# Technology vs. Morality:
# The Struggle to Preserve our Innate Ethical Senses

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Spring 2014

Imagine that you are in a village that is at war. Soldiers have overrun your town, shooting and looting anything they can find. You, your infant child, and the remaining townspeople are hiding in a basement. While the soldiers are searching above your baby starts to cry. You put a hand over her mouth to quiet her, but you realize that if you keep it there she will suffocate. If you remove your hand, the soldiers will surely find you and the others. Should you kill your baby to keep the others hidden, or remove your hand and lead the soldiers to your hiding place?

This is an example of a moral dilemma, an issue that makes us contemplate and question our morality. Morality is the differentiation between intentions, decisions, and actions that are right and those that are wrong. It can also refer to a system of values and codes of conduct held by an individual, group, or society. It is a very wide issue, concerning anything from the environment to technology and groups of people. For this purpose the definition of morality is narrowed down to the actions, decisions, and values that can harm others or that violate legislation passed by a recognized system of government.

There are many theories on how morality works. One standpoint is Utilitarianism, which focuses on the greater good and makes the most cost-effective decision. The philosopher Immanuel Kant followed utilitarianism, and believed that the process behind a moral judgment should be rational and logical thinking without the influence of emotions. The seventeenth-century philosopher David Hume is on the opposite end of the spectrum. He believed that our innate moral sense gave us emotions that provoked moral actions and judgments. Reasoning followed and allowed us to think about the decision but never directly caused it. Hume famously concluded that “Reason is and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them” (Hauser, 24).

Other people have standpoints somewhere in the middle of the spectrum or outside it entirely. John Rawls believed that emotions are a result of a judgment, not the cause of one.

(Hauser, 12-42) Thomas Henry Huxley theorized that humans are naturally immoral, selfish, and bad, and that morality is only a thin veneer painted on the outside so as to fit into the constructs of society (de Waal, 7-12) There are so many theories on what morality is that it is hard to pin down how it really works. Recently, however, scientists and researchers have made many discoveries about the biological and psychological roots of morality, which helps us understand what it is and how we interact with it. The results show that our morality has evolved over thousands of years and is derived from our emotions. It was found that using computer technology actually distances us from the emotions that trigger our morality, which allows people to commit immoral acts with ease and much fewer emotional consequences, a phenomenon we must guard against to minimize the risk of losing sight of our moral senses.

To understand how computer technology affects our morality, we must first understand what our morality is and how it develops. There has been extensive research done by scientists on different animals to investigate their moral senses and trace the evolution of morality. Although most animal species, with the exception of monkeys and apes, do not exhibit anything close to our system of morality they do have some level of the empathetic sense necessary to develop morality. Frans de Waal, one of the world's leading experts on primate behavior, developed the Russian Doll Model to describe the levels of empathetic development in other organisms.

The innermost layer, or innermost Russian Doll, is emotional contagion, the tendency for two or more individuals to feel and express emotions similar to each other. This is the simplest form of empathy which allows an animal to observe and respond to the emotional state of another, enabling mothers to tend to their offspring and for animals to recognize when another animal is agitated. Examples of emotional contagion have been observed in studies that were testing young children's abilities to empathize. In the study, the adults of the family would pretend to be sad or hurt, crying and exhibiting signs of distress. Sure enough the children, sometimes as young as two, would respond and try to comfort the adult. Surprisingly, the pets in

the home seemed as worried as the children about the adults, hovering over them or putting their heads in the adults' laps to try and comfort them.

Built upon emotional contagion is the next Russian doll, cognitive empathy, which allows a creature to assess the situation and determine the reasons for another's emotions. This involves some level of insight into the other's state of mind, and is often complicated as two animals or people can have very different needs. A striking demonstration of cognitive empathy occured when a female bonobo named Kuni in a research facility came across a stunned bird in her enclosure.

