

A Christian Perspective on Virtue Engineering Ethics

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Introduction to Virtue Ethics

- Most people consider this ultimately comes from the work of Aristotle
- Aristotle
 - Lived 384-323 B.C.
 - Was a student of Plato

Aristotle's ethics

- He begins by looking at the final cause of human beings
- He concludes that our final cause is well-being.
 - We therefore need to seek well-being in our life
- He concludes that well being can be obtained by leading a virtuous life

Virtuous life

- Life of happiness requires cultivation of virtuous character traits
 - This requires
 - Training
 - Building up of good habits

Classic Virtues to be emulated

- Cardinal virtues which date from Aristotle
 - Prudence
 - Temperance
 - Fortitude
 - Justice
- Additional virtues attributed to Thomas Aquinas
 - Faith
 - Hope
 - Love

Classic Vices to Avoid

- Pride
- Lust
- Gluttony
- Envy
- Anger
- Greed
- Sloth

Thomas Aquinas

- He once again made Aristotle's views popular
- He lived 1225-1274
- Most of his adult life he was a professor
- He added the last three virtues to the list of classic virtues



Developing an ethic

- Everything has a specific purpose or end
- The highest good and the fountain of all goodness is God
- Our ultimate goal—the good life— is not something that we can access only with reason.

Aquinas and the fall of man

- When Adam sinned, the human race fell
- What the fall of man means is very significant
- Aquinas believed that our righteousness fell, but that our intellect did not
 - We can still reason correctly

The value and limits of reason

- Reason can take us to living some of the virtues, most of the time
 - Prudence, justice, temperance, and fortitude
- We need God's gifts to be able to live the virtues of faith, hope, and love

Thomas's ethics

- To live the truly ethical life God intends requires more than the best that reason has to offer
- However, reason can take us a long way toward God

Thomas and Natural Law

- Natural law refers to what man can learn about the moral nature of the world from human reason and observation alone
- See Romans 1:20
 - **“For since the creation of the world God’s invisible qualities—his eternal power and divine nature—have been clearly seen, being understood from what has been made, so that men are without excuse.”**

Natural Law Example: The Declaration of Independence

- “We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable rights, that among these are life, liberty and the pursuit of happiness.”

Modern Interpreters of Virtue Ethics

- William Bennett
 - *“The Book of Virtues”*
- Alasdair MacIntyre
 - *“After Virtue: A Study in Moral Theory”*

Virtue ethics and religion

- Is virtue ethics inherently religious?
 - No. This perspective dates from Aristotle, who is not considered today to be a religious figure
 - Many cultures have embraced this perspective
 - Carolyn Whitbeck writes:
 - “The notions of a moral rule, and that of virtue...have been explicitly used in a larger range of cultures than has the notion of a right. Virtually every ethical and major religious tradition employs some counterpart of the notions of virtue and moral rule.”
 - Seebauer and Barry have defended a secular version of virtue engineering ethics in their book

Virtue ethics and religion

- Can virtue ethics be defended on religious grounds?
 - Yes
 - Harrington and Keenan defend a Christian version in their book *Jesus and Virtue Ethics*, Sheed and Ward, Lanham, Maryland, 2002.
 - The author is defending a Christian version of it in this paper

Thomas Aquinas

- His perspective on the fall of mankind is weak
 - His claim that the fall did not include our ability to reason is questionable
- Will examine the compatibility of his ethics views with the Bible

The Classic virtue of Prudence

- Prudence concerns the mind. A prudent mind thinks about a moral problem clearly and completely
- Proverbs 1:1-2,4
The proverbs of Solomon son of David, king of Israel
For attaining wisdom and discipline;
For understanding words of insight;
For giving prudence to the simple,
Knowledge and discretion to the young.
- Proverbs 8:15
You who are simple, gain prudence;
You who are foolish, gain understanding

The Classic virtue of temperance

- Temperance controls our attraction, helping to restrain our impulses to move blindly toward something

- Proverbs 6:20-26

My son, keep your father's commands
and do not forsake your mother's teaching.
For these commands are a lamp,
this teaching is a light,
and the corrections of discipline
are the way to life,
keeping you from the immoral woman,
from the smooth tongue of the wayward wife.
Do not lust in your heart after her beauty
or let her captivate you with her eyes,

The Classic virtue of Fortitude

- Fortitude controls our aversion, helping us stop avoiding something we do not like to do
 - Courage to do that which is difficult
- Joshua 1:6
 - Be strong and courageous, because you will lead these people to inherit the land I swore to their forefathers to give them
- Ezra 10:4
 - Rise up; this matter is in your hands. We will support you, so take courage and do it.

The Classic virtue of Justice

- Justice concerns our will and has two aspects: truth and fairness
- Proverbs 21:3
To do what is right and just
Is more acceptable to the Lord than sacrifice
- Micah 6:8
He has showed you, O Man, what is good,
And what does the Lord require of you?
To act justly and to love mercy
And to walk humbly with your God

The Classic virtue of Faith

- Romans 1:17

- For in the gospel, a righteousness from God is revealed, a righteousness that is by faith from first to last, just as it is written, “The righteous will live by faith”

- 2 Cor 5:7

- We live by faith, not by sight.

