Medical Ethics through the *Star Trek* Lens

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> Science fiction, which started out on the edges of literature and pulp fiction, has become more than mainstream; it is now an essential way of interpreting the world.
>
> —Eric P. Nash[1]

Throughout the twentieth century, science fiction has been deeply entwined in the popular moral imagination about the future. Novels, stories, and movies about science, technology, and moral decisions have shaped the way we think about people and the choices they make. From Mary Shelley's *Frankenstein* or Aldous Huxley's *Brave New World* through George Orwell's *1984*, I. R. Levin's *The Boys from Brazil*, or Michael Crichton's *Jurassic Park*, technology and the scientists who develop and deploy it represent both our scariest nightmares and our deepest hopes and aspirations. We want to make a better world, but we are unsure of our abilities or the purity of our motivations.

Over the past thirty years, the *Star Trek* series of movies and television shows have brought the ethical dilemmas of modern science and technology, and the ethical conflicts that arise in a vast, pluralistic universe, to a huge popular audience in a sensitive and accessible way. The "texts" of *Star Trek* often take the form of philosophic dialogues, in which the freedom offered by the science-fiction genre allows the authors to pose pointed moral questions in succinctly dramatic ways.

As a vehicle for communicating debate and discussion about these issues, it would be hard to overestimate the success or the reach of *Star Trek*. Since its first episode aired on 8 September 1966, the *Star Trek* universe has been one of the most popular and often cited science-fiction creations of any kind. There have been more books, television shows, and movies set in the *Star Trek* universe than in any other science-fictional universe. Beginning in 1987, *Star Trek: The Next Generation* ran for seven seasons as the highest-rated syndicated show in

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television history, followed by a reasonable success for *Star Trek: Deep Space Nine*, another top syndicated drama, and *Star Trek: Voyager*, the continuation of the franchise, which is now finishing its fifth and final year.[2] The *Star Trek* films have grossed more than one billion dollars, and are among the most popular of all video rentals. Hundreds of millions of copies of *Star Trek* books are in print, and dozens of new titles are published each year. There are hundreds of clubs and web sites devoted to the series, and scholarly attention has grown slowly since the 1970s. By the time this essay appears in print, the book *The Ethics of Star Trek* will be in bookstores, joining *The Physics of Star Trek*, *Life Signs: The Biology of Star Trek, The Metaphysics of Star Trek*, and *Star Trek on the Brain*, a book on the neurological and psychological science of the series.[3]

Part of the appeal of the *Star Trek* universe has been its explicitly humanistic ethos established by its creator, Gene Roddenberry. The original seventy-nine episodes addressed topics of racism, war, and humanity's relationship to machines. The *Star Trek* universe is populated with hundreds of exotic races and cultures, as well as many devices operating at the interface between the machine world and the life world. Thus, it provides opportunities to explore the moral dilemmas associated with cultural diversity and pluralism in a universe without a single moral code. In that sense, the ethics of *Star Trek* is the ethics of multiculturalism.[4]

Star Trek scripts have often grappled with dilemmas of medical ethics. The most explicitly medical-ethics-oriented *Star Trek* episode is named, aptly enough, "Ethics." The script was written by Sara Charno and Stuart Charno, authors of two other *Star Trek* episodes. "Ethics" first aired on 2 March 1992. In the fall of 1992, we began to use this "Ethics" episode to motivate discussions in our first-year medical students' course on medical ethics and the doctor-patient relationship. We asked students to write essays addressing one of the many ethical dilemmas posed by the episode. Over the years, the episode has become a tradition. Both students and instructors find the formulation of dilemmas in the context of a science-fiction story to be both liberating and stimulating. In this essay, we will discuss this particular episode in some detail and then provide a brief synopsis of other episodes that might be used in ethics courses in a similar way.

