

# THE DARWIN-GRAY EXCHANGE



*1 August 2009*

*ASA Annual Meeting*

*Bethany Sollereder*



# Introduction

---

❖ Asa Gray, Harvard botanist (1810-1888)



# Introduction

---

❖ William Paley (1743-1805)



# Paley's Influence

---

- ❖ Paley's influence on:
  - ❖ On Darwin's education



# Paley's Influence

---

❖ *"In order to pass the B.A. examination, it was, also, necessary to get up Paley's Evidences of Christianity, and his Moral Philosophy. This was done in a thorough manner, and I am convinced that I could have written out the whole of the Evidences with perfect correctness, but not of course in the clear language of Paley. The logic of this book and as I may add of his Natural Theology gave me as much delight as did Euclid."*

*-Charles Darwin, Autobiography*



# Paley's Influence

---

❖ “*I did not at that time trouble myself about Paley’s premises; and taking these on trust I was charmed and convinced by the long line of argumentation.*”

-Charles Darwin, *Autobiography*



# Paley's Influence

---

- ❖ Paley's influence on:
  - ❖ On Darwin's education
  - ❖ Mid-Victorian culture



# Paley's Influence

---

- ◆ God
- ◆ Angels
- ◆ Stars
- ◆ King/Queen
- ◆ Nobles
- ◆ Commoners
- ◆ Animals
- ◆ Plants
- ◆ Minerals



# Paley's Influence

---

❖ “All Things Bright and Beautiful” (1848)

❖ The rich man in his castle,  
The poor man at his gate,  
God made them, high or lowly,  
And order'd their estate.

-Cecil F. Alexander



# Paley's Influence

---

- ❖ Paley's influence on:
  - ❖ On Darwin's education
  - ❖ Mid-Victorian culture
  - ❖ On Darwin's science



# Paley's Influence

---

❖ *“The principle of the contrivance is clear: the application of the principle is also clear... nothing similar to the air-bladder is found in land-animals.”*

-William Paley, *Natural Theology*



# Paley's Influence

---

❖ *The illustration of the swimbladder in fishes is a good one, because it shows us clearly the highly important fact that an organ originally constructed for one purpose, namely flotation, may be converted into one for a wholly different purpose, namely respiration... All physiologists admit that the swim-bladder is homologous, or “ideally similar,” in position and structure with the lungs of the higher vertebrate animals: hence there seems to me to be no great difficulty in believing that natural selection has actually converted a swimbladder into a lung, or organ used exclusively for respiration.*

*-Charles Darwin, Origin of Species*



# Paley's Influence

---

❖ *Why, on the theory of Creation, should this be so? Why should all the parts and organs of many independent beings, each supposed to have been separately created for its proper place in nature, be so invariably linked together by graduated steps?*

*-Charles Darwin, Origin of Species*



# Darwin's Bind

---

❖ *Evidence of design, I think you will allow, everywhere is drawn from the observation of adaptations and of results, and has really nothing to do with anything else, except where you can take the word for the will. And in that case you have not argument for design, but testimony. In Nature we have no testimony; but the argument is overwhelming.*

-Asa Gray, "Design versus Necessity,"  
*American Journal of Science and Arts*, 1860.



# Darwin's Bind

---

❖ Beneficence?



# Paley's Influence

---

❖ *“But I own that I cannot see, as plainly as others do, & as I shd wish to do, evidence of design & beneficence on all sides of us. There seems to me too much misery in the world.”*

-Charles Darwin to Asa Gray, 22 May 1860



# Paley's Influence

---

❖ “*I cannot persuade myself that a beneficent & omnipotent God would have designedly created the Ichneumonidæ [wasp] with the express intention of their feeding within the living bodies of caterpillars, or that a cat should play with mice.*”

-Charles Darwin to Asa Gray, 22 May 1860



# Paley's Influence

---

❖ “ I grieve to say that I cannot honestly go as far as you do about Design... To take a crucial example, you lead me to infer... that you believe “that variation has been led along certain beneficial lines”. — I cannot believe this.”

-Charles Darwin to Asa Gray, 26 November 1860



# Darwin's Bind

---

- ❖ Beneficence?
  - ❖ of Ichneumonidae and mice
- ❖ Perfect adaptation?



