to speak on either "Modern Apologetics and Criticism" or "Biology and Natural Science."^{2} Moody's Northfield Seminary asked him to contribute in their work. When Princeton College offered Dawson the geology chair, Charles
Hodge induced Princeton Seminary to establish a lectureship on "the relation of Science and Religion," with the hope that Dawson would accept it as well.

II. Dawson's Paleyite Heritage

The 19th century was a time of growing doubt. Franklin Baumer views it as an age of sceptical revolution which crystallized in six schools of thought. Psychology, beginning with Feuerbach, was coming to regard the spiritual as a mental projection. Utilitarianism frequently argued that religion was injurious to society. The sciences, and especially evolutionary biology, were increasingly describing a natural universe that bore little relation to Christian beliefs and hopes. The anthropology pursued by such men as Tylor and Frazer was reducing religion to a naturalistic outgrowth of primitive superstition. Marxist economics was promulgating the idea that religion was nothing but a social by-product. The Higher Criticism was subjecting the Bible to historical analyses which resulted in such contentions as Strauss' that the New Testament was essentially myth. All in all, it can be seen that the very essence of belief had come under question.

Dawson was keenly aware of the atheism and agnosticism which surrounded him, and his own faith was always coloured by a conservative reaction to it. This conservatism was rooted in the Calvinistic belief in the fallen condition of man which seemed to explain the irreligion and madness of the "materialists," "positivists," and "agnostics." His faith was that of an embattled man fighting for the true and the good in a hostile world. In 1864 he declared that
he could hear "the thunders of Antichrist" which were possibly soon to be pitted in the final "great struggle against the Gospel." By 1898, one year before his death, this attitude had strengthened. In an exegesis of the Book of Revelation he applied some Johannine symbolism to his own era and arrived at the conclusion that "we may take the dragon to represent Heathenism and Agnosticism; the Beast, the Papacy and Ritualism; and the False Prophet, apostate Protestantism." What Dawson was conserving against the ravages of infidelity was his highly rationalized faith which was formed in a combination of religion and science and based on God's twin revelations: nature and the Bible. He assumed that God's creation was imbued with purpose and design which science could demonstrate in order to prove the divine designer. He also assumed that the Bible was literally true and that science could verify it when it touched on natural subjects. In sum, he represented a continuity of that line of belief which was epitomized in Paley and argued for the inherent reasonableness of religion and its scientific verification.

At the turn of the 19th century Paley published his *Natural Theology* which argued for an intelligent and benevolent God from the evidences of his design in nature. Using the now famous analogy with the watch, Paley reasoned that it was only by postulating the existence of a divine designer that we could explain the numerous manifestations of order and contrivance in nature. His argument rested primarily on the myriad examples of contrivance in anatomy which provided his reasoning with a scientific and empirical foundation. He assumed that science and religion could be reconciled in a universe pervaded
by purposefulness. The scientific study of nature led to knowledge of God because it discovered a designed creation which could not be explained through the action of random natural forces. Paley believed that everything was imbued with some divine purpose. Even purpose had a purpose, for it existed to make possible natural theology. Whatever God wished for his creatures he could have accomplished "without the intervention of instruments or means," but "it is only by the display of contrivance, that the existence, the agency, the wisdom of the Deity, 'could' be testified to his rational creatures."  

While natural theology demonstrated the existence of the divine artificer, it also served as a prelude to the New Testament which could in turn stand the test of reason. The Evidences for Christianity tried to show that the New Testament was historically accurate and could be validated by secular historical methods. Paley's central argument was that because the original Christian witnesses had defended their belief at the risks of torture and death, and because they could not have done so without that feeling of certainty which only miracles could have provided, the miracle stories must be true. Consequently the original witnesses must have been correct in their testimony and the New Testament must be true.

Paleyism lived on in the 19th century until Darwinism precipitated its decline. Its most notable expression was in the eight Bridgewater Treatises which were published between 1833 and 1840 from a bequest of the eccentric Earl of Bridgewater. These treatises continued the natural theological side of Paley's thought and attempted to illustrate "the power, wisdom and goodness of God" as
exhibited in his creation. The writers were all eminent men such as W. Whewell, the philosopher of science, and P. M. Roget, who is now more famous for his thesaurus. Thomas Chalmers, some of whose works were familiar to Dawson, not only contributed one treatise but also elsewhere embraced Paley's other side by offering rational defenses for scripture. His *On the Power Wisdom and Goodness of God* (1839) presented evidence for the deity in man's moral and intellectual adaptation to the external world. The *Evidence and Authority of the Christian Revelation* (1818) had aimed to verify the historical accuracy of the New Testament.

As an adolescent Dawson wrote more than one paper offering rational and teleological proofs for the existence of God which revealed the influence of Paley. His adult faith was also irrevocably intertwined with the rational demonstrations that he could offer for the existence of God and the validity of the Bible. Faith, he assumed, was a matter of intellectual assent to the evidences and arguments by which reason supported belief. His natural theology rested on the evidences of God's design in nature, and his Biblical faith rested on the scientific support which could be brought to verify scripture in its historical narratives and descriptions of nature.

Because Dawson believed that the study of nature led to God, he assumed that science could be reconciled with religion. Indeed, science was itself the religious exercise of exploring God's creation. Science ineluctably led to religion, and Dawson maintained that to depart from the path of either was to enter "into the mists and darkness which shroud from our gaze the precious junction of the spiritual and the material." Science and religion described
different aspects of the unitary rational universe. The same order pervaded God, man, and the world; and so science, which was limited to the inductive examination of energy and matter, complemented religious explanations of the spiritual. At no point in his life did Dawson depart from the conviction that God had created a rational purposeful world and that there was a "fundamental unity and harmony of all truth whether natural or spiritual, whether discovered by man or revealed by God."\(^9\)

The tragedy of Dawson's faith lay in the fact that it was based upon precisely those scientific explanations and descriptions of life which Darwin was to overturn. Dawson's Biblical faith was supported by the accordance of a seemingly scientific theory of creation with Genesis; mindless evolution was incompatible with belief in a creator. Dawson's natural theology was based primarily on the evidences of design in the organic world; Darwin's evolutionary biology was to explain these by the action of natural and mindless causes. Dawson was to oppose Darwin because his whole view of the world was fundamentally incompatible with evolutionary thought.

III. Dawson's Biblical Faith and Its Geological Confirmation

Throughout his life Dawson never waivered from the conviction that the Bible was essential to his own faith, to Christianity, and to the general health and progress of society. He saw it as being everything from a charter for civil liberties to a cure for materialism. He was most concerned with the book of Genesis because this was the book most frequently analysed by the Higher Critics and also the
book most susceptible, due to its cosmogony, to scientific attack or defense. As Dawson invested much effort in explaining and defending Genesis, we will be able to gain an insight into his attitude toward the Bible and its relationship to science by examining his thought on this subject.

Dawson saw Genesis as a type of natural theology. He thought that this was epitomized in its opening statement which contains that "great fundamental truth, which must ever form the basis of true religion and sound philosophy--the production from non-existence of the material universe by the eternal self-existent God." He always maintained that Genesis had served to provide the Hebrews, and now modern man as well, with the belief in a transcendent designing God who had created an ordered and purposeful world. It was as though the cosmogony had been written to answer to the modern diseases of materialism, positivism, pantheism, and the belief in fortuitous occurrence. Genesis explained the unity of the universe, cosmic design, and monotheism, and inculcated a natural and rational theism.

Dawson believed in the literal word of the Bible and its plenary inspiration. He frequently complained about the exegetes who would reduce it to myth, for it was his constant position that Scripture was an accurate historical and revealed narrative which referred to real events. He was, nevertheless, sufficiently a scientist that he often was forced either to rationalize away the unscientific portions of his material or to push the Hebrew language into meanings consonant with his needs. For example, he would grant that there were poetic sections in Genesis, such as the reference to the "windows of the heavens," which should not be taken literally.
Beyond his own believer's criticism, however, Dawson did not venture very far. He was sufficiently enraged by the Higher Critics that, later in life, he came to see them as the arch-enemy along with the evolutionists. He bemoaned how these two groups "have long since united forces, and true Christianity and true science are now face to face with both."11 Between protests, however, he did surrender to them a little ground. In 1860 Dawson had maintained "the Mosaic authorship of the Pentateuch, as an undeniable fact."12 By 1877, Moses had been reduced to the status of editor of Genesis, although he still retained the authorship of the remainder of the Pentateuch.13 By the 1880's, Dawson was well familiar with Biblical criticism, and in the 1890's the last four books of the Pentateuch had become a record kept by camp scribes, which accounted for stylistic variations; and the authorship of various parts of Genesis was attributed to such unknown authors as "the writer of Genesis ii."14 Despite these concessions, Dawson had a special dislike for critics such as Graf, Kuenen, and Wellhausen; and he continued to believe in the literal word of Genesis.

Genesis commits itself to a number of geological views. The most pertinent are that the earth was created, formed, and populated in a set order over a period of six days, and that there once was a universal deluge. From the late 18th century until the early 1830's English geological opinion was frequently in turmoil over the issue of whether or not its findings could be reconciled with Genesis. The geologists debated the compatibility of their data and theories with both the Genesis time scale and also the possibility of such a cataclysmic event as the Noachic deluge.
These controversies received a radical twist when Lyell began publishing the three volumes of his *Principles of Geology* in the early 1830's. Lyell seemed to have severed geology from Genesis with his "uniformitarian" method, which maintained that all geological change had taken place gradually over immense stretches of time through the action of those kinds of causes which are presently observable. As Wilson, Lyell's biographer, explains it:

> If strata were to be deposited and upheaved quickly, if valleys were to be excavated overnight, these events would indeed assume the dimensions of catastrophes; but if very long periods of time were allowed, they might be accomplished gradually by the ordinary action of rain, wind, and waves to wear down the land and earthquakes to build it up again.\(^{15}\)

Lyell had seemingly invalidated the Genesis chronology and removed the possibility of such a cataclysmic event as the deluge. He had also rendered geology a naturalistic science which could explain the earth by the action of efficient causality, without making reference to God.

A number of authors responded to Lyell in an attempt to reconcile his uniformitarianism with Genesis, and Dawson was familiar with the major works of this genre. Pye Smith, a Congregationalist divine, wrote *The Relation Between the Holy Scriptures and Some Parts of Geological Science* (1852) which maintained that the flood had been of only limited extent and that the six creation days referred to but a small area of the globe where God had perfected the Garden of Eden. Hitchcock's *Religion of Geology* (1851), which Dawson considered to be "valuable and popular,"\(^{16}\) also limited the flood and then posited an indefinite time gap between the first and subsequent creation days. The writer who most influenced Dawson, however, was Hugh Miller whose
The Testimony of the Rocks (1857) resurrected the idea that the creation days referred to extensive eras rather than twenty-four hour periods.

Dawson was a quasi-uniformitarian, which is to say that he was primarily a Lyellian gradualist, although he allowed for the occasional catastrophe whenever he needed to shorten his time span or allow for Noah's deluge. Nevertheless, he was enough of a uniformitarian that he felt compelled to reconcile Genesis to this method rather than to reject either. In 1860 he published Archaia which had the aims of harmonizing Genesis and geology as well as disposing of polygenism. This work typified his rational scientific view of religion. The reader is immediately introduced to Dawson's Paleyite position when in the preface he denounces those who try to "raise an insurmountable barrier between the domains of faith and reason." He then goes on to explain that Genesis is no mere myth or primitive attempt at science, but rather a purposeful revelation from God about the order of the world. The Bible is "full of natural theology" and Genesis served to nurture "a high and just appreciation of nature among the Hebrew people."

Dawson followed a path popularized by Miller in suggesting that the revelation of the cosmogony to Moses occurred in six visions over six days. It was not to be interpreted as a scientific account of nature, but rather as Moses' description of that which he had seen. He then interpreted, with great exegetical finesse, how the six days actually meant eras and how they nicely corresponded with the extensive geological periods provided by uniformitarianism. Assuming that the geological record did not reach as far back as the
fourth day, he correlated the remaining three days and their parts with the Palaeozoic, Mesozoic, Neozoic, and Modern periods. His method was to show how the animals which he considered characteristic of each geological period corresponded seriatim with the animals which Genesis recorded as successively introduced on each day. The Modern period and the seventh day were in agreement because neither of them had witnessed the introduction of any new forms of life nor experienced any permanent and major geological change. All in all, Genesis and geology were reconciled because they described the same world. Although Dawson had not bothered with any defense of the flood in Archaia, later works show that he considered it also to be capable of geological ratification. He believed that it had been of limited extent and that it was corroborated by post-glacial submergence.