Star Trek: The Next Generation: "Ethics" (2 March 1992)

At the beginning of this episode, Worf, a Klingon member of the starship crew, suffers a spinal injury that leaves him paralyzed from the waist down. As explicated in the discussion of his treatment, the

Klingon culture is a Spartan, warrior culture. A Klingon who is paralyzed and who thus cannot be a fierce and effective warrior is expected to honorably commit suicide, and this is what Worf wishes to do. He needs help, however, since the proper ritual requires him to use a ceremonial sabre which must be brought to him by a close friend or, preferably, by his son. Worf requests of the first officer, Riker, that he assist in this ritual suicide:

> [*Setting: In sickbay,* WORF *asking* RIKER *to help him commit suicide*]
>
> WORF to COMMANDER RIKER: "If you truly are my friend, then help me end my life as I have lived it; with honor and dignity."

Riker is first horrified, but also torn, and he turns to Captain Picard for advice. Captain Picard adopts a strong stance of respect for cultural difference and patient autonomy.

> [*Setting:* COMMANDER RIKER *and* CAPTAIN PICARD *are in the captain's ready room*]
>
> COMMANDER RIKER: "I have always tried to keep an open mind, not judge someone's culture by my own. . . . "
>
> CAPTAIN PICARD: "But Dr. Crusher says he'll never walk again."
>
> COMMANDER RIKER: "That doesn't mean his life is over!"
>
> CAPTAIN PICARD: "That's a very human perspective. For a Klingon in Worf's position, his life is already over. We have to respect his beliefs . . . . "

Meanwhile, Dr. Crusher has made it clear that she vigorously opposes any idea of suicide, assisted or otherwise, in her sickbay.

> [*Setting:* CAPTAIN PICARD *has come to sickbay to convince* DR. CRUSHER *to allow* DR. RUSSELL *to attempt the experimental surgery*]
>
> CAPTAIN PICARD: "If he can't make a full recovery, Worf will kill himself."
>
> DR. CRUSHER: "Not in my sickbay he won't! I'll put him in a restraining field and post security around his door before I'll let him commit suicide."

CAPTAIN PICARD: "And how long will you keep him there? A week? A month? A year?"

DR. CRUSHER: "If I have to. Suicide is not an option."

Instead, she offers Worf a course of rehabilitation that involves implanting "neural transducers," devices that transmit motor impulses from brain to muscle groups, restoring sixty percent of mobility. However, using a nonimplanted version of the neural transducer, Worf collapses while talking about the need to be strong with his son. He tells the doctor that he prefers death to lurching through the halls as a half-machine object of derision and disgust.

Fortuitously, the ship happens to be in the vicinity of a specialist on neurological injuries, a Dr. Toby Russell. Dr. Russell comes aboard and begins working with Dr. Crusher on possible treatments. Dr. Russell has an aggressive research agenda to generate replacement spinal cords for transplantation based on the patient's DNA, "genotronic replication."[5] When she suggests this approach, she also acknowledges that she has not tried the technique on a humanoid yet and that the experimental success rate in trials done on "holographic" patients is only thirty-seven percent. The remaining two-thirds all died. While not well explicated in the script, it appears that Dr. Russell's Institutional Review Board (IRB) has denied her permission to conduct humanoid trials. Dr. Russell argues that if the choice for Worf is cure or death, this is a chance worth taking. Dr. Crusher is insistent that Worf not be offered this option since she is working to get him to accept the transducers. However, Dr. Russell is unable to contain herself and offers Worf her risky cure, infuriating Dr. Crusher and intriguing Worf.

Much of the episode focuses on the moral differences between Dr. Russell, the investigator, and Dr. Crusher, the clinician. Neither is presented entirely sympathetically. Instead, the tensions between the two of them are cleverly highlighted. When Dr. Russell is first introduced, she frames the difference between a researcher and a physician as one of objectivity versus empathy.

DR. RUSSELL to DR. CRUSHER: "I know as a starship doctor you have to maintain close ties with patients, but I think that in this case I should maintain a discrete distance—that way I can give you a completely objective recommendation as to treatment."

Her supposedly "completely objective" recommendation is that Worf be offered the innovative therapy that she has devoted her career to perfecting.

