Chapter 3: Framing the Problem

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Case Study: benzene limitation

IN 1977 , THE OCCUPATIONAL SAFETY and Health Administration (OSHA) issued an emergency temporary standard requiring that the **level of air exposure to benzene in the workplace not exceed 1 part per million (ppm)**. This was a departure from the then **current standard of 10 ppm.** OSHA wanted to make this change permanent **because** of a recent report to the National Institutes of Health of **links between leukemia deaths and exposure to benzene.** OSHA advocated changing the standard to the lowest level that can be easily monitored (1 ppm).

Case Study: benzene limitation (Cont.1)

OSHAs authority seemed clear in the Occupational Safety and Health Act, which provides that **no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life.**

Case Study: benzene limitation (Cont.2)

On July 2, 1980, the U.S. Supreme Court ruled that OSHAs proposed 1 ppm standard was too strict. The law, said **the Court, does not give OSHA the unbridled discretion to adopt standards designed to create absolutely risk-free workplaces regardless of the costs.**

Conflicting approaches between OSHA and the Supreme Court

The Supreme Court justices apparently believed that **OSHA officials had not sufficiently taken into account the small number of workers affected, the technological problems involved** in implementing the new regulations, and the impact of regulations on employers and the economy.

Conflicting approaches between OSHA and the Supreme Court (Cont.1)

Despite this disagreement, OSHA officials and the justices probably **agreed on many of their basic moral beliefs:** that it is wrong to murder, that it is wrong to fail to meet obligations and responsibilities that one has accepted, that it is in general wrong to endanger the well-being and safety of others, and that one should not impose responsibilities on others that are greater than they can legitimately be expected to bear.

It says:

These observations point out the important fact that we usually experience moral disagreement and controversy **within a context of agreement.** When we disagree, this is often **because we still are not clear enough about important matters** that bear on the issue.

DETERMINING THE FACTS

- In any given case, many facts will be obvious to all, and they should be taken into account.
- However, sometimes people come to different moral conclusions **because they do not view the facts in the same way**.
- Sometimes they disagree about **what the facts are**.
- Sometimes they disagree about the **relevance or relative importance of certain facts**.
- Therefore, **close examination** on the **facts is critical**.

3 theses about factual issues:

1. Disagreements over the relevant facts: Imagine a conversation between two engineers, Tom (OSHA-ve) and Jim (OSHA+ve) :

Tom:

I hear OSHA is about to issue stricter regulations regarding worker exposure to benzene. Oh, boy, here we go again. Complying with the new regulations is going to cost our company several million dollars. Its all well and good for the bureaucrats in Washington to make rules, as long as they dont have to pay the bills. I think OSHA is just irresponsible!

Jim:

But Tom, human life is at stake. You know the dangers of benzene. Would you want to be out in the area where benzene exposure is an issue? Would you want your son or your daughter to be subjected to exposures higher than 1 ppm?

conversation (Cont.1)

Tom:

I wouldnt have any problem at all. There is just no scientific evidence that exposure to benzene below 10 ppm has any harmful effect.

2. Factual issues are sometimes very difficult to resolve.

For instance:

If Jim reads the literature that has convinced Tom that there is no scientific evidence that exposure to benzene below 10 ppm has harmful effects, they might agree that OSHA plans go too far. Often, however, factual issues are not easily resolved.

3. Once the factual issues are clearly isolated, disagreement can reemerge on another and often more clearly defined level

Jim replies to Toms conclusion:

Well, Tom, the literature youve shared with me convinces me that we dont have any convincing evidence yet that exposure to benzene below 10 ppm is harmful. But, as weve so often learned to our regret, **in the long run things we thought were harmless turned out to be harmful**. Thats what happened with asbestos in the workplace. For years the asbestos industry scoffed at any evidence that asbestos might be harmful, and it simply assumed that it wasnt. Maybe OSHA is going beyond what our current data can show, but 1 ppm can be easily monitored. It may cost a bit more to monitor at that level, but isnt it better to be safe than sorry when were dealing with carcinogenic materials?

COMMON GROUND

2 questions:

1. What are the relevant facts?
2. What are the relevant kinds of ethical considerations?

Relevant facts

It may be a fact that engineer Joe Smith was wearing a yellow tie on the day he was deciding whether to accept an expensive gift from a vendor. But it is **not obvious that this fact is relevant** to the question of whether he should accept or refuse the gift. **On the other hand,** the fact that accepting the gift might incline him to favor the vendors product regardless of its quality is relevant.

Relevant kinds of ethical considerations

- **Common morality**, professional codes of ethics, and our personal morality can be used to consider the possible ethical considerations.
- Common morality stems from different perspectives: religious commitments, secular commitments.
- **So,** there is a **surprising degree of agreement** about the content of common morality.
- Attempts have been made to make list of common morality (not complete).

Attempt by W. D. Ross (6)

1. **R1.** Duties resting on our previous acts: **(a)** Duties of fidelity (to keep promises and not to tell lies) **(b)** Duties of reparation/recompense for wrong done
2. **R2.** Duties of **gratitude** (e.g., to parents and benefactors)
3. **R3.** Duties of **justice** (e.g., to support happiness in proportion to merit)
4. **R4.** Duties of **beneficence** (to improve the condition of others)
5. **R5.** Duties of **self-improvement**
6. **R6.** Duties **not to injure others**

List by Bernard Gert (10)

1. G1. Dont kill.
2. G2. Dont cause pain.
3. G3. Dont disable.
4. G4. Dont deprive of freedom.
5. G5. Dont deprive of pleasure.
6. G6. Dont deceive.
7. G7. Keep your promise (or dont break your promise).
8. G8. Dont cheat.
9. G9. Obey the law (or dont disobey the law).
10. G10. Do your duty (or dont fail to do your duty).

GENERAL PRINCIPLES

Not a 1/0 principle

To some it may appear that, at least as we have characterized it so far, common morality is too loosely structured. Everyone can agree that, other things being equal, we should keep our promises, be truthful, not harm others, and so on. But all too frequently, other things are not equal. **Sometimes keeping a promise will harm someone, as will telling the truth. What do we do then? Are there any principles that might frame our thinking in ways that can help us resolve such conflicts?**

Universalizability

- Whatever is right (or wrong) in one situation is right (or wrong) in any relevantly similar situation.
- Although this does not by itself specify what is right or wrong, it requires us to be consistent in our thinking.
- For example, in considering whether or not it would be morally acceptable to falsify data in a particular project, a scientist or engineer needs to think about not just this particular situation but all situations relevantly like it.

Two general ways of thinking

1. The first appeals to the **utilitarian** ideal of maximizing good consequences and minimizing bad consequences.
2. The second appeals to the ideal of **respect for persons**.

UTILITARIAN THINKING

In its broadest sense, taking a utilitarian approach in addressing moral problems requires us to focus on the idea of bringing about **the greatest good for the greatest number.** However, there is **more than one way to attempt this**. We consider three prominent ways.

1. The CostBenefit Approach
2. The Act Utilitarian Approach
3. The Rule Utilitarian Approach

The CostBenefit Approach

- One approach that has some appeal from an engineering perspective is costbenefit analysis: *The course of action that produces the greatest benefit relative to cost is the one that should be chosen.*
- Sometimes this is a relatively straightforward matter. *However, making this sort of determination can present several difficulties.*

The Cost-Benefit Approach: Problems

1. First, in order to know what we should do from the utilitarian perspective, we must know **which course of action** will produce the most good **in both the short and the long term**. *Unfortunately,* this knowledge is sometimes not available at the time decisions must be made. [Example: Open or closed tender]
2. It becomes virtually impossible to calculate which actions actually produce the most good for so large an audience. If we limit the audience so that it includes only our country, our company, or our community, then we face the criticism that others have been arbitrarily excluded.

Problem of Cost-Benefit Approach (Cont.)

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third difficulty with the utilitarian standard is that it seems sometimes to favor the greater aggregate good **at the expense of a vulnerable minority**. Imagine the following: A plant discharges a pollutant into the local river, where it is ingested by fish. If humans eat the fish, they experience significant health problems. Eliminating the pollutant will be so expensive that the plant will become, at best, only marginally profitable. Allowing the discharge to continue will save jobs and enhance the overall economic viability of the community. The pollutant will adversely affect only a relatively small proportion of the populationthe most economically deprived members of the community who fish in the river and then eat the fish.

Cost-Benefit Approach

- Despite these problems, costbenefit analysis is often used in engineering. This approach attempts to apply the utilitarian standard in as quantifiable a manner as possible. An effort is made to translate negative and positive utilities into monetary terms.
- Costbenefit analysis is sometimes referred to as **riskbenefit analysis** because much of the analysis requires estimating the probability of certain benefits and harms.
- *Factoring in probabilities (prediction)* greatly complicates costbenefit analysis

Costbenefit analysis involves three steps:

1. Assess the available options.
2. Assess the costs (measured in monetary terms) and the benefits (also measured in monetary terms) of each option.
3. Make the decision that is likely to result in the greatest benefit relative to cost; that is, the course of action chosen must not be one for which the cost of implementing the option could produce greater benefit if spent on another option.

Problems of Cost-benefit Approach from public welfare

- One problem is that the costbenefit analysis assumes that economic measures of cost and benefit override all other considerations. (Everything is translated into money)
- Another problem is that it is often difficult to ascertain the costs and benefits of the many factors that should enter into a costbenefit analysis. The most controversial issue is how to assess in costbenefit terms the loss of human life or even serious injury.