But Dawson was not satisfied with his uniformitarian vindication of Genesis; if both science and Genesis described the same world there had to be greater reconciliation possible. Perhaps Genesis could guide scientific speculation beyond its empirical limitations to a tentative explanation of the first four creation days, and perhaps in turn this explanation might render more reasonable the Genesis cosmogony. Dawson took the then popular nebular hypothesis and showed how its theory of cosmic evolution accorded with the Genesis account of the creation of the heavenly bodies and more. For example, he urged how it was quite scientific that Genesis describes the existence of light (1:3) before the existence of the luminaries (1:14). After all, according to the nebular hypothesis as Dawson saw it, the whirling mass of nebulous matter would be luminescent before it actually formed into bodies such as the sun. He was later to remark on how this was "another point on which Moses anticipates
IV. Natural Theology and Progressionism

Dawson believed that nature bore the impress of the divine mind: that nature was pervaded by a design which could not be explained through the action of natural causes. Ultimates, such as natural laws and the introduction of species, manifested God's hand rather than the operation of natural forces. Order, testified a cosmic orderer. Adaptations, or any natural arrangement wherein some means serves an end, demonstrated the foresight and plan of a benevolent, purposive God. Dawson unfailingly and axiomatically drew the conclusion of design from the natural evidences of ultimacy, order, and adaptation. So strong was Dawson's telic vision that whenever he attempted to demonstrate the existence of God from the manifestations of ultimacy, order, and adaptation, he rarely if ever bothered to construct an argument to prove his case. It was as though these evidences were obviously evidences of design and thus equally obviously evidences of the divine designer. Furthermore, this telic reasoning so pervaded Dawson's thought that he came to see God as essentially a purposive designer.

Dawson occasionally spoke of how natural law signified the divine law-maker, but his belief that ultimacy exhibits the action of God's mind depended mainly on the palaeontological evidences for the abrupt introduction of species. If the species could not be explained as derived from either organic matter or other species, then this provided incontrovertible proof of God's creative action. The existence of law-like patterns, such as the crystalline formations,
and regularities, such as the structural types which run through the animal provinces, spoke to Dawson of designed order. Order attested to the existence of a unified plan which extended throughout the whole of nature and thereby also to God the planner and orderer.

Adaptations were the fundamentals in Dawson's vision of design because they so obviously indicated final causality and the actualization of divine purposiveness. Adaptations witnessed a side of God which ultimacy and order did not. They signified a benevolent God who was sufficiently involved in his creation to so arrange each part of it to serve some good and fulfil some end. Although ultimacy and order attested to the divine designer as well, this God might conceivably be one who had left his creation to the workings of blind fatalistic laws. But nature was full of purpose for Dawson: nothing existed without serving some end, and everything had its legitimate place in the scheme of things.

Dawson's telic vision, however, was not so complete as to render him an incompetent scientist. Dawson was an empiricist who believed in induction and in giving natural explanations and descriptions to natural events and objects. On the other hand, his religion directed him to study matters which would ostensibly support the faith, and his religion prohibited him from the thought that ultimacy, order, and adaptation could be given sufficient natural explanations. Dawson was no less a scientist than his positivistic colleagues, and his purely professional work did not rely on religious reasoning. Design constituted a border between science and religion where the former ceased its explanatory activity and yielded to the latter.
Dawson's scientifically based natural theology was well developed before the publication of the *Origin*. Palaeontology and biology had provided the substance of his thought with their portrayal of an organic world abounding with design. He believed that the millions of organisms and fossils provided overwhelmingly convincing examples of God's design. Dawson claimed that palaeontology presented a record of the progressive introduction of immutable species in prehistoric time. The chronological succession of strata contained a succession of fossils from the very simple to the most complex. The strata also appeared to tell of the abrupt introduction and extinction of species. Species seemed to have made their first appearances fully formed, and they never disappeared by gradually transmuting into the formation of new and derivative species. What interpretation could be given to this evidence but that species were immutable and created? Dawson certainly believed that this was the only justifiable conclusion and that the fossils were empirical proof of God's many creations. Additionally, the fact that the succession of fossils is progressive impressed him with the belief that God had had a similarly progressive creation plan. Dawson was a "progressionist" who read the palaeontological record as the scientific narrative of those ultimate beginnings where God had carried out his providential design. The idea of creation became a valid scientific theory which coordinated with and ratified his religious beliefs.

Progressionism had much in common with evolutionary thought: both saw development in the fossil record. Lyell mentioned this to Dawson, about one year after the publication of the *Origin*, when he wrote that:
If Darwin (sic) theory is ever established it will be by the facts and arguments of progressivists such as Agassiz whose development doctrine go (sic) three parts of the way tho they don't seem to see it.22

But Dawson needed no warning. Even before the Origin, he had elaborated his progressionism in a way which made it incompatible with the theories of the pre-Darwinian evolutionists. He was probably provoked into doing this by Robert Chambers' extremely popular Vestiges of the Natural History of Creation (1844) which combined pantheism and evolution in tracing all life back to a primordial chemico-electric operation. Dawson took a lead from Hugh Miller's Footprints of the Creator, which was a refutation of Chambers, and contended that although species had been introduced progressively, each one had degenerated after its creation. There was no progressive transmutation of species. The only progress was in the introduction of "new objects and powers not accounted for by previous objects or powers," the contemplation of which brings man "very near to the presence of the Spiritual Creator."23

Dawson also saw design in the order which prevails in the structures of organisms and fossils: the order which botanical and zoological systems of classification disclose. For Dawson the science of classification was no mere tool of biology, for it literally caught hold of God's natural plan. Dawson believed that there was a natural biological order which was apparent in the creation of life around certain fundamental types. Following Cuvier, he affirmed that all animals were designed around one of four essential types: the vertebrate; the radiate; the articulate; and the mollusc.24 Furthermore, he contended that there is a natural hierarchy of types as can be seen, for example, in the manner in which the vertebrate branch
breaks down into the mammal, bird, reptile, and fish types. As if this were not enough, Dawson also maintained that order was manifest in homologies, or the similar types of construction found in the organs of various animals. The inevitable explanation for this pervasive and fundamental order was that all animals had been designed around God's single unified plan; and, accordingly, classification was no "mere matter of arbitrary naming or even a convenient arrangement of structures" but rather the unravelling of God's plan.

The most important type was the species, which Dawson believed to be a real entity. He put his emphasis here rather than on the individual which, as he knew, rarely represents it with great accuracy. The genus, the order, or the class, were also of considerably less importance as they referred to the relations of organisms once created, while the species referred "to certain original individuals, protoplasts" which determined the structure of their constituent individuals. Although variable within limits, species were the immutable representatives of God's ordered plan; they were "that which the Creator has made, his unit in the work, as well as ours in the study."

Although the ultimacy of creative beginnings and the order exhibited in biological classification furnished much evidence for design, Dawson found the most compelling testimony in the adaptations which species display. Not only is each species intricately adapted to its environment, but also each organism is itself a complex arrangement of ends and means. The vegetable cell is adapted to the soil, to the atmosphere, and even to the distant sun. The coiled shell of the pearly nautilus is divided into air chambers which
enable it to modify its internal air density in order to float, rise, or sink. Vision is the result of a complex of adaptations between, among other things, the brain, the cornea, the lens, and the light. In sum, life is replete with adaptations explicable only through the action and foresight of a benevolent, designing, purposive God. How could blind nature create an eye? How could it be that life is so intimately suited to its environment were there no divine designer? Adaptations exist throughout nature and constituted what Dawson considered to be empirical proof of God's existence.

For some people the world makes complete sense; Sir William Dawson was one. He was an essentially rational man who believed in a rational, purposive God who had designed a rational, purposeful world. He marvelled at the impress of design which permeated God's creation, and he was overwhelmed by the rational corroboration which science provided scripture. Reason, science, and religion all contributed to the explanation of the complementary natural and spiritual realms which were unified by the same rational design. Reason led to religion; religion guided reason; and neither one could contradict the other.

Dawson's faith was a rationalized faith which existed in two modes, both of which were founded on scientific evidence. The telic quality of his thought saw mind in nature which, when empirically demonstrated, took him from the world to God. Scripture, which could be scientifically validated when it touched on natural subjects, was the literal revelation of God's word.
FOOTNOTES TO CHAPTER I


3 Letter, G. Mathews to J. W. Dawson, March 4, 1894, McGill University, Archives, Dawson papers.


Polygenism was the theory that maintained that mankind had descended from several pairs of ancestors rather than from Adam and Eve alone.


19 Ibid., p. 54.

20 Ibid., p. 48.


22 Letter, Lyell to Dawson, Oct. 27, 1860, McGill University Archives, Dawson papers.

23 J. W. Dawson, Archaia, p. 53.

24 By some point before 1886 this scheme had become amended and enlarged into six types.

25 An example of this is the similar skeletal construction shared by the wing of a bat and the arm of a man.


27 Ibid., p. 253.

28 Ibid.
CHAPTER II

THE THEORY OF EVOLUTION

Evolution was a direct challenge to the heart of Dawson's faith. The evolutionary speculations of Darwin and his disciples, for example, Huxley and Haeckel, assumed nature to be random. Spencer, the Lamarckian, argued that natural evil made belief in a designing God impossible. The inherent naturalism of evolution removed God as an ordering and explanatory principle in biology. Dawson's rationalized faith was based on science, and so evolution threatened the foundations of his belief. Randomness in nature was incompatible with belief in a designing God, and naturalism meant that God was not needed to explain the development of life. Evolution clashed directly with Dawson's natural theology and challenged his faith in the Bible because he saw Genesis as a type of natural theology.

Dawson battled evolution for the last half of his life and focused on the ideas of four major evolutionists, who were either agnostics or atheists. Darwin, from the publication of the Origin in 1859, was continually on Dawson's mind as the one who had grounded the development of evolutionary thought. Huxley was the object of Dawson's disdain from the early 1860's when he adopted the role of Darwin's popularizer. Spencer became an important figure for Dawson by the early 1870's, after the publication of his influential The Principles of Biology. Haeckel completed the list of Dawson's
principal foes when his works were first translated into English in the mid 1870's. Dawson also followed and criticized the theories of the major theistic evolutionists such as Wallace, Mivart, and Le Conte. But these men were of less significance to him because they did little to strengthen the argument for evolution.

This chapter explores the concepts of naturalism and randomness held by the agnostic and atheistic evolutionists in the order in which they came into Dawson's view. It then describes the attempts of some theists to reconcile religion and evolution. It concludes with a discussion of the attitudes of the agnostics and atheists toward religion.

I. Darwin

Although there had been some notable exceptions, such as Lamarck, most men before Darwin believed that species were divine and immutable creations. The Origin (1859) contended that all species were transmutable, and that they had all evolved from a few aboriginal progenitors. It was common scientific knowledge that species vary; Darwin argued that they were plastic. He argued that they were so plastic that any species could vary into becoming a new one: that any species could evolve. His real significance, however, lay not so much on this point as it did on his provision of a natural mechanism to explain how it happened. Evolution became the received scientific view because Darwin provided the mechanism of "natural selection" to explain it.

Darwin took as his starting point the Malthusian tenet that nature is a struggle for existence due to the competition of
geometrically increasing populations for only arithmetically increasing food supplies. Nature is a scene of battle with the less fit always giving way to the fittest. Now, given that species vary indiscriminately, it is bound to happen occasionally that a variation arises which chances to benefit survival. Because such adaptive variations promote life, the species or individuals bearing them have a greater chance of surviving, and so the variations become selected. Species chancing to vary adaptively will, over the course of time, survive. Species varying non-adaptively, die out. Over millions of years, and in the face of a continually changing environment, those species which continue to vary adaptively eventually become new species.

Much of both the appeal and the threat of the *Origin* was its naturalism. It allowed scientists to remove God from biology. Darwin worked in the realm of secondary causes and refused to use the divine mind as an explanatory idea. He argued that "such expressions as the 'plan of creation,' 'unity of design,' etc." were not explanations of nature but only veils to ignorance. This was, of course, repugnant to Dawson who saw mind in nature. In his review of the *Origin* he criticized Darwin's naturalism as "a rush and a leap into an unknown and fathomless abyss." Evolution did not explain anything that designed creation could not. It was an ambitious attempt to understand nature while simultaneously ignoring God.