Meanwhile, the Starship USS *Enterprise* is called to the scene of a crash-landed ship, where there are dozens of serious injuries. All personnel with medical training, including Dr. Russell, are drafted to help in the emergency triage area. In the course of conducting triage and emergent care, Dr. Crusher is startled by the death of a patient in Dr. Russell's care. Dr. Russell acknowledges that she provided to the patient an experimental drug, "rybotherapy," that she thought might work better than the standard "leporazine" or "morathial." But her experiment hastened the patient's death. Dr. Russell defends her decision to Dr. Crusher:

> DR. RUSSELL: "I don't think he would have survived with standard treatment."
>
> DR. CRUSHER: "The point is you didn't even try standard treatment."
>
> DR. RUSSELL: "I gave him what I thought was the best medical treatment. Wouldn't you have done the same?"

In the wake of Dr. Russell's breach in offering Worf her experimental therapy, Dr. Crusher is enraged and accuses Dr. Russell of unethically using patients to advance her research agenda. Dr. Russell fires back that if the life of someone Dr. Crusher loved were someday saved by these kinds of trials, she would see them as having been worthwhile. Unmoved, Dr. Crusher revokes Dr. Russell's privileges. Dr. Crusher feels that Dr. Russell's research ambitions motivate unethical exploitation of vulnerable subjects.

> DR. CRUSHER: "Worf is grasping for straws and you're giving him one."
>
> DR. RUSSELL: "If it works it will be a major breakthrough that will change people's lives."
>
> DR. CRUSHER: "You're using the desperation of an injured man as an excuse to use a procedure you couldn't use under normal circumstances."

Dr. Russell is clearly presented as ambitious, cold, and marginally ethical, but she is also clearly convinced that her cutting-edge methods are superior. In this case, her patient agrees. She shows how patient

autonomy can sometimes be exploited when unscrupulous researchers take advantage of desperate hopes that lead patients to consent to things they might otherwise not have wanted. That psychological dynamic is presented as the engine of medical progress. Dr. Russell acknowledges that innovative therapies present some risks, but she also argues that all medical progress requires that some patient be the first to take risks. Dr. Crusher does not accept her recommendations or her moral arguments. Instead, she strongly believes that Worf should be offered only a risk-free but less effective therapy.

> DR. RUSSELL: "I haven't been using this on humanoids—this will be the first time. . . . The success rate is up to thirty percent on holographic patients. . . . Sooner or later it has to be tried on living patients."

> DR. CRUSHER: "I can't justify the risk to Worf. We'll have to do with more conventional approaches."

The Captain intervenes and counsels Dr. Crusher that she will eventually have to accept Worf's right to control his own fate and that the chance at restored ability through the experimental therapy may be Worf's sincere choice and only chance.

> DR. CRUSHER: "The first tenet of good medicine is 'never make the patient any worse.' Right now Worf is alive and functioning. If he goes into that operation, he could come out a corpse."

> CAPTAIN PICARD: "It may not be good medicine. But for Worf, it may be his only choice."

Eventually, Dr. Crusher gives in and permits the procedure. The ultimate outcome is thoroughly ambiguous, from a moral perspective, and allows viewers to take either side. This open-mindedness requires the script writers to maintain a thorough evenhandedness that makes this episode, and other *Star Trek* episodes, excellent as a basis for moral debate within a medical-school ethics class.

We ask our students to watch the episode up to the point at which Captain Picard advises Dr. Crusher to allow Worf to choose the procedure, but before she agrees and before Worf chooses to undergo it. Their papers are to refer to one of a number of exchanges that we quote in the assignment.

Star Trek episodes have a number of pedagogical advantages over more traditional sources. Because the universe that they are describing is a fictional one, students are free from any traditional biases. People do not generally carry pre-existing convictions about Klingon culture the way they might about African-American culture, or Jehovah's Witnesses, or others. The fictional universe of *Star Trek* thus serves the same function as a philosophical parable, illustrating and isolating the relevant features of moral dilemmas, particularizing them in a story, and allowing generalizability without insisting upon it.

Because *Star Trek* is visual rather than written, the experience of watching can be shared. We do not have to assign the text before class but instead can show it in class. The shared experience of being an audience for a drama, rather than being readers of a written text, seems to allow different, freer responses. Somehow, the fairy tale aspect of the science fiction allows difficult moral issues to be raised and analyzed without the intellectual paralysis that sometimes comes from trying to raise the same issues in the abstract.

