Designing a Moral Dilemma Support System

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Abstract

Information technology may be able to help people become better ethical decision makers. This paper explores philosophical and psychological issues underlying the design of a moral dilemma support system (MDSS). The effects of schemas, decision strategies, social information, and emotions on dilemma analysis are considered. MDSS features that would help people understand moral dilemmas, choose a response, and explain analyses are identified.

Keywords: Personal Support, Decision Support Systems – DSS, Conceptual Study, Decision Models, Web Applications, Ethics, Ethical Dilemma, Moral Dilemma

(The items in *italics* are not in the Idea Group keyword list.)
INTRODUCTION

Most of the papers in this book are about the unethical use of information technology (IT). This paper addresses a different issue: using IT to help people make better ethical decisions. For the purposes of this paper, "better" does not refer to the particular action someone chooses in a situation, but to the process they use to make the choice. People often disagree on what actions are morally right. However, most people would accept that someone who has thought deeply about a situation, considered who is affected, reflected on his or her own duties, and so on, will make a better choice than someone who makes a snap decision with little thought.

The paper focuses particularly on issues underlying the design of a moral dilemma support system (MDSS). An MDSS would help people structure their thinking about morally ambiguous situations. It would not tell people what they should do, but would make it easier for them to make better decisions. Just as a word processor can help authors write better stories, an MDSS's decision tools might help people make better ethical choices.

There's reason to think that systems for dilemma analysis could be worthwhile. There's considerable evidence that analyzing dilemmas improves peoples' moral reasoning ability (Schlaefli, Rest, & Thoma, 1985). Further, moral reasoning is an important precursor to ethical behavior (Rest, Narvaez, Bebeau, & Thoma, 1999). Finally, moral judgment is amenable to IT support.

Before building a system, it's important to know what it should do. That's what this paper is about. Literature on ethical decision making is examined, with the goal of identifying the features an MDSS should have. The technical architecture of a system with these features is left for the future, as is testing its effectiveness.
The discussion makes some assumptions. First, MDSS users have access to appropriate technology, and possess basic literacy, technological, and abstract reasoning skills. This is not to dismiss the digital divide (Patterson & Wilson, 2000). However, it's important to investigate every approach to improving ethical reasoning, even those involving tools not available to the entire population. In fact, if IT can improve ethical choice, this is yet another argument for bridging the digital divide. Further, it is assumed that MDSS users want to make good decisions. If they do not, it won't matter how good the system is.

The final assumption is that competent adults have the right to make their own moral choices. This seemingly innocuous statement has important implications. People who think carefully about their lives, and this includes some IT designers, will have developed personal moral philosophies. This leads to the question: should designers promote their own ethical views when creating an MDSS? For example, I oppose radical relativism, the belief that morality is purely subjective. Should I ensure that anything I construct does not support radical relativism?

My visceral answer is "yes," but my considered answer is "no." I might explain why I think radical relativism is a bad idea, but should not prevent others from using it. Respect for people's autonomy is the most important reason for this stance, but there's another issue as well. Being intelligent, people know that information systems are built to achieve certain goals. If people think the goals offensive (e. g., they perceive attempts to manipulate their beliefs), they may not voluntarily use the system.

The discussion is limited to systems that have no hidden agenda. Not that an MDSS can be created without assumptions. For example, why build a system to help
people make ethical choices if they don't have the right to do so? However, a system's assumptions should be honestly identified.

The paper proceeds as follows. The first section explains what a moral dilemma is, and gives an example used throughout the discussion. The psychological processes people use to think about dilemmas are then considered. The final section suggests how an MDSS could aid moral reasoning. As is common practice, "morality" and "ethics" are synonymous in this work.

MORAL DILEMMAS

Moral dilemmas involve a conflict between two ethical standards, both of which are right. An example is assisted suicide, which pits the sanctity of life against individual autonomy. Both are desirable, but only one can be chosen. Heinz's dilemma is one of the best known dilemmas in the literature:

In Europe, a woman was near death from cancer. One drug might save her, a form of radium that a druggist in the same town had recently discovered. The druggist was charging $2000, ten times what the drug had cost him to make. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could get together only about half of what it should cost. He told the druggist that his wife was dying and asked him to sell it cheaper or to let him pay later. But the druggist said no.

