

Extrapolating Race in *GATTACA*: Genetic Passing, Identity, and the Science of Race

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Introduction

GATTACA (1997) is a rarity among science fiction films in that it transcended its mediocre box office earnings to become a common reference point in discussions about human-gene altering technologies.¹ As with *Brave New World*, another biologically based dystopian narrative, *GATTACA* provides a means of framing our relationships to new biotechnologies. News and magazine articles regularly use the phrase “GATTACA” when reporting discoveries in human genetics and biotechnology and their ethical implications. For example, the author of an article on reproductive medicine in *Wired* magazine wonders if allowing parents to select the gender of their offspring “would be a first step toward a *Gattaca*-like future of made-to-order babies, scrubbed clean of diseases and endowed with sparkling blue eyes—a world in which eugenics is just another branch of science.”² Likewise, many television news programs highlight the ethical issues associated with human genetic engineering by showing clips of the film, such as CNN’s *Newsroom*’s 2001 show about developments in genetic technologies.³ In effect, these media outlets use the expression “GATTACA” to quickly conjure up images of a sterilized world where biotechnology has led to severe discrimination against the genetically unmodified. Educators also frequently use the film in a wide variety of classrooms, from junior high school through graduate school and from biology to English, to help teach about the bioethics of genetic technologies. One need only glance at the many online *GATTACA* teaching guides to see how the film has been widely acknowledged by educators as a text that conveys the ethical issues associated with human biotechnologies.⁴

Much of the science fiction cinema that extrapolates from emerging scientific theories and technologies explores socially troubling aspects of these new technologies. Following in this tradition, *GATTACA* projects from today's limited use of human biotechnologies to imagine a future where parents eagerly enhance the genetic makeup of their offspring. In this imagined future, limited access to genetic technologies sets up a two-tiered system of social organization: the genetically modified who represent the privileged, dominant group and the genetically unmodified who represent an oppressed group. During the course of the film the unmodified Vincent circumvents this genetic discrimination by passing off the genes of the enhanced Eugene as his own. In a previous essay, I demonstrated that *GATTACA* works as a successful bioethical text because it does not fault human genetic technologies.⁵ Rather, the film warns that these technologies will create problems only if society accepts a genetic determinist ideology that sees humans as nothing more than the sum of their genes.

GATTACA extrapolates not only from current technological trajectories but also from current ideological trajectories in that it projects a world of total genetic determinism from today's movement toward "geneticization." Geneticization, a phrase coined by geneticist Abby Lippman, describes the trend in American society toward a reductionist view of humanity as a collection of genes. As Lippman defines it, "Geneticization refers to an ongoing process by which differences between individuals are reduced to their DNA codes, with most disorders, behaviors and physiological variations defined, at least in part, as genetic in origin."⁶ *GATTACA* shows the ultimate consequence of this trend: a world where a person's only sense of identity comes from his or her genes.

Although *GATTACA* succeeds in its social criticism of genetic determinism, its extrapolation of a eugenic world from trends in geneticization ignores the equally problematic contemporary trend toward the scientific linking of genes and racial differences. The film's discussion of genetic determinism and eugenics does not take into account current attempts by social conservatives to define race genetically, or the role race has played in the history of eugenics. Although *GATTACA* relies on the recognizable tropes of racial discrimination to support its claims about genetic discrimination, it ignores contemporary issues of race and genetics in America. In actuality, *GATTACA* functions as a "passing" film that utilizes terminology, images, and situations familiar in discussions of racial discrimination.

Methodologies and Interpretive Framework

In his studies of race and *Star Trek*, Daniel Bernardi applies neo-Marxist theory to this example of extrapolative science fiction in order to critique the understanding of the current hegemonic structure it suggests. According to Bernardi, knowledge of past culture is essential for understanding the trajectory from past hegemony to the present hegemonic structure. Therefore, we cannot overlook the historical significance of race when examining present-day hegemony. Likewise, if we wish to plot an extrapolative trajectory into the future we cannot overlook contemporary hegemony. Thus, he interprets *Star Trek: The Next Generation* as a neoconservative projection from contemporary society to a "white future-time" open to all minorities and aliens who are willing to be assimilated to this ostensibly progressive society. Bernardi argues that we define "progressive" society based on a white American norm. The Trek universe, specifically the "United Federation of Planets," is the cultural inheritor of American societal goals and ideals. Multiculturalism, as a Trek/American ideal, is represented by the *Enterprise's* heterogeneous crew including the dark-skinned alien Klingons, but it is embedded within assumptions that races/species conform within Federation/white American standards.⁷ The utopian vision of race in the future society extrapolated by *GATTACA*, however, begs the question of how the filmmakers envision a racially harmonious future based on the contemporary state of racial division and discrimination in America, which does not envision new racial relationships.