Darwinism offered an alternate naturalistic explanation of every kind of design which Dawson saw in life. Dawson saw the fine internal and external adaptations of animals and plants as the result of God's beneficent planning. Darwin explained them by the natural selection of chance adaptive variations. Where the progressive
nature of the palaeontological record was seen by Dawson as evidence of God's progressive plan. Darwin took it as direct evidence of evolution. If classification were seen as a science which discerned God's order in nature, Darwin explained this order by genealogy: "the community of descent," he said, "is the hidden bond which naturalists have been unconsciously seeking, and not some unknown plan of creation." The similarities of type, which Dawson took as an expression of God's mind, were regarded by Darwin as the inheritance shared by many species in their derivation from the same progenitors. The vertebrates had similar skeletons not because they were expressions of God's vertebrate type, but because they were all descended from the same vertebrate source.

Darwin would have threatened the natural theologians had he only suggested that their evidences for design could be explained away, but the implications of his theory went even further. Natural selection implied that nature was random: that it was without plan. The characteristics of a species were not selected by God's beneficent forethought but were the chance adaptive variations that natural selection had accumulated. In the first edition of the *Origin* Darwin protested that he had not introduced chance into nature, and that to label variations as chance-like was "a wholly incorrect expression." He thought that variations might be referred to as chance-like only because their causes were unknown, but that discovery of the causes would show them to be under the rule of law. But it would appear that Darwin had missed the main implication of his own argument. Natural selection did not imply randomness or chance because the causes of variation were unknown, but because
there was no coordination between variation and the needs of the individual. In fact, most variations were useless, and some were harmful. Species became what they were by pot-luck. But this Dawson could never accept, because variation was never random for him, but always an indication of "the wisdom of the creator."  

In *The Variation of Animals and Plants Under Domestication* (1868), Darwin was more aware of the implications his theory held for the theist. He had decided that, for the most part, variation was the "indefinite and fluctuating" result of environmental influences. Evolution stood mostly on the natural selection of this variation, and Darwin could conclude his book with the melancholy words that:

> If we assume that each particular variation was from the beginning of all time preordained, then that plasticity of organization, which leads to many injurious deviations of structure, as well as the redundant power of reproduction which initially leads to a struggle for existence, and, as a consequence, to the natural selection or survival of the fittest, must appear to us superfluous laws of nature. On the other hand, an omnipotent and omniscient Creator ordains everything and foresees everything. Thus we are brought face to face with a difficulty as insoluble as that of free will and predestination.

If the fortuitous variability of nature gave Darwin an occasional touch of mild anxiety, his *The Descent of Man* (1871) exacerbated the troubles of many others. In this rather clumsy book Darwin argued that man had descended, both physically and mentally, "from a hairy, tailed quadruped." Man was presented as the same kind of fortuitous product as was the rest of life, and by no means the acme of God's plan. This annoyed Dawson who viewed man as distinct from the rest of creation, and as made in the image of God. His *The Story of Earth and Man*, which was published two years after *The*
Descent, repeatedly attacked Darwin's contention:

Shave and paint your ape as you may, clothe him and set him up upon his feet, still he fails greatly of the "human form divine;" and so it is with him morally and spiritually as well. We have seen that he wants the instinct of immortality, the love of God, the mental and spiritual power of exercising dominion over the earth. The very agency by which he is evolved is of itself subversive of all these higher properties.  

The Descent may have denied man "the 'human form divine,'" but Darwin had a strong argument to back up his case. He used the essential similarity of human anatomy with that of all other vertebrates as evidence for derivation. The parallelism between the human skeleton and that of the monkey, seal, or bat was due to community of descent rather than God's plan. The seeming recapitulation of the major divisions of the vertebrate province by the developing human embryo led Darwin to conclude that the human fetus was the living history of man's evolutionary past. Man also, evidently, possesses rudimentary souvenirs of his ancestry. He has, for example, a caecum, which is a branch of the intestine serving no purpose and ending "in a cul-de-sac."  

Darwin also contended that there was no qualitative mental gulf between man and the other animals. Why, even dogs could form mental concepts, which Darwin had deduced from his observation that "when I say to my terrier, in an eager voice . . . 'Hi, hi, where is it?' she at once takes it as a sign that something is to be hunted." Even morality could be traced back to the "social instincts" found in lower mammals.  

Although The Descent embroiled man in evolutionary speculation, it retreated somewhat from the emphasis on natural selection found in the first edition of the Origin. The mechanism of natural selection had come under some serious objections. For example: how
could it select the incipient stages of variations before they became useful? Why should minor variations not be swamped out of existence when the individuals bearing them mated? How could it select those numerous characteristics of any species which provide no benefit in the struggle for existence? *The Descent* answered these questions by stressing other mechanisms, along with natural selection, which had been briefly passed over in Darwin's previous works. The most important of these was sexual selection, which meant that: (1) in the struggle between males for females, the healthiest and strongest males win out, and accordingly have their characteristics selected into the evolutionary process; (2) the healthiest females produce the most offspring, and thus also tilt evolution; (3) those characteristics, such as sweet voices and skin colour, whereby animals sexually excite their mates, are also selected because the sexually attractive mate more frequently and with the healthier companions.

Darwin also explained some other mechanisms, but he seemed vague as to their relative merits. He stated "that the inherited effects of the long-continued use or disuse of parts will have done much," but he did not say how much. He talked of certain "unknown causes," but he had no clue as to what they were. It was apparent, however, that natural selection remained paramount for evolution and that sexual selection was the most important determinator of characteristics unnecessary for survival. The sixth and final edition of the *Origin* (1872) also contained these revisions. In any event, evolution still proceeded naturalistically and, for the most part, through the selection of fortuitous variations. This, Dawson never lost sight of. Despite the revisions he always associated Darwinism
with natural selection, and natural selection with naturalism and randomness.

II. Huxley

Although it was Darwin who had set the evolutionary ball rolling, it was his junior, T. H. Huxley, who took natural selection to the people. Huxley was a controversialist who spent the latter part of the 19th century missionizing the doctrine of evolution. Although he was a zoologist of no mean standing, he sacrificed much of his own work to become the major propagandist for natural selection. He also outdid Darwin in his frank recognition of the implications that natural selection held for religion, and in his willingness to proclaim them loud and wide. Naturally, Dawson kept in touch with Huxley's work from the 1860's on.

Huxley welcomed the naturalism which Darwin had brought to biology and which he maintained would "lead us to a region free from the snares of those fascinating but barren virgins, the final causes."\textsuperscript{15} He made out Darwinism to be the culmination of the history of science, a history which was no other than the decline of religious ignorance and the rise of scientific knowledge. By the 1880's Darwinism had so liberated him from teleology that he came actively to advocate agnosticism as the inevitable concomitant of science. At this point Dawson singled out Huxley for special treatment and attacked this combination of naturalism and agnosticism, saying: "there must be some points of alliance between the Christian religion and the whole cosmos or arranged system of things, which must . . . be the product of the same Divine Mind with Christianity itself."\textsuperscript{16}
While eagerly embracing Darwinian naturalism, Huxley also sought to strengthen it. In 1863 his "Man's Place in Nature" compared man with the anthropoid apes and concluded that they were not far removed from each other. Certainly there were many large differences between man and the higher apes, but these were less than those between the higher and lower apes. There was apparently no inherent reason why man should be deemed distinct from the rest of the animal kingdom. Later Huxley extended his naturalistic bent toward materialism. In "On the Physical Basis of Life" (1898) he denied the existence of any vital life force. Although he never committed himself to philosophical materialism, he favored materialistic language and was prepared to consider man as a machine. Dawson viewed Huxley as more extreme than Darwin who "does not seem to have gone as far as absolutely to identify the physical and the vital in the way that Huxley, Tyndall, and others have done."17

Huxley accepted the randomness of evolution as quickly and fully as he did the naturalism. He explained Darwinism as a natural method of trial and error: "According to Teleology, each organism is like a rifle bullet fired straight at a mark; according to Darwin, organisms are like grapeshot of which one hits something and the rest fall wide."18 Cats abounded because they were good at catching mice, not because they had been designed to catch mice. And Huxley lectured all over England because he never tired of telling people that there was no teleology in biology.
III. Spencer

Herbert Spencer had come to the theory of evolution before Darwin, though he was, of course, later aided by Darwin's work. Spencer was a philosopher who wanted to create a complete and naturalistic picture of the universe. Evolution was to be at the centre of this vision because it permitted him to do without God. He adopted evolution because evolution eliminated miracle. Because Spencer had expanded evolution into a philosophy, at the start of his popular campaign against evolution, in 1873, Dawson viewed him as "the greatest English authority on evolution."¹⁹

Spencer's First Principles (1861) outlined his assault on all knowledge. The knowable universe was to be examined as variations upon an evolutionary theme. Evolution, or the passage of matter and motion "from an indefinite, incoherent homogeneity to a definite and coherent heterogeneity," founded everything.²⁰ The solar system had evolved from a homogeneous nebular mass into a differentiated system of stars and planets. Society had evolved from small groups of individuals into complex nation states. Even languages, the arts, and science had emerged from humble beginnings into complexity.

Spencer's The Principles of Biology (vol. I, 1865; vol. II, 1867) launched an all out attack on the doctrine of creation. It was "a primitive hypothesis" which educated men had discarded along with other superstitions.²¹ Deductively and speculatively Spencer fashioned an evolutionary process to replace it. Evolution was, after all, a more credible theory; it was a single principle which coherently explained: the natural relations of animals and plants; embryonic recapitulation; similarity of type; and the distribution of species.
in space and time.

Spencer's theory of evolution was primarily Lamarckian. He contended that environmental change causes organisms to vary in a direction of greater complexity and differentiation. When change destabilizes the balance between an organism and its surroundings, it triggers a chain of reactions in the organism which are completed only upon the achievement of a new balance. Over the course of time and continuing environmental change, such variation becomes speciation and thus also evolution. Additionally, this process is aided by the "survival of the fittest:" individuals who fail to adapt to change die out and are removed from the genetic pool.

Spencer's system was consciously naturalistic. Adaptations were not referred to God for explanation as the adaptive response of organisms to environmental change seemed to solve the problem. But Spencer's argument was weak. He had failed to show why an organism should vary adaptively to environmental change. His argument is little more than a rationalized statement of belief in the sufficiency of natural causes. Dawson noted this, and observed that Spencer, as opposed to Darwin, "often exaggerates or extenuates with reference to his facts, and uses the arts of the dialectician where argument fails."22

Spencer was ferociously antagonistic to the idea that some divine plan might underlie nature. He thought it bizarre, for example, that anyone should see design in the typological similarities of species. Why should God have designed a mammalian type in which each species has seven cervical vertebrae, when the giraffe could do with many more and the whale with less?
Shall we say that though, for the whale's neck, one vertebral would have been equally good, and though, for the giraffe's neck, a dozen would probably have been better than seven, yet seven was fixed upon for the mammalian type? Evolution could explain this on the assumption of community of descent. That there might be some creative plan to explain it Spencer dismisses as absurd. Classification was obviously not to be construed as a religious exercise; in fact, it was merely a method of arranging species in order to "facilitate our thinking." But what Dawson could never understand was how Spencer's evolution could proceed so harmoniously without design. Spencer assumed there to be a principle of progressive development in nature, but Dawson contended that without design nature could only be a sport of chance. Although Spencer's theory was as naturalistic as that of Darwin and Huxley, it lacked the element of randomness found in their thought. Spencer's environmentalism provided for organisms to vary adaptively to change; evolution did not depend on the selection of chance variations. On the other hand, Spencer considered nature to be incompatible with belief in a designing creator. He maintained that natural evil, so widespread in nature, was irreconcilable with belief. How could a designing God have created an earth which is "a scene of warfare between all sentient creatures?" Why should he have created the myriad parasites which invade and derange the body?

IV. Haeckel

Ernst Haeckel, the zoologist, was "the recognized spokesman of Darwinism in Germany" and also a scientist of international stature.
He had embraced Darwinism as the liberator of science from theology, as the start of a new age in a naturalistic universe. Prolific in writing and lecturing, Haeckel worked for the promulgation of evolutionary naturalism and the demise of Christianity. All that existed was a monistic universe in which matter and force were the products of some primordial natural reality. Natural selection had disproved teleology, and mechanical causes reigned supreme.

Dawson was familiar with at least two of Haeckel's books: The History of Creation (first English edition, 1876) and the Evolution of Man (first English edition, 1879). In these books Haeckel tried to prove evolution and to destroy belief in design. His works assumed the primary agency of natural selection and focused on supplying evidence for evolution. While Haeckel presented the usual arguments for evolution, what is peculiar to him is the emphasis he placed on the evidence of rudimentary organs and ontogenetic recapitulation.