The Classic virtue of Hope

- This gives us a confidence about the future
- Romans 5:1-2
 - Therefore, since we have been justified through faith, we have peace with God through our Lord Jesus Christ, through whom we have gained access by faith into this grace in which we now stand. And we rejoice in the hope of the glory of God.
- Jeremiah 29:11
 - “For I know the plans I have for you,” declared the Lord, “plans to prosper you and not to harm you, plans to give you hope and a future.”

The Classic virtue of Love

- I John 4:16-19

God is love. Whoever lives in love, lives in God and God in him. In this way, love is made complete among us so that we are like him. There is no fear in love. But perfect love drives out fear, because fear has to do with punishment. The one who fears is not made perfect in love. We love because he first loved us.

- I Cor 13:13

And now thee three remain: faith, hope and love. But the greatest of these is love.

Classic Virtues and the Bible

- The seven classic virtues all reflect character traits that the Bible strongly recommends
- If someone follows a virtue ethics perspective, he will be following a lifestyle that is consistent with the Bible
- We can conclude that a virtue ethics perspective is compatible with the Bible
 - Despite some errors in beliefs by Thomas Aquinas and Aristotle about the nature of mankind

Virtue ethics and engineering

- Martin and Schinzinger describe this as one of several approaches that can be taken with respect to engineering ethics
 - This is where the author first encountered the concept
- Seebauer and Barry develop a virtue engineering ethic in their book ***Fundamentals of Ethics for Scientists and Engineers***

Virtue engineering ethics

- This paper takes the insights learned from Seebauer and Barry's book and applies them to several case studies.
- For more examples, see our ASEE paper:
 - Jordan, W.M., *A Virtue Ethics Approach to Engineering Ethics*, presented at the A.S.E.E. Annual Meeting in Chicago, June 2006.

Why should engineers care about virtue ethics?

- In fall 2005, we surveyed engineering students at Mississippi State and Baylor University concerning several ethics issues.
- Details are reported in the following paper:
 - Jordan, W., and Elmore, B., *Engineering Ethics and Moral Theories : A Student Perspective*, to be presented at the 2006 A.S.E.E. annual meeting in Chicago, 2006.

Cheating and Moral theories

- Believing in different moral theories appears to result in different likelihoods of cheating
- Virtue ethics students claim to cheat less frequently than those who believe in other systems
- Utilitarian ethics students admit to cheating more often than those who believe in other systems

Virtue ethics and the N.S.P.E. Code of Conduct

- *Section II.1.a*
 - *Engineers shall hold paramount the safety, health, and welfare of the public. If engineers' judgement is overruled under circumstances that endanger life or property, they shall notify their employer or client and such other authority as may be appropriate.*
- A Christian virtue ethics perspective would endorse this position, as engineers of good moral character should always be concerned with the welfare of the public whom they are serving.

Virtue ethics and a case study

- You are a mechanical engineer working for a steel company. You supervise the pickle line and as a part of your work have developed a technique where you can weld together stainless steel in such a fashion that the welded joint can be cold reduced on the rolling mill. This was done as part of your work, but it was done on the evening shift and none of your supervisors are aware of it. Should you:
 - (a) Patent your technique and make a profit out of it.
 - (b) Patent your technique and assign patent rights to your company.
 - (c) Tell your supervisor and let him decide what else to do with the idea.

Option (a)—patent it yourself

- Your motive for this could be the desire for **justice**, based on the concept that this is your own idea and that it should belong to you.
- **Justice** might require that this really belongs to the company for it was done on company time.
- Might also be promoting the vice of **greed** in the engineer as he seeks to maximize his profits at the possible expense of the company.
- **Prudence** would suggest that you should not do this, for the company may respond very negatively to your proposed actions.

Option (b)—assign rights to the company

- This approach would support the virtue of **justice**, for the company has a good claim on your work if it was done on company time and with company equipment.
- Since the patent would be in the engineer's name, it would also reinforce **justice** for the engineer. It would also be a **prudent** thing to do. The company is likely to respond very positively to this response.

Option (c)—tell your supervisor and ask for advice

- This was certainly be **prudent** thing to do, for the company would not be unhappy with what you have done.
- It might not be **justice** for the engineer who has done the work.
- It might also promote the vice of **greed** among company officials.
- When balancing out the potential benefits to the engineer (promoting **prudence**) against the potential harms (**lack of justice** for the engineer and promoting **greed** in the company) it appears that this may not be a good choice.

Conclusions

- It appears that a virtue ethics approach to engineering ethics provides useful insights not available by other methods.
- Virtue ethics can be applied to real world case studies
- While a virtue ethics approach does not have to be based on a Christian view of the world, it can be based on a Christian view of the world
- A Christian virtue engineering ethic can be developed that will give guidance to engineers who wish to make their faith a part of their engineering practice

Any Questions?