# Paley's Influence

---

❖ “the degree of adaptation of species to the climates under which they live is often overrated”

-Charles Darwin, *Origin of Species*



# Paley's Influence

---

❖ *“If anything is designed, certainly Man must be; one's “inner consciousness” (though a false guide) tells one so; yet I cannot admit that man's rudimentary mammæ; bladder drained as if he went on all four legs; & pug-nose were designed”*

-Charles Darwin to Asa Gray, 11 December 1861



# Darwin's Bind

---

- ❖ Beneficence?
  - ❖ of Ichneumonidae and mice
- ❖ Perfect adaptation?
  - ❖ Poor adaptation: mammae, bladders, and pug-noses
- ❖ Intelligent design?



# Darwin's Bind

- ❖ *An innocent & good man stands under [a] tree & is killed by [a] flash of lightning. Do you believe (& I really shd like to hear) that God designedly killed this man?*
- ❖ *Many or most persons do believe this; I can't & don't. — If you believe so, do you believe that when a swallow snaps up a gnat that God designed that that particular swallow shd. snap up that particular gnat at that particular instant?*

-Charles Darwin to Asa Gray, 3 July 1860



# Darwin's Bind

---

❖ *I believe that the man & the gnat are in same predicament. — If the death of neither man or gnat are designed, I see no good reason to believe that their first birth or production shd. be necessarily designed.*

- Charles Darwin to Asa Gray, 3 July 1860



# Darwin's Bind

---

❖ *“On the other hand I cannot anyhow be contented to view this wonderful universe & especially the nature of man, & to conclude that everything is the result of brute force. I am inclined to look at everything as resulting from designed laws, with the details, whether good or bad, left to the working out of what we may call chance.”*

- Charles Darwin to Asa Gray, 22 May 1860



# Darwin's Bind

---

- ❖ Beneficence?
  - ❖ of Ichneumonidae and mice
- ❖ Perfect adaptation?
  - ❖ Poor adaptation: mammae, bladders, and pugnoses
- ❖ Intelligent design?
  - ❖ Chance and predestination



# Darwin's Surrender

---

❖ *“I feel most deeply that the whole subject is too profound for the human intellect. A dog might as well speculate on the mind of Newton... The more I think the more bewildered I become.”*

- Charles Darwin to Asa Gray, 22 May 1860



# Darwin's Surrender

---

❖ “But I know that I am in the same sort of muddle (as I have said before) as all the world seems to be in with respect to free will, yet with every [action] supposed to have been foreseen or preordained.”

- Charles Darwin to Asa Gray, 17 September 1861



# Darwin's Surrender

---

❖ *“Your question what would convince me of Design is a poser. If I saw an angel come down to teach us good, & I was convinced, from others seeing him, that I was not mad, I shd. believe in design.— If I could be convinced thoroughly [sic] that life & mind was in an unknown way a function of other imponderable forces, I shd. be convinced.— If man was made of brass or iron & no way connected with any other organism which had ever lived, I shd perhaps be convinced. But this is childish writing.”*

- Charles Darwin to Asa Gray, 17 Sept 1861



# Darwin's Surrender

---

❖ Looking for interventionistic design



# Darwin's Surrender

---

❖ *“I should believe it to have been designed (as I did formerly each part of each animal) until I saw a way of its being formed without design... When I think of my beloved orchids... it really seems to me incredibly monstrous to look at an orchid as created as we now see it. Every part reveals modification on modification.”*

- Charles Darwin to Asa Gray, 11 Oct 1861



# Darwin's Surrender

---

- ❖ Looking for interventionistic design
- ❖ Darwin's definition of design: Independent act of creation
- ❖ The search for design fails



# Asa Gray's Perspective

---

❖ *“The implication of a designing mind must [bring] with it a strong implication of design in matters where we could not directly prove it. If you grant an intelligent designer anywhere in Nature, you may be confident that he has had something to do with the ‘contrivances’ in your Orchids.”*

- Asa Gray to Charles Darwin, 2 July 1862



# Asa Gray's Perspective

---

- ❖ Design is found in and through modification, not in spite of it
- ❖ Is this atheism?



# Asa Gray's Perspective

---

❖ *“It would be more correct to say that the theory in itself is perfectly compatible with an atheistic view of the universe. That is true; but it is equally true of physical theories generally. Indeed, it is more true of the theory of gravitation, and of the nebular hypothesis, than of the hypothesis in question.”*

- Asa Gray, “Review: Origin of Species,” *American Journal of Science and Arts* (March 1860)



# Conclusion

---

- ❖ Darwin was unable to see design within evolution due to Paley's overwhelming influence
- ❖ Asa Gray was able to affirm design by rejecting Paley's criterion, and allowing design to be recognized through modification.