> Kuni picked up the starling with one hand and climbed to the highest point of the highest tree where she wrapped her legs around the trunk so that she had both hands free to hold the bird. She then carefully unfolded its wings and spread them wide open, one in each hand, before throwing the bird as hard as she could towards the barrier of the enclosure (de Waal, 31).

This example is unique because of the differences between Kuni and the bird. The bird was not part of Kuni's family or even a member of her species. Apes are inherently different from birds and yet Kuni was able to assess the situation and, recognizing their biological differences, helped the bird in the best way she knew how (de Waal, 37-42).

Another part of morality is the idea of fairness and justice. One example of this is shown in a study where monkeys were put in pairs and given tokens that they could exchange for food rewards. In the beginning the food for both animals was cucumber slices. Then the scientists introduced grapes, a high value food, into the mix. All of the subjects were put through four tests: an equity test where they did the same work for the same low-value food, an inequity test where one received high value food and the other didn't, an effort reward test where one subject received a higher reward for free and a food control test where the grapes were visible but not given to either subject.

Monkeys who were given lower-value foods displayed both passive negative reactions, refusing to exchange the token or ignoring the reward, and active negative reactions, throwing

out the token or the reward. They were far less willing to accept rewards or exchange tokens if the other monkey got a better deal- more so when the other got it for free. Interestingly, in the Food Control Test, the reaction to seeing the higher value food decreased over the course of the test, which suggests that the monkeys were reacting to the perceived injustice of the other one receiving a better reward. This shows that they are capable of measuring fairness and that they hold expectations about how they should be treated (de Waal, 25).

One of the greatest steps in the evolution of human morality was making the move from having opinions about oneself and one's relations to focusing on others and the greater good, often without regard to the individual's own situation. The beginnings of this can been seen in the interactions of apes. Females will bring males who had been fighting together to reconcile, or dominant males will stop fights among others, so as to promote peace in the group. The third and biggest Russian doll is attribution, where the subject can adopt another's perspective and see things from their point of view. So far, this behavior has not been observed in animals other than humans.

Humans are the only species that goes a step further and provides education or rules about the value of the community and its importance above individual issues (de Waal, 25-48). These rules and standards set the structure for making ethical decisions in our society. The Four Component Model theorizes that the process of making those ethical decisions for the greater good involves four distinct psychological processes: Moral Sensitivity, Moral Judgment, Moral Motivation, and Moral Action. Moral Sensitivity is a person's ability to recognize that a situation involves a moral issue, requiring there to be moral actions or perspectives. Moral Judgement is the process of formulating and evaluating possible solutions to the moral issue and deciding which are ethically sound. Moral Motivation is the intention to choose the moral solution over another solution, committing to uphold the moral value. Moral Action is the person's actions and behavior as they uphold the moral value (Lincoln and Holmes, 57).

The eons-long evolution of morality in our species has striking similarities with the

process of a moral development in a child as they grow. One of the best known theories of moral development in children was developed by Lawrence Kohlberg, who researched and refined the influential work of Jean Piaget, who twenty-five years earlier studied the moral lives of children to learn about their beliefs of right and wrong. Kohlberg's theory states that humans go through a series of three levels, broken up into six stages, in their development of a moral sense of right and wrong.

The first two stages are in the Pre-Conventional level. In this level, morality's importance to children is based on how it affects them. At the first stage, children decide whether an action is good or bad by its consequences. Rules are obeyed because of the threat of punishment, not because it is right or wrong. However, children seem to have moral sensitivity, differentiating between moral and conventional issues and even placing more importance on moral issues that have effects on the welfare of another person. Social or conventional issues, on the other hand, deal with other kinds of actions such as being loud or chewing gum that cause no harm.

At the second stage of the Pre-Conventional level, children judge actions based on how they serve their needs. Children understand the concept of fairness and sharing, but they will put more importance on the actions that benefit them compared to others. For instance, a child can know that if cookies are handed out to the class then everyone should get one, but if one of the classmates doesn't get a cookie the children are less likely to react compared to if he or she doesn't get a cookie.