We can add more ethical complexity, such as:

Heinz's wife knew she was dying. She told him she did not want him to do anything that might ruin his life, like stealing the drug or the money to pay for it.

To qualify as a dilemma, every alternative action must violate at least one moral standard. For example, if Heinz steals the drug, property rights will be violated. If he does not steal the drug, his wife will die, violating the "sanctity of life" principle.

The contexts in which people encounter dilemmas affect the way they make
decisions, and, consequently the way an MDSS might help them. Sometimes people encounter dilemmas in contexts specifically designed to raise ethical awareness, such as university business ethics courses, or church-based spirituality workshops. The dilemmas used in these cases are often fictional, like Heinz's dilemma. People sometimes analyze these dilemmas individually, and sometimes in groups. Often people are required to explain their analyses, in person or in writing.

People also encounter dilemmas in real life. However, in real life people often don't have time to think carefully. A soldier deciding whether to shoot a distant figure must act instantly, and is under such emotional stress that rational thought is difficult. Instinct and training take over. However, military training includes instruction in ethics (Swift, 2001). It's in these classes that an MDSS might help soldiers hone their moral instincts.

MAKING ETHICAL DECISIONS

This section considers how people analyze moral dilemmas. These processes are not qualitatively different from those used in other domains (Narvaez, 2002). The same mechanisms operate, and the same constraints apply. This review is selective, of course. It focuses on important processes that an MDSS could support.

Schemas

A schema is a mental template for an object, idea, or process (Narvaez, 2002). For example, a marriage schema might include the elements "spouses," "love," and "fidelity." The schema's "slots" are instantiated for a particular situation. For example, "spouses" might be instantiated as "Ann and Kieran" when describing a specific marriage.

Schemas influence cognitive processes in various ways. First, schemas help
people infer a situation's details from a few pieces of information. Suppose you read that "Harry punched Ellen." You might invoke a wife beating schema, with all of its attendant consequences. However, if you learned that Harry and Ellen are boxers, you would use a different schema, inferring different things about the situation.

Schemas are implicated in social pathologies (Kunda, 1999). For example, the behaviors of someone with the schema "black men are thieves" might range from putting his hand on his wallet when a black man walks by, to denying black men housing, credit, and jobs. These behaviors need not be conscious. In fact, people are unaware of most of their mental activity (Narvaez, 2002).

The second way schemas affect cognitive processes is by setting goals. Suppose you see a robbery in progress. Your schemas for yourself might prompt you to call the police. This becomes a subgoal. Calling the police means finding a telephone. This is another subgoal, and so on. Schemas for sets of actions are sometimes called scripts (Narvaez, 2002).

Third, schemas affect people's judgments of the diagnosticity of information, that is, how relevant the information is in describing a situation. For instance, where Heinz lives (Europe, Africa, North America, etc.) does not change his dilemma from a moral perspective. That Heinz's wife does not want him to risk his future is important to decision makers who value autonomy.

Schemas are accumulated and elaborated throughout life. Task expertise is largely dependent on schemas. Experts have more and richer schemas than novices, use them more flexibly, and recall them more quickly (Narvaez, 2002).

In applying schema theory to dilemma processing, we find that many ethical
schemas have been described. Some are analytical, derived largely from prescriptive moral theories. Western thought typically focuses on three types of moral philosophies: teleological, deontological, and virtue-based. Teleological theories like Mill's utilitarianism concentrate on outcomes. For example, if Heinz steals the drug, who gains and who loses, and by how much? Deontological theories, of which Kant is perhaps the best-known proponent, are concerned with duties and rights. What are Heinz's duties as a husband? As a citizen? Virtue ethics focuses on people's character. For example, Aristotle listed courage, wisdom, and compassion as attributes of a good person. If Heinz were courageous, what would he do? What action would be most wise? What would be compassionate?

In contrast to these prescriptive theories, there are descriptive, empirically-derived theories that also identify schemas. Rest et al. (1999) list three schemas, derived in part from Kohlberg's (1976) work. The "personal interests" schema says, "A fair world is one in which people get what they want" (Narvaez, 2002). The "maintaining norms" schema says one should follow established rules set by legitimate authorities. The "post-conventional" schema emphasizes moral ideals, like justice and compassion. Kidder (1995) identifies four schemas he believes underly many dilemmas: truth vs. loyalty, individual vs. community, short-term vs. long-term, and justice vs. mercy.

