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Darwin's Doubts About Design

The Darwin-Gray Correspondence of 1860

Darwin is credited with overturning Paley's ideas of design. However, Darwin's problems with design are more complex, and are often misunderstood by neither grasping Paley's ideas of design, nor those of his successors, who were beginning to replace arguments leading from design to God by arguments to design from God. Darwin's doubts about design arose from three main sources: first, he used the argument from design, in contrast to Gray's argument to design; second, the issue of chance and determinism; and, third, his doubts that a 'Beneficent God' could design a world with so much pain. The correspondence between Darwin and Gray and Gray's articles on Darwin show how Gray sought to be Darwin's retriever. Hodge's challenge in What is Darwinism? was centred on chance, and as natural selection depended on chance Darwinism had to be atheistic, even if Darwin himself was not. In conclusion Darwin's doubts about design stemmed directly from his doubts about God, and especially suffering.

Key words: Design; teleology; Darwin; Paley; Gray; Hodge.

'In crossing a heath, suppose I pitched my foot against a stone, and were asked how the stone came to be there. . . . But suppose I had found a watch upon the ground . . . the inference we think is inevitable, that the watch must have had a maker. . . .'¹

In this well-known passage Archdeacon Paley sets out the most venerable of arguments for design. It is easy to mock Paley or, like Dawkins, be magnanimous to a defeated opponent. It is less easy to define what design meant either to Paley or to his successors, as there is no one definition. Paley concentrated on biological examples, almost ignoring astronomy. Although he was writing at the same time as geological evidence was appearing for a changing earth of a vast age, he wrote of a static unchanging world. Drawing an analogy between the 'contrivance' of a watch or other machine and a biological structure, Paley presented that as a proof of there being a designer of great wisdom. Thus, if a system of levers in a machine made by a human is designed, so the system of levers in an animal's body is also designed. Whereas Paley and some successors saw design in the *details*, others notably Wordsworth and Whewell used design in a more general and evocative sense. Darwin seemed to consider design in strongly Paleyesque terms.

1 Paley, W. *Natural Theology*, London (1825), p. 1.

The 'received' account of the relationship of Evolution and Christianity is that until 1859 most Christians believed the earth was a few thousand years old and held a strongly Paleyite view of design; Darwin then exploded this with devastating effect and was met with religious bigotry and ignorance. This account is mythical but still keeps resurfacing, blatantly in White and Gribbin's biography of Darwin,² and implicitly in Keith Ward's *God, Chance and Necessity*.³ Part of the reason for its persistence is the very commonly held perception of Christianity as creationist and the 'conflict thesis' of science and religion. The recent publication of Darwin's Correspondence for 1859, 1860, and 1861 gives a wealth of material for a slow motion re-assessment of the reception of *The Origin of Species*. This study focuses on one aspect: the extensive correspondence of Darwin and the Christian Botanist Asa Gray and Gray's reviews, and then on Hodge's *What is Darwinism?* which in the opinion of the author must be the best anti-Darwinian book ever written.

Asa Gray (1810–88) was Professor of Botany at Harvard from 1842 to 1873 and had corresponded with Darwin for many years. Gray and Darwin met when Gray came to Britain in 1838 and 1868 when on visiting Downe House Mrs Gray found Darwin 'entirely fascinating'.⁴ Their letters show warmth, familiarity and openness in which both often mention their private, rather than public, thoughts. Much of the correspondence is technical and mundane, part concentrates on the publication both in the U.S. and Britain of Gray's review of *The Origin of Species*. They shared an abhorrence of slavery. Of interest to this study is their long discussion of the theological issues of evolution. All in all, if Huxley was Darwin's Bulldog or Rotweiler, Gray was Darwin's Retriever as he did much to retrieve Evolution for orthodox and Evangelical Christianity. In 1860 Lyell advised Bishop Tait to read Gray's reviews rather than Wilberforce's as Tait was wavering on evolution (CD to AG 11 Dec 1860, p. 521).⁵

If one has been brought up on a diet of White's *History of the Warfare of Science and Theology*, or has what Leslie Francis dubbed a 'perception of Christianity as necessarily involving creationism',⁶ it will seem that Gray was either out of step with, or way ahead of, Christians of his day. Along with Kingsley, F. Temple, Hort, Baden Powell, Tristram, Church, Jenyns, Fox, (all Anglican clergy) and others he was quick to accept evolution. Though most Christians did not accept evolution, the great age of the earth was not an issue in the 1860s. Evolutionist, creationist and waverer all accepted the vast age of the earth as a proven fact, though estimates of the age varied from ten million

2 White, M & Gribbin, J. *Darwin; a life in science* London: Simon & Schuster, (1995), p. 322, see especially chapter 11 *Battles with Bigotry*.

3 Ward, K. *God, Chance and Necessity*, Oxford: One World, (1996), p. 212, see p. 63.

4 Desmond, A. and Moore, J. *Darwin*, London: Michael Joseph, (1991), p. 562. Dupree, A Hunter, *Asa Gray*, Baltimore, John Hopkins, (1988) (rpr of 1959), p. 503.

5 Burkhardt, F. *The Correspondence of Charles Darwin*, Vol. 8, Cambridge, Cambridge Univ. Press (1993). Letters are given by their date and page number.

