ETHICS ACROSS THE CURRICULUM

Wade Robison
Rochester Institute of Technology
First step

Our goal is to avoid ethical problems if we can and resolve them if we can’t.

But to achieve that goal, we first need to know when we may have an ethical problem.
First step

Some ethical problems are easily recognizable — e.g. harassment, bribery, conflicts of interest.

But some that arise within disciplines and professions can be more difficult to recognize.
How ethics enters into disciplines

These are crucial because the ethical considerations that can give rise to such problems are unavoidable by anyone in the discipline.

Such ethical considerations enter in at least five ways.
How ethics enters into disciplines

• Through the rules of skill we must learn if we are to become proficient in a discipline or profession.

• Through the way our solutions within each discipline embody values.
How ethics enters into disciplines

• Through the ways in which we learn to think and solve problems within each discipline.

• Through internal tensions within the disciplines.
How ethics enters into disciplines

• And even through the ways in which we present our findings.
Internal ethical problems

A rule of skill is a conditional statement. It tells us how to accomplish a particular end.

To tie your shoelaces so they do not loosen as you walk, you have to do it a certain way—reverse one stage in a Granny knot.
Rules of Skill

Rules of skill are pervasive, defining our lives: we could not read, write, or tie our shoelaces without them.
Rules of Skill

We can go wrong using a rule of skill in many ways:

We may use the right rule, but fail to do a step properly, fail to do all the steps, do the steps in the wrong order, use the wrong rule, or fail to use any rule at all.
Rules of Skill

We have all made mistakes using rules of skill, but, I hope, not these:

• The woman who thought a head of garlic was a clove and put six in her spaghetti.

• The man who did not realize you take the plastic off the chicken before baking it.
Rules of Skill

Rules define disciplines — history, biology, engineering, mathematics, computer science.

In teaching someone to become an engineer, or an historian, or a physician’s assistant, we are teaching the rules of skill specific to that discipline.
Rules of Skill

Professionals can make mistakes in their professional practice, but we generally ignore them unless they are catastrophic, sustained, or pervasive.
Rules of Skill

Catastrophic?

e.g. the BP blow-out in the Gulf

e.g. the Hyatt-Regency collapse in Kansas City
Rules of Skill

Sustained?

E.g. the surgeon in Memphis who kept cutting too much.
Rules of Skill

Pervasive?

E.g. consistently making mistakes or failing to do things quite the way they ought to be done, i.e., someone in a pay scale above their level of competence.
Rules of Skill

Whether catastrophic, sustained or pervasive, the harms involved are unnecessary.

It is wrong to cause unnecessary harm.

So such mistakes raise an ethical red flag.
Rules of Skill

How high we raise the flag depends upon the kind of harm, its magnitude, its extent, and its persistence.

In any event, we have an ethical issue when a flag goes up — and are being ethical when it should not.
Rules of Skill

We may not think those within a discipline are being ethical when they are just doing what they are supposed to do.

But they are.
Rules of Skill

If my dentist drills through a tooth while daydreaming, “Drill, baby! Drill!”, her negligence makes her morally responsible — whatever her intent, we should add.
Rules of Skill

In learning the rules of skill of a discipline, we are learning its norms. “This is how we do that.”

And the norms articulate the standard practice, but are also ethical.
Rules of Skill

If I were an attorney, I would much prefer saying of a client, 

“My client did what any surgeon faced with that problem would do” rather than

“My client just wanted to try something different this time.”
Rules of Skill

We should note that there may be many ways to achieve a particular end, all normal within a profession.

There may not be just one way to amputate a limb.
Rules of Skill

We should also note that these rules are not fixed, permanent features of a profession.