Haeckel created the name "dysteleology," or the "science of purposelessness" for the study of rudimentary organs. He believed that evolution alone could explain these organs, and that they were conclusive proof of the absence of design. Why would a divine designer provide his creatures with useless organs? It was blatantly impossible, a contradiction in terms. Yet rudimentary organs exist. Man, for example, has a rudimentary and useless covering of hair. This at once shows his ape inheritance and disproves the belief in a designing creator.

Haeckel's "first principle of Biogeny" states that "the evolution of the germ (Ontogeny) is a compressed and shortened reproduction of the evolution of the tribe (Phylogeny)." While other
evolutionists, it is true, used the argument from recapitulation, it was Haeckel who relied on it most of all. He reconstructed man's history by extrapolating from ontogeny to phylogeny and back again. Because of the ontogenetic similarity of human egg cells with all other animals, he concluded that man had descended "from a one-celled organism." Because the developing human embryo seems to parallel the embryonic forms of other vertebrates, and even the Ascidians, Haeckel traced man's derivation through the vertebrate phylogeny down to the worm. This Dawson considered to be an untenable conclusion. He countered Haeckel by saying that the facts of embryonic development have "long been known, and . . . regarded as a wonderful evidence of the homology or unity of plan which pervades nature," rather than as evidence of evolution.

Haeckel had a naturalistic view of life. He had removed miracle from nature by placing the start of evolution in a primordial spontaneous generation. He was so convinced that natural selection could explain evolution that he ignored trying to prove it and spent his time tracing the evolutionary paths of various organs and species. Final causes had been eliminated; nature was all; and there was no more room for a mind and matter dualism. Haeckel believed that:

everywhere the phenomena of human life, as well as those of external nature are under the control of fixed and unalterable laws, that there is everywhere a necessary causal connection between phenomena, and that, accordingly, the whole knowable universe is one undivided whole, a "monon."

Dawson had no respect for Haeckel's views. He accused Haeckel of assuming most everything he claimed to have proved. Haeckel's spontaneous generation was not based on facts, and only occurred when
he "waves his magic wand and simple masses of sarcode spring from inorganic matter." Haeckel assumed that man's moral and rational nature lay potentially in the lower animals, and also that there was no mind apart from the brain. Indeed:

We must grant the monist all these postulates as pure matters of faith before he can begin his demonstration; and as none of them are axiomatic truths, it is evident that so far he is simply a believer in the dogmas of a philosophic creed.

V. The Theistic Evolutionists

A number of scientists tried to reconcile evolution and religion in a compromise which was usually made at the latter's expense. A sampling of three such men who were familiar to Dawson will provide the essentials of this position.

One of the more famous of these scientists was A. R. Wallace, the co-discoverer with Darwin of natural selection, and a biologist whom Dawson considered to be "next to Darwin, ... a leader among English derivationists." Wallace was a Darwinian until it came to the question of man. Certainly man was a result of natural selection physically, but his moral and intellectual faculties were exempt from this agency. As early as 1864 Wallace was writing that man's more noble faculties led him to be social and charitable rather than to be a fierce competitor in the struggle for existence. The intellectual and moral faculties were obviously a product of spiritual forces and not of brute natural selection. In fact, the universe could be seen as no other than the will of one or more spiritual beings.
Wallace lived in a spiritual cosmos. His "Creation by Law" (1867) maintained that evolution had been a process governed by laws such as those of the struggle for survival, heredity, and variation. Surely this was compatible with the belief in a law-abiding spiritual creator who had so ordered his creation as to leave it equipped with the power of adjusting to change, and of evolving? By 1889 Wallace had set forth his thesis that evolution had occurred in three stages, the beginnings of which natural selection could not explain: the introduction of vitality into the inorganic world; the introduction of consciousness; and the introduction of spirit.\textsuperscript{36} Evidently such considerations led to the belief in an unseen spiritual realm "to which the world of matter is altogether subordinate."\textsuperscript{37}

It was all very well for Wallace to point out some limitations to the agency of natural selection, and to bring spirit back into the world. It is also understandable that he considered a law-like evolution to be compatible with a law-abiding creator. But Wallace had not solved the problem of randomness. Perhaps naturalistic evolution could not fully explain life, but Wallace had to do more than provide gaps for God. Wallace never explained why it is that variation is random, and how this might be compatible with a supposedly law-abiding creator.

Another theistic evolutionist, the geologist Joseph Le Conte, saw evolution as a universal cosmic law. Unlike Wallace he had fully accepted the naturalistic universe and managed to reconcile it with belief by opting for pantheism. Certainly the world is ruled exclusively by natural law, but this world and its laws are none other than "the objectified modes . . . of the mind of God," and "science
is the systematic knowledge of these divine thoughts and ways—a rational system of natural theology." While this may have been all very well in rendering science and religion theoretically compatible, it would have made for a weak natural theology. Le Conte lacked any firm empirical ground on which to base his faith. There was no inherent reason why his naturalistic universe should be pantheistic rather than materialistic.

Le Conte also accepted natural selection and yet found it impossible to conceive of biological adaptations and order except "as the result of thought." As with Wallace he had missed the sobering assumption of randomness which natural selection had introduced into the world. Le Conte explained how we only speak of variation as random due to our ignorance of its causes, that "of course, it is well understood that nothing in Nature is really fortuitous." This completely missed the point. Natural selection implied randomness, regardless of the causes of variation, because it assumed that most variation was not adaptive and sometimes even harmful. If variation were not random there would have been no need for a selecting mechanism.

Dawson gave Le Conte's views a thorough analysis and found them wanting. Le Conte's thesis that evolution is caused by some force which God planted in nature approached Spencer's hypothesis that things are self created. Le Conte had placed "himself at the mercy of the agnostics who may say that the continuous evolution of things from one another by 'resident force' requires no intervention of a creative power."

One of the more significant theistic evolutionists was also a major opponent of Darwin. St. George Mivart, who was at first a
Darwinian, later rebelled against natural selection and randomness in an attempt to make evolution and design compatible. Mivart was a devout Catholic whose scientific work earned him a doctorate of philosophy from Pius IX in 1870, and whose modernism and theistic theory of evolution earned him an excommunication toward the end of his life. Dawson was familiar with Mivart, although he never attacked his theory of evolution directly. Indeed, the only direct attack Mivart received from Dawson was a censure of his moral beliefs, which Dawson considered to be those "of a Romish theologian" rather "than of a Biblical student or philosopher."  

Mivart's book _On the Genesis of Species_ (1871) provided for an evolution in which the agency of natural selection was minimal. Natural selection helped to remove monstrosities from nature, and it hastened the elimination of species superseded by evolution; but evolution proper proceeded in a law-like manner by the action of some "internal power." Mivart reconciled religion and science by suggesting that evolution was really only "derivative creation," or "the Divine action by and through natural laws."  

Mivart's theory was little more than a statement of belief that God was still in control of life. He had raised some serious objections against natural selection, such as the question of how it could select the beginning stages of variations not yet useful. But it was not scientifically convincing to offer some unknown "internal power" in its place. Additionally, although Mivart's scheme was compatible with belief in design, it lacked, as he admitted, any empirical proof for God.
VI. The Agnostic and Atheistic Evolutionists on Science and Religion

The theory of evolution by natural selection naturalized biology by allowing it to proceed without God as an ordering principle. Its acceptance showed a desire to remove providence from the world. Weismann, the German Darwinian zoologist, announced that evolution "influences our whole realm of thought," that it means "nothing less than the elimination of the miraculous from our knowledge of nature." It is true that some evolutionists, Darwin, for example, left room for an original creation, but many would have even removed God from this, his last refuge. Spencer and Haeckel crossed the border between the organic and inorganic by reducing biology to chemistry. Tyndall, who based his case on the theory of the conservation of energy as well as on evolution, saw in matter "the promise and potency of all terrestrial life."

As God was removed from nature so also did nature adopt a seemingly godless appearance. Warfare, struggle, and famine became the determining forces behind life. Man became a lonely figure in a cold universe, the chance product of a random process. He had lost his immortality and, for some, his nobility. Haeckel would even have traced love "to its primitive source, to the power of attraction between two differing cells." It appeared as though the court of science had discovered that God was dead. The melancholy words of George Romanes, written at a time when he had lost his faith as a result of evolution, describe the impact of such thinking:
As I am far from able to agree with those who affirm that the twilight doctrine of the "new faith" is a desirable substitute for the waning splendour of "the old," I am not ashamed to confess that with this virtual negation of God the universe to me has lost its soul of loveliness; and although from henceforth the precept to "work while it is day" will doubtless but gain an intensified force from the terribly intensified meaning of the words that "the night cometh when no man can work," yet when at times I think, as at times I must, of the appalling contrast between the hallowed glory of that creed which once was mine, and the lonely mystery of existence as I now find it, --at such times I shall ever feel it impossible to avoid the sharpest pang of which my nature is susceptible.

And:

There is a dreadful truth in those words of Hamilton, --Philosophy having become a meditation, not merely of death, but of annihilation, the precept "know thyself" has become transformed into the terrific oracle to Oedipus--"Mayest thou ne'er know the truth of what thou art." 48

Although evolution was heavy artillery in the war on religion, Darwin himself was not a combatant. It is clear, however, that he had a low regard for religion. In The Descent devotion is explained as something distantly approached in "the deep love of a dog for his master, associated with complete submission, some fear, and perhaps other feelings." 49 It is perhaps not without a measure of truth that Dawson claimed Darwin's autobiography revealed a man "paralysed by a spiritual atrophy, blinded and shut up in prison and chained to the mill of a materialistic philosophy." 50

Huxley, on the other hand, was a very vocal agnostic. His only faith was in the scientific method which, he concluded, had rendered the beliefs of Christianity highly improbable. The history of science was, after all, the history of its victorious battles over Christianity. Nature shows no trace of God, and "extinguished theologians lie about the cradle of every science as the strangled snakes beside that of Hercules." 51 And yet Huxley did not appear overly
eager to embrace the surrogate religion of evolutionary science, for he had rebelled against the belief that evolutionary thought might tell us how to live our lives. In his Romanes lectures of 1893 he talked of how "social progress means a checking of the cosmic process at every step." Evolution did not legitimate social Darwinism.

We have seen that Huxley regarded Darwinism as the death of natural theology. He also propagated the view that science had disproved, or rendered improbable, much of the Bible. Evolution and palaeontology had confuted the Genesis cosmogony, or as Huxley once called it, "the Miltonic hypothesis." Uniformitarian geology had shown the Noachic deluge to be fanciful. The credibility of the New Testament was severely strained due to its unscientific demonology and miracles. Obviously science would be wise to pursue its work without the counsel of revelation:

Wherever bibliolatry has prevailed, bigotry and cruelty have accompanied it. It lies at the root of the deep-seated, sometimes disguised, but never absent, antagonism of all the varieties of ecclesiasticism to the freedom of thought and to the spirit of scientific investigation.

Spencer was also an agnostic, but of a more elaborate sort, for Spencer was an agnostic who wanted to reconcile religion and science. He maintained that there was a religious sentiment in man, an "undifferentiated substance of consciousness," or "a sense of that which exists persistently and independent of conditions." Beneath the dogma and theology of every religion lies this common appreciation that there is an "utterly inscrutable" power behind the universe. This is the essence of religion, a feeling for the "unknowable;" religion deals with that which is beyond thought and experience.
Science, on the other hand, "is simply a higher development of common knowledge." It has the whole realm of the "knowable" to itself, and a monopoly on thought and experience. Man is a finite creature trapped in a conceptually finite world in relation to which the unknowable infinite can not be conceived. His universe is, by definition, scientific.

The battles between science and religion are due to the infringement which either party occasionally makes on the other's domain. Sometimes science attempts to understand the absolute and moves in on religion in a futile attempt to know the unknowable. For the most part, however, religion is the guilty party in its equally futile attempt to talk of the infinite in terms of the finite. The solution is a more humble science and a religion which either is silent or admits that its beliefs and dicta are meaningless. Religion and science are reconciled because they are separate. This, Dawson found unacceptable. He accused Spencerianism of doing "more to degrade the human reason and cut it off from all communion with anything beyond mere matter and force, than does any other form of philosophy."