6 L. Francis, H. Gibson, & P. Fulljames, Attitudes towards Christianity, Creationism, Scientism and interest in Science among 11–15 year olds, *British Journal of Religious Education*, 1990, vol. 13 (1), p. 4.

to a billion years, with Darwinian doubter John Herschel even suggesting 50 billion for the age of the universe! As Richard Main wrote in *Replies to Essays and Reviews* edited by Wilberforce, 'Some . . . still teach . . . that the earth is 6000 years old. . . . No well-educated person of the present day shares that delusion.' However, there were serious scientific objections to evolution, which Wilberforce, Sedgwick and others addressed, e.g. the nature of scientific reasoning, the fossil record and geology, where geologists initially did not accept vast hiatuses in the geological record.⁷

The religious controversy over Darwin was not centred on Genesis, as all Christian writers in the 1860s took Genesis 'non-literally', with conservative Christians opting for a Gap Theory, Day-Age, or less often, a poetic view, and increasingly by liberal Christians a mythical interpretation. The exceptions were Biblical Literalists like the Brethren B. W. Newton, Moses Stuart and some American Southern Presbyterians who are non-representative. Having said this, the common perception is that many Christians were Biblical Literalists. This is still common in recent scholarship, for example Desmond in *Huxley the Devil's Disciple* claims that Owen was trying to woo Wilberforce away from literalism.⁸ This was not the case as in the 1820s Wilberforce had attended Buckland's geological lectures at Oxford and his review in the *Quarterly Review*⁹ makes it abundantly clear he was an 'old earther'. Noll and Livingstone also point out that 'a set of critics has insisted that Hodge (C. H.) was merely a hidebound biblical literalist.' (WID p. 35).¹⁰ Anyone who has dipped into Hodge's *Systematic Theology*¹¹ knows that he was no literalist. The alleged literalism of Christians distorts much understanding of the relationship of science and religion in the nineteenth century.

The main theological problems of evolution were perceived to be: first, that the random nature of natural selection implied chance, and thus excluded design by God and ultimately a Creator, with the implication that Darwinism is anti-teleological; second, the descent of humans from animals destroyed the moral stature of humanity and thus destroyed the Image of God and morality.

It was the first of these problems which was discussed by Gray and Darwin in their letters, and then by Gray in his various reviews which were collected together to form *Darwiniana*¹² published in 1876. As Noll and Livingstone point out in relation to Hodge's *What is Darwinism?* the question was teleology and not literalism.¹³ This present study concentrates on issues raised by questions of design and teleology, and largely ignores those on the animal origin of man

7 Sedgwick, A. 'Objections to Mr. Darwin's theory of the origin of species.' *Spectator* 24 March 1860, p. 285-6.

8 Desmond, A. *Huxley: The Devil's Disciple*. London: Michael Joseph, (1994), p. 281.

9 (Wilberforce, S.) 'Darwin's Origin of Species'. *Quarterly Review*, (1860) 108, p. 225-64.

10 Hodge, C. H., *What is Darwinism?*, ed. with introduction Noll, M & Livingstone, D. Michigan, Baker, (1994), p. 182. References given as WID p. xxx.

11 Hodge, C. H., *Systematic Theology*, 3 vols., London, James Clarke, (1960, rpr of 1872).

12 Gray, A. *Darwiniana*, Cambridge, MS, Belknap Press, (1963, reprint of 1876 edition) p. 327. References given as Gd p. xxx.

13 Noll & Livingstone, Introduction to WID, WID p. 35.

or morality. It utilises both private correspondence between Darwin and Gray and their published works. As the letters were private, they are often unguarded and let out the innermost thoughts; thus Darwin discusses his problems with aspects of Christian belief. The letters give the *private* thoughts of both Gray and Darwin, and their published works their considered *public* statements.

Charles Hodge (1797–1878) was somewhat older than Gray and had been for many years the leading Systematic Theologian at Princeton Theological Seminary. Along with B. B. Warfield, he was the leading architect of biblical inerrancy. His best known work is *Systematic Theology* (1872) which is, rightfully, still in print today. In those volumes Hodge discussed both geology and Darwin.¹⁴ On geology he simply followed the consensus of the day that Genesis does not require one to accept a young earth and that the geological ages were correct. In this he was assisted by James Dana of Yale, a geologist who was initially opposed to evolution but by the 1870s reluctantly began to accept it, although insisting on the direct creation of man.¹⁵ Hodge's *What is Darwinism* (1874) is in the style of an extended book review, and reflects a deep understanding of science and the issues Darwin raised.

Having introduced the four participants, Darwin and Paley, Gray and Hodge, the issue of design and its implications are now considered.