Moral schemas help describe a dilemma's structure. Some writers also offer scripts for dilemma analysis, that is, schemas for the process of thinking about dilemmas. Figure 1 shows an example (Kidder, 1995). See Maner (2002) for a review.

**Decision Strategies**

People manage to analyze complex moral dilemmas, despite having limited
cognitive resources, like short-term memories and attention. How do we do it? First, we divide complex problems into smaller subproblems. This hierarchical structuring lets us focus attention on parts of the problem, one at a time.

Second, most knowledge is tacit, and is used without conscious attention (Narvaez, 2002). For example, literate adults can answer the question "What is two times five?" with little effort. Cognitions performed without conscious effort are said to be automatic (Kunda, 1999).

Third, we reduce the amount of information we consider. We sometimes use satisficing to find a "good enough" answer from a large choice set (Byron, 1998). We often search for confirming evidence to decide whether a statement is true (Kunda, 1999). For instance, to decide whether more people die from murder or suicide, we simply might choose the one for which we recall more cases.

These methods introduce errors, of course. Someone might use a rule like "theists are more moral than atheists" automatically in every situation, even though a little thought would suggest it may not always be accurate. Satisficing leads us to choose the first option we encounter that meets minimal criteria, rather than the optimal alternative. Searching for confirming evidence is often less effective than searching for disconfirming evidence (Kunda, 1999). For instance, while murders in the U.S. receive more attention from the press, suicides are more common, with about 1.5 to 2 suicides for every murder over the last decade (Statistical Abstracts of the United States, 2002).

Social Information

Social information also affects dilemma analysis. Nucci (2001) differentiates between social conventions and moral values. Conventions are somewhat arbitrary
standards that vary from culture to culture, like forms of address for men and women. On the other hand, moral values like "don't harm others" are relatively invariant across cultures. Piaget (1965) wrote that children learn values mostly from interaction with peers. For instance, they learn that equal sharing can avoid some disputes. Respected authority figures can be influential as well (Lind, 2002).

Social interaction also offers feedback on goal attainment. For example, social information is a primary source of feedback for those who crave social dominance. Other people being deferential suggests that social dominance has been achieved. People are also a source of knowledge about the world. If you have a question (e.g., is homosexuality "catching?"). there are people ready with an answer.

Social information can be misleading, of course. The social conventions of one culture can be misinterpreted in another. Someone with a hidden agenda might say that homosexuality spreads like influenza, even if empirical evidence suggests otherwise. People also engage in impression management, conveying a social image that helps achieve their goals (Frink & Ferris, 1998).

Social interaction is not all face-to-face. People also communicate via letters, telephones, email, and so on. Virtual interaction may not be as emotionally rich as personal interaction, but some people develop meaningful relationships with individuals they have never met (Turkle, 1995).

**Emotion**

Emotions also influence dilemma analysis. Important moral emotions include guilt, shame, and empathy (Eisenberg, 2000), disgust (Haidt, Rozin, McCauley, & Imada, 1997), and elevation (Haidt, 2000).
Sometimes cognition serves emotion (LeDoux, 1996). For example, someone yearning for social dominance might create an elaborate plan to satisfy the desire. Developing and executing the plan will require significant cognitive effort. The individual might be willing to harm others and violate his or her duties to achieve social dominance, without even noticing the emotional motivation. Developing emotional awareness can be difficult, but, without self-examination, the roots of one's actions can remain obscure.

Finally, emotions sometimes cloud people's judgment. Emotional arousal can overwhelm cognitive processing (Derryberry & Tucker, 1992). Further, LeDoux (1996) suggests that much of the information in our memories has somatic markers, providing quick "good/bad" evaluations of objects and actions. They are the "gut feelings" that guide so much behavior. Some people rely on gut feelings in even the most complicated situations, despite there being little reason to think they are veridical.

**MDSS FEATURES**

The previous section considered how schemas, decision strategies, social information, and emotions influence dilemma processing. This section suggests how an MDSS might support dilemma analysis, while helping decision makers (DMs) address the cognitive and emotional issues described above. For the purposes of discussion, dilemma analysis is divided into three subtasks: understanding the dilemma, choosing a response, and explaining the choice. The tasks are interdependent, of course, and DMs move freely between them.