Haeckel also wanted to separate religion and science, but for the reason that he believed religion to be superstitious nonsense. He was a combatant for the atheistic religion of science. Haeckel saw a universe devoid of design and purpose, a universe completely ruled by the juggernaut of mechanical causes and natural law. The advent of Darwinism was the death of God. Natural theology had been felled by the forces of naturalism and dysteleology. Genesis, already wounded by Copernicus, was directly refuted by evolution. Man was finally free from the "anthropocentric error," or the belief that he
"is the premeditated aim of the creation of the earth."$^{59}$

To replace Christianity came the monistic religion of science: "the sublime, pantheistic idea of the Unity of God and Nature."$^{60}$ A church in itself, monism came complete with a pantheon containing such notables as Democritus, "the immortal founder of the Atomic theory," and Bruno, "the great martyr of the monistic theory."$^{61}$ Science would now lead man into a bright future of freedom, morality, culture, and progress. Darwin had removed mind from nature, and man was finally able eagerly to embrace the new truth: the universe is infinite in space and time; God is dead; man is mortal; morality is enlightened self-interest; naturalistic realism replaces Christian idealism. Dawson was horrified by such ideas, and concluded that if life were worth living in the universe Haeckel described:

then it must be for the immediate and selfish gratification of our desires and passions; and since we are deprived of God and conscience, and right and wrong, and future reward or punishment, there can be nothing left for us but to rend and fight with our fellows... that we may reach such happiness as may be possible for us in such an existence, ere we drift into nonentity.$^{62}$
FOOTNOTES TO CHAPTER II


3 C. Darwin, Origin, p. 420.

4 Ibid., p. 131.


7 Ibid., vol. II, p. 428.


12 Ibid., vol. I, p. 120.


14 Ibid.


18. T. H. Huxley, "Criticisms on *The Origin of Species*," Darwiniana, p. 84.
24. Ibid., p. 59.
29. Ibid., p. 140.
37. Ibid., p. 476.
39 Ibid., p. 323.

40 Ibid., p. 79.


44 Ibid., p. 278.


55 H. Spencer, First Principles, p. 96.

56 Ibid., p. 46.

57 Ibid., p. 18.


60 Ibid., vol. I, p. 72.

CHAPTER III

THE MAJOR PROBLEMS DAWSON SAW IN THE THEORY OF EVOLUTION

Although Dawson subjected the *Origin* to a lengthy review when it first came out, initially he was not very agitated by it. During the 1860's he wrote little on evolution and appears to have become seriously aroused by the spread of evolutionary thought only toward the end of the decade. In 1869 he wrote a scientific appraisal of "Modern Ideas of Derivation," and in 1873 he launched his popular campaign against evolution with *The Story of Earth and Man*. The next 26 years brought a flood of books, articles, and lectures.

Evolution by natural selection challenged the foundations of Dawson's faith. The randomness inherent in Darwinism was the major threat, because it was completely antagonistic to belief in the designing God. The naturalism inherent in evolution was the second threat, because it removed the natural evidences of design and made nature capable of producing life without divine help. Randomness and naturalism were incompatible with Dawson's natural theology. They were also incompatible with his interpretation of the Genesis creation narrative because he read it as a type of natural theology. This chapter explores the problems of randomness and naturalism which evolution presented to Dawson's faith. It also places his perception of these problems into the Canadian context of thought on the same issues.
I. Natural Selection and Design

The natural evidence of ultimacy, adaptation, and order led Dawson from nature to God. He saw design in nature with such immediacy that it was impossible for him to accept any theory which made out nature to be random. From the last half of the 1860's when he began to realize that the idea of natural selection implied precisely this, he also decided it was atheistic. Because Dawson believed there could be no cosmos without God, and not even a hint of chaos with him, he could not have accepted Darwinism and maintained his faith.

With the opening of his popular campaign against evolution in 1873, Dawson presented the controversy as at root a debate over whether or not there was design in nature: over whether or not there was a God. Was one to hold, with Democritus, that a chaos of atoms could produce a cosmos; or to hold that a cosmos must be designed? Darwinism led ineluctably to the former position. But because Dawson saw the controversy as centering on the question of design, he had unfairly reduced the Darwinian position to one which maintained the development of life to be a totally random affair. For example, in his popular book *Origin of the World*, he admonished that:

> when evolutionists, in their zeal to get rid of creative intervention, trace all things to the interaction of insensate causes, they fall into the absurdity of believing in absolute unmitigated chance as the cause of perfect order.\(^1\)

This was inaccurate, however, for Darwinian randomness was always mitigated by law.

This dichotomy between chance evolution and designed creation became somewhat ambiguous when Dawson considered the theistic
evolutionists. In 1873 he maintained that evolution was incompatible with theism because evolution excludes "the idea of plan and design" and resolves "all things into the action of unintelligent forces." Later he occasionally was willing to admit theistic evolution as "essentially distinct from Darwinism or Neo-Lamarckianism," because "it necessarily admits design and final causes." Yet he could never forget for long that it was precisely Darwinism which had made evolutionary thought credible and that there was an "incongruity between the methods supposed by evolution and the principles of design, finality, and ethical purity inseparable from a true and elevating religion."

Aside from this confusion on theistic evolution, Dawson's position on natural selection and design was unchanging. There were two options. Either one could accept Darwinism, and believe in the completely absurd universe; or one could reject Darwinism, and believe in the completely designed universe. Natural selection was incompatible with belief in God, and this was the major reason why Dawson rejected evolution.

In his belief in design, Dawson came at the end of the natural theology tradition in Canada. Paleyism was moderately represented among Canadian intellectuals before Darwin, and inevitably led to a rejection of Darwin, but it did not survive him. Dawson was correct in arguing that it would be impossible to accept natural selection, and yet believe in the divine designer.

There were five significant Canadian proselytizers of the
belief in design who preceded the impact of Darwinism. Henry Taylor (fl. 1770-1860), the Quebec author, was the first with his *An Attempt to Form a System of the Creation* (1836) which aimed both to prove design as well as to reconcile Genesis and uniformitarianism. He saw design in the order and adaptations in nature, and one of his major examples of this, ironically, was the variation in species which guaranteed that no two individuals would be alike, and showed "a master and designing hand to have directed their formation."\(^5\) Doubtless, had he lived long enough, Taylor would have found Darwin's ideas on variation a special challenge.

Thomas Trotter (1781?-1855), the Presbyterian pastor of Antigonish, also wanted to reconcile Genesis and geology as well as to show the mind behind nature. His popular styled *A Treatise on Geology* (1845) found God's intelligent providence in the history of the earth. He argued that the succession of geological periods was the unfolding of God's benevolent plan. For example, he saw divine purpose in the carboniferous period which had lasted just long enough to provide man with the right amounts of coal, iron, and lime for his industries.

But natural theology only came into its own in Canada with the *Elements of Natural Theology* (1850), by James Beaven (1801-1875), which was concerned only with the question of design, and passed by the problem of reconciling God's word with his work. Beaven, an Anglican clergyman and scholar, was professor of divinity at King's College, Toronto, from 1843 until 1849 when he accepted the chair of metaphysics at the University of Toronto. He wrote the *Elements* as a didactic book which aimed to relieve the believer of his
occasional doubts, and to convert the atheist if his mind were not totally warped.

Beaven was very much like Dawson. They both assumed, as Beaven stated it, that "contrivance must have a contriver; design must have a designer." And they both thought that this contrivance and design was readily apparent in nature. Beaven found his principal evidence in the order and adaptations of biology and astronomy. For example, he saw God's purposive mind in such structures as "the teeth and saliva, admirably adapted for preparing the food before it enters the stomach." He also, as with Dawson, believed there was a unified plan in nature, which he could tell from the fact that everything was adapted to some end.

Outlines of Natural Theology (1859) by James Bovell (1817-1880) was similar in its views but different in approach. Bovell, who taught natural theology at Trinity College, Toronto, shared Dawson's interpretation of the fossil record as progressive; and so he argued for design from the coordinated progression of life and its environment during the history of the earth.

William Leitch (1814-1864), who was principal of Queen's University, took the argument for design to astronomy. His God's Glory in the Heavens (1862) was a didactic exposition of the design which he discovered in the arrangement and structures of the planets and stars. For example, he found a pattern on the moon in the "endless repetitions of the typical crater with the central cone." He also found purpose in the universe, which could be evinced in such as the moon's effect of raising and lowering the tides of the earth.

Although his book came out shortly after the Origin, Leitch
had avoided its impact. After Darwin the major problem for the natural theologians shifted from that of demonstrating the plan of creation, to that of answering the challenge of randomness. Before Darwin it was relatively easy to assume that the universe had to have been designed, precisely because the only alternate explanation for it was chance, which could be immediately dismissed as ridiculous. With Darwin the idea of randomness received scientific credibility. A sample of 19th century Canadian reactions to the problem of randomness will show this issue to be a significant one which Dawson was not alone in facing.

There were those who, like Dawson, found Darwinism to be totally antagonistic to belief in the divine designer. William Hincks (1794-1871), the brother of Sir Francis Hincks and professor of natural history at University College, Toronto, elaborated on this issue in his presidential address to the Canadian Institute, in 1870. And he confessed that:

if my reason compelled me to adopt the Darwinian hypothesis, its opposition, as I understand it, to cherished and valued sentiments respecting creative wisdom and goodness, and a perfect divine plan in nature, would cause me great pain.9

A friend of Dawson, James Carmichael, who was dean of Montreal and a colleague of Dawson in the Natural History Society, shared Hinck's horror of Darwinism. Carmichael, who seems to have gained most of his views on Darwinism from Dawson, wrote two pamphlets in defense of design: Design and Darwinism (1880), and Why Some Fairly Intelligent Persons Do Not Endorse the Hypothesis of Evolution (1898). He aimed to make evident to the naïve that Darwinism was incompatible with design and thus untenable. He argued that it was:
a series of hypothetical assumptions, which, sometimes speaking in the dogmatic language of ascertained fact, has boldly endeavoured to elevate the working of Disguised Accident into the position so long held by Divine Design.\(^{10}\)

There were some thinkers, however, who did not share this Dawsonian dichotomy of having to picture the universe either as a godless chaos or as a designed cosmos. For example, Goldwin Smith (1823-1910), the Toronto journalist and historian who was also an acquaintance of Dawson, accepted Darwinism and hoped for it to be reconciled with religion. He realized the atheistic implications of "the apparent evidences of the absence of design, waste and miscarriage in the heavens and the earth, purposeless havoc and the extinction of races," but warned against leaping into materialism.\(^{11}\) Smith hoped that somehow randomness would be found to be incompatible only with the traditional dogma and superstitions, and not with the essence of faith which underlay them. He was unable, however, convincingly to show how this might be the case.

Where Smith only hoped for a solution to the problem of randomness, John Watson (1847-1939), the idealist philosopher at Queen's University, managed to carry it out. Instead of regarding variation as an accidental process which produced some good and some bad, Watson presented it as a process which produced only differing degrees of good. Because variation was always good, Watson could conclude that life was in fact coordinated with its environment by mind rather than by chance. Watson's only difficulty was that he lacked any scientific evidence to substantiate his claim.

In sum, belief in the divine designer had a history in Canada before Darwin, and was severely challenged by him. Dawson, as a
participant in this tradition, shared with many others the perception of Darwinian randomness as a significant threat to this belief. How widespread this perception was, however, is difficult to say; but the four thinkers sampled here echo a common sentiment found in the colleges, scientific societies, and journals.

II. Naturalism and Natural Theology

Evolutionary naturalism would have doomed Dawson's natural theology by removing the empirical evidence for design. This was unacceptable to him because his faith was based as much on nature as it was on the Bible. Dawson held that science and religion could be reconciled; Spencer and the Darwinians claimed that nature showed no trace of God. Consequently, Dawson perceived their theories as mad attempts to go beyond sound induction and to eliminate God from science. From 1873 until his death Dawson repeatedly expounded on how there were limits to science and how it was that man could know God. He wanted to establish Christianity as the metaphysics of modern science. He saw the main opposition to this goal coming from Spencer, Haeckel, and Huxley. It was Darwin who had naturalized biology, but it was these men who extended Darwinism to agnosticism or atheism.

Dawson's position on the relation of science and religion was constant throughout his career. Science was strictly inductive. It could discover laws and explain the action of efficient causality, but the final explanation of the ultimacy, order, and adaptations which it discovered, was religious. Whether addressing a scientific
or a popular audience, Dawson was adamant on this point. As president of the British Association for the Advancement of Science he warned his peers that evolutionary speculation was bringing science into contact "with those great and awful questions of the ultimate destiny of humanity, and of its relations to its Creator," and that:

> In entering on such questions, we should proceed with caution and reverence, feeling that we are on holy ground; and that though, like Moses of old, we may be armed with all the learning of our time, we are in the presence of that which, while it burns, is not consumed; a mystery which neither observation, experiment, nor induction can ever fully solve.12

Similarly, in 1881, while lecturing the students of Crozer Theological Seminary on the views of Spencer and Haeckel, Dawson admonished that:

> this borderland between science and religion is one which men cannot be prevented from entering; but what they may find therein depends very much on themselves. Under wise guidance it may prove to us an Eden, the very gate of Heaven, . . . But on the other hand, it may be found to be a battlefield or a bedlam, a place of confused cries and incoherent ravings, and strewn with the wrecks of human hopes and aspirations.13

At the start of his popular campaign against evolution, in 1873, Dawson considered Spencer to be his prime enemy. He was reacting to The Principles of Biology which had replaced Christianity with an evolutionary metaphysics and had relegated religion to the realm of the unknowable. If we followed Spencer, he contended, we would have to "hold that God is 'unknowable,' and creation 'unthinkable,'" with the result that "we are left suspended on nothing over a bottomless void."14 Huxley's Lay Sermons (1870) also came in for some abuse when they argued that religion was beyond the realm of nature and knowledge, and that science proceeded best by limiting
itself to materialistic terminology.