Finally, we find the dramatization of ethical issues, rather than the philosophic explication of those same issues, to have pedagogic value. Generally, a philosophic explication will take a side, argue a position, try to convince. The goal of the dramatization is just the opposite—it is to hold the opposing positions in dramatic tension in a way that gives each side of the argument its do, to lead the viewer to greater emotional understanding of the complexity of the problems rather than greater intellectual certainty about the preferability of a particular solution.

Selective Videography

The *Star Trek* universe is rife with implicit ethical conflicts, not just explicit ones. For example, what is the status of someone who has been copied (Commander Riker's stranded double), someone who shares partial memory and identity with numerous others (Dax in *Star Trek: Deep Space Nine*), or someone who has had half his or her brain replaced by a prosthetic (e.g., Vedek Bareil in *Star Trek: Deep Space Nine*)? Why is it that genetic enhancement has been forbidden for four hundred years and parents who provide their children with genetically enhanced intelligence are subject to imprisonment (e.g., Dr. Bashir on *Star Trek: Deep Space Nine*)? Based on our experience with "Ethics," the use of *Star Trek* episodes provides an easy way to introduce and frame

these topics to encourage open-minded discussion. Although we have not used other episodes in teaching medical ethics, we offer the following brief compendium of some other episodes that we believe could be successfully taught using our approach.

These ten episodes were chosen after a review of synopses of the four *Star Trek* television series.[6] They are shows that focus on distinctly medical ethical issues of concern. Interestingly the proportion of medical ethics issues addressed in each series appears to have peaked with episodes of *The Next Generation* in the late 1980s and early 1990s: 0 of 80 in the original series, 7 of 177 (4%) episodes in the *The Next Generation*, <1% of 175 episodes in *Deep Space Nine*, and 2% of 172 episodes in *Voyager*. There were, however, many ethical issues addressed throughout each series that directly bear on medical ethics but that were not included, such as issues around the Prime Directive.

Star Trek: Original Series: "The City on the Edge of Forever" (6 April 1967). Ethical issue: Deontological "rule of rescue" versus utilitarian sacrifice of an innocent.

The most famous case of a struggle between deontology and utilitarianism in *Star Trek* is in the episode "The City on the Edge of Forever" in the original series. In this classic episode Kirk and Spock are sent back to the 1930s United States by a mysterious "time portal." While there, Kirk falls in love with a charismatic pacifist leader who is lobbying Franklin Roosevelt to stay out of World War II. If she is successful, Nazism will triumph. In our timeline, however, she is hit by a car and dies before her meeting with Roosevelt. Kirk is obliged to stand by and watch her die.

Star Trek: The Next Generation: "Symbiosis" (18 April 1988). Ethical issue: Conflict between beneficence and autonomy.

The various reasons for violating the Prime Directive are at the core of many plots,[7] just as the conflict between beneficence and patient autonomy are at the core of many medical-ethics dilemmas. In the episode "Symbiosis," the *Enterprise* is asked to help repair freighters carrying a desperately needed medicine from the planet that produces it to the planet that needs it. They discover that the producers have tricked the consumers into becoming addicted, for two hundred years, to a drug that they do not in fact need. Forbidden by the Prime Directive to inform the addicts of their discovery, they instead refuse to repair the freighters, forcing the addicts into withdrawal.

Star Trek: The Next Generation: "The Measure of a Man" (13 February 1989). Ethical issue: What constitutes self-aware personhood for machine minds?

One of the most philosophically charged of all *Star Trek* episodes is "The Measure of a Man," in which the android member of the crew, Commander Data, is forced to prove that he is a self-aware being due the protections of Federation citizenship. Captain Bruce Maddox, a Federation scientist, has requested that Data be turned over for dissection, since he is the most sophisticated "positronic computer" in the Galaxy. Captain Picard acts as defense counsel at the hearing:

CAPTAIN PICARD: "What about self-awareness? What does that mean? Why am I self-aware?"

CAPTAIN MADDOX: "Because you are conscious of your existence and actions. You are aware of your self and your own ego."

