

# A Biblical Perspective on Engineering Ethics



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# Introduction



- Engineering ethics is an important concept that is regulated by codes of conduct that have been developed by various professional societies and the State Boards of Registration
- As Christian engineers, we believe the Bible is a more important standard as to how to live and work
- In this paper we will examine what the Bible has to say about engineering practice

# Overview of Paper



- This paper is a follow on to the paper we presented at the 2002 Annual Conference of the American Society for Engineering Education
  - *“The use of Moral Theories to Evaluate Engineering Codes of Conduct”*
  - The ASEE paper used different moral theories to evaluate engineering codes of conduct
    - Utilitarian theories
    - Duty theories
    - Rights theories
    - Virtue theories

# Overview of Paper



- Our original goal for this paper was to use the Bible to directly evaluate a typical code of conduct
- We began to realize that before we do this, we need to briefly examine several other issues
  - A Biblical view of calling
  - The nature of work
  - The nature of engineering

# Outline of Paper



- **The Nature of Our Calling**
- The nature of work
- A Definition of Engineering
- Introduction to Engineering Codes of Conduct
- A Biblical Perspective on Engineering Codes of Conduct

# The Nature of Our Calling




- We have been heavily influenced by Os Guinness' book *The Call*
- Guinness points out we have two callings:
  - A calling to God (to be a disciple)
  - A calling to our work
- We need some balance so that one of the callings does not get overwhelmed by the other

# The Nature of Our Calling



- Guinness writes:
  - *“Calling is the truth that God calls us to himself so decisively that everything we are, everything we do, and everything we have is invested with a special devotion, dynamism, and direction lived out as a response to his summons and service.”*

# Distortions to the concept of Calling



- Elevating the spiritual above the secular
  - What is important is a full time commitment to spiritual work
    - Medieval times—a commitment to be a monk and/or serve in monasteries
    - Modern times—commitment to full time Christian service (such as pastor or missionary)

# Distortions to the concept of Calling



Elevating the secular above the spiritual

- We serve God through our daily life
  - While true, this is not the only way we serve God

President Calvin Coolidge

“The man who builds a factory builds a temple.  
The man who works there worships there.”

Henry Ford

“Work is the salvation of the human race, morally,  
physically, socially.”

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# The nature of work



- Work was created before the fall of mankind, it is not a curse of the fall
- Gen 1:28
  - *God said to them, "Be fruitful and multiply, and fill the earth, and subdue it; and rule over the fish of the sea and over the birds of the sky and over every living thing that moves on the earth."*

# The nature of work



- Gen 2:15
  - *Then the Lord God took the man and put him into the garden of Eden to cultivate it and keep it.*
- Work is therefore important and not to be seen as just a necessary duty

# The nature of work



- Some aspects of work were made more difficult by the fall
- Gen 3:17b-19
  - *“Cursed is the ground because of you; In toil you will eat of it all the days of your life... By the sweat of your face you will eat bread, till you return to the ground.”*
- This sounds like more unpleasant work than was described by the earlier cultivate the garden command.

# Importance of Work



- Work is important to us:
  - God's commands for us to work predate the fall.
  - While we do need to work to provide for the needs of our families, work is more important than just providing for them.
- When we work, we need to recognize that we are always working for God
  - Eph 6:7
  - *With good will render service, as to the Lord and not to men.*

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# A Definition of Engineering



- Creating a definition is not simple
  - There are some activities that are clearly the practice of engineering
  - There are some activities that are clearly not the practice of engineering
  - There are many activities in which it is not clear whether or not engineering is being performed

# A Definition of Engineering



- There are many written definitions of science and the scientific method, but fewer attempts have been made to define engineering
- We are indebted to the careful thinking on the nature of engineering that has been done by Dr. Billy Koen of the University of Texas. His definition of the engineering method is "the strategy for causing the best change in a poorly understood or uncertain situation within the available resources and the use of heuristics."