Paley and Design

Many people have heard of Paley's Watchmaker, but few have actually read his books. Though Paley argued in explicit detail *from* design to the existence of God, his argument is never as simplistic as it is often made out to be. Neither did he eliminate the role of chance and devoted one section to the subject.¹⁶ My reading is that he did not go quite as far as those today who argue for an 'Intelligent Designer'. Though Paley's writings on design had a great influence on British science and theology up to the 1860s, there was a considerable variation in opinion. Some, like Coleridge, felt Paley had overplayed his hand. John Wyatt in his fascinating book *Wordsworth and the Geologists* deals in passing with the dissatisfaction with simple Paleyism remarking that 'Wordsworth was as sceptical of crude Paleyanism as Greenough, Sedgwick or Whewell'.¹⁷ However Buckland was more Paleyite and argued in a very detailed manner, as is shown by his *tour de force* in a lecture on the *Megatherium* that was given in the Holywell Music Rooms on 23 June 1832. It was a fine example of Buckland's buffoonery and scientific skill. Buckland chose *Megatherium*, which he christened 'Old Scratch', to demonstrate design because Buffon and Cuvier had singled out sloths as rare examples of bad design. Buckland argued

14 Hodge, C. H. *Systematic Theology*, *op. cit.* 11, vol. 1 p. 570ff on geology, vol. 2, p. 12ff on evolution.

15 Livingstone, D. N., *Darwin's Forgotten Defenders* Grand Rapids/Edinburgh (1987) pp. 210, p. 70–77.

16 Paley, W. *op. cit.*, p. 337.

17 Wyatt, J. *Wordsworth and the Geologists*, Cambridge: Cambridge University Press, (1995), p. 268, p. 115.

that 'Old Scratch' was a root eater and it was to this style of living 'to which the megatheroid skeleton . . . had been so finely adjusted'.¹⁸ Thus the *Megatherium* was perfectly designed for its divinely chosen environment. The Cambridge school were less detailed in their approach to design and Whewell's works though 'Paleyian in its general thesis of Divine direction' had absorbed Lyell and much uniformitarian geology and thus paved the way to accommodate Darwin.¹⁹ At the risk of oversimplifying, Whewell and others were beginning to argue *to* design from God, and thus had a more generalised view of design, and were less deistic and detailed than Paley. It may be significant that Darwin adopted Buckland's detailed approach to living structures, rather than the more generalised approach of Sedgwick and Whewell—his own teachers. This distinction of *from* and *to* design is essential to understand both Darwin and Gray and also the more general issues of the 1860s. To put the point in a more general form, there is a difference between the philosophical arguments for God and natural theology *proving* the existence of God and the idea that such arguments *support* the existence of God, although the two perspectives are not totally mutually exclusive.

The high water mark of Paleyesque design was the publication in the 1830s of the eight *Bridgewater Treatises*, and especially Buckland's treatise on geology. Seven of the authors were Anglican clergy scientists, the eighth being the Scottish Presbyterian Thomas Chalmers. Whewell was already questioning Paley's approach in this volume.

Design and Darwin

It was against this background that Darwin developed his evolutionary ideas, with the irony that, as an undergraduate, Darwin had studied Paley's works in the same room that Paley had occupied fifty years before. Darwin often retained Paley's terminology, e.g. contrivances, but came to see these as caused by natural selection rather than design. Darwin made some references to the Creator in the *Origin*, and some have ascribed this to Darwin trying to make his necessarily atheistic theory more palatable. However, as Darwin stressed in his *Autobiography* he was a theist in 1859, notwithstanding Moore's claim that the death of his daughter Annie in 1851 snuffed out his faith in a benevolent Creator and the scheme of Redemption.²⁰

Darwin made no explicit reference to design in the *Origin*, but it is implicit when in the last two chapters he stressed that certain facts cannot be explained by the theory of creation, meaning a direct instantaneous creation according to the design of God. Darwin regarded the 'attempt to explain this similarity of pattern . . . by utility or by the doctrine of final causes' as 'hopeless'. And 'On the ordinary view of the independent creation of each being, we can only say

18 Rupke, N. A., *The Great Chain of History* Oxford (1983) pp. 322, p. 240–5

19 Wyatt, J. *op. cit.*, p. 131.

20 Darwin, C & Huxley, T., *Autobiographies*, Oxford, Oxford University Press, (1983), p. 54. Desmond & Moore, *op. cit.*, p. 387.

that so it is;—that it has so pleased the Creator to construct each animal and plant'. In Darwin's final chapter *Recapitulation and Conclusion*, he stressed that 'the theory of creation' has no explanatory powers: 'This grand fact of the grouping of all organic beings seems to me utterly inexplicable on the theory of creation' (Origin p. 444).²¹ Some interpreted these passages as a clear rejection of God as creator as did John Amory Lowell in the *Christian Examiner* of May 1860. He claimed Darwin cast a 'sneer at the idea of any manifestation of design in the material universe'. Gray took this up and considered the charge to be unfounded. To Gray sneering was one thing and considering the difficulties of belief in final causes another (GD p. 114). Gray's reviews of 1860 and later works show how he found evolution and design to be compatible.

The nub of the question faced by critic and supporter alike was whether a 'doctrine' of secondary causes was inimicable with design by a Creator. Gray tackled this in his *Design versus Necessity* put in the form of a discussion between an opponent and supporter of Darwin (GD pp. 51–71). Gray concluded with the story of a woman and a piece of cloth. In previous years she would say 'the wool or cotton was carded, spun, and woven by hand.' On being told that no human hand had touched it she would reckon that 'the cloth was made without design'. However on having explained to her 'carding-machines, spinning-jennies and power-looms' . . . 'she would believe in design as firmly as before . . . beyond anything she had previously conceived possible' (GD p. 70).