The second level is the Conventional level, made up of stages three and four, wherein children place importance on social conformity. In stage three, children define being good as helping or pleasing others. They act to try to gain approval from others in their lives, and they try to conform to the behaviors of the group. In stage four, being good is more about respecting authority than it is about gaining approval from others. Children try to maintain social order and do what is expected of them by people of authority.

In the third level, the Post-Conventional level, children start to place more importance on

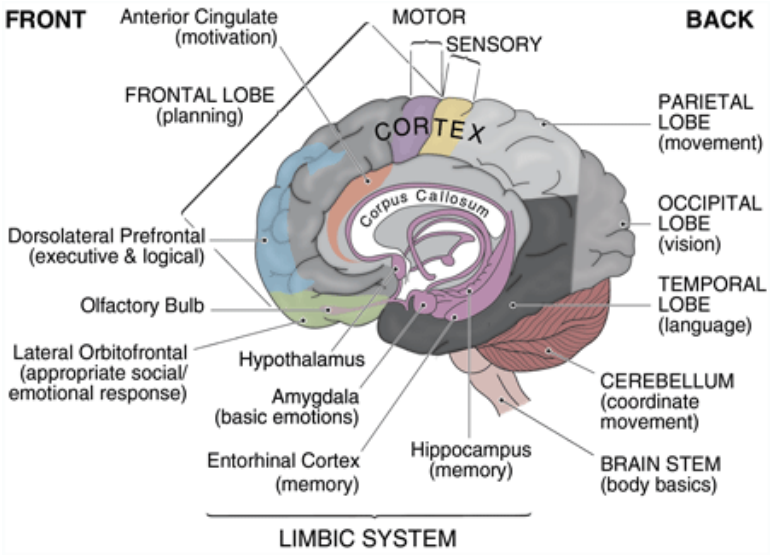
the reasons behind the rules rather than the authority of the people behind the rules. In stage five, children learn that moral issues and opinions can often depend on someone's personal beliefs, and that they are to be respected nonetheless. It is in this stage that children start to explore their Moral Judgement and Moral Motivation as well as their emotional attribution, the biggest Russian Doll. Although children put more importance on the rules agreed upon by society, they understand that changing the laws or rules can be acceptable if society changes its view on the issue.

In stage six, children choose their own ethics and principles which they use to uphold their moral values. These ideals can be abstract, concerned with justice, equal human rights, and respect of a person as an individual. At this point, children have reached the top of the moral pyramid. They are capable of making ethical decisions and have all the skills necessary to do so according to the Four Component Model. Children and people of all ages can be at different stages in this process, and although the general trend is to move upwards sometimes a person can become stuck on a level or go down to a previous stage (Kohlberg, 53-58).

Although this behavior has been observed by psychologists such as Kohlberg, the biological reasons behind the development of a moral sense are still being brought to light. There is much debate about what parts of the brain are involved in morality: the emotional areas, the rational parts, or something else entirely. Although much is still to be discovered, the general trend is pointing towards the theory that emotions are the foundations of morality, which supports Hume's theories on morality over Kant's, although this can vary somewhat with the degree of personal involvement in the situation.

A study conducted by Daniel Langleben at the University of Pennsylvania involved students hiding a card and lying to say that they did not have it. When the students lied, different parts of their brain were activated versus when they were telling the truth. The anterior cingulate cortex, which is a part of the brain that is involved in rational thinking, decision making, empathy, impulse control, and reward anticipation, was more active when lying. Within it the prefrontal

cortex, involved in ordering thoughts and actions in response to personal goals, was activated to help suppress the truth-telling response, and the premotor cortex established a poker face and suppressed twitches or other 'tells'. Because lying takes so much more effort than telling the truth, Langleben postulated that telling the truth is the brain's default state that has to be suppressed when telling a lie. Other studies showed that when a person demonstrates loyalty to someone or something, the reward centers of the brain, the amygdala and prefrontal cortex, glowed as if the person had just won a prize. Interestingly enough, taking revenge against someone who has done wrong activates the same reward centers in the brain (Stein, 211-212)




