



## The Scientific Revolution with Dr. Ted Davis

### Lecture 8.2: New Views of Knowledge: Utility and Praise

#### Outline:

##### New Views of Knowledge: Utility and Praise

- Robert Boyle, *The Christian Virtuoso* (1690), University of Pennsylvania
- Robert Boyle, *Some Considerations Touching the Usefulness of Experimental Naturall Philosophy* (1664), Science History Institute

##### Knowledge as useful (utility)

- For Aristotle, the main goal of science was not to improve the human condition, but to take pleasure in understanding nature for its own sake. “For even in those kinds [of animals] that are not attractive to the senses, yet to the intellect the craftsmanship of nature provides extraordinary pleasures for those who can recognize the causes in things and who are naturally inclined to philosophy.” – quoted by G.E.R. Lloyd, *Early Greek Science: Thales to Aristotle*, p. 105
  - Sciences is about the life of the mind.
- “At first he who invented any art whatever that went beyond the common perceptions of man was naturally admired by men, not only because there was something useful in the inventions, but because he was thought wise and superior to the rest. But as more arts were invented, and some were directed to the necessities of life, others to recreation, the inventors of the latter were naturally always regarded as wiser than the inventors of the former, because their branches of knowledge did not aim at utility. Hence when all such inventions were already established, the sciences which do not aim at giving pleasure or at the necessities of life were discovered, and first in the places where men began to have leisure. This is why the mathematical arts were founded in Egypt; for there the priestly caste was allowed to be at leisure.” – *Metaphysics*, book 1
- “For it is owing to their wonder that men both now begin and at first began to philosophize;...e.g. about the phenomena of the moon and those of the sun and of the stars, and about the genesis of the universe. And a man who is puzzled and wonders thinks himself ignorant...;therefore since they philosophized in order to escape from ignorance, evidently they were pursuing science in order to know, and not for any utilitarian end. And this is confirmed by the facts; for it was when almost all the necessities of life and the things that make for comfort and recreation had been secured, that such knowledge began to be sought. Evidently we do not seek it for the sake of any other advantage; but as the man is free, we say, who exists for his own sake



- and not for another's, so we pursue this as the only free science, for it alone exists for its own sake..." – ditto
- But Francis Bacon and others in the scientific revolution argued for the utility of the knowledge produced by scientific enquiry – especially for mitigating consequences of the Fall. A prophet of science rather than a scientist, Bacon had the vision of a *New Atlantis* (1627) brought on by scientific progress. So many useful things for improving life would result.
    - Drawing by Lowell Hess for *The Scientist* (Time-Life, 1964) – This vision is about technological progress.
  - This was all done to advance the kingdom of God and Christian charity. "Let no man...think or maintain, that a man can search too far, or be too well studied in the book of God's word, or in the book of God's works; divinity or philosophy: but rather let men endeavor an endless progress or proficiencie in both; only let men beware that they apply both to charity, and not to swelling; to use, and not to ostentation; and again, that they do not unwisely mingle or confound these learnings together." – Bacon, *The Advancement of Learning* (1605)
  - Bacon believed that nature is for us – for humanity. As he wrote in *The Wisdome of the Ancients* (English translation 1619): We are "the thing in which the whole world centers," and "all things are made subservient to man, and he receives use and benefit from them all..."
  - Boyle's title speaks volumes: *The Usefulness of Natural Philosophy*. Medicine, agriculture, and the trades will all benefit from scientific knowledge. Like Bacon, Boyle saw scientific knowledge as holding the key to the "Empire of Man over the Creatures" – that is, the Genesis mandate.
    - The better you can do Natural Philosophy, the better you can carry out the dominion that God has charged us to carry out.