CAPTAIN PICARD: "Commander Data. What are you doing now?"

COMMANDER DATA: "I am taking part in a legal hearing to determine my rights and status. Am I a person or am I property?"

CAPTAIN PICARD: "And what is at stake?"

COMMANDER DATA: "My right to choose. Perhaps my very life."

CAPTAIN PICARD: '"My rights'...'my status'...'my right to choose'...'my life.' Seems reasonably self-aware to me."

Star Trek: The Next Generation: "Suddenly Human" (15 October 1990). Ethical issue: Beneficence versus cultural traditions of corporal punishment of children.

In the episode "Suddenly Human," Captain Picard risks war when he refuses to return a human boy to the alien father who raised him and may have abused him. The plot hinges on the assertion that corporal punishment is more accepted in this alien culture. The boy wants to be returned to his adoptive father, and in the end he is allowed to go back.

Star Trek: The Next Generation: "Half a Life" (6 May 1991). Ethical issue: Individual autonomy versus cultural traditions of gericide.

In this episode, Lwaxana Troi, the mother of the ship's psychologist, falls in love with a scientist visiting the ship. Their romance and the scientist's research on solar behavior are both cut short when the scientist turns sixty and is required by his society to commit ritual suicide. Captain Picard makes clear that he will not interfere with the planet's customs, despite Lwaxana's efforts to convince her new lover of the barbarity of their solution to overpopulation. This tack is unsuccessful, but it turns out that the scientist's work is essential to the future of his world, so he decides to live by seeking asylum on the *Enterprise*. But his planet refuses to listen to the warnings of an apostate and sends warships to intercept the *Enterprise*. In the end, the show preserves moral tension when the man changes his mind, accepts his familial obligations, and returns to die.

Star Trek: The Next Generation: "Homeward" (17 January 1994). Ethical issue: Conflict between beneficence and autonomy.

In "Homeward" an anthropologist, Worf's human brother, is surreptitiously studying a pretechnical tribe and discovers that its members are threatened by their atmosphere's impending dissipation. To save their lives, the anthropologist calls the *Enterprise* to rescue them. Captain Picard insists that, under the Prime Directive, he is not allowed to interfere. The anthropologist can't accept this, creates a virtual copy of their world on the *Enterprise* holodeck, and beams the tribe members there while they are asleep. Faced with this fait accompli, Captain Picard finds them a new home and beams them down to a planet much like the one they left, without their knowing that they have moved.

Star Trek: Deep Space Nine: "Life Support" (30 January 1995). Ethical issue: Brain death and prolonging life of the mortally wounded for utilitarian goals.

When a serious accident nearly destroys a Bajoran transport arriving at Deep Space Nine, Bajoran religious leader Kai Winn manages to escape virtually unharmed, but her fellow cleric Vedek Bareil is critically injured. Winn informs Captain Sisko, the commander of Deep Space Nine, that the two were en route to a secret meeting to initiate peace talks with the imperialistic Cardassian Central Command. Bareil is the driving force behind the discussions. The ship's physician, Dr.

Bashir, agrees to replace most of the Vedek's damaged brain with a cybernetic implant to keep him alive and functioning long enough to help bring about a Bajoran peace treaty with Cardassia. But the doctor struggles with the meaning of pursuing this ultimate heroic measure in the face of the complete erasure of the Vedek's personhood and memories.

Star Trek: Voyager: "Death Wish" (19 February 1996). Ethical issue: Right to suicide.

In this episode the crew of the *Voyager* comes to the aid of a suicidal immortal, part of the "Q Continuum," who has been prevented by his race from ending his existence. The suicidal Q requests asylum on the ship, and a trial is held to determine his fate. Various dire galacto-political consequences are suggested if Q is allowed to kill himself, while his advocates argue for for his right of self-determination. In the end he is granted asylum and mortality, and drinks hemlock.

Star Trek: Voyager: "Nothing Human" (2 December 1998). Ethical issue: Using unethically acquired research data.