Joshua Greene and Jon Cohen, neuroscientists at Princeton University, researched how the brain reacts when faced specifically with moral dilemmas. They argued that moral judgments that are more personal are driven mostly by emotional responses, whereas more impersonal ones are caused by emotionally-distant rational cognition. Participants in the study were presented with two moral dilemmas. One dilemma involved a runaway trolley cart that was set to run over five people. If the person flipped a switch to route it to another track, it would crush one person. This decision is made impartial by the switch. The person does not have to approach the trolley or actively run the people over, so making the decision to flip the switch isn't as emotionally compromising.

The other dilemma had the same setting: five people on one track, one person on the other. However, in this problem the only way to stop the trolley was to actively shove a bystander onto the tracks, requiring the person to emotionally and physically involve themselves in the scenario. The cost was the same- five people saved with one death- but now the decision

is a personal one. The majority of people voted to kill the one person in the first scenario, but would not do the same in the second scenario. When the participants' brains were scanned, there were differences in how the brain worked with personal dilemmas and impersonal ones

When subjects struggled with a personal dilemma the medial prefrontal cortex, involved in differentiating conflicting thoughts and determining good or bad, glowed far more than when subjects considered an impersonal one. Executive regions involving rational thinking were much quieter during personal judgments, which suggests that emotional responses can outweigh rationality when determining a solution to a personal moral problem. Personal moral violations cause strong negative feelings that bring people to conclusions that are the opposite from the utilitarian, cost-effective stance. Some participants fought off these strong feelings to push the stranger in front of the trolley but they hesitated much longer before they chose this option. Those participants had activity in the prefrontal cortex and the rational anterior cingulate areas of the brain that deal with orchestrating rational actions. Interestingly the posterior cingulate, an emotional processing unit, also had increased activity. The fact that this area had activity during logical processing suggests that the emotional brain is a part of rational moral thinking. (Stein, 214-216).

One of the greatest, and most mysterious, results of the emotional brain is the concept of empathy. A pivotal discovery about how we empathize was made at the University of Parma by a team of Italian neuroscientists in the early 1990s. They were studying how the brain controls our actions by measuring the activity of neurons in the brain of a monkey. The scientists observed the activity of neurons in the premotor cortex, a part of the brain involved in planning and executing voluntary actions. When the monkey picked up a peanut, certain neurons were fired. When he broke the shell of the peanut, others neurons were involved. The startling discovery came when one of the scientists picked up a peanut to give to the monkey. The neurons that fired when the monkey picked up a peanut also fired upon seeing someone else picking up a peanut.

The sight and even the sound of someone performing an action will activate the neurons in the brain involved in that action. When a person sees someone build a box, their brain will learn how to build a box by firing the same neurons. This way, it is possible to learn how to execute an action by watching someone else- the brain will translate the firing of neurons into a motor program that will be used when the person does the action themselves.

This also happens when we observe someone feeling a physical sensation or emotion. When someone's shoulder is tapped, our brain will activate as if we were also tapped on the shoulder. The region of the brain that is active when feeling sadness is also activated upon seeing an expression of sadness on someone else's face. When someone else is in pain, we feel pain, and when someone else is happy we echo their happiness. This stops us from seeing other people as unimportant; their actions, emotions, and experiences have become our own. The neuroscientists who discovered this phenomenon called those neurons *mirror neurons*, because the brain mirrors the activity of others. These shared circuits evolved to help us survive. By seeing a hunter make a spear, your brain developed a motor program allowing you to make a spear so that you could hunt for food. Seeing someone bite into a new fruit and express disgust helped attach feelings of disgust to that fruit so that you would not eat it (Keysers, 16-23).