In *Natural Selection not inconsistent with Natural Theology* Gray developed another analogy based on rain-drops (GD p. 128). Gray took rain coming from the evaporation of the sea, which on falling on land enabled vegetation to grow. Gray asked rhetorically whether only the raindrops which fell on land were designed to support vegetation, whereas the 'multitudes of raindrops' which 'fall back into the ocean—are as much without a final cause.' After receiving these reviews Darwin wrote back to Gray (26 September 1860, p. 388) indicating his appreciation of Gray's arguments. Darwin liked the metaphors of the cloth and raindrops and reckoned 'The last two essays are *far* the best Theistic essays I have ever read.' But he was not totally convinced as 'I (unfortunately) think more of the rain-drops on the ocean' with their apparent lack of design or purpose. Darwin concluded the paragraph by writing 'But I well know that I am muddled-headed on this subject.'—or should he have said 'I am not convinced by design.?'

Some months before, Darwin had discussed design with Gray (3 July 1860, p. 275), which shows that Darwin's concept of design included determinism and was contrary to Gray's more 'general' idea. He wrote that when he shot a bird for food, 'I do it *designedly*', and then asked if a man killed by lightning was *designedly* killed by God. The letter concluded with a classic example of Darwin nailing his colours firmly to the fence, 'If the death of neither man or gnat are

21 Darwin, C. D., *Origin of Species*, Harmondsworth, Penguin, (1968) (1st edit 1859), cited as Origin p. xxx.

designed, I see no good reason to believe that their *first* birth or production should be necessarily designed. Yet, as I said before, I cannot persuade myself that electricity acts, that the tree grows, that man aspires to loftiest conceptions all from blind, brute force.'

Darwin seemed to have got himself into an impasse, taking design in its most extreme form and combining it with determinism. Yet he had written to Gray hours after receiving an account from Hooker of the affair at the British Association at Oxford from Hooker commenting to Gray that the 'Bishop of Oxford . . . ridiculed me at great length . . . & Hooker answered him' (3 July 1860, p. 273). Hooker had told Darwin that Huxley could not be heard and it was left to Hooker to 'smite that Amalekite Sam' (2 July 1860, p. 270).

Gray's reviews were published anonymously in the *Atlantic Monthly* for July, August and October 1860 and reprinted at Darwin's expense in 1861 (GD p. 72–145). On 26 November Darwin wrote to Gray of his impressions on reading the third article, saying they were '*admirable*', but 'I cannot honestly go as far as you do about design.' Darwin could not see everything as the result of design and could not believe 'that variation has been led along certain beneficial lines' as Gray expressed it (GD p. 122). He concluded 'I am . . . in a hopeless muddle.'

Discussing vestigial organs in the *Origin* Darwin emphasised that these are useless and, by implication, inexplicable by design, as to say they are created 'for the sake of symmetry' is 'a restatement of fact' (*Origin* p. 430). In his review Gray stressed that vestigial organs are far better explained by 'community of descent' (GD p. 100).

Design, Chance and Determinism

Intellectually Darwin had great problems concerning whether or not everything was absolutely predetermined. To Darwin, as he expressed it to Gray (22 May 1860, p. 224), if God were God He would then be 'an omniscient Creator, who foresaw every future event and consequence.' This problem of free-will and determinism surfaced very early on in the Gray-Darwin correspondence of 1860. In February 1860 Gray sent 'the remaining sheets of the Review' and Darwin replied with his comments on 24 February bringing out his theological puzzles. To Darwin it seemed that for 'an Omnipotent & omniscient Creator to foresee is the same as to preordain' and he regarded this as 'an uncomfortable puzzle *something* analogous with "necessity & Free-will" or the "Origin of evil" ' (24 February 1860, p. 106).

This problem of determinism occurred several times in Darwin's letters to Gray in 1860, and Gray's Reviews may be seen as an attempt to answer Darwin's problems and *retrieve* evolution, if not natural selection, for Christianity. As discussed earlier Darwin did not ultimately accept Gray's arguments, claiming bewilderment. However the whole tone of Darwin's letters indicate that this 'bewilderment' was genuine and not vacillation. He talked about it to others, reporting his discussion with his cousin/brother-in-law Hensleigh

Wedgwood, 'a very strong theist'—'I put it to him, whether he thought that each time a fly was snapped up by a swallow, its death was designed; & he admitted that he did not believe so, only that God ordered general laws & left the result to what may be so far called chance, that there was no design in the death of each individual fly' (10 Sept 1860. p. 350).

Darwin finally developed his problems over chance and necessity in the Stonehouse Metaphor at the end of *Variation of Animals and Plants under Domestication* published in 1868, by which time he had ceased to fund the publication of Gray's reviews. It is reasonable to see this as the culmination of the Gray-Darwin dialogue on the ramifications of design begun in 1860. Here Darwin all but rejected any design.