They serve an end and are always open to revision if the end is better served by a change or a change causes less harm.
Rules of Skill

In learning the rules of skill of a discipline, that is, we are learning how to avoid what may be unethical and how to be ethical.
Second, choices embody values

Ethical considerations also enter into the core of disciplines in how choices within each discipline embody values.
Choices embody values

I will provide two examples to make this point, one from political science, the other from engineering.
Choices embody values

Fehrenbacher’s wonderful book on the 1857 Dred Scott case won a Pulitzer.

But he drew the conclusion that the case had no real political impact.
Choices embody values

His criterion for that was to measure — he is a political scientist, after all — whether there were any significant changes in voting patterns in the 1858 election.

There were not, and so he concluded that the case was without political impact.
Choices embody values

But the case made a civil solution to slavery impossible.

Civil solutions require working within an existing legal framework — to “touch...the better angels of our nature.”
Choices embody values

The only civil way to solve the problem slavery posed was by appealing to a branch of government empowered to change the existing laws on slavery or by amending the Constitution.
Choices embody values

The Supreme Court had already determined that state legislatures had no such power (*Prigg v. Pennsylvania*, 1842).

The Dred Scott case determined that Congress had no such power.
Choices embody values

The President had no such power, and no state governor or state court had such power.

And in its decision, the Supreme Court made it clear — by a 7 to 2 decision — that according to the Constitution, it had no such power.
Choices embody values

So one impact of the Dred Scott case was that no civil, that is, Constitutional, solution to slavery was possible, no amendment having any chance of success given the South’s voting bloc.
Choices embody values

Fehrenbacher’s judgment about the case’s impact embodies the values of political science and ignores the ethical implications — and so the Constitutional implications — of the case.

His choice about how to measure the case’s impact is not ethically neutral.
Choices embody values

Neither, we shall see, are the choices engineers make when engaged in the intellectual core of their discipline, solving design problems.

Consider such a simple thing as a toothpick (with thanks to Henry Petroski).
Choices embody values
Choices embody values

The design is of Japanese origin, and it embodies several values.

When you are finished using it, you are to snap off the end and then place the toothpick on it, like a pillow.
Choices embody values

The gains?

• No one will reuse the toothpick.

• And the used end is off the eating surface so it will not spread germs.
Choices embody values

The health benefits are values embedded in the toothpick’s design.

Consider another example of how an engineering artifact embodies values.
What is this?
Ways of thinking

So we find ethical values embedded in the products of disciplines.

We also find them embedded in the ways of thinking we learn in becoming proficient in a discipline.
Ways of thinking

We learn to think and resolve problems in different ways within disciplines.

• The joke about the engineer, the priest, and the physician

• My faux pas: criticizing arguments
Ways of thinking

Such differences can have ethical implications.

One striking example concerns the decision to launch the Challenger.
Ways of thinking

NASA cannot launch without the permission of the major contractor if there is a problem.

The problem at issue was that the temperature was to drop to 18°F, and the O-rings were certified down to 25°F.
Ways of thinking

Morton-Thiokol was the contractor for the O-rings, and after the engineers recommended against launch, management met separately.

Lund was the VP for engineering at Morton-Thiokol and was asked to take off his engineering hat and put on his management hat.
Ways of thinking

When he changed hats, he changed his decision from “No launch” to “Launch.”

Why? The best explanation is that in changing hats, he changed decision procedures — without realizing it.
Ways of thinking

As an engineer, he was risk-averse: why risk the *Challenger* and its crew when launch could be readily delayed?

As a manager, he did a cost/benefit analysis, taking into account how unlikely it was that the launch would fail compared with the costs of not launching.
Ways of thinking

The managers overruled the engineers and recommended launch despite temperatures below even the 40° for which the engines were certified.
Ways of thinking

So the ways in which we learn to think as we become proficient in a discipline have ethical implications.

We certainly want our engineering students to learn to think like engineers rather than, say, lawyers.
Ways of thinking

But those within a discipline ought to learn a second-order form of thinking as well: they need to learn about how they are thinking.

They need to know what they may miss because of how they think.
Internal tensions

The VP for engineering was wearing two hats, but ethical tensions exist within disciplines — while wearing one hat.

• Physicians as mechanics and counselor
Internal tensions

Such tensions exist in many disciplines — e.g. history — and often come to exist because of changes in the field — e.g. biology after DNA.

And they can create ethical problems for practitioners — e.g. a physician switching back and forth between a mechanic and a counselor.
Internal tensions

I ran across an example of that tension in Memphis when a patient said to a physician, “Don’t tell me I have cancer.”

He said, “O.K.,” and turned to me to say, in her hearing, “She has a massive lump in her stomach. It’s probably cancer.”
Internal tensions

The physician obviously did not have a good bedside manner.

And his way of presenting his findings illustrates another way ethical considerations enter into a discipline.
Presentations

They enter because the presentations we make are not value-neutral.

A good example comes from Edward Tufte, a master at how to present data.
Presentations

He argues that the night before the launch of the *Challenger*, the Morton-Thiokol engineers should have just presented their data in a scatterplot, correlating temperature with O-ring damage.
Presentations

“Had the correct scatterplot... been constructed,” he says, “no one would have dared to risk the Challenger in such cold weather.”
The engineers were concerned that the O-rings would not be resilient enough to bounce back in place given the expected launch temperature.

It was to be between 26°F & 29°F, far below the 53°F of the past January when the engineers discovered severe damage to one of the secondary O-ring’s.
Presentations

They failed to convince the managers, but, Tufte argues, that is because they failed to provide a scatterplot. Here is the one he thinks they should have provided.
O-ring damage index, each launch

26°–29° range of forecasted temperatures (as of January 27, 1986) for the launch of space shuttle Challenger on January 28

Tufte’s scatterplot
Presentations

With Tufte’s scatterplot, we can see the risk that a launch at 26° to 29° would pose.
The ascending curve of risk
So Tufte’s scatterplot is not morally neutral. Tufte uses it to blame the Morton-Thiokol engineers both morally and intellectually. As he puts it, the engineers “didn’t know what they were doing, and they were doing a lot of it.”
Unfortunately, Tufte’s scatterplot confuses the temperature of the O-rings with ambient air temperature.

If we correct that by providing only ambient air temperature, we get a very different scatterplot.
The ambient air temperature for SRM 15 was 64°F
So here is the chart showing ambient air temperature at launch

O-ring damage index, each launch

26°–29° range of forecasted temperatures (as of January 27, 1986) for the launch of space shuttle Challenger on January 28
Presentations

The ascending curve of risk is gone.

But what is needed is a scatterplot with the O-ring temperature. The engineers only had that data for two launches, one irrelevant to the launch of the Challenger.

So here is the “scatterplot” they could have presented if they “knew what they were doing.”
Tufte's chart corrected to show O-ring temperature at launch.
O-ring damage index, each launch.

26°–29° range of forecasted temperatures (as of January 27, 1986) for the launch of space shuttle Challenger on January 28.

Tufte’s chart corrected to show O-ring temperature at launch.
Presentations

In short, no scatterplot was possible.

And with Tufte’s failed scatterplot, we have a telling example of how presentations can be morally loaded.
Presentations

And, of course, my presentation of Tufte is morally loaded as well.

Indeed, his scatterplot is even worse than I have argued. The dependent variable — O-ring damage — is also wrong.

But that is a story for another day.
In summary

Today? We have illustrated five ways in which ethical considerations enter into disciplines:

• Through the rules of skill defining them.

• Through the ways our solutions within each discipline embody values.
In summary

• Through the forms of thought we learn in becoming adept at the rules of skill.

• Through the ways we navigate the tensions within disciplines.
In summary

• And through the ways in which we present our findings.
How ethics enters into disciplines

I am not claiming that these are the only ways ethical considerations enter into the core of disciplines.

But one would suffice to make a *prima facie* case that ethical considerations are internal to the various disciplines.