These mirror neurons also played a key role in the development of empathy and moral codes. Imagine you are one of two starving people. You find some food and are torn - do I eat it all myself or do I share it? Eating it yourself seems like the better option, ensuring your survival. But because of our shared circuits, if you eat all the food you would experience some of your companion's suffering.  If you shared it you would take part in his joy and relief. The decision is not only affected by your hunger but by your companion's feelings of joy or pain. This startling discovery shows that our brains are wired to be ethical and empathetic, supporting the belief that emotions are at the root of morality (Keysers, 24).

These scientific discoveries and research have been very helpful in interpreting our

moral sense and how the brain works. They make it clear that our emotions are at the root of our moral senses, and they have helped establish knowledge about how our morality develops, both in individuals and in a species. However, many other scientific and technological advances are hurting the human sense of morality, not helping it. To understand the problem and help think of solutions, we must examine the way our brain perceives technology and technological interactions, and how those affect the emotions that are at the root of our moral senses. We need to work around these adverse effects and our natural disengagement methods to preserve our innate moral senses while still enjoying the benefits of technology.

> Technology is a problem because we cannot do without it and our use of it clearly makes us both better and worse. Human beings are- among other things- technological or tool-making animals. We use our brains and our freedom to transform nature, and in doing so we transform ourselves. We have a perverse capacity to make ourselves unhappy and a singular pride in our misery. We are both proud of and wish to free ourselves from the burdens of our technological success. So we find it almost impossible to judge how much and what kind of technology would be best for us.- Peter Augustine Lawler (Opposing Viewpoints, David Cox, 37)

We live in an age of technology and information. People can talk to each other instantly,even if they are on opposite poles of the Earth. Diseases that fifty years ago were deadly now have cures. Information is available to almost everyone. Although many advances are being used for moral purposes, to help people, many more make it easier to be immoral by distancing us from the emotions that prompt us to do the right thing.

When people act in contrast to their moral values or beliefs, they have to disengage or psychologically distance themselves from their morals and emotions so as to lessen their psychological distress. As in the trolley situation, the repercussions of making a difficult moral decision are less when there is a distancing aspect to the situation. Moral disengagement is made possible by several coping mechanisms such as diffusing or displacing responsibility, minimizing the consequences, misattributing blame, or dehumanization of the victim.

Displacement or diffusion of responsibility allows people to blame other factors such as social pressure or other people in a group as the driving forces behind their immoral acts.

Dehumanization takes away the guilt caused by the actions if the person involved is seen as inconsequential or inhuman, and minimization of consequences can lead to disregard of possible punishments (Bandura, 364-374). There is a growing amount of evidence that suggests that computers and computer technology distances us from our emotions and moral regulations, allowing us to implement moral disengagement and immoral decisions.

Evidence has found that our brain perceives and processes interactions through computer technology differently than face-to-face communications in some very important ways. In normal interactions, we are constantly watching the other person for cues imparted by their voice and body language, the emotional contagion and cognitive empathy explained in the Russian Doll model. If one person contemplates something that would be morally wrong, such as insulting another person, regulation stemming from ingrained beliefs on values and morals automatically kicks in. We are constantly regulating ourselves in our speech and our actions so that we do not disregard social norms by accident in our interactions with other people.

With digital interactions, things are different. Communication is rapid and can be changed to reach one specific person or many people at once. There are no visual and social cues that we pick up when talking to someone: voice inflection, tone, or expressions, that would allow us to tailor our speech to fit the scenario. Often, this can result in the sender having reduced sensitivity to the 'social correctness' of the message; their emotional attribution capabilities are compromised by the distance provided by the computer..Those messages are commonly more difficult to understand and the intentions and tone behind the words are much easier to misinterpret (Freeman, 25-28)

In a study made up of Polish adolescents, 37% of them admitted to sending something on the Internet as a joke, or with humorous intent, but having it interpreted as mean or hurtful (Lazuras, Pyzalski, Barkoukis, and Tsorbatzoudis, 65). The lack of visual audience and the feeling of distance between the sender and recipient can lead to more informal actions and less regard to social constraints: in other words, our automatic self-regulation doesn't kick in.