Darwin imagined an architect (no Darwin would stoop to being a builder!) building a house without the use of cut stone 'from the fragments at the base of a precipice'. Some houses in North Wales are like this, notably the Ugly House, or Ty Hwll near Capel Curig. Darwin passed this house on several occasions as Snowdonia was the place of his geological apprenticeship in 1831 and of his last serious geological fieldwork on glaciation in 1842.²² As Darwin wrote 'we should admire his skill and . . . paramount power.' But the architect did not 'design' the stones used, he had utilised what he had found. Darwin likened the relationship of the fragments of stone to the edifice, to the relationship of 'the fluctuating variations of organic beings' with the varied structures acquired by their modified descendants.²³ He continued by saying that the shape of the fragments may be 'accidental' but as they are the result of a long sequence of events they are not. Then he moved 'beyond my proper province' and wrote 'An omniscient Creator must have foreseen every consequence which results from the laws imposed by Him'. Continuing on from that he wrote 'we can hardly follow Professor Gray in his belief that variation has been led along certain beneficial lines', as he questioned whether God would have ordained certain characteristics in domestic animals. Darwin came to no conclusion and wrote 'Thus we are brought face to face with a difficulty as insoluble as is that of free-will and determinism'.

In a letter to Darwin on 25 May 1868, Gray wrote, 'I found your stone-house argument unanswerable in substance (for the notion of design must after all rest mostly on faith, and on accumulations of adaptations, etc.) . . . I understand your argument, and feel the might of it.' Gray was now adopting the argument from God to design, and used design in a very generalised manner.²⁴

Darwin's belief in 1868 was less theistic, or rather more agnostic, than it was in 1860 when he wrote to Gray (22 May 1860, p. 224) after expressing his moral concerns with *Ichneumonidae* saying 'On the other hand, I cannot

22 Roberts, M. B. 'Darwin at Llanymynech.', *British Journal for the History of Science*, 1996, 29, p. 469–78., and 'Darwin's Dog-leg.', *Archives of Natural History*, forthcoming 1997. Browne, J. *Charles Darwin Voyaging*, London: Jonathan Cape (1994), passim.

23 Darwin, C. *Variation of Plants and Animals under Domestication*, (1905), vol. 2, pp. 523–6.

24 cited in Moore's discussion of the Stonehouse metaphor in Moore, J. R. *The Post-Darwinian Controversies*, Cambridge: Cambridge University Press, (1979) pp. 276.

anyhow be contented to view this wonderful universe . . . & to conclude that everything is the result of brute force (chance).'

Moral Doubts

So far we have considered Darwin's *intellectual* problems over design, but alongside these are Darwin's *moral* doubts. Darwin was a sensitive person and in 1827 gave up medicine because he could not accept the suffering involved in operations. His squeamishness turned to a rejection of a beneficent God in 1851 on the death of his ten year old daughter Annie, which Jim Moore argues somewhat too neatly extinguished what little Christian faith he had. He had found hard to accept the death of his father in 1848, who as an unbeliever had no place in Redemption. During this period Darwin studied several works of theology which had moved beyond the edges of orthodoxy, notably F. W. Newman's *Phase of Faith* (1850). As Moore points out 'there was no resting place *en route* from Anglicanism through Unitarianism to a purely theistic belief . . . Darwin gave up Christianity'.²⁵ He did not give up belief in God, but could not reconcile a loving God with such unnecessary death and suffering. This questioning stayed with Darwin for the rest of his life. His religious musings in his *Autobiography* also show that his problems with Christianity were not so much *intellectual* as *moral*, and thus Darwin may be regarded as a typical Victorian moral critic of Christianity.²⁶ Nowhere does this come out more poignantly than in his letter to Gray of 22nd May 1860, as the essence of his letter is the question, 'How can a loving God allow suffering?' (22 May 1860, p. 224).

Darwin had sent Gray a complimentary copy of the *Origin* in November 1859 and Gray, who had known of Darwin's natural selection theory for several years, soon made his basic acceptance clear to Darwin. In the first part of 1860 Gray was both arranging the publication of the *Origin* in the U.S.A. and writing a favourable review for the *Atlantic Monthly*. Frequent letters passed between them mostly on these preceding matters, but also openly discussing more religious concerns. In a letter dated 22nd May Darwin aired his problems over suffering. Unfortunately the letter from Gray dated 7th May has not been found. Darwin's letter dealt first with matters of the American edition and then of recent reviews, referring to negative ones by Sedgwick, Clarke, Duns and Owen. The second part of the letter deals with 'the theological view of the question' and Darwin dealt with theological rather than scientific problems, stating 'I cannot see, as plainly as others do, . . . evidence of design and beneficence.' He could not see how a good God could have created an *Ichneumon* fly or allowed cats to play with mice. *Ichneumonidae* lay their eggs in live caterpillars which remain alive until the larvae pupate, and gave the basis for the SF film *Alien!*

25 Desmond, A. and Moore, J. *Darwin*, London: Michael Joseph, (1991), chap. 25 'Our Bitter & Cruel Loss' especially p. 299.

26 On the 'moral criticism' of Christianity see Altholz, J. 'The Warfare of Conscience with Theology', (1976) in Parsons, G. *Religion in Victorian Britain. Vol. IV*, Manchester, Manchester University Press (1988), p. 150-169. (Useful, despite howlers on the history of science!)

It is difficult not to feel the force of Darwin's argument as he required a beneficent theodicy, and could not reconcile 'Nature Red in tooth and claw' with a loving God. To Darwin God not only had to be an Intelligent Designer, He also had to be a Loving Designer.

Many of Darwin's scientific predecessors, however, did not feel the problem of suffering so keenly as is evidenced by those who wrote the *Bridgewater Treatises* a generation earlier. The *Bridgewater*s represent the height of design and evidential theology in the 1830s. All the authors were Christian, mostly clergy. At least two discussed suffering. Buckland, the Oxford Geologist, who in the 1820s was the foremost proponent of Diluvialism, wrote *On Geology and Mineralogy* which, according to Jon Topham, was the biggest seller of the eight and was found in many mechanics' institutes.²⁷ This treatise presented the geological and palaeontological understanding of the mid-1830s through the eyes of one of geology's foremost Anglican exponents. By 1835 Buckland had rejected his diluvialism and in 1838 became convinced of the Ice Ages proposed by Agassiz, following a visit to the Jura. Theologically Buckland was close to moderate Evangelicalism as was his friend Edward Copleston of Oriel College, whom Simeon considered to share all his essential beliefs. In the 1820s Buckland was encouraged by the Evangelical theologians J. B. Summer (Archbishop of Canterbury 1848–62) and G. S. Faber, and by the ultra-conservative Bishop Shute Barrington of Durham.²⁸ To Buckland and many contemporary Evangelicals predation did not contradict the beneficence of God, as is shown by Chap. XIII of his *Bridgewater Treatise*: 'Aggregate of Animal Enjoyment increased, and that of Pain diminished, by the existence of Carnivorous Races'. Neither did they accept that passages such as Genesis 3 or Romans 8 raised problems for the concept of predation.²⁸ Buckland is echoing Paley's view of suffering in *Natural Theology* where he says without predation we would 'see the world filled with drooping, superannuated, half-starved, helpless and unhelped animals'.²⁹

William Kirby's *On the History, Habits and instincts of Animals* (1835) was unique among the *Bridgewater*s for adopting a *young earth* position to the consternation of other writers. The introductory chapter claimed that all strata were laid down in the Flood. Kirby was the leading early 19th century entomologist and his work was widely used by Darwin. This is borne out by his correspondence with the Rev John Rodwell in late 1860, describing cats and blind rats and how these supported the ideas in the *Origin*. On discovering that Kirby was Rodwell's uncle he wrote, 'whom I for as long as I can remember have venerated'. In 1818 Kirby and Spence had written a four volume

27 Topham, J. 'Science and popular education in the 1830s', *British Journal for the History of Science* (1992) 25, 397–430.

28 Rupke, *op. cit.*, p. 14.

29 Buckland, W., *Geology and Mineralogy considered in reference to Natural Theology*, 2 vols., London, 1836 etc.

Buckland, W. *An Inquiry whether the sentence of death . . .* London 1839.

See S. J. Gould's discussion of the same theme in 'Nonmoral Nature' in *Hen's Teeth and Horse's Toes*, London, Penguin, 1984, p. 32–45.

Introduction to Entomology of which Darwin had a heavily annotated copy. As his was the first edition he probably used it for his beetlemania at Cambridge. In the second volume of his *Bridgewater Treatise* Kirby described the *Ichneumon* and how they destroy pests 'by the goodness of Providence'.³⁰ The chapter on insects speaks of them demonstrating the beneficence of God in their beauty, design and behaviour, something Darwin could not accept. However in his letter to Gray on 22nd May 1860 it is far more likely that Darwin was thinking of Kirby's account in his *Entymology* rather than his *Bridgewater*, as the former was one of Darwin's most used texts. Kirby described how, 'The active *Ichneumon* braves every danger, and does not desist until her courage and address have insured subsistence for one of her future progeny.'³¹

Thus Darwin wrote 'With respect to the theological view of the question . . . I am bewildered' as 'There seems to be too much misery in the world'. A few lines further he wrote, 'On the other hand I cannot . . . conclude that everything is a result of brute force' (21 May 1860, p. 224). Perhaps like William Blake, Darwin could accept that God 'designed' the lamb, but did not frame the 'fearful symmetry' of the tyger.³² As Blake's biographer wrote 'Few poems have been scrutinised so closely', and one reading is that a benevolent God made the lamb but not the tyger. Among critics, there is little agreement to its meaning. However his *Book of Urizen* seems to accept two creators one benevolent and Urizen the other, thus providing a mythological dualism to explain the negative in creation.³³

Suffering was an insuperable problem for belief to Darwin, and in the face of it he was left bewildered as to whether a beneficent God could have designed a world with so much animal pain. Darwin's theodicy was a baffled reverent agnosticism; Buckland and Kirby regarded animal suffering as God's intention for the natural order, but this became less acceptable in a post-Chloroform society.³⁴

30 Paley, W. *op. cit.*, p. 312.

31 Kirby, W. *On the power, wisdom, and goodness of God, as manifested in the Creation of Animals* London, various editions, from 1853 edit vol. ii, p. 243.

Kirby, W. and Spence, W., *An Introduction to Entomology*, London, 1856 (6th Edition), p. 194.

32 William Blake, *Tyger! Tyger! Burning bright;* and *Little lamb, who made thee?*

33 Ackroyd, P. *Blake* London, (1995), pp. 399, p. 143f & p. 175.

34 At the conference where this paper was presented the most perceptive and awkward question was on how I, as a minister, tried to minister to people in the midst of suffering. Two days after the conference I was due to bury a little baby of five months, so the questioner touched a nerve. To give a brief outline, I often start with God as Creator, echoing God speaking to Job out of the whirlwind (Job. 38-42) and considering the Love of God reflected in the beauty of Creation. I then move to the death of Christ, the Son of God and the Crucified God who not only forgave sins but also entered into all human suffering. I often focus on the cry of dereliction 'My God, my God, why have you forsaken me?' (Mark. 15.34.) I have found Darwin's concerns over suffering most helpful and challenging to my own pastoral work. Desmond's treatment of the poignant correspondence between Huxley and Kingsley over the death of Huxley's little son Noel has also been spiritually formative for me and gave me the kernel for a sermon at the annual Memorial Service in my Church. (Desmond *op. cit.*, p. 286-9). Darwin and Huxley both raised acute problems over the goodness of God in their pain over the loss of young children. No help will be found from an Intelligent Designer or a Cosmic Fine Tuner. Like Job they were angry with God for 'taking away' their children, see Job chaps. 2 and 3. The beginnings of an answer come in Job chap. 38 where

Aesthetic Considerations

Despite Darwin's problems over suffering and the apparent randomness of natural selection and his inability to 'see clearly' on design, his consideration of the beauty of the natural world at times gets the better of his (alleged) naturalistic atheism. This comes out strongly in the last paragraph of *The Origin of Species* (Origin p. 459–60):

'It is interesting to contemplate an entangled bank, clothed with many plants of many kinds, with birds singing in the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect . . . There is grandeur in this view of life, with its several powers, having been originally breathed (by the Creator) into a few forms or into one: and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved.' [N.B. 'by the Creator' is not in the first edition but was inserted later. Why?]

This echoes what he wrote to Gray (22 May 1860, p. 224) after showing his abhorrence to suffering, 'On the other hand I cannot . . . view this wonderful universe . . . and to conclude that everything is a result of brute force'. Darwin had a great sense of the wonder and beauty of the natural world, which led him against believing in pure chance. Those who have watched the TV series on the *Voyage of the Beagle* will know the sheer beauty Darwin saw on his journey. The passage from the *Origin* quoted above is possibly inspired by the country lanes of Shropshire, or at least I think so, having passed many entangled banks covered in spring flowers.

However the appeal to the aesthetic is not a rational argument and operates at a very different level to Paley's design, or even 'the fine tuning of the universe', being evocative and not logical. Being evocative and non-rational and non-logical, but not irrational and illogical, it needs to be illustrated *subjectively*. In the middle of writing this section I went for an evening walk on the high moorland above Llangollen. Being a clear evening the views were as extensive as they were beautiful with a panorama from Snowdonia to The Wrekin, the very places where Darwin spent his formative years. As I enjoyed the vista I thought of Darwin, 'I cannot . . . conclude that everything is a result of brute force.' Here Darwin was neither rational or logical, and balked at the apparent reductionism of his argument from the chanciness of natural selection because of the manifest beauty and wonder of the world. In his letter to Gray aesthetic considerations of wonder and awe made Darwin draw back from a reductionist stance on natural selection.

34 *continued*. God speaks to Job out of the whirlwind and asks Job where he was at Creation. For succour one must go to the Suffering Servant who 'has borne our griefs and carried our sorrows.' (Isaiah 53.4.) Christians need to listen to both Darwin and Huxley over suffering as they raise the deepest of personal issues as well as the less important intellectual ones. I hasten to add that few of my parishioners are aware of the source of my approach to suffering although in a funeral service in my church in Chirk the coffin is placed in the chancel—right above the crypt containing the tomb of Fanny Mostyn Owen, Darwin's first love!

What is Darwinism?

Princeton theologian and architect of inerrancy, there cannot be anyone more conservative than Charles Hodge and thus *What is Darwinism?* attracts dismissive accounts showing Hodge to be a hidebound literalist. Hodge had not 'measured Darwin's hypothesis by its conformity to Genesis, literally interpreted' as Phipps claimed (cited in WID p. 35, note 48), but rather considered whether Darwin's view of natural selection led by chance would allow any design or Teleology, and thus whether ultimately Darwin had any room for God. *What is Darwinism?* is a short work published in 1874, that is after Darwin's *The Descent of Man* had been published and after many Christians had come to accept some kind of evolution. It is carefully researched and tightly argued, focussing on the one question of teleology and design, since Hodge considered Darwinism to be based on randomness and chance: To Hodge, Darwinism is not the same as Evolution, and though he does not seem to accept Evolution, he is not fundamentally opposed to it: 'If God made them, it makes no difference, how he made them: whether at once or by a process of evolution' (WID p. 95.). The short work is a sustained attempt to show that 'the answer to our question, What is Darwinism? It is atheism,' as Hodge concludes his book. However, Hodge immediately added the qualification that 'It does not mean that Mr Darwin himself and all who adopt his views are atheists, but it means his theory is atheistic' (WID p. 156).

The essence of Hodge's argument is that natural selection, as Darwin expounds it, operates by chance and thus has no place for God. Thus Darwinism i.e. natural selection, is by definition atheistic. Undoubtedly Hodge would not have been surprised at ultra-Darwinians like Dawkins, Dennett, Maynard Smith and others adopting an atheistic and reductionist position as a derivative from natural selection.

Hodge did accept natural selection up to a point (WID 79–89) but also accepted the fixity of species (WID 143–49) which seems to be in contradiction. Hodge defined Darwin's use of *natural* in natural selection more narrowly than did Darwin, writing that it 'is a selection made by natural laws, working without intention or design . . . In using the expression *natural selection*, Mr Darwin intends to exclude design or final causes.' (WID 85). Hodge was not alone in interpreting Darwinism this way, citing George Henslow, son of John. S. Henslow—Darwin's scientific mentor at Cambridge. As Hodge wrote 'a pronounced evolutionist . . . Mr Henslow expressly excludes man, both as to body and soul, from the law of evolution' (WID p. 90–1).

Gray reviewed Hodge in *The Nation* in May 1874, describing Hodge as ultra-orthodox. His conclusion is that 'Excellent as the present volume is . . . and . . . it shows that Darwinism may bear an atheistic as well as a theistic interpretation . . . it will not contribute much to the reconciliation of science and religion.' (GD p. 230). Gray concluded by quoting Kingsley 'We know of old that God was so wise that he could make all things; but, behold, he is so much wiser than even that, that he can make all things make themselves' (GD p. 232).

Gray sent a copy of his review to Darwin on 16 June 1874. 'You will see what uphill work I have in making a theist of you' Darwin replied, having also given sceptics an uphill task of making an atheist out of him, 'The more I reflect on this subject, the more perplexed I grow' (quoted in WID p. 33). Gray had written *Evolutionary Teleology* especially as the last and thirteenth chapter of *Darwiniana* 'As a climactic effort to all that he had written on design in Nature' (GD p. xxi). Gray argued that Darwin had reintroduced purpose and design into the organic world. He regarded the idea of design as associated with Paley to be 'confusion of thought', as it was too mechanistic and 'an idea which has been set up as the orthodox doctrine, but which to St Augustine and other learned fathers would have savoured of heterodoxy' (GD p. 294). However it is unlikely that this would have convinced either Darwin or Hodge, nor would it convince Dawkins or Moreland today.

To allow Darwin the last word, Darwin discussed design in the section on his religious belief in his *Autobiography*. Here Darwin showed himself to be a typical 'Honest Doubter' of the 19th Century and lists his problems with Christianity: the unreliability of the Old Testament, the unprovableness of the New, damnation, the multitude of faiths and suffering. Science, or even Evolution, is not mentioned, whereas design and its problems are mentioned. Having said that the world is too wonderful to have been formed by chance, he concludes 'I deserve to be called a Theist.' The next paragraph raises 'the doubt' and 'thus I for one must remain to be an Agnostic'.³⁵

All the evidence points to Darwin being an Agnostic. There we must halt, as despite claims for a death-bed conversion, which have been exploded by Jim Moore, Darwin remained bewildered.³⁶

Conclusions

Darwin's doubts about design are in many ways a reflection of his doubts about God. His objections to design underline the weakness of a highly detailed Paley-esque argument *from* design to God, as he highlighted the flaws in that line of reasoning (rather than believing) whether of suffering, chance, determinism and vestigial organs. It is probably correct to say that Darwin severely weakened the argument *from* design to God, as expounded by Paley and Buckland for over a century. Perhaps part of the confusion between Darwin and Gray was that Gray was arguing *to* design from God in a generalised manner, a position of faith, and Darwin was arguing *from* design, in all its details. This is substantiated by the generalised and unspecific use of design by Gray, Kingsley and Hensleigh Wedgwood among many others.

When Darwin considered the beauty and wonder of the world, he was much more inclined to see 'the hand of God', but this did not override his problems over design or God, chance, determinism and suffering. It seems the more Gray

35 Darwin, C & Huxley, T., *Autobiographies*, Oxford, Oxford University Press, (1983), p. 49-54.

36 Moore, J., *The Darwin Legend*, Michigan, Baker, (1994).

sought to try 'making a theist of you (Darwin) of good and reputable standing' the more 'bewildered' and 'perplexed' Darwin became. Darwin was an archetype of the reverent agnostics. From 1859 there were a variety of responses to natural selection in relation to design. Whether one agrees or not with the two differing approaches of Hodge and Gray, they gave two of the clearest, erudite and deeply spiritual Christian responses to Darwin, which even after 125 years come over with a freshness that makes them feel totally contemporary.

This three-cornered discussion between Darwin, Gray and Hodge provides historical background for contemporary explorations into 'design', whether the Godless Algorithms of Dennett and Dawkins, the fine-tuning of the universe of Davies and Polkinghorne, the guided evolution of Peacocke, Ward and Van Till, or the 'Special Creationism in Designer Clothing' of Moreland and others. The actual historical linkages are left for the reader to elucidate, and are beyond the scope of this paper.

Darwin, Gray, and Hodge all deeply considered design and natural selection and a consideration of the three can only illuminate and enhance our understanding of Christianity and Evolution/Creation today, even though they give no easy answers. The problems remain the same: the problem of suffering and theodicy; whether living things can be said to be designed; the problems posed by vestigial organs to a strong doctrine of design, and whether Design operates at an aesthetic rather than a rational level in our theological understanding. We can look to Darwin to lay bare the issues, even if we do not like his answers, or, rather, his *bewilderment*.

But we can say with another father witnessing the suffering of his child, 'I believe, help thou my unbelief'. (Mark. 9:24, RSV.)

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