According to Antonio Gramsci, the ruling class, in order to maintain its hegemonic position, must legitimate and renew the "common sense" mentality in society through consent or coercion. Scientific validation is a powerful mode for generating consent because it makes the prevailing common sense seem inevitable, i.e., "the natural order of things." Gramsci recognized this relationship between science and consent. In the *Prison Notebooks*, he writes, "Philosophy and modern science are constantly contributing new elements to 'modern folklore' [common sense] in that certain opinions and scientific notions, removed from their context and more or less distorted, constantly fall within the popular domain and are 'inserted' into the mosaic of tradition."⁸ Gramsci's notion of the "insertion" of scientific elements into the "mosaic of tradition" is comparable to the science and technology studies concept of "black boxing," which refers to scientific theories that society accepts as being accurate and useful descriptions of nature. Bruno Latour provides a theoretical framework for understanding the

role that mass media, like fictional films, can play in the establishment of scientific black boxes.⁹ Latour maintains that scientific concepts become black boxed when the concept has a significant number of “allies” who are convinced that it represents an accurate portrayal of nature. Once a scientific concept is black boxed, it is thought of as “common sense” and the ruling class can use it to legitimate its dominance. Allies for a scientific concept can come from any segment of society, including popular cultural forms like fictional films. In Latour’s theoretical framework, science fiction films like *GATTACA* can play a significant role in the social acceptance of scientific concepts.

GATTACA as a “Passing” Film

Several filmic elements in *GATTACA* show a clear analogy between the genetic discrimination faced by genetically unmodified people and racial discrimination faced by minorities in contemporary American society. First, the terminology surrounding genetic discrimination in the film conjures up words associated with contemporary racial discrimination. For example, Vincent, in one of his voice-overs, explains, “It’s illegal to discriminate on the basis of genetics—genoism it’s called—but no one takes the laws seriously.” The voice-over is delivered in a flashback in which Vincent is waiting to interview for a job that he knows he will never get because of his genetic makeup. As with racism in contemporary America, genoism may be illegal, but it is clearly practiced in the society portrayed by *GATTACA*. Likewise, just as minorities are often referred to by derogatory names, so too are the genetically unmodified referred to by disparaging names, such as “faith births,” “defectives,” “God children,” or the officially sanctioned term “in-valids.” In-valids who utilize the genetics of the genetically modified are called “de-gene-erates” or “borrowed ladders.”

Vincent experiences all the obstacles that a minority might experience in present-day American society: joblessness, lack of educational opportunities, alienation, low self-esteem, etc. Like a dark-skinned individual whose minority status is visible to all, Vincent’s position as genetically unmodified, albeit invisible, is easily ascertained. Vincent explains in the flashback that anything he touches, a door handle, a handshake, or the saliva on a letter, could provide a sample of his DNA and identify him as a genetically unmodified individual. Furthermore, his minority status, as with many minorities today, prevents him from getting jobs for which he would otherwise be eligible. Although his genes prevent him from obtaining a formal education, Vincent manages

to educate himself as an engineer. In the flashback, Vincent, in a voice-over, informs us that, in hindsight, he should have known he would never be hired for an engineering job: "It didn't matter how much I lied on my resume. My real resume was in my cells." Since poor vision is an indication that an individual is not modified, he removes his glasses before the interview. As he opens the door, a series of close-ups accompanied by his voice-over underscores the fact that removing his glasses was futile: the company could easily obtain a DNA sample, and thus his identity. Realizing that the company will not hire him because of his minority status, he leaves before the interview even starts.

In several scenes, socially imposed obstacles are made literal in order to illustrate discrimination against unmodified individuals. For example, a scene in which a teacher informs Vincent's parents that he cannot go to school with other children ends with a close-up of a gate closing on Vincent. The visual composition of the scene emphasizes that Vincent's genetic makeup "closes the door" on his educational opportunities. In another scene, the "glass ceiling" that exists when discrimination is illegal but openly practiced is literally depicted. Vincent is shown working as a janitor at the Gattaca Corporation, with his face pressed against a glass window, looking at the genetically modified individuals who work inside.