Cyberbullying, the use of electronic communication to harass another person with the intent to cause them emotional or psychological harm, is a prime example of this. The secretive, more distant nature of cyberbullying makes it much easier to do than with face-to-face bullying. The perpetrator cannot see the recipient and so finds it easier to rationalize the situation or dehumanize the victim. The same Polish study found that 36% of cyber-bullies said that they were doing it 'for fun', and so viewed it simply as another form of online entertainment (Lazuras, Pyzalski, Barkoukis, and Tsorbatzoudis, 65).

The distancing aspects of computers also affect how people view digital property. In the real world, stealing someone's physical property is definitely wrong, but in the digital world things are different. Studies performed by Batya Friedman at the Department of Mathematics & Computer Sciences in Colby College and The Mina Institute give evidence that electronic or digital property is viewed much differently than physical property. In a study with high school students, she found that everyone considered trash cans on street corners as public property, and 97% of the students considered someone's bike to be private property- pretty normal views overall. However, only 25% of the students thought that a published and copyrighted computer program was private property.

Furthermore, in another study she found that while no one thought it was all right to take someone else's physical property (such as a bicycle), 77% felt it was okay to pirate someone else's computer program for their own use, 62% thought it was okay to pirate music to give away, 47% said it was all right to pirate a computer program to give to someone else, and a full 40% approved of pirating something for the purposes of selling copies and making profit off of it. This sounds very similar to stage two in Kohlberg's theory on moral development, where the people involved know the rules but disregard them to act in their own self-interest.

With respect to private materials, only 3% said it was okay to read somebody else's diary and 10% condoned reading a private letter left open on a desk. However, 43% said it was fine to access another person's computer files without reading them, and 16% said it was okay

to access files with the addition of reading them. Interestingly, although the students didn't seem to see computer information as private, they were uncomfortable with actually changing the information in the files, so on some level they recognize that they don't have ownership of the files and that changing them would be wrong. (Freeman, 29-30).

Computer technology also makes it easier to commit crimes. Minor crimes or immoral actions, such as libel, defamation, flaming, and spamming are much more convenient to do on a computer. Once the information is in the public domain, it cannot be taken back. A person's social standing could be ripped apart by nasty rumors and information published on the internet - it has happened before. Spamming is the use of computers to send a message or messages in bulk to people around the world. Usually this is used for advertising and commercial promotion, but also to con or trick people into doing certain things. Not many people would believe an email from a 'friend' in Nigeria who needs funds urgently to get back home, but if that email was sent out to ten million people and a tiny fraction of them replied, that tiny fraction could amount to a lot of money.

If all our use of computer technology in everyday life affects our moral standing as general citizens, what happens when people with greater power or technology are operating computer systems? This question comes up most often in situations concerning the military, as soldiers and the military have so much power over people's lives. A very recent issue has been the implementation of unmanned drones in US warfare, the most recent example in a list of military stories of ethical problems related to technology.

The military is a complex organization full of many different departments that have to work closely together. This is facilitated by the use of lots of technology, one of the main ones being decision support systems (DSS). A DSS is a set of computer programs that gather, analyze, and show data or information to help people make decisions for their business or organization. For example, American Airlines produced a DSS that obtains and sorts information on seat prices and flight popularity so that flights are filled and profits are maximized. DSSs are

used on military planes and technology, analyzing the surroundings and data on the fighting so that the pilots or soldiers can make the best decisions. Often, though, this can lead to disaster. For instance, in 1998, the USS *Vincennes* accidently shot down a commercial plane because their DSS was poorly designed, with an inadequate and overly complicated display and confusing or inaccurate data (Cummings).

DSS systems can be designed with various levels of automation, from fully automated systems where the operator has no part of the decision process to low automation systems where the automation only presents the data and does not authorize any actions. Highly automated DSS systems can be useful in many situations but when there are lots of potential conditions and variables, the system tends to degrade. Raja Parsuraman, a professor at George Mason University in the Department of Psychology, helped conduct a study of the effects that using highly automated systems have on their human operators. The conclusions are interesting.