# Creating our own definition



- We believe that engineering fits into Koen's definition, but so do other tasks such as politics or ministry
- We would like to define engineering as:
  - *"The application of science and human experience to solve problems faced by people. This is often done in poorly understood or uncertain situations, using the available resources."*

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# Engineering Codes of Conduct developed by State Boards of Registration



- The various State Board's of Registration in the United States have developed codes to regulate engineering practice.
- These codes must be treated seriously, for failure to follow these codes can result in fines and loss of your engineering license

## Engineering codes of conduct developed by Professional Societies



- These codes typically contain more specific information than the State Codes for they deal with issues unique to that branch of engineering
- Failure to follow these codes can result in your dismissal from the society and their publicizing of your dismissal

# Engineering codes of conduct




- There is no governmentally sanctioned national standard of engineering conduct
- In this paper we will examine the closest thing we have to a national standard: the code developed by the National Society of Professional Engineers (N.S.P.E.)
- This code is very similar to many state board codes. If you violate this code, you are probably violating the code of your state board.

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# A Biblical Perspective on Engineering Codes of Conduct



- Modern engineering, with its significant scientific base, did not exist during the time of the Bible's writing
- A type of engineering, empirically based on practical experience did exist in some cultures. Examples of this:
  - The pyramids of Giza
  - Roman aqueducts

# A Biblical Perspective on Engineering Codes of Conduct



- We need to infer a Biblical approach to engineering practice from what the Bible has to say about certain other topics, such as:
  - Building
  - Work
  - Excellence in work

# The Bible and Building



- Building things is praised in the Bible
- Example of building the ark of the covenant
  - Exodus 31:1-7
  - *Now the Lord spoke to Moses, saying, "See I have called by name Bezalel, the son of Uri, the son of Hur, of the tribe of Judah. I have filled him with the Spirit of God in wisdom, in understanding, in knowledge, and in all kinds of craftsmanship, to make designs for work in gold, in silver, and in bronze, and in the cutting of stones for settings, and in the carving of wood, that he may work in all kinds of craftsmanship. And behold, I myself have appointed with him Oholiab, the son of Ahisamach, of the tribe of Dan; and in the hearts of all who are skillful I have put skill, that they may make all that I have commanded you: the tent of meeting, and the ark of testimony, and..."*

# Comments about building



- It appears from the Exodus passage that the interest and skill in doing this work was a gift from God.
  - Our interest in engineering, and our ability to solve engineering problems are gifts from God.
  - This does not mean that hard work is not required for us to be able to use our skills to their fullest potential.

# Creating things that do not last



- While God commends building and creating, we need to recognize that what we build is not going to last forever.
- Ecclesiastes 2:4-6, 11
  - *"I enlarged my works; I built houses for myself, I planted vineyards for myself; I made gardens and parks for myself and I planted in them all kinds of fruit trees; I made ponds of water for myself from which to irrigate a forest of growing trees... Thus I considered all my activities which my hands had done and the labor which I had exerted, and behold all was vanity and striving after wind and there was no profit under the sun."*

# Requirements for our work



- We need to do what we can, while we can
  - Eph 5:15-16
    - *Therefore, be careful how you walk, not as unwise men but as wise, making the most of your time, because the days are evil.*
- We need to strive for excellence, even if no-one is watching
  - Col 3:23
    - *Whatever you do, do your work heartily, as for the Lord, rather than for men.*

# Requirements for our work



- We need to realize who is the real audience for our work.
- It is God's opinion that really matters
- Guinness refers to this as working for an "audience of one"

# Our Audience of One



- Guinness writes:
  - When asked why he was not stung by a vicious attack from a fellow Member of Parliament, Winston Churchill replied: "If I respected him, I would care about his opinion. But I don't, so I don't." Similarly we who live before the Audience of One can say to the world: "I have only one audience. Before you I have nothing to prove, nothing to gain, nothing to lose."