Vincent eventually obtains an engineering job at Gattaca by procuring modified DNA that he passes off as his own. He seeks out a DNA broker, German, who specializes in finding valids willing to "rent out" their genetic material to in-valids. German matches Vincent with Eugene, a former Olympic swimmer who lost the use of his legs after a failed suicide attempt.¹⁰ In exchange, Eugene receives a portion of Vincent's salary. To succeed at the deception, Eugene collects his body material—hair, skin cells, eyelashes, urine, and blood—for Vincent to use when he is subjected to rigorous genetic measurements. Likewise, Vincent must vigorously scrub himself to remove loose skin and hair that could betray his true identity.

By borrowing Eugene's "good genes" or "DNA ladder," Vincent is comparable to minority characters in other films who avoid discrimination and obtain jobs by passing as a member of the majority group. For example, in the film *Lost Boundaries* (1949), an African American doctor passes as white in order to get a better job at a prestigious hospital. Other, more recent examples of films that depict passing to gain economic advantage include *School Ties* (1992), *Devil in a Blue Dress* (1995), and the British film *Skin Deep* (2001). The comedy *The Associate* (1996) even took the concept of passing to the extreme of having an

African American female pass as a white male in order to succeed in business. In his book *Neither Black Nor White Yet Both*, Werner Sollors claims that a "significant number of cases of 'passing'" occur only in situations of "sharp inequality between groups."¹¹ Such is the case in *GATTACA*. Moreover, the boundary that separates the two groups can easily be assessed: the Gattaca Corporation maintains entrance stations to validate a person's genetic identity and turn away in-valids. Even average citizens can obtain other people's genetic information. For example, Vincent's love interest, Irene, has his (really Eugene's) DNA analyzed at a "sequencing" station. The many close-ups of Vincent's body matter (hair, skin, blood, etc.) show the risk he faces that anyone could easily determine his true identity. Ultimately, Vincent's eyelash found near a crime scene points to him as a murderer, at least in the minds of the police. Given that every cell contains genetic information, the ability to pass as one of the genetically modified becomes exceedingly difficult. What makes *GATTACA* unique as a passing film is that Vincent, a white male, is passing as another white male whose differences are invisible to the naked eye but easily detectable in the genetically obsessed future society.

Like many other minorities who wish to pass, the genetically unmodified Vincent will do anything in order to overcome discrimination, including undertaking extreme physical changes. The extent to which Vincent is willing to alter his physical appearance is reminiscent of procedures historically used by some African Americans in order to make them appear white. These procedures included the use of bleaching agents to remove melanin and lighten the skin and the use of strong detergents, such as lye, to denature kinky hair. A scene from *Malcolm X* (1992) when Red/Malcolm X is unable to wash out a straightening chemical and burns his scalp demonstrates just how painful these processes could be. In *GATTACA*, one scene gruesomely illustrates the lengths to which Vincent will go in order to join the ranks of the genetically modified. After some minor physical alterations, German informs Vincent that he is not tall enough to pass for Eugene. Vincent's response ("Can't I just wear lifts?") is met with a knowing glance between German and Eugene. Vincent realizes what they have in mind and protests that he will not do "that." Eugene, who is relying on Vincent's potential income to support his standard of living, questions Vincent's desire to follow through on their arrangement: "I thought you were serious, Vincent?" A quick cut to a radial bone saw follows Vincent's response, and we realize that Vincent is having his legs extended. The scene then fades to a shot of Vincent lying on the ground

with his legs in braces. Vincent's voice-over tells us that Eugene "never questioned my commitment again." That Vincent is willing to undertake such a painful procedure demonstrates the lengths he is willing to go to pass as a member of the dominant group.¹²

Genetic passing performs two functions in *GATTACA*. First, as discussed above, the filmmakers use the concept of passing as a means for furthering the analogy between racial discrimination and genetic discrimination. The second function of passing in *GATTACA* is to call into question the origins and maintenance of the identity categories and boundaries set up by genetic determinism. Within the world imagined by *GATTACA*, the dominant class's grounds of privilege are founded upon the complete acceptance of genetic determinism. In *Passing and the Fictions of Identity*, Elaine K. Ginsberg argues that the act of passing destabilizes grounds of privilege that are founded on essentialism.¹³ Genetic determinism is the ultimate essentialist ideology because it claims human beings are nothing more than the sum of their genes. Therefore, *GATTACA* forces us to ask this question: If the genetically unmodified can pass as genetically modified, then what is genetic modification actually accomplishing? Since the genetically unmodified Vincent passes as a modified individual *and* proves to be more successful than all the modified characters, *GATTACA* undermines the very basis of genetic discrimination and the boundary between unmodified and modified.

Getting From Here to There: The Extrapolation of Racial (In)Equality in *GATTACA*

To adopt Gramsci's terms, the genetically modified in *GATTACA* are the dominant class who legitimate their hegemonic position through fostering a total belief in the genetic determinist ideology. The idea that determination of self is solely based on genetic makeup is seen as "common sense" and is taken as the "natural" order of things in this future society. One way to ascertain the dominant class is by identifying the group which other groups must pass as in order to gain economic advantage (opportunistic passing). In *GATTACA*, it is clear that the genetically modified are the dominant group since the unmodified Vincent can only gain economic advantage by passing as a modified individual. According to Ginsberg, the discourse of passing in American history has been predicated upon the assumption that white males occupy a place of status and privilege in society.¹⁴ Passing stories where minority men or white women pass as white males to gain economic

advantage show us not only that minorities and women occupy peripheral groups but that white males are the dominant class. But in *GATTACA* it is a white male who has to pass in order to obtain the privileges of the dominant class. Ginsberg's assumption about privileged white male status is not valid in this extrapolated future society in which white males per se no longer occupy the dominant class. By setting up a white male as the character who must pass as a member of a ruling class (Eugene is also white; his genetic modification gives him his status), *GATTACA* sets up an extrapolated hegemony that is contrary to the current white hegemony.

Outside of the fact that a white male must pass to join the privileged class, there are other elements from the film that suggest that race no longer forms a barrier separating people in this society. The film takes the "Star Trek" view of race in the future, in that there are many minority characters whose race plays no significance.¹⁵ This vision of racial blindness is reminiscent of what Micheal Pounds calls the "United Nations" version of the future as seen in *Star Trek*.¹⁶ Pounds says that as "American society struggles with redefining the workplace as inclusive of the nation's diversity, both *Star Trek* series modeled a workplace where men and women, whites and blacks, and aliens functioned together as professional equals."¹⁷ Several minority characters have positions of power in *GATTACA*. Both the geneticist who helps Vincent's parents design a second child and the first person to interview Vincent are African Americans. These characters are designed to present a "race-blind" society in which the only concern is genetics and not skin color or ethnicity. Every shot of the workers inside the Gattaca Corporation shows a mix of races and ethnicities, men and women. In addition, every scene inside the nightclub/restaurant frequented by the genetically modified includes an ethnically diverse group of people. Likewise, the only other group of genetically modified workers we see, the police, includes several African Americans. At Vincent's first interview, the waiting room shows a wide mix of races and genders, with the implication that all of these people have a shot at this job—the exception being Vincent, whose glasses give him away as a member of the only minority class in this future world. On the other side of the genetic barrier, the only in-valids who are shown in the film are white males. In fact, *every* in-valid shown in the film is a white male. This includes all the in-valids rounded up in the murder investigation and all the janitors who clean the Gattaca Corporation.

One scene is particularly useful in illustrating the filmmakers' attempt to present a "Star Trek" future of racial equality. After Vincent

has boarded a rocket near the end of the film there is a shot of the other engineers accompanying him into space. The camera starts in on a close-up of an African American male's face, then the camera pans from right to left, revealing an Asian male, a white male, an Asian woman, and finally resting on Vincent's face. According to the dominant ideology of this society, the only individual who should not be on this rocket is the genetically unmodified white male, Vincent. Like *Star Trek*, *GATTACA* offers a utopian vision of a multicultural workplace where job discrimination based on race and gender is a thing of the past. Individuals from any ethnic group can get a job at the prestigious Gattaca Corporation, as long as they have the proper genetic makeup.

This utopian vision of a postracist society flows from the assumption that an individual's identity emerges only from his or her genetic makeup. If society defines you solely on the basis of your genes, then there is no longer any need for associations grounded on other factors. In *GATTACA*, cultural groups are seemingly no longer socially constructed but, rather, are biologically constructed. Associations based on genetics are so strong, in fact, that genetic allegiance overrides familial identity. In "The New Eugenics in Cinema," I demonstrated how the depictions of blood in *GATTACA* serve as metaphors for genetic identity.¹⁸ Blood as a metaphor for individual genetic identity even transcends the use of blood to define familial relationships: Vincent's genetically modified brother, Anton, declines Vincent's attempt to become his "blood brother." Anton's rejection of Vincent's "defective" blood indicates his preference for relationships based on the quality of an individual's genes rather than on larger bonds of kinship. Given the rejection of familial associations in favor of genetic associations, it is not surprising that other cultural relationships break down in *GATTACA*'s genetic determinist society.

In essence, *GATTACA* sets up a dystopian world in regard to genes and a utopian world in regard to race. This utopian vision of a race-blind society in *GATTACA*, however, is not extrapolated from the state of racial division and discrimination in American society today. At the risk of oversimplification, there are two opposing views on how to define race, the biological and the sociological. The biological definition assumes that races are different in physical, mental, and behavioral characteristics that reflect significant underlying genetic differentiation. The sociological definition, on the other hand, assumes that race is socially constructed from shared historical relationships and experiences. Given that the film ultimately attacks any notion that genes can truly define people, it is not surprising that the filmmakers adopt a

social constructionist view of race. However, by ignoring the possibility that the biological definition of race could become “common sense,” the filmmakers overlook another danger arising from unlimited uses of human genetic technologies.

Contemporary Scientific Racism and the Extrapolation of Race in *GATTACA*

The racially harmonious society portrayed in *GATTACA* does not project today’s social conservatism, which extends genetic determinism to include a biological definition of race. By defining race genetically, social conservatives link behavioral and intellectual differences to underlying genetic differences. Moreover, throughout its history, eugenics has been intricately linked to the genetic definition of race.¹⁹ Most proponents of a “new,” technologically driven eugenics argue that we are beyond the “historical mistakes” of the old eugenics and its racial baggage. Ashley Montagu contends that this view is misguided because “the dead hand of the past may continue to guide the practice of the present as well of the future.”²⁰ Steven Selden also sounds a warning in his book on race and eugenics, noting that “such ignorance of the past is potentially dangerous.”²¹

It is not difficult to find recent examples of behavioral geneticists and “evolutionary psychologists” who claim to have found genetic differences among races that account for mental or behavioral traits. Perhaps the best-known examples are Richard Herrnstein and Charles Murray, who in their 1994 bestseller, *The Bell Curve*, claim that disparities in IQ scores among Asians, whites, and Africans are due to underlying genetic differences.²² Although intelligence may be the best-known trait for current researchers who wish to link race and genetics, it is certainly not the only one. Behaviors, such as violence and criminality, and personality characteristics, such as “childhood shyness,” are also traits for which researchers claim to have found genetic links and significant differences among races.²³ Other work that has received recent publicity relates to the supposed genetic basis for African Americans’ prowess in athletics as promoted by Jon Entine in *Taboo: Why Black Athletes Dominate Sports and Why We’re Afraid to Talk about It*.²⁴

Developmental psychologist Richard Lynn sees the growing list of genetic differences among races as a sign that a new eugenics is *desirable*. In his 2001 book, *Eugenics: A Reassessment*, Lynn makes the case that at the end of the twentieth century “a wide measure of consensus had already been reached” in regard to “the genetic contri-

bution . . . to intelligence, and to personality." Because of "the importance of intelligence and personality for educational and occupational achievement," Lynn believes that equality will only be reached by using our burgeoning new biotechnologies. Of course, in Lynn's view some racial groups have more of an uphill genetic battle than others. He cites *The Bell Curve* as a "portent of the coming counterrevolution in the rehabilitation of eugenics."²⁵ Few geneticists, however, go as far as Lynn. Most behavioral geneticists and evolutionary psychologists who advocate racial differences based on genetics claim that they are only revealing "nature as it is." It should not come as a surprise, however, that these supposed differences favor current white power structures.

According to biologists Richard Lewontin, Steven Rose, and Leon Kamin, genetic determinism has been "a powerful mode of explaining the observed inequalities of status, wealth, and power in contemporary industrial capitalist societies." They sound a warning in their book, *Not in Our Genes*, that neoconservatives, who Lewontin et al. call the New Right, have increasingly turned to genetic determinism and biological definitions of race to justify their privileged position. Lewontin et al. contend that genetic determinism "has been gratefully seized upon as a political legitimator by the New Right, which finds its social nostrums so neatly mirrored in nature; for if these inequalities are biologically determined, they are therefore inevitable and immutable."²⁶ Lewontin et al. are not alone in interpreting the New Right's attempts to define racial differences genetically as efforts to legitimate the current power structure as "natural." Ruth Hubbard and Elijah Wald link the rise in behavioral genetics to a conservative political climate:

This shift is due in part to a conservative backlash against the gains of the civil rights and women's rights movements. These and similar movements have emphasized the importance of our environment in shaping who we are, insisting that women, African Americans, and other kinds of people have an inferior status in American society because of prejudices against them, not because of any natural inferiority. Conservatives are quick to hail scientific discoveries that seem to show innate differences which they can use to explain the current social order.²⁷

Biologist Stephen Jay Gould also perceives *The Bell Curve* as just another attempt to make racial inequalities a "natural" outcome of "inherent" differences in intelligence. According to Gould, "The remarkable impact of *The Bell Curve* must therefore, and once again as always, be recording

a swing of the political pendulum to a sad position that requires a rationale for affirming social inequalities as dictates of biology."²⁸

Those wanting to challenge racial social policies, especially affirmative action, have certainly seized upon *The Bell Curve's* findings. For example, Thomas Sowell, a senior fellow at the conservative Hoover Institution, wrote an article for *American Spectator* in which he states, "In thus demolishing the foundation underlying such practices as double-standards in college admissions and 'race-norming' of employment tests, *The Bell Curve* threatens both a whole generation of social policies and the careers of those who promote them."²⁹ Likewise, in an article for *National Review*, Michael Barone wrote:

More specifically, by showing strong relationships between intelligence as measured by IQ tests and behaviors ranging from job performance to a propensity to commit crimes or bear children outside marriage, *The Bell Curve* makes a powerful case that the disproportionately low number of blacks in top positions and the disproportionately high number of blacks in prison (just under half our prisoners are black) do not result from racial discrimination.³⁰

More worryingly, books such as *The Bell Curve* enable eugenic ideas to get a hearing among the "respectable" right. A review in *American Spectator* warned about "the worsening of the American gene pool" and even raised the question of criminal sterilization as a possible solution.³¹ While *The Bell Curve* received the most response from the general press, it is not the only mainstream book to make such claims or to tie them to social policies. Conservatives have seized upon other books, such as J. Philippe Rushton's *Race, Evolution, and Behavior* and Michael Levin's *Why Race Matters*, as "scientific proof" of genetic racial differences and evidence that affirmative-action policies are "unnatural."³²

Hubbard, Wald, and other critics of scientific racism point out that efforts to justify racial differences based on genetics are not new. Their concern, however, is that current attempts to find genetic differences among races come at a time when the American public is more and more convinced that genetic technologies are revealing the natural "truth" about humanity. From the perspective of scientific racism's critics, the move to make genetic determinism "common sense" can never be independent from scientific attempts to correlate race and genetics. In light of this association between genetic determinism and race in the history of American eugenics, it is surprising that *GATTACA's*

filmmakers failed to take into account contemporary arguments by neoconservatives linking race and genetics.

GATTACA's failure to address race and genetics is unfortunate, because popular films play a significant role in the acceptance or rejection of certain scientific ideas. Proponents of a genetic basis for race claim that the establishment of genetic racial differences is inevitable because "nature" has the final say. As is the case with all knowledge production, the establishment of scientific facts requires social acceptance, and this acceptance requires interactions among various actors. The diffusion of genetic explanations to all aspects of society is not an obvious consequence of scientific advancement but the result of complex interactions and negotiations. Therefore, the production of "scientific fact" is at stake in any attempts to translate genetic claims to the general public.

Black boxing can occur without the endorsement of the scientific community if a critical mass of the public accepts the concept as "representing reality." Despite the urging of molecular biologists that genetic explanations must take into account environmental factors, fringe sociologists have employed behavioral genetics and evolutionary psychology to establish a prominent public discourse about genetics. Critiquing such approaches, Dorothy Nelkin and Susan Lindee have shown how the gene has become a cultural icon and how genetic determinist notions permeate popular culture.³³ Peter Conrad's work demonstrates how the news media fail to report disconfirmations and often misrepresent genetic findings by adopting a frame of "genetic optimism" that has led to a privileging of genetics in public discourse.³⁴ José Van Dijck shows how, in the mass media, the genetic frame has become common for explaining a wider range of societal problems.³⁵ In essence, these sociological studies demonstrate the black boxing of genetic determinism over the objections of molecular biologists. *GATTACA* is a popular culture exception that does not serve as an ally for genetic determinism. Regrettably, while it presents a strong statement against the black boxing of a genetic determinist ideology, it misses an equally important opportunity to keep the black box of genetic racial differences from closing.

Conclusion

That we are headed for a "new" eugenics is clear. The near completion of the Human Genome Project was announced in spring of 2001 with the publication of 99 percent of a human's DNA sequence.³⁶

Although this information will have limited use initially, in the not-too-distant future humans will soon be able to use this knowledge in conjunction with new genetic technologies to determine the genetic makeup of offspring before they are born. Recent major developments in human genetic technologies have made the likelihood of wholesale genetic changes even greater and have moved us one step closer to a *GATTACA*-like future. For example, in several cases, reproductive technicians used preimplantation embryonic selection, the technology used in *GATTACA*, to select embryos that did not contain known genetic defects. In one highly publicized case, a couple was able to select an embryo that did not carry the allele for Fanconi's anemia (a blood disease) before implantation in the mother's womb.³⁷ There have also been some successes in germ-line gene therapy with our close relative the rhesus monkey.³⁸ According to an article in *Wired* magazine, these developments render the question of a new eugenics irrelevant: "The fact is, eugenics is here. Brought to you by high technology and the free market, it looks nothing like a Nazi newsreel. The question isn't 'Should we have eugenics?' but rather, 'How far should we go?'"³⁹ Unfortunately, the ethical question of "How far should we go?" is too simplistic. There are many other ethical problems embedded within the new eugenics. As I have argued in this essay, two scientific ideologies will have a profound impact on the direction the new eugenics will take if they become black boxed: genetic determinism and a genetic definition of race.

Fictional films, like *GATTACA*, will play a role in determining whether these scientific ideologies become black boxed. Rather than serving as another popular culture ally for genetic determinism, *GATTACA* provides a powerful counterexample. However, the society envisioned within *GATTACA* in which racial inequality no longer exists is not only overly optimistic but ignores an alarming, persistent racial ideology that seeks to define some races as genetically inferior. This omission undercuts the film's perceptive critique of genetic determinism because it offers minority viewers the vision that enhanced genetics can lead to the path of racial equality. By presenting a raceless society obsessed with genetics, the film suggests that genetic determinism combined with genetic manipulation will have some desirable consequences. In this genetically deterministic world, equality is not achieved through complex social changes but through the simplistic route of genetic manipulation. As Nelkin and Lindee demonstrate, genetic explanations have a powerful appeal because they offer simple solutions and displace blame for social problems from external, societal causes to

internal, biological causes. For social conservatives, a genetic basis for racial differences provides easy answers and justification for current inequalities and discrimination. According to this viewpoint, unrestricted manipulation of human genetics would be a good thing because it would allow "inferior races" to remove these "defective elements" and would lead to racial equality, as shown in *GATTACA*. This simplistic and racist viewpoint rests upon the belief that people will have equal access to gene-altering technologies, should such a future presents itself. Social inequality often leads to unequal access to scientific benefits, and a consensus that race has an underlying genetic basis would actually accelerate social problems. The black boxing of a genetic basis for race would provide scientific justification for current discriminatory practices and deepen the racial and ethnic income gap. Rather than leading to the racial utopia as depicted in *GATTACA*, the acceptance of a genetic basis of race will only further segregate society.

NOTES

1. *GATTACA*, directed by Andrew Niccol, 1997, Columbia Tristar Pictures. The title of the film is actually an acronym of sorts. The letters G-A-T-T-A-C-A refer to the four DNA bases, adenosine, guanosine, thymine, and cytosine. Therefore the title of the movie, *GATTACA*, mimics a DNA sequence.

2. Brendan I. Koerner, "Embryo Police," *Wired* 10, no. 2 (2002): 53.

3. Joel Hochmuth, "Voyage of Life," *CNN Newsroom*, May 3, 2001. Transcript of the show can be found at <http://www.cnn.com/TRANSCRIPTS/0105/03/nr.00.html> (accessed March 19, 2004).

4. For example, see <http://www.teachwithmovies.org/guides/Gattaca.html> (accessed March 19, 2004).

5. David A. Kirby, "The New Eugenics in Cinema: Genetic Determinism and Gene Therapy in *GATTACA*," *Science Fiction Studies* 27, no. 2 (2000): 193–215.

6. Abby Lippman, "Prenatal Genetic Testing and Screening: Constructing Needs and Reinforcing Inequities," *American Journal of Law and Medicine* 17 (1991): 15–50, 19.

7. Daniel Bernardi, *Star Trek and History: Race-ing Toward a White Future* (New Brunswick, NJ: Rutgers University Press, 1998), 135–6.

8. Antonio Gramsci, *Selections from Cultural Writings*, ed. Geoffrey Nowell Smith and trans. William Boelhower (Cambridge: Harvard University Press, 1985), 189.

9. Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge: Harvard University Press, 1987).

10. Eugene's full name is Eugene Morrow, which suggests the "good gene of tomorrow" and thus refers to eugenics.

11. Werner Sollors, *Neither Black Nor White Yet Both* (New York: Oxford University Press, 1997), 248.

12. This is not to say that white men are not members of the dominant group (e.g., Eugene) or that white men exclusively occupy fringe status in the society extrapolated by *GATTACA*. Rather, genetics, not skin color, determines one's inclusion in the privileged class.

13. Elaine K. Ginsberg, "Introduction: The Politics of Passing," in *Passing and the Fictions of Identity*, ed. Elaine K. Ginsberg (Durham, NC: Duke University Press, 1996), 1–16.

14. *Ibid.*

15. The "Star Trek" view of a racially harmonious future world is discussed in Bernardi, *Star Trek and History*; Jon Wagner and Jan Lundeen, *Deep Space and Sacred Time* (Westport, CT: Praeger, 1998); and Micheal Pounds, *Race in Space* (Lanham, MD: Scarecrow Press, 1999).

16. Pounds, 52.

17. *Ibid.*, 91.

18. Kirby, 206–7.

19. For the history of eugenics and its racial dimensions see Donald K. Pickens, *Eugenics and the Progressives* (Nashville: Vanderbilt University Press, 1968); Daniel J. Kevles, *In the Name of Eugenics* (New York: Alfred A. Knopf, 1985); Marouf A. Hasian, *The Rhetoric of Eugenics in Anglo-American Thought* (Athens: University of Georgia Press, 1996); and Steven Selden, *Inheriting Shame: The Story of Eugenics and Racism in America* (New York: Teachers College Press, 1999).

20. Montagu's quote is found in his foreword to Selden, *Inheriting Shame*, vii.

21. *Ibid.*, xv.

22. Richard J. Herrnstein and Charles Murray, *The Bell Curve: Intelligence and Class Structure in American Life* (New York: Free Press, 1994).

23. Summaries of research in behavioral genetics can be found in William Wright, *Born That Way: Genes, Behavior, Personality* (New York: Alfred A. Knopf, 1998).

24. Jon Entine, *Taboo: Why Black Athletes Dominate Sports and Why We're Afraid to Talk about It* (New York: Public Affairs, 2000).

25. Richard Lynn, *Eugenics: A Reassessment* (Westport, CT: Praeger, 2001), 275.

26. Richard C. Lewontin, Steven Rose, and Leon J. Kamin, *Not in Our Genes* (New York: Pantheon Books, 1984), 7.

27. Ruth Hubbard and Elijah Wald, *Exploding the Gene Myth* (Boston: Beacon Press, 1997), 9. The view that social conservatives are the only ones supporting a genetic definition of race is too simplistic. For example, Marouf Hasian's research shows the ways in which some African Americans have supported eugenics. Hasian, *The Rhetoric of Eugenics*, 51–71.

28. Stephen Jay Gould, *The Mismeasure of Man* (New York: W. W. Norton, 1996), 31.

29. Thomas Sowell, "Ethnicity and IQ," *American Spectator* 28, no. 1 (1995): 32–6, 32.

30. Michael Barone, "Common Knowledge," *National Review* 46, no. 23 (1994): 32–4, 34.

31. Christopher Caldwell, review of *The Bell Curve*, by Richard J. Herrnstein and Charles Murray, *American Spectator* 28, no. 1 (1995): 62–7, 67.

32. J. Philippe Rushton, *Race, Evolution, and Behavior* (New Brunswick, NJ: Transaction, 1995); and Michael E. Levin, *Why Race Matters*, (Westport, CT: Praeger, 1997).

33. Dorothy Nelkin and M. Susan Lindee, *The DNA Mystique: The Gene as a Cultural Icon* (New York: W. H. