Natural Theology, Theodicy and Political Economy in 19th century Britain: William Whewell's Struggle.

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Portrait of Whewell by William Drummond 1835

This paper draws on the Whewell Papers at Trinity College Cambridge and I thank the Librarian Jonathan Smith for his assistance with accessing the papers, and William Ashworth for his very helpful guide to the papers which has generously shared with Whewell scholars. Earlier versions were presented at the History of Economic Thought Society of Australia annual conference, and the Centre for the History of Political Economy at Duke University, and I am grateful for the comments of participants. I thank the editor Kevin Hoover and the two referees for their comments which significantly improved the paper.

Abstract

William Whewell (1794-1866) exerted a huge influence over 19th century British intellectual life. This paper places Whewell's writings on political economy within this context, emphasising the theological basis of his interest in the subject, and his struggle with the problem of theodicy which shaped his later view of political economy. Particular attention is paid to earliest writing on the subject, an unpublished 1827 sermon in which he attacked the deductive and atheist political economy of Ricardo, and to a lesser extent Malthus' principle of population. Whewell's failure to develop a satisfactory economic theodicy (following similar lack of success by Malthus, Sumner, Whately and Chalmers) contributed to the collapse of the British tradition of scientific natural theology and the subsequent separation of theology from political economy in the middle decades of the 19th century.

INTRODUCTION

William Whewell is best known among economists as an early contributor to mathematical economics, principally for papers he delivered to the Cambridge Philosophical Society in 1829 and 1831[1]. Debate continues among historians of economics about how much he used mathematics as a tool for discovery or was merely translating the work of Ricardo and JS Mill into mathematical form. Whewell is also known among economists with an interest in methodology for his advocacy against JS Mill of a reputedly muddled version of inductive methodology[2].

For historians of economics, Whewell's contribution runs much deeper than his early use of mathematics or his argument with JS Mill over induction. This paper will set Whewell's economic writings in a larger context and argue that his work on economics makes more sense as Whewell's wider scientific project rooted in a background of British natural theology. I will also argue that while the alliance between political economy and Christian theology contributed to the rise of political economy in 19th century Britain - including arousing Whewell's interest in the subject - the question of theodicy that Whewell struggled with ended up undermining the plausibility of the natural theological framework for political economy, and contributing to the separation of theology from political economy. An early unpublished sermon which attempted to reconcile political economy with theology is important for understanding the Whewell's view of political economy.

Whewell's massive influence in 19th century scientific and university circles means that his approach to political economy and his inability to construct an adequate economic theodicy matters for the history of political economy. The sermon which I devote considerable space to in this paper is significant not because of its own influence, but because of its role in forming Whewell's thinking. Without a proper understanding of Whewell's influence on debates over the methodology of political economy, its relationship to other disciplines, and its public standing, a contextual history of political economy in 19th century Britain is incomplete. Whewell is also important as a test case for the value of natural theology as a context for the development of

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[1] The existing literature on Whewell's economics such Cochrane (1970), Rashid (1977), Campanelli (1987), Henderson (1996) concentrates on his early mathematical papers.

[2] Leslie Stephen (1899) seems to have planted the idea of Whewell's scientific methodology as a muddle, describing Whewell as "scarcely a philosopher" and his views on methodology "scarcely coherent". Stephen interprets Whewell as definitely the loser of the mid-19th century debate with JS Mill. Discussions of Whewell's scientific methodology in relation to economics include JN Keynes (1917), Schumpeter (1954 p448-50), and more recently Yeo (1993), Henderson (1996), Snyder (2006, 2011) and Maas (2008). Stephen may have been a loud voice in 19th century Britain, but is no authority on the philosophy of induction, and though he seems to have influenced subsequent opinion on Whewell, his view can now be disregarded.

political economy as a discipline. Even for historians with no interest in political economy Whewell's engagement with political economy is significant because of its role in provoking his influential advocacy of inductive scientific methods in 19th century Britain.

THEODICY AND POLITICAL ECONOMY

To understand the theme of theodicy that runs through this paper it is helpful to first consider the larger 19th century natural theological framework in which theodicy (rational defence of God's goodness and power in the face of suffering and evil) is embedded.

Natural theology stands beside revealed theology as an ostensible source of information about God. One way of expressing this relationship is that God has written two books: namely the Scriptures and the Book of Nature. Among the many varieties of natural theology, the one relevant to 18th and 19th century political economy is scientific natural theology that has been described as the "common context" for the intellectual activity of scientists, philosophers and theologians in Britain over this period[3]. This British tradition of scientific natural theology includes Francis Bacon's *Advancement of Learning* 1605 and *Novum Organum* 1620, Robert Boyle's *Disquisition about the Final Causes of Natural Things* 1688, Isaac Newton's *Philosophiae Naturalis Principia Mathematica* 1686, John Ray's *Wisdom of God Manifested in the Works of Creation* 1691, Joseph Butler's *Analogy of Religion* 1736, Abraham Tucker's *The Light of Nature Pursued* 1768, William Paley's *Natural Theology* 1802, and the Bridgewater Treatises- a series of works commissioned in the 1830s "On the Power, Wisdom and Goodness of God, as Manifested in the Creation" (including one authored by Whewell) marking the decline of this tradition in Britain in the middle years of the 19th century.

It is crucial to recognise that this tradition of British scientific natural theology was not a project of rationally demonstrating God's existence, but instead depended for its coherence on the revealed Christian doctrines of creation and divine providence. Its most important functions in 18th and 19th century Britain were non-demonstrative[4]:

1. Promoting science, especially among those who saw scientific work as a threat to religion. Isaac Newton for instance, justified his scientific endeavours as seeking to understand the divine mind, and Robert Boyle described himself a "priest in the temple of nature". This function of natural

[3] This British tradition of scientific natural theology is described by Young (1985), who argued it formed the common context for intellectual life in Britain in this period, and, in more detail by Brooke (1992).
[4] These seven non-demonstrative functions of natural theology were identified by John Hedley Brooke in relation to Whewell's natural theology in Brooke (1991 p149-50) and generalised in Brooke (1992).

theology is consistent with the argument Waterman (1991) makes about the justification of Christian Political Economy to those who saw it as a religious threat.

2. Rebutting attacks of sceptics, scoffers and deists. Not that these were numerous or influential in 18th and early 19th century Britain, but the appearance of usefulness for this purpose helped justify works of scientific natural theology.

3. Mediating between different religious groups in their scientific activity. Contentious doctrinal issues such as atonement or church order could be put aside and scientists united around more general doctrines such as creation and providence. This function of natural theology was particularly important for non-Anglican scientists in Britain such as Joseph Priestley.

4. Unifying science and religion in minds of clerical participants. The majority of scientific work, including political economy, was carried out by clerics. As we will see later for Whewell, writing on political economy was a religious project, as it was for others discussed by Waterman (1991) such as JB Sumner, Richard Whately and Thomas Chalmers.

5. Supplying political resources for the defence of the status quo, as illustrated by the social theory of Joseph Butler, Josiah Tucker and William Paley. Occasionally natural theology provided a basis for attacking the status-quo, as shown for instance in the writing of Joseph Priestley. This function of natural theology was particularly important in the moral sciences, including the emerging science of political economy. Whewell is an excellent example as will be discussed later in the paper.

6. Suppressing religious enthusiasm, in favour of rational religion.

7. Supplying teleological regulative principles for the interpretation of the natural world. There are many examples of natural theology promoting scientific progress, either through suggesting interpretations or bringing together interpretations of the natural world. For example, political economy interprets the role of the doctrine of providence in relation to Adam Smith's invisible hand as discussed in Oslington (2012). Another is Malthus' interpretation of rent as a bountiful gift of providence as discussed by Winch (1996 p349ff).

The arguments by some historians of economics that key 18th and 19th century political economists such as Adam Smith, TR Malthus, Thomas Chalmers, and Richard Whately operated within this

British scientific natural theological framework[5] should not be surprising given the well-documented connections of other sciences to this type of natural theology (for instance Brooke 1992, Harrison 2015).

A natural theology (or indeed any theology) that attributes creation and providential care of the world to God is potentially going to be challenged by the problems of suffering and of evil. While suffering and evil have always been with us (and stimulated much philosophical and theological reflection) theodicies of the type considered in this paper only began to appear in the 17th and 18th centuries[6]. One explanation for their emergence at this time is that traditional claims of Christianity began to be challenged by a particular type of rationality in this period, bringing forth a particular type of rationalistic theodicy. Such a theodicy is exemplified by Archbishop William King's *De Origine Mali* 1702 (later translated and published by Edmund Law 1831) and Leibniz' famous *Theodicy* 1710 drawing on an analogy between divine and human rationality, arguing that God allows no more evil than is absolutely necessary to achieve his purposes, making our world the best of all possible worlds. This type of theodicy was equally famously parodied in the wake of the Lisbon earthquake by Voltaire in *Candide* 1759. David Hume's formulation of the problem of theodicy in his *Dialogues Concerning Natural Religion* is perhaps the best known version of this argument today. For Hume the problem was holding together God's power, God's goodness and the reality of evil in a rationalistic account of religious claims, and his own purpose being (arguably) to undermine rational demonstrative natural theologies, and thus to recast the role of reason in religious belief.

Another explanation for the emergence of theodicies in the 18th century is the advance of scientific understanding when such understanding was framed by natural theology. If the world is increasingly being understood as following laws of divine origin, and if the outcomes appear bad then a defence of God's role would seem more pressing; compared to an earlier time when bad outcomes could be seen as chance or just the way things always were. God was now seen more as the cause of suffering. The possibilities of using scientific understanding to alter outcomes created particularly complicated versions of the problems of evil and suffering.

Political economists operating within a natural theological framework in Britain offered various theodicies. Anthony Waterman (1991) has shown the importance of theodicies provoked by

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[5] Arguments about the natural theological framework of early political economy may be found in Oslington (2011a, 2012) following earlier work of Anthony Waterman (1991, 2008), Boyd Hilton (1988), John Pullen (1981) and Jacob Viner (1972, 1978).

[6] There is a huge philosophical and theological literature on theodicy. I have found Surin (1986) particularly helpful.

Malthus's *Essay on the Principle of Population* for the development of political economy in Britain in the early decades of the 19th century. Malthus in the 1798 first edition of the *Essay* suggested that the struggle over limited food supplies was necessary to awaken human capacities[7]. Another popular theodicy offered by economists operating within a natural theological framework, such as William Paley, and Malthus in later editions of the *Essay*, was that this world was a trial for the future life, and that a trial requires the existence of evil for there to be a meaningful human choice between good and evil[8]. JB Sumner was thought by some to have developed a more successful theodicy in his *Treatise on the Records of Creation* 1816. Others such as Richard Whately considered the problem insoluble[9].

Constructing an economic theodicy for these early natural theological political economists was especially difficult in light of the reasons for the emergence of theodicies in the 18th century. New economic laws were being discovered, making the problem of suffering and evil increasingly pressing for an enterprise framed by a natural theology which connected God and economic outcomes. Political economists, notably Adam Smith, and Richard Jones on agriculture and rent, were documenting the remarkable variability of economic arrangements and outcomes across time and space. Economics more any of the other sciences showed suffering and evil to be potentially under human control and hence a much more messier problem than theodicy was for other scientists.

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[7] Malthus' theodicy is discussed by Pullen (1981), Waterman (1991) and many subsequent authors.

[8] Economic theodicies tended not to be well received by the general public, especially in times of great economic distress. An infamous example is the story of the feast Malthus added to the 1803 second edition of the *Essay* (Book IV, Chapter VI p249). In this story the door to nature's mighty feast was shut to the excess population, out of compassion, and the host explained to the excluded that they have no right to sustenance. Malthus removed this story from subsequent editions. As well nastiness these stories were criticised for being infinitely elastic in defence of the status-quo, for instance by Charles Dickens whose fictional character Mr Podsnop always had a providential explanation at hand for any seeming dysfunction of the economic system (discussed by Winch 2009 p12).

[9] Whately (1832 p104-5) suggests reasons for material lack are "probably unfathomable by us in the world" and discusses "apparent frustrations" of design. In relation to natural and moral evil "we cannot give a satisfactory account". He then discusses "the only difficulty of theology, the existence of evil in the universe". All this after citing JB Sumner (1816), suggesting Whately considered the problem not solved by Sumner and probably insoluble by human beings in this life. If a figure as important as Whately was unconvinced by Sumner's theodicy, and others such as Whewell continued to grapple with the problem, it is difficult to accept Waterman's view (2014 p107) that "Sumner reassured the educated elite that political economy was not opposed to and was indeed positively supportive of Christianity".

POLITICAL ECONOMY IN WHEWELL'S LIFE AND WRITINGS

Whewell's struggle over economic theodicy forms part of a larger intellectual project, and so it is helpful to begin by placing Whewell's economic writings and those of his close friend and collaborator Richard Jones within the context of their lives and writings[10].

Whewell was born in 1794 in Lancashire. Despite modest family origins his ability in languages and mathematics was recognised early, and this, plus Whewell's commitment to hard work took him to Trinity College Cambridge on a scholarship. He graduated as second wrangler in 1816, and was offered Fellowship at Trinity the following year. Close friends at Trinity included the political economist Richard Jones, the astronomer John Herschel and the mathematician Charles Babbage. Whewell was very active intellectually and socially as founder of the Cambridge Philosophical Society in 1818, Fellow of the Royal Society in 1820, and a major figure in British Association for the Advancement of Science (BAAS) from 1831. This included founding Section F devoted to statistics in 1833 an important forum for political economists, and role in founding the Statistical Society of London in 1834.

Whewell's interest in political economy developed in the 1820s through conversations with his Cambridge friend Richard Jones. In 1822 correspondence Whewell asked Jones for information about the state of political economy and sought Jones' advice about books on political economy. They seem to have collaborated on a work *Reasons against the Repeal of Usury Laws* (Jones 1825) attacking the utilitarian arguments against the repeal of these laws[11].

In these years debate was intense over Malthus' writings on population, especially their theological implications. Controversy was heightened by the publication of Ricardo's *Principles of Political Economy and Taxation* 1817 which modified and further developed Malthus' population theory, especially combining the idea of diminishing returns in agriculture with a particular understanding

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[10] Whewell's life is covered by Todhunter (1876), Fisch (1991), Henderson (1996) and Yeo (2004). Jones' life is covered by Whewell's preface to Jones (1859), Gregory (1987) and Pullen (2004). Laura Snyder (2011) tells the story of Whewell and Jones and their Trinity friends campaigning to reform British science along inductivist lines, and Whewell's coining of the term 'scientist' at the BAAS meeting in 1833. Snyder's popular book has even generated an even more popular TED talk available at http://www.ted.com/talks/laura_snyder_the_philosophical_breakfast_club.

[11] This work is discussed by Harro Mass (2008 p146-8) who found a manuscript written in Whewell's hand among his papers. There are similarities between the arguments in this work against the utilitarians approach to usury laws and the arguments Whewell deploys against Ricardian political economy in the 1827 unpublished sermon considered below. Whichever of the friends produced the manuscript it is clearly a joint intellectual project flowing from their shared interest in political economy.

of rent to derive stark conclusions about conflict between social classes over the distribution of income. As well as this combination threatening the harmonious vision of social life offered by Anglican social theology, it raised the possibility of the British economy heading to a stationary state where growth would cease. For Ricardo this modelling was directed partly towards the abolition of the Corn Laws, for the importation of foreign corn would postpone the stationary state. Some political economists like Whewell and Jones recognised the more general point about the challenge of social conflict implicit in the Ricardian model. Social conflict challenged the vision of harmony in Anglican social theology, and the economists resented the aspersions cast by Ricardians on the adequacy of divine provision for British population.

For some years now a Fellow at Trinity College, Whewell's profile was growing as a vigorous participant in Cambridge societies, and as author of the popular textbooks *An Elementary Treatise on Mechanics* 1819 and *A Treatise on Dynamics* 1823. His ordination as Priest in 1825 led to a series of sermons delivered at St Mary's Church Cambridge in 1827 where he attempted to reconcile contemporary science with theology. He was motivated partly by personal interest, and partly by defending the Christian faith of which he was a minister against threats flowing from certain interpretations of the work of Malthus, Ricardo, and others. These unpublished sermons will be discussed more fully in the next section, including the text of an undelivered fifth sermon which is crucial to understanding why Whewell thought the currently dominant forms of political economy could not be reconciled to Christian theology, and so political economy needed to be redirected along theologically framed inductivist lines. This 1827 fifth sermon is the earliest textual record of Whewell's lifelong engagement with political economy.

During the 1820s political economy was establishing itself as distinct field of enquiry, evidenced by the formation of the London Political Economy Club in 1821, George Pryme's lectures on political economy at Cambridge, Malthus' lectures at the East India College, and the establishment of the Drummond Chair in Political Economy at Oxford in 1825, occupied first by Nassau Senior and then by his mentor Richard Whately. A pressing question, evident in early political economy lectures (especially those of the Oxford men Senior and Whately) was appropriate methodology for the new field. This question was recognised by Whewell and Jones, and many of the other participants, to have moral and theological dimensions[12].

Whewell's Cambridge Philosophical Society papers of 1829 and 1831 *Mathematical Expositions of the Doctrines of Political Economy* have so far been the focus of most economists' interest in his

[12] The moral and theological dimensions of the debate about methods of political economy are discussed by Corsi (1987, 1988) and Waterman (1991).

work. Rather than pioneering mathematical economics, they are better seen as reluctant resort to mathematics to rebut Ricardo on his own terms[13].

Richard Jones was uneasy about Whewell's mathematical approach in the Cambridge papers believing that it granted a false legitimacy to Ricardo's assumptions[14]. Jones pursued a different strategy of detailed empirical investigation into different types of rent, attempting to undermine empirically the view of rent that was the basis of Ricardo's reasoning. According to Jones, Ricardo's analysis was based on just one of four types of rent, and by no means the most prevalent type. Jones' book was published in 1831 and positively reviewed by Whewell in the *British Critic.* Whewell wrote that "The work before us places the subject rent in a new point of view, and connects it with a multitude of problems and researchers which had not been previously understood to be upon it" (1831 p41). He emphasised Jones different view of rent to Ricardo was morally and theologically significant: "The 'bounteous earth' … yields to the cares which educe its fruits more than is sufficient to support the cultivators. There is a surplus produce, a subsistence for others who do not cultivate… This superfertility, this fruitful is beyond the necessary limit, is a remarkable and universal blessing which we owe to him to who created the earth, and man, and their powers." (1831 p41). Repeating the argument of his 1827 sermons Whewell wrote that Ricardian political economy is "the most glaring example of false method of directing a science which has occurred since the world had any examples of the true method" (1831 p51-52). So "political economy… must be a science concerned with actual facts and daily observations; its general propositions, if they are true at all, must be so by being verified in particular cases of human affairs… Political economy in short must be a science of induction and not of deduction" (1831 p52). Whewell wrote of the "vices of their method" (1831 p53) referring to the Ricardians.

A new stage of the debate over political economy came when Whewell received a letter from Jones in 1831[15] discussing Nassau Senior's appendix to Whately's *Logic* on definitions in political

[13] Henderson (1996) discusses the relationship of the mathematical papers to his wider project thoroughly and in my view persuasively.

[14] Letter from Jones to Whewell 18 April 1829 Whewell Papers Add.Ms.c.52/16. Another letter from Malthus to Whewell 26 May 1829 Whewell Papers Add.Ms.a.209/10 offers qualified support for Whewell's attempt to apply mathematics advantage to political economy – "particularly with a view to determine the different degrees in which certain objects are affected, under different hypotheses. The grand difficulty however, with a view to practicability, is the getting data to work upon, sufficiently near the truth; and such as can be stated distinctly in mathematical language". This is published as Letter I in De Marchi and Sturges (1973).

[15] Jones to Whewell 24 February 1831 Add.Ms.c.52/20.

economy and Whately's 1831 inaugural lectures as Drummond Professor at Oxford[16]. Whewell and Jones were horrified to find deductive methods employed by Whately and the Oxford logicians. This was especially dangerous because unlike Ricardo, the Oxford men shared Jones and Whewell's commitment to Christianity and a natural theological framework. It is in correspondence over this issue that Jones makes the significant suggestion that his friend Whewell publish a work on inductive reasoning, leading to Whewell's influential works in the 1840s on the history and philosophy of the sciences along inductive lines[17].

The debate was somewhat clouded by misunderstanding. Malthus was initially dismayed by an 1832 paper "On Definitions" by Whewell criticising political economists fixation with definitions of terms, but subsequent correspondence clarified that the attack was not on Malthus' 1827 work on *Definitions in Political Economy*, but on Nassau Senior's appendix to Whately's *Logic* on definitions in political economy[18]. Malthus' approach is complicated because the first edition of his *Essay on the Principle of Population* 1798 was a tight deductive argument, but the increasingly lengthy subsequent editions of the *Essay* from 1803 sought to justify his assumptions and conclusions empirically. As we shall see in the next section, the first edition of Malthus' *Essay* was criticised by Whewell in his 1827 sermon, but Malthus by the 1830s was at odds with Ricardo over method and had moved closer to Jones and Whewell's position[19].

Whewell's rise to fame was both marked and assisted by the invitation to write a Bridgewater Treatise *Astronomy and General Physics Considered with Reference to Natural Theology* 1833. His work was positively reviewed and became the bestseller of the series[20]. Despite the allocated topic of "Astronomy and General Physics" Whewell found space for discussion of human society

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[16] Nassau Senior's 1827 *Introductory Lectures* as Drummond Professor seem to have escaped their scrutiny. Senior's lectures are discussed in Oslington (2001). Note that an important additional chapter was added to the 1832 edition of Whately's Introductory *Lectures on Political Economy*.

[17] The suggestion is in a letter from Jones to Whewell 24 Feb 1831 Add.Ms.c.52/20. Jones suggested "that some popular views of inductive reasoning such as I shall sketch would be a good thing to publish, when you see them decide whether you will keep them & use them yourself or send them back for me to enlarge. If either of us do it must not be with a reference to natural philosophy exclusively or I think mainly - But mind if you insist on German phraseology or anything like it I wash my hands of the job". This correspondence is perhaps the seed of Whewell's later volumes on the history and philosophy of the sciences.

[18] Malthus to Whewell 1 April 1833 Add.Ms.a.209/12. This is Letter IV in De Marchi and Sturges (1973).

[19] For instance Malthus to Whewell 28 February 1831 Add.Ms.c.53/2 where Malthus writes "I am most gratified that he agrees with me on almost every point on which I differ from Mr Ricardo" after reading Jones *Rent*. Also Malthus to Whewell 31 May 1831 Add.Ms.a.209/11 where Malthus expresses appreciation of Whewell's support of his argument against Ricardo. These are published as Letters II and III in De Marchi and Sturges (1973).

[20] The Bridgewater Treatises on the Power, Wisdom and Goodness of God as Manifested in Creation are discussed by Brooke (1992) and Topham (1998).

and morality, suggesting that these topics were of continuing interest to him and an integral part of his wider scientific project.

It is possible that Whewell's lack of success in the 1827 sermons reconciling political economy with theology, in contrast to his feeling he had achieved success with the physical sciences, led him in the 1833 Bridgewater Treatise to separate the manner of God's government of the social world from that of the physical world. Such a separation would help insulate his reconciliation of the physical sciences with theology from any difficulties of reconciling the political economy with theology. As he wrote in the Bridgewater Treatise "There can be no wider interval in philosophy than the separation which must exist between the laws of mechanical force and motion, and the laws of free moral action… by which God governs his moral creatures," (Whewell 1833 p375). He also attempted to reassure readers of his Bridgewater Treatise that any lack of satisfaction they might have about the reconciliation should not interfere with Christian devotion: "if, in endeavouring to trace the tendencies of the vast labyrinth of laws by which the universe is governed, we are sometimes lost and bewildered, and can scarce, or not at all, discern the line by which pain, and sorrow, and vice fall in with a scheme directed to the strictest right and greatest good, we yet find no room to faint or falter" (Whewell 1833 p381). Significantly, the sources of possible bewilderment are identified as "pain, sorrow and vice" which were precisely the stumbling blocks Whewell identified in the 1827 sermons when attempting to reconcile political economy with Christian theology. Furthermore Whewell called his readers to take comfort from the way the advances of others sciences such as physics and astronomy had shown nature to be harmonious and beneficent in their domains, even though the problems of pain sorrow and vice "are the darkest and most tangled recesses of our knowledge" into which "science has as yet cast no ray of light" (Whewell 1833 p381)[21].

Whewell's growing influence in British scientific circles and organisational capacities also influenced the shape and place of political economy among the sciences. An example is his involvement in the British Association for the Advancement of Science (BAAS) and the founding of Section F which was devoted to statistics. The statement of purpose from the 1833 Presidential Address is pure Whewell. Members are assured that the new Section F will deal "with matters of

[21] Whewell in his Bridgewater Treatise *Astronomy and General Physics Considered with Reference to Natural Theology* seems to have completely ignored the earlier Bridgewater Treatise of Thomas Chalmers. There is a brief correspondence following Chalmers Bridgewater Treatise *On the Power Wisdom and Goodness of God Manifested in the Adaption of External Nature to the Moral and Intellectual Constitution of Man* (1833) but Chalmers early work on political economy was deductive in the spirit of Malthus first *Essay*, and Chalmers later popular writings on the subject dealt only superficially with problem of theodicy. More surprising is his neglect in the Bridgewater Treatise of the work of JB Sumner (1816) who dealt with theodicy.

fact, with mere abstractions, and with numerical results. Considered in that light they give what may be called the raw material to political economy and political philosophy; and by their help the lasting foundations of those sciences may be perhaps ultimately laid. These inquiries are, however, it is important to observe, most intimately connected with moral phaenomena and economical speculations—they touch the mainsprings of passion and feeling—they blend themselves with the generalizations of political science; but when we enter on these higher generalizations, that moment they are dissevered from the objects of the Association". Whewell was joined in founding Section F by a distinguished group of political economists including his close friend Jones, and Malthus.

Whewell's fullest discussion of the sciences is in his multivolume *History of the Inductive Sciences* published from 1837 and his *Philosophy of the Inductive Sciences* from 1840[22]. His selections from the larger volumes which "bear on theology" published as *Indications of a Creator* 1845 is significantly devoid of illustrations from political economy. The only substantial engagement with political economy in any edition of these volumes is chapter 23 of the *On the Philosophy of Discovery* 1860 where it is described as an immature science and a science of "mixed character" where "observations and ideas are mingled together, and act and react in a peculiar manner" (Whewell 1860 p292). Political economy is here argued to be separated methodologically from the physical sciences because its object of study is human behaviour, and not just because of its immaturity as a science. The charge of premature deduction is again made, over thirty years after its first appearance in the 1827 sermons (Whewell 1860 p294-5).

Whewell's rise continued with his appointment as Master of Trinity College Cambridge, and then Knightsbridge Professor of Moral Philosophy in 1845. His acceptance of the moral philosophy position signalled a concern with the state of that discipline, especially the growing influence of utilitarian philosophy of Paley and Bentham, and his conviction of the connections between the sciences and moral philosophy. Whewell's *Elements of Morality, Including Polity* 1845 (with substantial revisions 1854 and 1864) was written to replace Paley's *Principles of Moral and Political Philosophy* as a Cambridge text, drawing instead on the moral philosophy of Joseph Butler's *Sermons*. The final Chapter 25 of Book II on the "Morality of Virtues and Duties" presents Whewell's arguments against utilitarian philosophy, picking up many of the points made

[22] These volumes have a complex publication history. The dates given above are the first of several editions, complicated by publication of selections from *History* and *Philosophy* which "bear on theology" as *Indications of the Creator* 1845, then revised 1846, volumes often referred to as the third edition of the *History* entitled *History of Scientific Ideas* 1858, and companion volumes often referred to as the third edition of the *Philosophy* entitled *Novum Organon Renovatum* 1858 and *On the Philosophy of Discovery*1860. These volumes have some claim to mark the beginning of the history and philosophy of science as a discipline.

in his sermons and writings. Political economy is dealt with in Book V Chapter 12 "Duties of the State". The implication of the principle of population is the focus and he recounts the common view that the labouring population has "the remedy in their own hands; since by abstinence from marriage they may limit their own numbers" (Whewell 1864 p489). However he rejects this remedy as a realistic solution as it is "contrary to all consistent humanity" and "it can hardly be meant that a poor man can never love". If the remedy is unrealistic 'there appears a kind of cruelty in applying the censure to the party who are already suffering the consequences of their fault" (Whewell 1864 p490). Public works, assisted emigration, and voluntary charity may have some ameliorating effect according to Whewell, but the principle of population remains as a moral and theological problem. Aside from what he writes here, Whewell's coldness towards political economy is indicated by the contrast between Paley's lengthy treatment of population and growth in his *Principles* and the lack of prominence of political economy in Whewell's replacement Cambridge textbook. By the time Whewell was writing his textbook, political economy had developed much further than it had in Paley's time, and his silence is plausibly explained by growing moral and theological reservations about the discipline.

As a reforming Cambridge Vice Chancellor from 1842-43 and 1855-56 Whewell played a major role in establishing the Natural Sciences Tripos and the Moral Sciences Tripos from 1851. The Moral Sciences Tripos included political economy, examined by Whewell's Cambridge colleague George Pryme. Political economy in Pryme's hands (indicated by the published syllabus of his lectures, and comments in Whewell's correspondence) was theologically safe – favouring inductive methods, sceptical of Ricardian rent theory, and politically disengaged.

The death of his friend Richard Jones in 1855 meant that any hope was gone of Jones publishing sequels to his early *Rent* volume and thereby of establishing a foundation for an inductive political economy. My sense from the correspondence is that a desire to avoid invading Jones' territory precluded Whewell from authoring a substantive work on political economy. Jones' anxiety about Whewell publishing on matters they discussed together is evident in correspondence, as is Whewell's increasing frustration with Jones' lack of progress with his work on political economy, and with Jones' reluctance to publish[23]. What Jones was able to produce was published as *Literary*

[23] Evidence of Jones anxiety includes Whewell to Jones 15 December 1826 Add.Ms.c.51/33, published in Todhunter (1876) I p81: 'I never intended to publish, and I do not think that I shall preach anything which will brush the most delicate bloom of novelty off your plums'. There are many examples of Whewell's frustration with Jones' delays, including Whewell to Herschel 4 December 1836 "I am going to stay with him [Jones] in the Christmas vacation. The only misfortune is, that he is less and less likely to write the books he owes the world. He professes that he shall still do much in that way, but I confess I doubt it: and I doubt with grief, for in certain branches of Political Economy I am persuaded he is a long way ahead of anybody else, and might give the subject a grand shove onwards."

Remains 1859, largely edited by John Cazenove, but including a lengthy introduction by Whewell which picked up many of the themes raised in his 1827 sermons and his 1831 review of Jones on *Rent*. In assessing Whewell's influence on political economy, he should be credited with inspiring and organising (and perhaps sometimes even helping to write) much of the little Jones published, as well as contributing to the influence Jones had through his writing, lectures at Kings College and the East India College, and work with the Tithe Commission and other official bodies.

Whewell's *Lectures on Political Econo*my 1862 are of less interest than they might appear assumed at first glance as they are a record of lectures prepared for the Prince of Wales (the future Edward VII) who was taking classes in Political Economy at Trinity College Cambridge in 1861. The lectures were intended as a summary of existing "opinions" on "leading questions belonging to the subject by successive eminent writers". Whewell explicitly declaimed propounding any system of his own (Whewell 1862 p1). There is, as one might expect, considerable discussion of Jones' work on rent, commendation of Jones and Malthus on political economy (but not Malthus on population), and criticism of Ricardo. Whewell returned often to Smith as a figure of authority, emphasising that the *Wealth of Nations* is "a book full of actual facts, and not of mere hypothetical cases" (Whewell 1862 p2).

Not many years after this in 1866 Whewell died in a horse riding accident, and his statue stands alongside Bacon and Newton in Trinity College chapel.

WHEWELL'S FAILED ATTEMPT TO RECONCILE POLITICAL ECONOMY WITH CHRISTIAN THEOLOGY

I will now consider in more detail the neglected but crucial sermons[24] Whewell delivered on the relationship between science and Christian theology at St Marys Church at the University of Cambridge in February 1827. According to Todhunter these sermons "attracted great attention" at the time, but were never published[25].

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[24] Sermons have been neglected as a source by historians of economics. Francis (2012) emphasises the reach of sermons both through the number of hearers, and the popularity of volumes of printed sermons in 18th and 19th century Britain. Sermons delivered by clergymen economists and by influential non-economist preachers on economic topics would seem to be particularly illuminating about the popularisation of political economy during this period. For the scholar wanting to utilise them there is much dull and irrelevant reading in the huge volume of available sermons, and much less guidance available than for scholars utilising economists private papers and correspondence.

[25] Todhunter (1876) I p323. Though the 1827 sermons are mentioned by Brooke (1991 p151), Yeo (1993 p194), Henderson (1996 p94), Synder (2006 p24) the discussion is mostly limited to the passages quoted by Todhunter. The manuscripts of the five sermons are in the Whewell papers R6.17 at Trinity College Cambridge. Handwriting of the 28 page manuscript of the undelivered draft of the fifth sermon is undecipherable in places, which is perhaps part of the

While preparing the sermons Whewell wrote to his friend Hugh Rose, explaining his view that the sciences must harmonize with religion: "What I do hold is that inductive science is a good thing, and, as all truth is consistent with itself, I hold that if inductive science be true it must harmonize with all the great truths of religion; nor do I see how anyone can persuade one's self to believe that all this tempting system of discoverable truths is placed within our reach, as it were on purpose, while it is at the same time tainted with the poison of irreligion."[26] This assurance of the harmony between science and religion was characteristic of British scientific natural theology, and similar statements can be found in the writings of Malthus, Whately and others.

Whewell wrote to Jones that his topic would be "benevolent design in the moral frame of society". He was behind in writing the sermons but "with time enough I should not fear the greater part of the work - all the argument about the activity and omnipresence of the Deity, but when I come to the indications of benevolent design in the moral frame of society I have not such an habitual familiarity with the view of the subject in its details as merits with the confidence and vehemence which would be becoming. I have no doubt I should get on better if I had you at my elbow". What is interesting here is the emphasis Whewell puts on benevolent design in society – the particular subject matter of science of political economy - in a series of sermons that was to cover the relationship between the sciences and theology." [27]

When Whewell came to preach the sermons in February 1827 only the first four of the five he prepared were delivered. As he wrote to Jones "'I have got through them without getting quite up to the moral part of my subject...No population and in short nothing but one or two analogies from the natural world to illustrate the probability of our being very fairly ignorant of the non-general laws of the moral world". Whewell described the sermons as "an attempt to make science fall in with a contemplative devotion which I don't think was difficult though people seem from the notion they had of scientific men to have thought it must be impossible". "I forgot to say that I doubt much about publishing. I wrote at last in haste and believe I'd better wait" and that "my plan altered much in shape"[28] from that which he had previously discussed with Jones.

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reason this sermon has escaped detailed analysis. One can only speculate why the handwriting of the fifth is so poor – Whewell may have had a heavy night with the Trinity College port –which might also explain the florid language.

[26] Whewell to Hugh Rose 12 December 1826 R.2.99/27. Published in Todhunter (1876) II p78.

[27] Whewell to Jones, 10 December 1826 Add.Ms.c.51/32. Published in Todhunter (1876) II p79. It seems from his letter to Jones 15 December 1826 Add.Ms.c.51/33 published in Todhunter (1876) II p81that he sought Jones advice on the content of the lectures and even sent an early version to Jones, as suggested by Todhunter (1876) I p330 .

[28] Whewell to Jones 26 February 1827 Add.Ms.c.51/34 published in Todhunter (1876) II p82-83.

After the sermons he encouraged Jones to carry on the attack on false political economy, writing that Jones has a "great deal of work to do in the world of which the execution is yet to begin? That you have got to trouble the shortwitted, rotten, pseudo-political-economists; and to yoke history, & morals, & natural characteristics, and practical experience to that chariot of science which they have hitherto been driving tandem with one jack-ass before another"[29]

Why was the fifth sermon on political economy not delivered? Todhunter (1876 I p330) suggests Whewell was concerned about premature disclosure of views his friend Richard Jones was planning to publish in a book which eventually appeared in 1831 as *Essay on Distribution: Rent*. The reasons are more likely to have been Whewell's lack of success in reconciling political economy with Christian theology (as suggested by Yeo 1993 p194) and the continuing difficulty of constructing an adequate economic theodicy. Whewell's lack of success might also explain why he was so keen for Jones to carry forward his own work on political economy, especially the attack on the Ricardian theory of rent.

Consider now the content of Whewell's unpublished 1827 Cambridge sermons.

The first sermon took the text Isaiah 33:6 "wisdom and knowledge shall be the stability of thy times, and strength of salvation: the fear of the Lord is his treasure". Whewell argued that theology is deductive, beginning from scriptural revelation and the irresistible evidence of sense. As such it leaves "room for the love of knowledge without expelling the love of God" as exemplified by the natural theologically framed inductive science of Bacon and Newton.

The second sermon was on one of the favourite texts of natural theologians Romans 1:20 "For the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made". This sermon continued the argument about the proper place of science in relation to theology; that scientific knowledge cannot save us but does gratify the intellect and can give us a taste of heaven.

Next was a sermon on Proverbs 3:5-6 "Trust in the Lord with all thine heart; and lean not on thine own understanding. In all thy ways acknowledge him, and he shall direct thy paths".
Again there is much said about the value of the sciences, but the emphasis is on the imperfect state of scientific knowledge, and how the natural world which the sciences study remains in God's hands. In the end, the natural world "shall expire in the throes and agonies of some sudden and fierce convulsion; and the same hand which plucked the elements from the dark and troubled

[29] Whewell to Jones 10 September 1827 Add.Ms.c.51/41.

chaos, shall cast them into their tomb, pushing them aside that they may no longer stand between His face and the creatures whom He shall come to judge."

The fourth sermon, and the last to be actually delivered, was on Job 36:3 "I will fetch my knowledge from afar". This sermon, like the third, has a more devotional tone than the philosophical arguments of the earlier two sermons. Whewell describes how Job and his friends struggle for an adequate explanation of events, how Job in spite of his inability to explain events does not curse God for the misfortunes he has suffered, and how God answers not with an explanation of evil (in the manner of a theodicist) but with a reminder in the whirlwind of who has created the world and has the power over nature and the fortunes of human beings. For Whewell, our response can only be awe of creation and worship.

The ground that Whewell prepared in these sermons was to lead into his fifth sermon on political economy. The text was James 3:13 "Who is a wise man? Let him shew out of a good conversation his meekness of wisdom".

Whewell begins by announcing that he will "speak now … of those who have reasoned concerning the moral nature and prospects of man and societies of men" (p1 of the manuscript) and observes that "they do not lead us, through their teaching, up to an admiration of the beneficent wisdom and ever-good producing contrivance of the great Creator". The reference seems specifically to David Ricardo and his followers, because of the following comment about "founders and idols of sects and schools" and Whewell's suggests that if this was their intention rather than the unintended effect of Ricardian political economy they must be considered "among the most abandoned and degraded of the bondsmen of error, with tongues and hearts vile and hardened enough for such a cursed and unhallowed work" (p1). This could hardly be said of Malthus who did not have followers in the same way as Ricardo, and who was a fellow Anglican clergyman rather than Ricardo the Jew turned Unitarian. It is too early to refer to Senior and Whately's work on political economy, to which Jones first drew Whewell's attention to in 1831 correspondence.[30]

Having politely ruled out the horrible possibility that these political economists intended to cast doubt on the character of God, Whewell will only "speak of the effect produced on men's minds by the doctrines of these teachers. I speak of the manner in which their views and opinions of the laws which influence human events fit themselves with our views, and the believers' views of a God of mercy and justice presiding over the world which he has made and ordered all things for good" (p2). He asks to consider particularly the effect of this new science of political economy "which in

[30] Jones draws Whewell's attention to the Oxford men's work on political economy in letters of 24 Feb 1831 Add.Ms.c.52/20 and 1 June 1831 Add.Ms.c.52/38.

these modern times has won the largest share of applause" on the "humble believer" (p2). He suggests that it has caused "something of seeming disturbance, some struggle and conflict, between the spirit of prayer and praise, of trust and thanksgiving to the wisdom that orders all things well" (p2) particularly in relation to evils and imperfections. Whewell points to a "want of harmony perceived between the views of the Reasoner and the Believer" (p2), noting that Whewell means by Reasoner the speculative or deductive reasoner, a figure regularly mocked in his other writings.

He then explores why these political economists have fallen into error. He suggests "this discord, this struggle arises from too narrow a view which their philosophy has taken of the moral structure of this world and of man" (p2-3) and goes on in somewhat florid language to suggest it is because the world and human beings are not regarded by these political economists as part of creation and therefore sources of knowledge of a creator God in the manner of natural theology. As Whewell puts it "their wings are leaden, their flight is crippled, their strength is broken by some inward infirmity, some disease of falsehood and mistake" and "their sight is imperfect in that they discover not the door that leads out of their difficulties and doubts of their systems into the regions of religious truth, and they are like blind insects beating their wings against the walls of their self-chosen prison to see the opening by which they might emerge into the wider and clearer air of heaven" (p3).

At this point the specifics of political economy with which Jones was assisting him[31] seem to fail him, and Whewell evades the task with the suggestion that "To sift and examine all the erroneous doctrines by which men may have been shaken and disturbed in their contemplation of the goodness and holiness of God is too vast a task for one man, and not for this place or for this occasion" (p3). He adds that in any case "how could the preacher find language suited to his lips" (p3) in relation to these political economists.

Nevertheless he will offer "a brief and general indication at some of the forms of error, its causes and the grounds of its refutation" (p4) for there is "no higher subject than showing that the motives and actions of men and the frame of society has marks of benevolent contrivance as strong as that the eye was made to give the pleasures of sight and the ear of sound" (p4). The reference to the eye suggests Whewell is calling for an extension of Paley's natural theological project to human society – the task that the political economists he is criticising have rejected. Whewell at this point discusses the greater complexity of the natural theological project in the social world, and our present lack of understanding of laws in the social world. He writes of the "tangled and

[31] Jones assistance with the details of political economy is requested in several letters, for example Whewell to Jones, 15 Dec 1826 Add.Ms.c.51/33 Todhunter p81 where he asks for assistance so that in the sermons "I shall talk confidently of that which I do not prove and assent loudly that a good deal more may be known"

multifarious texture of questions relating to man" (p7). Without our imperfect understanding of social or economic laws we struggle to see God's government in this domain.

The sermon then switches focus to Malthus' principle of population, which Whewell summarises as follows "It has, for instance, been maintained, and this doctrine has produced and does still produce a powerful impression and manifest tendency in the speculations of those who even now reason concerning the laws which regulate the prosperity and riches of human societies, that the fiat of His will by which the Creator ordained the increase and multiplication of men, impelled them in a career leading by a course not to be stopped or deflected, to want and degradation, to vice and misery. It has been passed from pen to pen and from lip to lip as a great discovery, that the tendency of mankind to replenish the earth ever pushes them on till the sharp discipline of pain, the iron hand of want and its deadly concomitant crime, drive them back or at least forbid their further progress. That however the large bounty of nature opens some new supply, pours out some new store of nutriment, this fierce and indomitable property of human societies springs forth instantly upon the offered food and devours it with wolfish rapidity, leaving the spot that seemed thus enriched as bare and hungry as it had been. That thus the more depressed of the orders of mankind, those portions of society that win their bread by the labour of their hands and eat it in the sweat of their brows are destined to eternal and irredeemable degradation -fated to increase in numbers as the fruits of the earth allow of their increase, and as it were condemned to become more numerous lest they should become more happy. That this, or something like this, is the representation often given of the necessary course of states and nations by those who most loudly call our attention to their success in speculation most will recognize and know. That the proclamation of such a doctrine, represented as a demonstrated truth and the fruitful source of many truths besides, shook and startled the minds of pious and benevolent men, and seemed like an oppressive and disquieting thought forced in among their belief and trust in God's goodness, like a funereal and menacing light thrown upon the fair face of nature, many who bear in mind the youth and first appearance of these doctrines and their operation on the minds of men, will still recollect". (p9).

The accuracy of Whewell's summary is debatable, and seems to correspond most closely to the initial anonymous 1798 edition of the *Essay on the Principle of Population*. This is also the edition of the essay which included Malthus later abandoned attempt to reconcile the principle with Christian theology, arguing that the struggle for existence in the face of limited food supply was a necessary spur to the full development of human capacities.

Whewell's diagnosis of the problem with Malthus *Essay* is "rushing headlong on with abstract generalisation of a principle without considering the limitations and exceptions with which in human affairs truth is clothed." (p10). This is more true of Malthus 1798 *Essay* then the later

editions from 1803 which included moral restraint as less gruesome way of reconciling population with the food supply than starvation (or vice and misery). The later editions were more modest in their claims, and included many more facts in support of the argument.

Whewell's position on Malthus' theodicy is not clear. He suggests that what is going on is not "vice or misery, in any reasonable application of such terms" and that the uncertainty and struggle of daily life strengthens religion and allows mankind to "ennoble and exalt his being, promoting affection and friendship without which his character would be selfish and savage" (p11). Whewell here pencilled a marginal comment "It is obvious that I am not here attempting to account for all the vice and misery in the world, but to show that one of the systems it represents as the source of laws of human existence is logically false." (p11)

Drawing together Whewell's discussion of Ricardian political economy and Malthus' principle of population, his diagnosis is that premature deduction undermines science and faith. Premature deduction is especially problematic in political economy because of the greater complexity of human nature and society, compared to the subject matter of other sciences. When political economists deliver unclear or erroneous laws then the general public will struggle to see God's government in economic matters, and Christian faith will be undermined. Particularly dangerous in Whewell's view was the way both the Ricardian theory of rent and the principle of population underestimate the bounty of nature, overstate the degree of conflict between social classes, and fail to generate the sorts of evidence which allowed the natural theologian scientists to construct plausible theodicies in other domains.

This neglected 1827 sermon is not just significant as the first text where Whewell dealt with political economy, and where he expresses views which are taken up again and again in his later writings. As the first textual expression of his views it reveals the driving force of Whewell's foray into political economy as a theologically motivated defence of established Anglican social theory against the threat posed by the Ricardians, and especially their appropriation of Malthus' *Principle of Population* and joining it to a particular view of rent.

POLITICAL ECONOMY AS SOURCE OF WHEWELL'S ANTIPATHY TO DEDUCTION

Besides the significance of the 1827 sermon in clarifying Whewell's involvement in political economy, the sermon also suggests a connection between this involvement and his wider view of scientific method[32]. I would like to comment briefly on this before returning to the main issue of theodicy.

In the 1827 sermon Whewell clearly associates deductive methods with atheism as they are joined in Ricardo's political economy, and uses rather colourful language in criticising them as dangerous mixture[33].

I am arguing Whewell's view changed after his encounter with Ricardian political economy, as documented in correspondence with Jones and in the 1827 sermon. The reason has view changed is also clarified by the sermon – the theological threat to the harmonious Anglican vision of society that is posed by Ricardian theory, in particular the combination of the principle of population with rent theory. Whewell's methodological objection to induction seems to follow from the identification of this religious threat. His encounter in the late 1820s with Ricardian political economy seems to have triggered his lifelong antipathy to deductive methods.

Some validation of the causal connection between Whewell's encounter with political economy and Whewell's view of deduction is provided by a comparison with the methods Whewell employed in other early writings. Where there was no threat to the harmonious Anglican social vision, such as in Whewell's early work on mineralogy and on church architecture Whewell is

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[32] This association between deductive methods and atheism was noted by Becher (1991p10) who suggested Whewell's objection to Ricardians reveals "font of his being". It is also discussed by Yeo (1993, 2004 p196)), Henderson (1996 p91-96) and Maas (2008). John Brooke made the suggestion in conversation some years ago that an association between atheism and deductive methods may have come from experience of French science and philosophy. Maas (2008 p144) concluded "Whewell's rejection of Ricardianism was motivated by methodological concerns. These were in their turn rooted in his theological convictions". I agree that Whewell's rejection was rooted in his theological convictions but Maas' conclusion in my view misses the key point that the theological threat came from the substance of Ricardian theory (in particular the combination of the principle of population with rent theory) and that the methodological objection follows from the substantive objection.

[33] The situation with Malthus is complicated because the 1798 *Essay* was anonymous, though authorship was soon widely known, and because Malthus modified both his methods and his theodicy in subsequent editions. The correspondence between Malthus and Whewell which began two years after these sermons suggests that Whewell would probably have regretted public criticism of Malthus alongside Ricardo. For instance Malthus to Whewell 28 Feb 1831 Add.Ms.c.53/2 published as DeMarchi and Sturges "Four Letters" II, and Malthus to Whewell 1 April 1833 Add.Ms.a.209/12 De Marchi and Sturges "Four Letters" IV. It is regrettable that parts of the Whewell side of this correspondence seem lost. De Marchi and Sturgess (1973 384-5) discuss Whewell's later attempt to recruit Malthus to their side of the fight against Whately and Senior.

perfectly happy to employ theory and deductive methods, and in fact Becher (1991 p3-8) attributes his success in each of these fields to his willingness to use theory to direct his enquiries. Fisch mentions Whewell's "composition and eventual suppression of an unpublished book-length essay on the philosophy of mathematics" (Fisch 1994 p249, 266-73) which is consistent with a theologically driven change of mind about the role of deduction[34].

A further connection between deductive methods and atheism for Whewell comes from early 19th century debates over mathematics Cambridge discussed by Fisch (1994) and Ashworth (1996). Whewell's Cambridge friends Babbage and Herschel founded the short-lived Analytical Society in 1812 which championed the methods of notorious French atheists Laplace and Lagrange – deductive reasoning from first principles. Both their deductive method and their first principles were suspect for Whewell. Even more worryingly for Whewell, members of the Analytical Society joined this mathematics with projects reform of British society (Ashworth p635)[35].

It is difficult to weigh the relative importance for Whewell of the association of deduction with the atheist Ricardian political economy and its association with the French (mediated through the Analytical Society and subsequent advocates at Cambridge). A common element in both is the threat to the Anglican social theory and the established social order that they posed. Whichever association was more important in forming Whewell's antipathy to deduction it was an antipathy that had a strong religious component.

Whewell's mature methodological position (expressed in his *History* and *Philosophy* volumes and his 1849 essay on JS Mill's 1843 *Logic*) was a softened version of induction which did not exclude theory (induction was in fact an almost dialectical interplay between evidence and theory), and an allowance that deductive methods were appropriate in sciences such as theology and astronomy which had a solid evidential base. Deductive methods however were not appropriate in mixed sciences such as political economy, which, partly because of their mixed character were less

[34] Fisch (1994 p266) notes the last entry in the manuscript R.18.17[8] in the Whewell papers is dated 1833. It is unclear when the bulk of it was composed, but the content is most consistent with his other scientific writings of the early 1820s, in other words before, or at least parallel with his encounter with deductive political economy.