In this episode the ship's doctor (a self-aware computer-based hologram) calls up the recorded personality and memories of Crell Moset, a biologist from the imperialistic warrior species, the Cardassians. Moset is an expert on exobiology, and a Klingon member of the crew is suffering from a bad case of parasites. It turns out that Moset's expertise is derived from wartime germ-warfare experiments, and he is a widely recognized and unpunished war criminal and mass murderer. The patient refuses to be treated by him but receives life-saving treatment under order of the captain. The ship's doctor then decides to wipe the program and its unethically acquired knowledge from the ship's computer:

> DOC: "In light of recent evidence I cannot in good conscience utilize research that was derived from such inhuman practices."
>
> MOSET: "In good conscience? What about the well-being of your crew? . . . You're confronted by new forms of life every day—many of them dangerous. You *need* me! Delete my program and you violate the first oath you took as a physician: 'Do no harm.' . . . You can erase my program, Doctor, but you can never change the fact that you've

already used some of my research. Where was your conscience when B'Elanna was dying on that table? Ethics? Morality? Conscience? Funny how they all go out the airlock when we *need* something. . . . "

Star Trek: Voyager: "Critical Care" (1 November 2000). Ethical issue: The just allocation of resources.

In this episode the holographic Doctor's program is stolen and sold to a hospital. At first, the Doctor refuses to work for his captors, but his beneficent obligations take over when he is faced with trauma victims. The Doctor begins to learn that medicine in this society is allocated on the basis of social worth, determined by a computer program called the Allocator. Based on the patient's social worth, the Allocator assigns a treatment coefficient that determines the resources available to treat that person. The wealthy, famous, and important patients receive expensive nonessential treatments while their social inferiors are denied life-saving care. The Doctor begins to game the system to shift resources from the nonessential care of the elites to save lives of the poor. When he is discovered, the Allocator is wired to override the Doctor's power to prescribe. When the Doctor is rescued by his shipmates, he injects the administrator with the virus causing the epidemic and with antigens identifying him as lower class, forcing the administrator to transfer all the sick to the first-class ward, and provide them all with the necessary treatments. Back on *Voyager*, the Doctor hopes that his decision to threaten the administrator with death, sacrificing an individual for the many, was caused by the Allocator's tampering with his ethical systems. In fact, his diagnostics reveal his ethical subroutines are working just fine.

NOTES

1. Eric P. Nash, "Existential Questions Plus Androids. Cool," *New York Times*, 28 January 1996, B1, B18.

2. Richard Zoglin, "Trekking Onward: As a New Generation Takes Command, the *Star Trek* Phenomenon Seems Unstoppable," *Time*, 28 November 1994, 20–25.

3. Judy Barad and Ed Robertson, *The Ethics of Star Trek* (New York: HarperCollins, 2000); Lawrence M. Krauss, *The Physics of Star Trek* (New York: Basic Books, 1995); Robert Jenkins and Susan Jenkins, *Life Signs: The Biology of Star Trek* (New York: HarperCollins, 1998); Richard Hanley, *The Metaphysics of StarTrek or, Is Data Human* (New York: Basic Books, 1997); and Robert Sekuler and Randolph Blake, *Star Trek on the Brain: Alien Minds, Human Minds* (New York: W. H. Freeman, 1998).

4. Dorothy Atkins, "*Star Trek*: A Philosophical Interpretation," in *The Intersection of Science Fiction and Philosophy: Critical Studies*, ed. Robert E. Myers (Westport, Conn: Greenwood Press, 1983), 93–108.

5. For more details about genotronic replication, see the Medical and Science Library of the official *Star Trek* web site, http://startrek.paramount.com/library/medical.asp. Site accessed 29 March 2001.

6. Information about these episodes is taken from the official *Star Trek* web site, http://startrek.paramount.com/library/episodes.asp (Site accessed 16 January 2001); and from *Star Trek: The Next Generation Episode Guides 2000*, http://www.ugcs.caltech.edu/st-tng/episodes/ (Site accessed 12 January 2001).

7. Jill Forney, "Violating the Prime Directive: Anthropology and Star Trek," http://www.rtd.com/~rhelvey/vioint.html. Site accessed 29 March 2001.