By 1880 Haeckel had become as dreaded an opponent as Spencer. The Evolution of Man had been translated into English in 1879, and Dawson subjected it to a lengthy criticism the following year. He described Haeckel's monism as "a sort of atheistic monotheism," which led "to a cold, mechanical, and unsympathetic view of man and nature." Dawson countered Haeckel with both a critical scientific attack and also an attempt to show the futility of his atheistic mechanical view of nature. He argued that even if life were but a machine, such a machine could not exist without design: "The homely argument which Paley derived from the structure of a watch" would still "be fatal." Dawson countered Haeckel with both a critical scientific attack and also an attempt to show the futility of his atheistic mechanical view of nature. He argued that even if life were but a machine, such a machine could not exist without design: "The homely argument which Paley derived from the structure of a watch" would still "be fatal.”

Spencer and Haeckel remained Dawson's two principle targets throughout the 1880's. These two men had elaborated evolution into naturalistic philosophies which Dawson found horrific. He clearly regarded the religion of science as more trying than the science which ignored religion. The publication of Spencer's The Data of Ethics, in 1879, exacerbated his dissatisfaction. This work based ethics on evolution, and Dawson remarked that:

it has contributed very much to open the eyes of thoughtful men to the depth of spiritual, moral, and even social and political, ruin into which we shall drift under the guidance of this philosophy.

Dawson agreed with Spencer's naturalism in so far as it maintained that God was essentially unknowable. He agreed that everything was unknowable in essence. We can, however, know things in their properties, relations, and effects. It was illigitimate to replace the spiritual explanation of life with evolutionary naturalism, because God is knowable through his effects on, and relations to, the
world. These relations and effects are apparent in creation and design. In his elaborate denial of this, Spencer had become for Dawson a kind of archetypical modern agnostic.

Dawson occasionally stated that Spencer's naturalistic agnosticism was worse than atheism. It was not an expression of doubt or disbelief but a reasoned conviction that God was unknowable and that nature lacked his impress. It is clear, however, that Dawson was more disturbed by Haeckel's atheism. When discussing Haeckel, Dawson's rhetoric often revealed a profound discontent. He never retreated from the view that if Haeckel were right then we would be "face to face with the darkest and most dangerous moral problem that has ever beset humanity."\(^\text{18}\)

Dawson claimed that Haeckel's naturalism was not supported by science but that it was rather the perspective through which he pursued his science. In any event, Haeckel had failed because any science which indulges in atheistic theorizing will fail. If all is mechanical then there is no explanation for order, adaptations, and the progressive development of life. For example: "Ordinary people fail to understand why a world of mere dead matter should not go on to all eternity obeying physical and chemical laws without developing life."\(^\text{19}\) Additionally, Haeckel's philosophy offered an unacceptable view of reality. Without the possibility of discovering eternal truths, science became pointless, and without God there arose the serious "question whether life is worth living."\(^\text{20}\)

Although Dawson had frequently criticized Huxley since 1869, it was not until the 1890's that this scientist's naturalism came in for the kind of treatment Dawson had previously reserved for
Haeckel and Spencer. Dawson was reacting to the articles which Huxley began writing in the late 1880's on agnosticism.\textsuperscript{21} Huxley had come to the conclusion that although "the scientific naturalism of the latter part of the nineteenth century" did not deny the supernatural, it did deny that there was any evidence for it.\textsuperscript{22} He agreed with Dawson that belief was an intellectual matter founded on evidence, but he was an agnostic because science provided him no evidence.

Dawson considered Huxley's agnostic naturalism to be a "dread alternative" which leaves man "with no Heavenly Father, no divine solace in our present life, and no immortal destiny."\textsuperscript{23} He countered with a demonstration of design in nature and an argument for the possibility of knowing God in his effects. He also attempted to find analogies between nature and the Gospel, such as between "the sacrifices made by animals in the interest of their progeny," and "the Christian doctrine of vicarious suffering."\textsuperscript{24} He judged Huxley to have the bias of denying anything not demonstrable by sense data and thereby uncritically dismissing God.

In 1896 Dawson probably had Huxley in mind when he addressed the Jubilee Conference of the Evangelical Alliance on "Science the Ally of Religion." Among others, Huxley had argued that each discovery of a secondary cause led that much further to naturalism by reducing the supernatural God's area of operations. Dawson's address argued that we replace the word "supernatural" with the word "spiritual" so as to avoid the problem. Supernaturalism implies a distinction between secondary causality and God's immediate causality. The word "spiritual" refers to the intelligent design behind the whole natural world and its laws.
As Dawson saw the randomness in evolution as inherently atheistic, so also he saw its naturalism as inherently agnostic. It not only eliminated the traces of God from nature and the fossil record, but also eliminated him as a first cause. The naturalism of evolution tended toward materialism. Dawson knew that Darwin was prepared to allow God the role of first cause, but he also believed that the logic of the theory precluded this. If there were an original creation then there was no reason why there could not be an indefinite number of further ones. Additionally, it was ridiculous to suppose that God would leave an original creation to be evolved in a random fashion. As the matter stood, Spencer, Huxley, and Haeckel had in fact reduced life to matter.

With this appraisal of the situation, Dawson saw theistic theories of evolution as suicidal compromises. Even if they were successfully to eliminate randomness from their theories, the theistic evolutionists remained trapped within a naturalism that left no proof for God. He became, at best, a theoretical possibility. The Story of Earth and Man warned that "the bare hard logic of Spencer, ... shows that the theory, carried out to its legitimate consequences, excludes the knowledge of a Creator and the possibility of His Work." Aside from which, Dawson did not want:

this God "afar off," who has set the stone of nature rolling and then turned his back upon it, but a present God, whose will is the law of nature, now as in times past.

By 1890, when he was familiar with all the major theistic evolutionists, Dawson asserted that "despite the efforts of the so called theistic and Christian evolutionists," the theory of evolution "may be held to have tended constantly to a lower and lower
depth of materialistic agnosticism." 27 Le Conte, Mivart, Wallace, and others had tried to avoid this either by regarding the laws which guided evolution as divine, or by regarding the cause of the process as some divine power inherent in life. However, Dawson did not think that they had offered any compelling reasons why such forces or laws might not be purely natural.

Dawson believed that there was a rational principle behind nature which man's reason could discover: that there was a design in nature. The naturalism of evolution forbade him this empirical evidence for faith. This he could not accept. Dawson did not naively believe that man could fully understand God, but he did believe that man could understand the finite design to which God had fashioned nature. He also believed science to be out on a mad fantasy when it sought to give a rational explanation of nature while simultaneously ignoring or seeking to replace the God who had made it rational:

The finite cannot comprehend the infinite, the temporal the eternal. We need not, however, on that account be agnostics, for it is still true that, within the scope of our narrow powers and opportunities, the Supreme Intelligence reveals to us in nature His power and dignity; and it is this, and this alone, that gives attraction and dignity to natural science. 28

Naturalism came after randomness as the second reason for rejecting evolution. In denying that there was any evidence of God in nature, naturalism would eliminate natural theology and lead to agnosticism and materialism.
As with the issue of design and randomness, Dawson was not alone in finding evolutionary naturalism to be a significant challenge. Canadian natural theologians had faced the problem of naturalism, in a minor way, before Darwin; it was a major problem after him. It was also a problem which did not confront the natural theologians alone, for Darwinian naturalism assaulted the heart of Christianity by implying that God was not responsible for the development of life and man. Some considered that this meant the end of belief. Others hoped that at most it would necessitate a reformulation of belief.

Before Darwin, some Canadian natural theologians saw a naturalistic threat in the theories of Lamarck and Chambers. Both of these evolutionists believed that life had originated in a spontaneous generation and evolved by the agency of a perfecting power within it. And while they both considered this power to be natural, Chambers' position was modified, in theory at least, by his pantheism. Taylor and Beaven realized that Lamarckism entailed a sufficient natural explanation for design, and so attacked it as being scientifically unsubstantial. Moses Harvey (1820-1901), an historian of Newfoundland and a Presbyterian pastor in St. John's, responded to Chambers in Lectures on the Harmony of Science and Revelation (1856). Although this work was concerned mainly with reconciling Genesis and geology, it contained a rebuttal of Chambers' thought because Harvey had concluded that it would lead to "gross materialism." 29

Another source of the naturalistic threat lay in philosophy. Bovell saw in the epistemological relativism of Hamilton and in the Spinozism of German idealism, the death of natural theology. Hamilton
would have limited knowledge to the phenomenal and the relative; idealism eliminated the distinction between nature and supernature. Although Bovell did not counter these threats in philosophical argument, he wrote the Outlines of Natural Theology with the express intent of providing an alternative to such views.

But the debate over naturalism only became widespread and significant after the publication of the Origin. The theories of Lamarck and Chambers never gained scientific respectability. And Bovell had no need to be concerned with either Hamilton or German idealism, because Hamilton had little impact on philosophy, and German idealism was in serious decline by the mid 19th century. Darwinian naturalism, on the other hand, did gain scientific respectability; and Darwinism was so ably and widely defended that it could not be ignored.

One of the first Canadian responses to Darwin was a review of the Origin by E. J. Chapman (1821-1904) in 1860. Chapman, who was professor of mineralogy and geology at University College, considered the major problem with Darwin's theory to be its naturalism. He praised the book as a storehouse of knowledge, but maintained that Darwin was trying to answer questions which were beyond the range of science. In a manner similar to that of Dawson, Chapman explained that the nature of species was part of a divine plan which is "unfathomable to us at present, and perhaps ever to remain unfathomed by our restricted powers of inquiry."30

It was not sufficient, however, to reject evolution as a naturalistic explanation of species without offering any scientific argument. Sir Daniel Wilson (1816-1892), who was a natural historian of international reputation and president of the University of
Toronto, understood this. A good friend of Dawson, he thought the major challenge of Darwinism lay in its naturalistic explanation of the origin of man. If man were a product of the apes, this seemed to deny his unique spiritual and intellectual constitution, and thus by implication his immortality. Wilson's *Caliban: The Missing Link* (1873), which was written in response to the *Descent of Man*, aimed to show that the idea of a transitional mind between ape and man was absurd. Among other things, Wilson argued that reason could not have evolved from a savage because it would have been disadvantageous to his survival. How could a being who depended on instinct to live, get by in a "hybrid condition, with passions emancipated from the restraint of half-obliterated instincts, and uncontrolled by the glimmering reason?"  

Another kind of response to Darwinian naturalism was to accept it, and then also to separate religion from science. For example, John Buchan (1841-1885), the principal of Upper Canada College, proposed that religion and science were two separate realms. Thus although Buchan could admit that Darwinism "seems to strike at the belief in personal immortality and the other foundations of morals and religion," he could also maintain that "the presence of the religious and moral elements in man is at least as much a fact as the links of resemblance that establish a link between us and the anthropoid apes." Buchan's solution was to place religion and science into separate compartments rather than to reconcile them. This would have horrified Dawson, both because it removed the scientific foundation of faith, and also because it produced a dichotomized and inconsistent view of reality.
It was also possible to accept Darwinian naturalism and to reconcile it with belief. Watson was prepared to accept that evolution could explain the development of life without reference to religion. But as an idealist he concluded that the very process of evolution could be seen as "a phase, though not the highest phase, of the single self-conscious intelligence in whom and through whom and by whom are all things." If naturalism implied that God bore no relation to nature, Watson's idealism solved the problem by making God immanent within nature. However, for many supernaturalists, such as Dawson, this solution to the problem of naturalism involved too radical a restatement of Christianity.

Goldwin Smith took a more aggressive approach to the problem of naturalism. While he accepted the idea of evolution, he questioned the positivistic presuppositions of any science which divorced itself completely from religion. He argued that those who assumed metaphysics or religion had nothing to do with science, were in fact taking a metaphysical position themselves. The Darwinian, he claimed, had no more right to assume that there was no intelligence behind evolution than did the believer have a right to assume that there was.