[35] Whewell's Cambridge friend Charles Babbage published an unofficial Bridgewater Treatise (Babbage 1838) which quoted on its title page a passage from Whewell's earlier Bridgewater Treatise about the inability of "mechanical philosophers and mathematicians" to help us "ascend to the first cause and supreme ruler of the universe". Note that Whewell is not writing about demonstrating anything; "ascent" suggests he has pastoral and spiritual utility in mind. Babbage attacks Whewell, suggesting based on an analogy between his calculating machine and the natural world that mathematics opens the way to a richer conception of God. There is further discussion in Ashworth (1996 p 649-51).

developed[36]. There seems to be a pragmatic retreat from his early theologically driven antipathy to deduction, which gives room for deduction in political economy on the basis of principles established inductively. Whewell received JS Mill's *Principles of Political Economy* much more warmly than his *Logic*.

A full treatment of Whewell's developing views on induction is beyond the scope of this paper[37]. My concern is the evidence the 1827 sermon provides of the connection between his early engagement with political economy and his antipathy to deductive methods.

THE PROBLEM OF THEODICY IN POLITCAL ECONOMY UNDERMINED BRITISH SCIENTIFIC NATURAL THEOLOGY

For Whewell, economic evils such as poverty and starvation cast doubt not just on the natural theological framing of political economy, but on the whole scientific natural theology project. Doubts about natural theology stemming from his 1827 sermon are evident in his 1833 Bridgewater Treatise *Astronomy and General Physics Considered with Reference to Natural Theology*, his 1837 sermons *On the Foundations of Morals*, and his Cambridge textbook *Elements of Morality, including Polity*. By the 1840s Whewell seems to have given up any attempt to construct an adequate economic theodicy, and is left only with the hope (expressed most clearly in the final pages of his Bridgewater Treatise) that the progress of political economy as a science would open up ways of reconciling it with Christian theology, as had been the experience of other sciences. As he writes: "All the laws which govern the moral world are expressions of the thought and intentions of our Supreme Ruler …if, in endeavouring to trace the tendencies of the vast labyrinth of laws by which the universe is governed, we are sometimes lost and bewildered, and can scarce, or not at all, discern the line by which pain, and sorrow, and vice fall in with a scheme directed to the strictest right and greatest good, we yet find no room to faint or falter" (Whewell 1833 p380-81).

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[36] This mature position distanced Whewell from his friends Jones and Herschel's extreme version of induction. The literature attributes Whewell's shift to learning from his own scientific work such as on tides, and his reading of Kant and other German philosophers, but there may be some influence from Whewell's wider reading in political economy and in particular a greater appreciation of Malthus' weaving together of deductive arguments and evidence in later editions of the *Essay*.

[37] Laura Synder (2006) extensively discusses the methodological issues in Whewell's exchange with JS Mill, and overturns the conventional wisdom going back to Leslie Stephen that Whewell's views on induction are muddled. She particularly draws attention to the role of the scientist in induction, making induction a social and morally significant operation rather than purely mechanical. This paper is about natural theology and theodicy, and induction only comes into the argument because of its religious overtones. Describing and evaluating the validity of various approaches to induction in the middle years of the 19th century, and explaining the increasing adherence to induction as a scientific method in this period is outside the scope of the present paper.

If a man such as Whewell, the greatest scientific authority of his age, ordained clergyman, and Master of Trinity could not deal satisfactorily with the problem of economic evil and suffering, and this problem stood in the way of reconciling political economy with Christian theology, what hope was there for lesser mortals? Reconciling political economy with Christian theology must surely be an impossible task.

Whewell and others failure to construct an adequate economic theodicy is significant for the disintegration of the natural theology framework for British intellectual life in the middle years of the 19th century[38]. Various other explanations for the disintegration of natural theology have been offered in the literature. Anthony Waterman (1991) tells a two stage story where the alliance between Christian theology and political economy falls apart from the late 1830s, partly due to the changed political situation, and partly due to the death of major figures such as Malthus and departure to ecclesiastical offices of others such as Sumner and Whately. Theodicy is part of this story of the separation of theology from political economy but Waterman's account concentrates on the struggles of earlier figures such as Paley, Malthus, Chalmers, Sumner and Whately. For Waterman there is a second and largely unrelated stage where natural theology collapses as a framework for British science in the middle of the 19th century due to difficulties created by Darwin's *Origin of Species* 1859. In the history of science literature on the death of British scientific natural theology (for example Turner 1978, Brooke 1992) more emphasis is placed on the increasing professionalisation of the sciences, and natural theology being asked to carry too heavy a demonstrative burden as the 19th century progressed. At the same time the non-demonstrative functions of scientific natural theology outlined in an earlier section of this paper were losing much of their force.

In a world where Christian theology remained authoritative, the inability of Whewell and others to reconcile a natural theologically framed political economy with Christian theology must be part of the story of the collapse of natural theology in 19th century Britain. Political economy's hold on the public imagination gave it the power to seriously undermine the natural theology framework. The damage was done by the inability of a succession of influential political economists (Malthus, Chalmers, Whately, culminating with Whewell) to deal with the particularly nasty and complicated version of the problem of evil raised by political economy, alongside the continuing belief that a theodicy was necessary. This process proved much more corrosive to natural theology than *Hume's Dialogues on Natural Religion* which, as Waterman (1991) rightly points out, had

[38] Ashworth (1996) alludes to political economy at several places in his account of the changing intellectual climate – the move to "industrialize the human mind" (p653) in the middle years of the 19th century. He discusses Whewell's views on mathematical instruction at Cambridge but not his work on political economy.

relatively little impact. Whewell's struggle in the 1827 sermon to deal with theodicy in political economy, following the struggles of other natural theological political economists, had implications for the fate of natural theology well beyond political economy.

CONCLUSIONS

Whewell's engagement with political economy was theologically driven: - he was defending Anglican social theory against the threat posed by the Ricardian political economy. His own views on political economy were shaped by his encounter with the atheistic and deductive political economy of Ricardo, with Malthus' evolving position, and with Whately and Senior's deductive Christian political economy. The issue here was not the philosophical question of the validity of induction in relation to deduction (and none of the participants took much trouble to define terms) but the religious connotations of deduction and the social threat posed by its advocates.

It is clear from the 1827 sermon that Whewell as a natural theologian was deeply troubled by the problems of economic evil and suffering, and his intuition was sound that this task is immensely challenging for economists. The main significance of the 1827 sermon is the evidence it provides of his recognition of theological threat posed to the Anglican vision of social harmony by the combination of Ricardian population and rent theory, which suggested social conflict was the norm. As well as being the earliest substantial writing by Whewell on political economy, the sermon is the best account we have of Whewell's own failed attempt to deal with the problem of economic evil which in his view made it impossible to reconcile political economy with Christian theology. I suggested at the end of the paper that his failure to construct an adequate economic theodicy contributed to a wider loss of confidence in natural theology, and to its collapse in mid-19th century Britain.

How important then is Whewell for understanding the 19th century British political economy? Whewell made no great theoretical contributions, however the claim in the introduction that it is difficult to see how a contextual history of political economy in 19th century Britain could be written without Whewell has some basis in his influence on debates over the methodology of political economy, its public standing, and its relationship to theology. Whether or not the claim about Whewell can be sustained, his neglected 1827 sermon provides further evidence that 19th century political economy cannot be understood apart from its theological background.

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