# General comments about engineering



- God wants everyone to work
- For most of us our work will be “secular”, but we should not ignore the fact that we are working to please God and not just other people.
- We need to recognize that the things we create will not last. This does not diminish the significance of what we create or the relationships we develop while we create.

# Our examination of the N.S.P.E. Code



- For continuity sake, we will examine the same portions of the code that we examined in our A.S.E.E. paper
  - Our A.S.E.E. paper is available on Dr. Jordan's web site, in the engineering ethics section.
- These four passage in the NSPE code were selected to represent different aspects of the practice of engineering

# Fundamental Canons of Engineering



- *Section II.1.a*
  - *“Engineers shall hold paramount the safety, health, and welfare of the public.”*
- The canons appear to be consistent with Paul’s command in Galatians 6:9-10
  - *Let us not become weary in doing good...as we have opportunity, let us do good to all people.*
- We have an obligation to all people, not just the immediate client who has hired us.

# Public Knowledge and Appreciation



- *Section 11.2.c*
  - *“Engineers shall endeavor to extend public knowledge and appreciation of engineering and its achievements.”*

# A Biblical Perspective on Public Knowledge and Appreciation



- Being pleased in what we do is legitimate
  - Prov 13:4
    - *The sluggard craves and gets nothing, but the desires of the diligent are fully satisfied.*
- We cannot ever be totally satisfied only by our work
  - Eccles 5:10
    - *He who loves money will not be satisfied with money, nor he who loves abundance with its income.*

# A Biblical Perspective on Public Knowledge and Appreciation



- We need to make sure that we do not get arrogant in our profession and ourselves
  - Hosea 13:6 (describing the reaction of the successful people of their society)
  - *"...they became satisfied, and being satisfied, their heart became proud; Therefore they forgot Me."*
- This part of the code may be seen as promoting a self-satisfaction and arrogance that is sinful

# Deceptive Actions



## *Section 11.5.a*

*"Engineers shall avoid deceptive acts. Engineers shall not falsify their qualifications or permit misrepresentation of their or their associates' qualifications."*

## **A Biblical Response**

Prob 16:14

Righteous lips are the delight of kings and he who speaks right is loved.

# A Biblical Perspective on Deceptive Actions



- We need to speak the truth, even if it does not appear to be in my immediate self interest

Psalm 15:1-4

*O LORD, who may abide I Your tent?*

*Who may dwell in Your holy hill?*

*He who walks with integrity, and works righteousness*

*And speaks truth in his heart*

*...who honors those who fear the LORD;*

*He swears to his own hurt and does not change.*

# Example of changes in NSPE Code

- *“By order of the United States District Court for the District of Columbia, former Section 11(c) of the NSPE Code of Ethics prohibiting competitive bidding, and all policy statements, opinions, rulings or other guidelines interpreting its scope, have been rescinded as unlawfully interfering with the legal right of engineers, protected under the antitrust laws, to provide price information to prospective clients...”*
- *Statement of NSPE Executive committee*
- *In order to correct misunderstandings which have been indicated in some instances since the issuance of the Supreme Court decision and the entry of the Final Judgment, it is noted that in its decision of April 25, 1978, the Supreme Court of the United States declared: “The Sherman Act does not require competitive bidding”*
- *1. Engineers and firms may individually refuse to bid for engineering services...*
- *4. State societies and local chapters are free to actively and aggressively seek legislation for professional selection and negotiation procedures by public agencies.*

# A Biblical Perspective on Example of changes in NSPE Code



- Human codes of engineering conduct do change, since they are fallible instruments
- While the circumstances of how we apply the Bible may change, the Bible (and its standards of behavior) does not change
  - Isaiah 40:8
    - The grass withers, and the flowers fall, but the word of our God stands forever.
- What the Bible says is more important than what the code says.

# Conclusions



- The Bible was written in a pre-technological time and cannot directly be used to make decisions on technology
- The Bible provides us with insight into how we should practice engineering
- The engineering codes of conduct, while reasonable in many respects, contain some statements that cannot be justified by Biblical teaching.