In sum, there were many Canadian intellectuals, mostly scientists, who believed that there were religious limits to science, and also that the study of nature should harmonize with belief. While they reacted to Darwinian naturalism in various ways, they shared in the view of it as a threat. Dawson stood out among these thinkers, however, in his capable theorizing on the relation of science and religion, and in his aggressive defense of the evidence for God in nature.
III. Evolution and Genesis

Dawson considered the theory of evolution to be completely incompatible with the Genesis creation narrative, and thus also that it struck at the very roots of faith. And because the Bible was as fundamental to his faith as was natural theology, this by itself would have been sufficient reason for him to reject evolution. However, because Dawson interpreted the Genesis creation narrative as a type of natural theology, the disagreement which he saw between evolution and Genesis was essentially a problem between evolution and natural theology. Genesis proclaimed the divine designer who had fashioned the world according to plan, but evolution assumed both that nature was random and also that natural causes could sufficiently explain life. Had it not been for this, Dawson could have reconciled evolution with his reading of the text of Genesis. There was no significant difficulty between Genesis and evolution aside from the difficulties of randomness and naturalism.

Dawson never saw the creation narrative as a primitive attempt at science, but always as a revelation that the universe is a designed cosmos. Genesis established the belief in a designing creator and a designed creation. It warned against belief in materialism, atheism, polytheism, and pantheism. Genesis:

has no theories to support, except the general doctrine of an almighty Creator. Its notions are not warped by any superstition born of myth or idolatry. Nature is to it neither a goddess nor a sport of chance, . . . but an ordered cosmos working out the designs of its Maker.34

In 1873 Dawson asserted that the Genesis idea of creation was:

"Simply this: that all things have been produced by the Supreme
Creative Will, acting either directly or through the agency of the forces and materials of His own production. And again, this rather vague conviction is one which he never left. Genesis does not state the precise methods of how life developed. It does describe the appearance of life. It notes that the waters, the land, and the atmosphere participate in the production of life. But it does not give the sequence of secondary causes which were involved in producing life. The creation story tells that God created the world according to a plan; it does not tell how this plan was carried out. Dawson had no desire to be more specific about Genesis than he had to.

Yet Genesis did impinge on Dawson's science in a minor way, aside from committing him to a designing creator. Creation had proceeded in a certain order: the fishes, for example, came before man. The creation of man was approximately 6,000 to 7,000 years ago. And the animals of the earth were said to have come forth "according to their kinds," which seemed to imply that they were immutable species.

The Biblical order of creation should have presented no obstacle to Dawson's accepting evolution. He had reconciled this order to the palaeontological record which was in turn one of the major supports of the evolutionists. That evolution required millions of years was also no problem. Dawson had already turned
the days of creation into periods of indefinite extent. Even the limited chronology which Genesis allows man should have been no problem; it would merely have fixed the time at which the ape became human.

Not even the apparent limitation to variation imposed by the words "according to their kinds" should have been an obstacle to Dawson's accepting evolution. He could hardly maintain that variation was tightly limited. Because he treated the allied species, which evolutionists offered as proof for transmutation, as being only varieties, his species had very wide limits. In Modern Ideas of Evolution he held that the "kinds" referred only to certain fundamental types, which were, nonetheless, highly variable within their kind. It was apparent that Genesis "does not commit itself as to the limits of species or as to any special doctrine with respect to the precise way in which it pleased God to make them."36 While addressing an audience at Union Theological Seminary, in 1874, Dawson announced that the question of derivation was of "comparatively secondary importance" to that of materialism, and that the Genesis doctrine of creation precluded only the latter.37 It is clear, then, that the "kinds" in Genesis were no obstacle between Dawson and evolution.

The text of Genesis could not have prevented Dawson from accepting evolution, and yet he was convinced that Darwinism was completely incompatible with it. His problems accordingly could not have been in exegesis. They lay in the antagonism between the natural theology he had imported into Genesis and the randomness and naturalism of evolution. Dawson accepted that the mode of creation was unknown and that the creation took place over millions
of years. He could have had no reason to deny evolution as the mode of creation, were it not that evolutionary randomness would have eliminated the creator altogether, and evolutionary naturalism would have denied him any role. Dawson could not be an evolutionist and maintain his faith in the Bible, but the opposition between evolution and Genesis introduced no irreconcilable problems other than those of his natural theology.

Among those 19th century Canadians who published reconciliations between Genesis and science, Dawson stands with only one other in being concerned with the challenge which evolution presented to Genesis. Before Darwin, the threat to which the reconcilers were responding was the apparent antagonism between uniformitarianism and Genesis. After Darwin, the major threats were uniformitarianism and the doubt which the Higher Criticism had raised about the inspiration of Genesis.

Uniformitarianism, it will be recalled, was the theory which maintained that the history of the earth was one of gradual change over millions of years. The principal problem this posed Genesis was its antagonism to the short time span of six days which Genesis allows for the formation of the world. Henry Taylor's *An Attempt to Form a System of the Creation of Our Globe* (1836) solved the problem by arguing that Genesis allowed for an indefinite period of time between God's creation of the earth and the first day mentioned in Genesis 1:5. He placed the ages of uniformitarian geology into this gap. Thomas Trotter's *A Treatise on Geology* (1845) argued that
while uniformitarianism explains the recent history of the earth, it could not explain the early history which was subject to quick and catastrophic forces. The Mosaic Account of Creation (1856), by T. W. Goldie, followed Taylor in placing an indefinite period between the creation and the first day, and also argued that the six days of the creation narrative actually refer to vast eras.

But only one response to uniformitarianism dealt as seriously with the history of life as it did with the history of the earth. Moses Harvey, who was a progressionist like Dawson, interpreted the days of Genesis as vast geological periods. His Lectures on the Harmony of Science and Revelation (1856) also contended that Genesis and science agreed "in the great general outlines" of how "the earth has slowly and gradually advanced from a condition unfitted for any animal existence to one in which man is denizen." 38

There were two reconciliations of Genesis and geology written in response to the Higher Criticism. Ezekial Wiggins (1839-1910), an Ottawa civil servant, wrote The Architecture of the Heavens (1864) in reaction to Colenso's discrediting of the authorship and accuracy of Genesis, in the first part of his The Pentateuch and Book of Joshua Critically Examined. Wiggins sought to refute Colenso by showing Genesis to be scientifically accurate. His main concern was the deluge, which Colenso had declared to be unbelievable. Wiggins attempted to vindicate it geologically by limiting it to Europe, Asia, and Africa, and by explaining how it resulted from the earth tilting on its axis. Jacob Hirschfelder (1819-1902), who lectured in oriental languages at University College, was also provoked by Colenso and, in addition, Essays and Reviews and Kalisch's Commentary on Genesis.
These last two works raised serious questions about the inspiration of Genesis and its geological claims. Hirschfelder countered these critics with *The Creation* (1874), an elaborate philological argument intending to show that the Hebrew of Genesis allowed for the ages of geology to have occurred before the first day in Genesis 1:5. This, he maintained, made Genesis geologically credible, and thus saved it as God's revelation.

The one writer, aside from Dawson, who was both engaged in the Genesis and geology issue and also responding to the threat of evolution, was William Cassidy. His *Age of Creation* (1887) was mostly concerned with vindicating catastrophism as a geological theory so that he could, among other things, argue that the six creation days were a suitable length of time for the formation of the earth. But Cassidy also took the attack against Darwinism in defense of the Mosaic account of the creation of life. Although this was a minor part of his book, he raised several scientific objections to Darwin, such as that evolution demanded more time than the history of the earth allowed.

But Cassidy did not consider evolution to be as serious a threat to the Bible, as did Dawson. For that matter, Dawson emerges as the only Canadian reconciler of Genesis and science who was concerned with all three major problems which Genesis faced: uniformitarianism, the Higher Criticism, and evolution. His reconciliation of Genesis and uniformitarianism had been done partly in reaction to the Higher Criticism as well as to Lyell. And, as we shall see in Chapter Four, he defended the doctrine of creation against the theory of evolution not only because it was a base for his natural theology,
but also because it harmonized with Genesis. In addition, Dawson wrote *Modern Science in Bible Lands* (1888) which had the sole intention of proving the Higher Critics wrong by attempting to corroborate various topographical, geological, and historical references in Genesis.
FOOTNOTES TO CHAPTER III


4. Ibid.


7. Ibid., p. 96.


16. Ibid., p. 458.

CHAPTER IV

DAWSON'S SOLUTION TO THE PROBLEM OF EVOLUTION

Because Dawson found the randomness and naturalism of evolution incompatible with his faith, he rejected it. But because he was a Paleyite and a dynamic apologist, he responded to it by formulating a scientifically competitive theory of creation which preserved the design in life and could be reconciled with Genesis. This theory stands out in 19th century Canada as an aggressive and highly competent solution to the problem of evolution, which kept science and religion reconciled without surrendering traditional supernaturalism. This chapter commences by examining a sample of Canadian solutions to the problem of evolution, and concludes with an examination of Dawson's solution.

I. A Sample of Canadian Solutions to the Problem of Evolution

Of all those who concluded that evolution presented serious, if not fatal, problems for Christianity, there were very few who had constructive solutions to offer. Some sought to separate religion into a realm separate from the science which threatened it. Others only reaffirmed their old religious views without any great attempt to reinforce them before the challenge of evolution. And there were those who accepted that evolution had damaged their belief, but clung on in the hope of some eventual resolution. On the other hand,
there were the positivists who embraced evolution as a welcome antidote to religion. There were also the German and British idealists, and the spiritualists who felt capable of absorbing evolution into developmental views of life, with God or spirit somehow immanent in the process of evolution itself.

We have already touched upon some of the many responses to evolution, in Chapter Three. There was John Buchan who separated his science from his religion. But this option cannot have been but a counsel of despair. It produced inconsistent combinations of belief such as that of J. Moffat, a member of the Hamilton Association, who both accepted Darwinism and its implication that nature was mindless, while also holding that nature had to be designed. Writing in the 1890's, he contended that religious knowledge was different from scientific knowledge, and that despite Darwin man could, and must, continue to regard the universe as designed because: "nothing else that has ever been proposed can fully meet the desperate needs, satisfy the aspirations and reconcile the contradictions of his nature at all comparably with it." But this was to surrender the intellectual side of faith, and with it any coherent view of reality.

Those who rejected evolution while keeping religion and science reconciled, however, were not always in a much stronger position. Very few were capable of making the doctrine of creation scientifically competitive with the theory of evolution. They were able to satisfy themselves of the validity of their position, but they were unable scientifically to show it as superior to evolution. For example, Carmichael, a Paleyite and creationist, took as his
major argument against evolution the fact that natural selection was
incompatible with design. He assumed it to be false because the
randomness it posited in nature, he argued, precluded the possibility
of life exhibiting the order and seemingly designed adaptations which
it does. But this was to do no more than to challenge Darwinism on
the basis of an assumption which it was precisely Darwin's break­
through to have removed from science. The significance of evolution
was that it could explain by means of natural law and a random
process that which the creationists had taken to be designed.

Another response to the problem of evolution was briefly
mentioned in Chapter Three, namely that of Goldwin Smith. He accepted
that evolution, along with Biblical criticism, had destroyed much of
the traditional dogma, superstitions, and anthropomorphic outlook of
Christianity, but he did not conclude that this meant the end of
belief. The essence of religion was separable from revelation and
theology, and could well survive the overthrow of its dogmatic
formulations. This essence was the belief:

that we have our being in a Power whose character and
purposes are indicated to us by our moral nature, in
whom we are united, and by the union made sacred to
each other.\(^2\)

Smith hoped that somehow a rational religion could be constructed on
this foundation which would prove compatible with science. He did
not know how to do this himself, but urged scientists and believers
to engage in open discussion in the attempt to reunite science and
religion on some ground between the extremes of untenable orthodoxy
and fanatical positivism. And he admonished that should evolution
completely discredit Christianity, the world would face the "consider­
erable danger of a desperate conflict between different classes of
society for the good things of that which people are coming to believe is the only world."3

But there were options which reconciled evolution and religion. The most noteworthy of these was John Watson's idealist synthesis. Watson was one of the leading philosophers of his time. He had studied under Edward Caird at Glasgow, and partly inherited from him a revulsion for positivism and materialism, and a desire for a rational idealistic faith. He entered the evolution controversy in the 1870's with a number of articles on such topics as evolution and morality, and science and materialism. Beginning with Comte, Mill, and Spencer, in 1888, he issued a number of books which examined evolutionary speculation and Christianity, and attempted a reconciliation of the two.