## Natural Theology

- The Scientific Revolution was a high point for natural theology – seeing God in nature. Some leading scientists of the 17<sup>th</sup> century were absolutely convinced that **discoveries in science made it impossible for the rational person to doubt the existence of a wise and powerful God**. The clockwork metaphor gave impetus to this; so did discoveries of delicate, intricate contrivances [things made with a specific purpose in mind] in anatomy.
- No one exemplified this more than **Robert Boyle**. He realized that genuine philosophical atheism was rare in his day; he was more concerned with "practical Atheists," those "baptized infidels" who lived as if there were no God to judge them. Thus, he wrote a book on natural theology aimed at promoting personal piety, *A Disquisition about the Final Causes of Natural Things* (1688).
  - Final causes means ultimate purposes of things.
- "my Reader should not barely observe the Wisdom of God, but be in some measure Affectively [an emotive output of this] Convinc'd of it." "Men may



- be brought upon the same account both to *acknowledge* God, to *admire* Him, and to *thank* Him.” – *Final Causes* (1688)
- Boyle was profoundly influenced by a book (A Work Concerning the Trueness of the Christian Religion) by a protestant lawyer, **Phillipdu-Plessis Mornay**, in France.
    - Like Boyle, Mornay targeted impiety and ungodliness in a post-Reformation context. He sought, “to waken such as are asleepe, to bring backe such as are gone astray, to lift up such as are sunke downe, and to chafe them a heat which are waxed cold.” He asked God “to touch our stonie harts with the force of his spirit, and with his owne finger to plant his doctrine so deeply in them, as it may take roote and bring forth fruit.”
    - Mornay wrote about the same “clockmaker” God that Boyle later popularized. He spoke of the sky “as the great whéele of a Clocke,” amounting to “the very instrument of tyme,” needing “a Worker that putteth him to use, a Clockkéeper that ruleth him, a Mynd that was the first producer of his moving.” If “God created Nature,” then God was not tied “to the lawes of Nature.” Boyle’s views [on all these points] were identical.
    - Borrowing Mornay’s language when he added a provision to his will, Boyle established annual lectures “for proveing the Christian Religion against notorious Infidels [namely], Atheists, Theists [Deists], Pagans, Jews, and Mahometans, not descending lower to any Controversies that are among Christians themselves...”
    - In the 18<sup>th</sup> century, the collected edition of his work stressed his contributions to natural theology: “from the causes of things, to know the First Cause [God]”
  - Boyle regarded his scientific work as a form of religious worship – the best way to praise the Creator. He loved to work alone in his laboratory on Sunday afternoons.
    - **“if the World be a Temple, Man sure must be the Priest”** – Some Considerations Touching the Usefulness of Experimental Natural Philosophy
  - No one used science to praise God more than **Johannes Kepler** (1571-1630), who had wanted to be a Lutheran theologian before turning to astronomy. He poured his theology into his astronomical writings. “For it is precisely the universe which is that Book of Nature in which God the Creator has revealed and depicted His essence and what He wills with man, in a wordless script.” – *Epitome Astronomiae Copernicanae* (1618)
    - “Since we astronomers are Priests of the Most High God with respect to the Book of Nature, it behooves us that we do not aim at the glory of our own spirit, but above everything else at the glory of God.” – letter to the Bavarian statesman Hans Georg Herward von Hohenburg (1553-1622), 26 March 1598



- **Isaac Newton** (1642-1727) also gave a central role to natural theology. He believed it was “the main Business of natural Philosophy” to arrive at convincing arguments for the existence of God. – query 28, *Opticks* (originally published in Latin edition of 1706)
  - “Blind metaphysical necessity which is certainly the same always and everywhere, could produce no variety of things. All that diversity of natural things which we find suited to different times and places could arise from nothing but the ideas and will of a Being necessarily existing...”
  - “And thus much concerning God, to discourse of whom from the appearances of things does certainly belong to Natural Philosophy.” – Newton, “General Scholium,” added to 2<sup>nd</sup> edition of *Principia* (1713)
    - Newton believed that God was the source of knowledge about the world, that God had been the Creator of the world, and the world gave much evidence of God having been the Creator.