*Understand the Dilemma*

In a practical sense, to "understand" a dilemma means to identify or infer
information that helps DMs decide what to do. An MDSS could offer various types of assistance. First, it could offer scripts DMs could use to understand a dilemma (Kidder, 1995). Recall that a script is a schema for a process (see, for example, Figure 1). The MDSS could explain how to use the scripts, and offer samples of completed scripts. The system could create document templates based on these scripts, making it less likely that DMs will forget important issues.

Second, the MDSS could offer DMs schemas they could use to understand conflicts. The system could also help DMs instantiate them. Figure 2 shows a deontological schema instantiated for Heinz's dilemma. Figure 3 shows a teleological description of a hit-and-run traffic accident (this isn't a dilemma, since there is no "good versus good," but the idea of a teleological description applies).

Third, the system could show DMs how other people analyzed the same dilemma. It could store the description in Figure 2, for example, for other DMs to examine. Not only could DMs learn from other peoples' solutions, they could also offer feedback to each other. A threaded discussion board for each dilemma would be one way to implement this.

Fourth, the MDSS could help DMs learn schemas and scripts. For instance, it could describe Kidder's (1995) schemas, then offer a short quiz the DM could use to test his or her knowledge. The system could also offer to repeat the quiz in the future, to make sure the schemas are not forgotten.

Fifth, the MDSS could raise questions about the schemas the DM is using. For example, many people might use a "Scrooge" schema to describe the druggist in Heinz's dilemma, thinking him a heartless man only interested in wealth. The dilemma's text does
not say that, however. Could there be other reasons the druggist refused Heinz? Perhaps there is not enough of the drug to go around, and the druggist has already promised all he can produce to other people.

Sixth, the MDSS could help DMs find relevant documents on ethics and other subjects. The system could ask DMs to rate documents on criteria like usefulness and readability, to help others find the best material. The MDSS might offer summaries of long works, like Aristotle's *Nichomachean Ethics*. Recall, however, that DMs schemas affect the information they consider important. Someone reading Aristotle's work from a virtues perspective might remember different things from someone reading it from a utilitarian standpoint. The MDSS might store more than one summary of the same document, created by people with different points of view.

Seventh, the MDSS could highlight similarities and differences between dilemmas, particularly as summarized by experienced DMs. This would help DMs identify diagnostic elements of dilemmas, that is, information that is particularly important in choosing a response.

Eighth, the MDSS could help DMs become more aware of their emotional reactions to a dilemma. The system could, for example, prompt DMs to describe their emotions, and think about the effects emotions have on their decisions. Were they angry at the druggist in Heinz's dilemma? Did they want to punish him? Did they pity Heinz's wife? Would their emotions change if they learned that her cancer was caused by smoking, a behavior with well-known risks?

**Choose a Response**

Once the DM understands the dilemma, he or she must choose a response. DMs
are sometimes given specific responses to evaluate (e. g., should Heinz steal the drug?). Sometimes they are free to recommend other solutions (e. g., perhaps Heinz can promise to work for the druggist part-time to pay for the drug). In the latter case, an MDSS could identify responses the DM might not have considered, perhaps by aggregating options other DMs have thought about.

Second, the MDSS could help the DM describe and evaluate the possible consequences of each response. If Heinz steals the drug, he might get caught, or he might not. The MDSS could gather arguments from different DMs on the likelihood of each consequence. One DM might say that burglars are usually not caught if they are careful. Another could point out that Heinz is known to have a motive, and would attract police attention. The system could also offer more objective information on, say, FBI estimates of the probability that a first-time burglar will be caught.

Eventually the DM has to make a choice. The MDSS could help the DM review his or her work, perhaps identifying missing information, and summarizing the analysis in an easy-to-read report. The system could help the DM rank potential actions. Once a choice has been made, the system could help the DM record the reasons for the choice, and perhaps show what other DMs chose.