While refusing to commit himself to the theory of evolution, Watson tried to show how it could be reconciled with both teleology and also idealism. He realized that Darwinism had rendered teleology unnecessary in the study of individual species, and so he attempted to reintroduce it on a higher level. Watson wanted to demonstrate that an intelligent teleology was immanent within the organic realm as a whole, that evolution, if true, was itself a teleological process. But before doing this he had to account for the chance implicit in Darwinism. As was mentioned in Chapter Three, he accomplished this by regarding variation as a process which produced only varying degrees of good, and not as one which produced both good and bad. He could consequently interpret variation as telic rather than random.

Teleology could now be safely reintroduced into evolution.
Watson took the fact of the harmony between life and its environment as his first example of purpose. Because all variation adapts organisms to their environments, and because all organisms are in harmony with their environments, there must be a final cause behind this coordination. Purpose can also be discovered in the impulse for survival, which Darwinism assumes to exist in each organism. And lastly, purpose can be seen in the fact that lower forms of life are not as well adapted as higher forms. Were this not the case there would be no evolution from lower to higher forms. There is, accordingly, teleology in the progressive direction of evolution itself.

Watson next wanted to show that this telic process was a manifestation of mind. He assumed that matter could not produce mind, and then argued that because existence contained the same principle of rationality as did the mind, that all existence must be a product of it. Evolution, if true, would thus also be a product of mind. And so Watson could reconcile it with his idealistic panentheism. Evolution would be a phase of that intelligence which is God.

Similar in approach to Watson, although not in ability, was Stinson Jarvis (1854-1926), a Toronto lawyer and novelist who moved to the U. S. A. in 1891. Jarvis was a spiritualist who believed that religion and science were both well served by the theory of evolution. His The Ascent of Life (1894) opined that Darwin could not successfully explain why animals should vary in a progressive way. Life, he offered, evolves because the soul of each organism continually strives to discover and then achieve ideals which are in greater harmony with spirit. Evolution is fundamentally a religious
Both Watson, in his brilliance, and Stinson, in his naivety, however, made two mistakes. First, they both assumed that evolution was progressive. But this was not a necessary part of Darwin's theory, which could just as easily account for a regressive direction in life, and did not state that all forms of life were always improving. Watson appears to have been less influenced by Darwin than he was by the none too scientific evolutionary optimism of Spencer. Second, Stinson and Watson had not solved the problem of randomness. Stinson merely ignored it. And Watson maintained the contradictory position that life was a manifestation of intelligence and yet had evolved by natural selection. If there were mind behind nature, if it were in fact not random, then there was no need for any natural mechanism of selection.

Diametrically opposed to Watson, was the solution offered by William Le Sueur (1840-1917). He embraced evolution as a theory which strengthened his positivistic view of life. Le Sueur was an author and a civil servant who was one of the most vocal evolutionists in Canada. A follower of Comte, he had an optimistic view of man and "the great church of science" which was to provide "the common home and shelter of humanity." He ignored religion as something beyond the realm of science and knowledge, and saw in evolution the proof of his conviction that God was not needed to explain man.

Le Sueur revelled in controversy. From the late 1870's until 1880, he used Rose Belford's Canadian Monthly and the Canadian Journal as a medium to debate such questions as the relation of
morality to religion and the efficacy of prayer in a world governed by natural law. His views that morality was unrelated to religion, which has a history of much evil in any event, and that prayer could accomplish no changes in the physical world, provoked many responses. In 1884 he made his general views on science and religion explicit in an argumentative pamphlet written in response to an attack on agnosticism by the bishop of Ontario. He maintained that the world was witnessing a change toward rationalism and the rejection of miracle. Evolution was a result of this process. Also, while the burgeoning rational scientific point of view did not disprove belief in God and immortality, it did render them incredible "as part and parcel of a supernatural system miraculously revealed to mankind."^5

Later the same year he issued another pamphlet which defended the views of his first from a rebuttal by the bishop. Concentrating more on the issue of evolution, he argued for it as the most probable explanation of life in a universe run by natural law. He allowed as how evolution left room for a hypothetical God at the beginning of life, but continued by emphasizing how evolution had no need for the ideas of design and providence. He concluded by declaring himself a believer in science, and invited others "to taste and see whether the laws of the finite are not sufficient for finite man."^6

II. Dawson's Solution to the Problem of Evolution

There were no traditional supernaturalists in Canada, aside from Dawson, who were capable of grounding their faith in science sufficiently well to challenge the evolutionists. For that matter
there were few anywhere. And those who accepted evolution and still believed usually did so at the expense of any intellectually complete and coherent view of reality. The options of idealism and spiritualism were not without problems, and such a radical and complex reformulation of the faith as Watson's was either beyond, or repugnant to, most. But without such a coherent view of reality, the positivistic alternative gained increasing credibility.

Dawson's significance lies in the fact that he produced one of the most reasonable and compelling defenses of traditional supernaturalism. He very capably defended the concept of designed creation as an alternative explanation of life to that of evolution. And he formulated this into a coherent view of reality in which science and religion were reconciled. Essentially creation meant there was a supernatural author for the designed development of life. Dawson set this forth in a scientific theory of "creation by law" which was antagonistic to evolution, preserved design, and could be reconciled with Genesis.

The question of the origin of the universe and its inhabitants was always important to Dawson. He not only believed that the universe would be chaotic without design, but also as a supernaturalist he placed the source of design outside of nature. He found it inconceivable that nature might have its own principle of order, or that order might be the chance result of a conflux of atoms dancing through infinite time. Without belief in a creator there arose the absurd alternatives of pantheism, idealism, and materialism. With a creator man gained a heavenly Father, discovered the source of design, and became part of a rational,
purposeful world. Or, as Dawson told his audience at Crozer Theological Seminary, in 1882:

If the universe has been created, then, just as its laws must be in harmony with the will of the Creator, so must our mental constitution; and man, as a reasoning and conscious being, must be made in the image of his Maker.7

As with design, so also creation constituted a border between science and religion. It was at once a scientific and a religious idea. Science discovered beginnings which it could not explain, and which manifested the workings of God. The palaeontological record disclosed the introduction of species. Thermodynamics tells us the universe is dissipating energy, and so we must assume it to have had a beginning. The speed of the earth's rotation is diminishing, which implies that the world is finite. And geology, which prior to the Origin Dawson believed to be a science which had discovered no indication of a beginning, came to be one which:

by tracing back all present things to their origin, was the first science to establish on a basis of observed facts the necessity of a beginning and end of the world.8

Dawson was also forced to make creation a scientifically respectable theory in biology, in order to confront his foes' dismissal of the supernatural. Haeckel's atheistic monism passed it over as primitive superstition. Huxley considered it beyond the realm of a necessarily naturalistic science. Darwin admitted the possibility of an original creation but found it unlikely that "at innumerable periods in the earth's history certain elemental atoms have been commanded suddenly to flash into living tissues."9 And Spencer, whom Dawson considered the most outrageous, not only made explicit Darwin's belief that creation meant some incredible and miraculous departure
from natural law, but also considered it an unthinkable religious idea.

Dawson's major arguments for creation were from the gaps in the palaeontological record and the apparently qualitative differences between man and the other animals. The fossil record did not reveal a series of species slowly gradating into each other through time. It revealed distinct species which arrived fully formed in one era and disappeared in the next. While the evolutionists could argue the record was incomplete, Dawson argued it supported his contention of creative intervention. There were gaps between species, a gap between vegetable and animal life, and a gap between dead and living matter. Surely this was evidence of God's discrete species rather than an evolutionary continuum.

As Spencer and the Darwinians included man in evolution, Dawson was also at pains to show him as radically distinct from the other animals. The Story of Earth and Man, published two years after The Descent of Man, argued man was "a 'new departure' in creation." There was a huge gulf between "the mechanical, unconscious, repetitive nature of the animal" and a human who could think, talk, make moral decisions, and have religious feelings.

The Story of Earth and Man also contained the initial elaboration of Dawson's proposal of creation by law. With an eye especially on Spencer's Principles of Biology, which had dismissed creation as ludicrous and unthinkable, Dawson tried to re-establish "the old idea of creative design, which undoubtedly rests on an inductive basis." It was not, however, until 1875 that his thoughts were polished and he was able to present them in an impassioned address to the American Association for the Advancement of Science. Dawson defined the creation
of species as "the continuous introduction of new forms of life under
definite laws, but by a power not emanating from within themselves,
nor from the inanimate nature surrounding them."\(^{13}\) He wanted to
show that creation was not some miracle repugnant to science. Certainly
"the seen can be explained only by reference to the unseen," but this
did not mean that God encroached on natural law in a sporadic and
arbitrary manner.\(^{14}\)

Creation by law was an elaboration of the progressionism Dawson
had adopted before the *Origin*. The process was now presented as one
regulated and stabilized by a number of laws which Dawson had general­
ized from the fossil record. All of these laws were incompatible with
evolution. The development of life was not a continuous affair but
rather marked by the alternation of periods of rapid production of
species with periods of extinction. Species were usually introduced
in intermediate types, from which they quickly varied, within limits,
either toward degradation or elevation. Allied species were introduced
simultaneously in different areas.\(^{15}\) And so it went, with God's
activities being discovered as scientific, and evolution discredited
as wrong.

There was in all of this, however, one area Dawson studiously
avoided. He never described the mode of creation nor even guessed at
it. But this was in keeping with the mysterious realm between science
and religion which creation occupied. Science could examine the re­
sults of creation but not the process. Dawson maintained the position
he had first announced in 1863 in response to Darwin's *Origin*:
It may be found, after all, that the question whether the creative force manifested itself in calling certain species into existence from nothing, from dead matter, whether by an instant and miraculous act, by more sudden natural change, or by slow and gradual processes, is insoluble by us; or that all or many of these modes may have been concerned in making living beings what they are.\(^{16}\)

Creation by law provided Dawson with a supernatural explanation of the origin of life which was scientifically credible. It was a more coherent theory than evolution because it not only explained the origin of species but also the origin of life. Evolution had either to assume an original creation or to argue for spontaneous generation. The former option Dawson considered to be incompatible with evolution, and the latter he considered absurd. Huxley might "make the grandeur of the material universe his highest object of adoration," and Haeckel might adopt the "alternative of self-existence or causelessness for the universe and all its phenomena," but this was ridiculous presumption which explained nothing.\(^{17}\)

Creation "provides in 'will,' the only source of power actually known to us by ordinary experience, an intelligible origin of nature."\(^{18}\) It does not leave man's ultimate questions unsatisfied or unanswered, but is rather an elevating rational view of species which prevents "the deceptions of pseudo-scientists from doing their evil work."\(^{19}\) Creation brings God into history rather than leaving him an otiose first cause or omitting him altogether. The origin of species shows that:

> the will of God has been active and operative as the sole cause throughout all ages of the world's creation and history, and that the visible universe is not a mere product of its own phenomena.\(^{20}\)

The design in nature now gained a firm scientific foundation.
The evidences for order and adaptation were vindicated, and the origin of species seen as part of a plan:

The plans of the creative mind constitute the true link of connection between the different states and developments of inorganic and organic objects. This is the real meaning of creation by law, as distinguished from mere chance on the one hand, and arbitrary and capricious intervention on the other.21

Creation by law could also be reconciled with the Genesis cosmogony which Dawson had come to see as "not reconcilable with the supposition of a series of arbitrary acts any more than the scientific idea."22

In underpinning natural theology and the Bible, creation by law, as Dawson pleaded for it to the American Association, is the nexus where:

natural science meets with theology, not as an antagonist, but as a friend and ally in its greatest time of need, . . . neither men of science nor theologians have a right to separate what God in Holy Scripture has joined together, or to build up a wall between nature and religion, and write upon it "no thoroughfare." The science that does this must be impotent to explain nature and without hold on the higher sentiments of man. The theology that does this must sink into mere superstition.23

But by the time of Sir William Dawson's death, in 1899, the era of Paleyism was drawing to a close. Although his theory was as scientifically sound as that of evolution, it belonged to this dying perspective. Science was becoming increasingly naturalistic and unwilling to tolerate religious interferences with its expanding domain. And naturalism demanded evolution as much as evolution made naturalism feasible. Science and religion were separating into independent, and sometimes inconsistent, views of reality. The harmony of science and religion which Dawson had fought for, was defeated.
FOOTNOTES TO CHAPTER IV


11 Ibid., p. 370.

12 Ibid., p. 145.


14 Ibid., p. 22.

15 Ibid., p. 25.


21 Ibid., p. 376.

22 Ibid., p. 377.

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