Well-designed information automation can help decrease the operator's mental workload, but if the system is too confusing and highly automated, requiring lots of information input or confusing tasks, the operator's mental workload and stress will increase. Often, automated decision-making systems will reduce the operator's awareness of their surroundings, degrade their skills, and encourage complacency or 'over-trust' in relation to the system (Parasuraman, Sheridan, and Wickens, 286-291). This makes it easier to activate moral disengagement as the operator places trust in another thing to make their decisions for them.

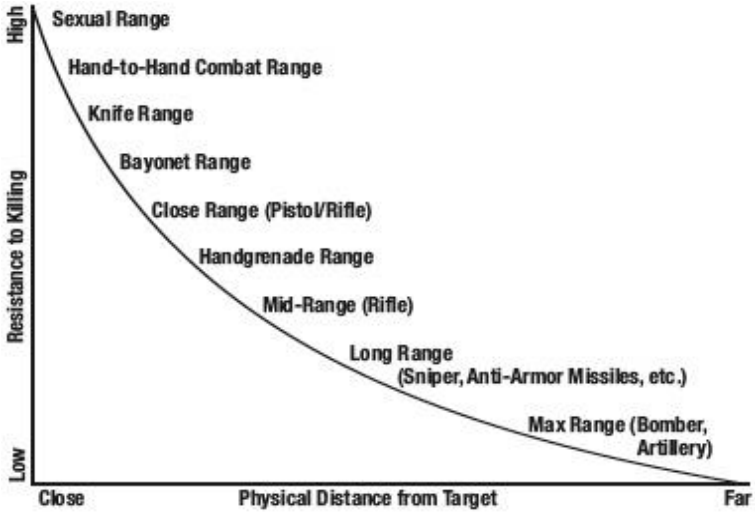
An even bigger problem with automated DSS systems is the eroding of accountability within it. "Sheridan maintains that even in the information- processing role, 'individuals using the system may feel that the machine is in complete control, disclaiming personal accountability for any error or performance degradation.'" (Cummings) This diffusion or displacement of responsibility and the misattribution of blame are more components of moral disengagement.

Mary L Cummings, a naval officer and military pilot in the nineties who then went on to

receive her Masters and Ph.D in Space Systems Engineering and Systems Engineering, knows the danger of DSS systems better than anyone. As a military pilot, she experienced the moral distancing in warfare and DSS systems for herself and since has gone on to write many books and articles on the subject.

> ...when developing a human computer interface for any system that has the ability to harm people, such as interfaces for weapons and medical interfaces, the possibility exists that a moral buffer, a form of distancing and compartmentalization, is created which allows people to morally and ethically distance themselves from their actions (Cummings).

More and more, our systems of warfare includes technology that allows us to kill others from great distances. This technology can provide the military with greater control over the battlefield and could save many lives, but they also could become moral buffers that would allow us to kill without adequately considering or feeling the consequences. In the military, there are records of many instances that soldiers refuse to fire or kill in hand-to-hand or close combat, but few or no instances that they refuse to fire when killing from afar. As with the trolley dilemma, most people find it much easier to kill when they are removed from the situation by a piece of technology, whether it be a switch or a long-range military device. The more distance between the one who takes the action and the target of the action, the more technology between them, the easier it is to kill, as demonstrated in the chart to the left (Cummings).




A study conducted by U.S. Army Brigadier General Marshall during WWII found that only 15 to 20 percent of riflemen on the firing line would fire at the enemy. The others didn't run or hide and would often enter greater danger for other reasons- to rescue comrades or get

ammunition- but simply would not fire at the enemy, even when faced with repeated assaults (Grossman). Cummings' report concludes with a plea for interface designers and users to be aware of the buffering effect when designing or using interfaces that require quick human decision with possibly lethal consequences (Cummings).