The MDSS could help the DM avoid processing errors. It could reduce satisficing by asking the DM to make comments about each potential action, rather than simply choosing the first one that is minimally satisfactory. This might also reduce unwarranted automaticity, since DMs would be explicit about the reasons they accepted or rejected each option. Having the DM record and analyze each potential action also adds hierarchical structure to the problem. When evaluating a particular action, the DM can
concentrate on that option, assured that the MDSS is saving his or her previous work.

**Explain the Analysis**

Sometimes DMs must explain their analyses to others, like peers, managers, or graders. The MDSS could offer templates for reporting an analysis to others, perhaps as a Web page, a presentation (PowerPoint, Impress), or some other format. The system could include features like spell checking. As DMs analyze dilemmas, the MDSS could remind them to think about how they would explain their thoughts to others, encouraging them to be careful and explicit in their analyses.

**Conclusion**

Computers may be able to help people become more effective moral decision makers. This paper considers the features a moral dilemma support system (MDSS) might have. An MDSS cannot help people *want* to be moral, but it can help them work out *how* to be moral.

This paper focuses on an artifact, the MDSS. Ultimately, however, systems must conform to the environments in which they are used. For instance, a system might be designed to support ethical discussions inside a company. That context adds constraints, like anonymity and confidentiality. To be useful, an MDSS must comply with the social, operational, financial, and other constraints present in its environment.

Supporting dilemma analysis does not exhaust the potential of IT in the ethical domain. Peoples' moral perspectives reflect their personal histories, their loves and hates, disappointments and triumphs, chance meetings, and systematic thought. Computer technology can help people integrate their ideas to explore life's larger questions. It can help them examine their values, map their life histories, and interact with people who
have similar concerns.

Using computers to help people fully realize their humanity almost seems oxymoronic. Yet it does appear to be feasible. It is an exciting thought that system designers could make such a contribution to human flourishing.
VI. References


1. Recognize that there is a moral issue
2. Whose issue is it?
3. Gather the relevant facts
4. Test for right vs. wrong issues
5. Test for right vs. right issues
6. Apply the resolution principles
7. Study trilemma options
8. Make decision
9. Revisit and reflect

Figure 1. Dilemma Script

<table>
<thead>
<tr>
<th>Autonomy</th>
<th>vs.</th>
<th>Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>People should be able to decide what is best for themselves.</td>
<td>Some people need to be prevented from doing stupid things, or pushed to do things that would help them.</td>
<td></td>
</tr>
</tbody>
</table>

Relevance?
Do you think this pattern is relevant to the dilemma (click Yes or No)?

Yes  No

People Involved
Please type in the people (or groups, institutions, etc.) involved on each side of the conflict, and any comments you have about their conflict. If there is more than one Autonomy vs. Protection conflict, use the Add Row button to add another row to the table.

His wife is the one who’s dying. Her preferences are important.  Need at least one conflict for a pattern to be relevant.  His wife needs to be protected from herself. Who knows whether she will really live?

Add Row

Figure 2. Describing a Conflict in Duties
**Event**

<table>
<thead>
<tr>
<th>Name</th>
<th>Car accident</th>
</tr>
</thead>
<tbody>
<tr>
<td>When</td>
<td>Summer 2002, about 1 a.m., weeknight</td>
</tr>
<tr>
<td>Where</td>
<td>Rochester</td>
</tr>
<tr>
<td>Description</td>
<td>A car ran a stop sign and hit another car. The driver who caused the accident drove off. The person in the other car was injured.</td>
</tr>
</tbody>
</table>

**People**

Instructions: Click Add to add a person; Click Delete to remove someone you have added.

<table>
<thead>
<tr>
<th>Add</th>
<th>Name</th>
<th>Role</th>
<th>How affected?</th>
<th>Emotions felt?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The driver of the car that ran the stop sign.</td>
<td></td>
<td>Helped</td>
<td>Fear. Wanted to avoid trouble.</td>
</tr>
<tr>
<td></td>
<td>Damaged car. Legal trouble if caught.</td>
<td></td>
<td>Harmed</td>
<td></td>
</tr>
<tr>
<td>Delete</td>
<td>The driver of the car that was hit.</td>
<td></td>
<td>Helped</td>
<td>Pain, anger, expense, maybe fear that it would happen again.</td>
</tr>
<tr>
<td></td>
<td>Hurt. Taken to hospital.</td>
<td></td>
<td>Harmed</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3. Describing Outcomes