So, the question remains, what is to be done about this phenomenon? How do we ensure good moral development and necessary skill sets in such a computer dominated world? There are many solutions, answers, and ideas about the situation that have the potential to be helpful.

One answer is that the effects of computers on our morals could be circumvented by education. It would need to start early and happen frequently, to guide children through their moral development and to give adults necessary information about the problem. Parents, advisers, and educators could make use of the many theories on moral development, helping to tailor the education to the people in question and making sure that there is a variety of choices on how people's moralities are structured. Exercises about taking other people's perspectives, understanding their viewpoints, and being able to address differences in opinion civilly might also be helpful. Information on the brain, how it works, and the development of morality could be paired with lessons on technology so as to give the students a broad view of the situation..

This education would be especially important to children. Children, born and raised in the computer age, cannot imagine a life without computers and therefore do not view them with the same skeptical or cautious viewpoint as adults of the current generation. The privacy afforded by a computer also makes it much easier for kids to connect with each other and adults, interactions that, while often beneficial, have the ability to cause harm through cyberbullying, cyberstalking, and other malicious activities.

> "Thanks to e-mail, online chat rooms and instant messages- which permit private, real-time conversations- adolescents have at last succeeded in shielding their social lives from adult scrutiny. But this comes at a cost: teenagers nowadays are both more connected to the world at large than ever, and more cut off from the social encounters that have historically prepared young people for the move into

adulthood. (Opposing Viewpoints, Brent Staples, 50-51)

More and more children are growing up with inadequate social and moral skills. They need to be given the skills to develop relationships and empathy in real life, compared to digitally. If they do not, their empathetic and moral development will be adversely affected. If children don't get enough time with family and friends, they will not have well-developed social skills and empathy, which could contribute to antisocial or aggressive behavior later on. Heavy use of computers and the Internet has been shown to replace the face-to-face time kids spend with their family and friends. "Researchers have found that time spent in direct contact with family members drops by as much as half an hour for every hour we use the Net at home" (Opposing Viewpoints, Brent Staples, 51). If children and adults understand their words and actions on the internet can be harmful both to themselves and others, it will could combat the distancing effects of computer technology.

However, many of the steps to prevent psychological distancing should come from the technology and its developers, not the users. One solution is to design technology to help combat the risks to our morals. Technological developers would be made aware of the risks of information technology, especially in situations where extreme harm or loss of life may occur. Computers, DSS systems, and military technology can be built with failsafes and other measures to ensure that moral buffers are diminished. For instance, they can be designed so that the interface gives information that would be more likely to invoke emotional involvement in the action. The identity, histories, and activities of current targets could be displayed, making them seem more like humans and less like video-game characters. Interfaces should portray not only who the target is but also the context of and the consequences when the various commands take effect. It would also be helpful to build these systems so that they have a range of functions that do not cause death or harm to others, thus opening up new courses of action and lessening the psychological stress of the operators (Sparrow).

Both education and technological design have potential to positively impact moral behavior, but neither would be sufficient to fully address the problem, even if used in tandem. Many approaches and solutions would have to be used and paired together to help us get past this situation. Morality in humanity has evolved through a long and complex process spanning many centuries. From our first awareness of the emotions of others, to being able to recognize problems and their solutions, to putting ourselves in someone else's perspective, all of it was developed painstakingly and carefully. So far, we are the only known species to create a written moral code that we enforce among ourselves. We have developed concrete emotional responses and regulatory systems to help control our actions and responses. The innate senses of right and wrong within us are complex and highly beneficial things. So, then, why would we allow our technology, which we have painstakingly created to *help* us, to endanger those senses? Computer technology's distancing aspects can cause many harmful behaviors from cyberbullying, unintended hurtful actions towards others, immoral acts, and in the case of war, death of others. Education and information for both children and adults on the risks of computer technology and DSS systems can help reduce the risk of psychological distancing. That, coupled with changes made to our technology to prevent moral buffers, could be the first steps to preventing the unintended effects of using computer technology so that it can fulfill its original purpose of benefiting humanity.

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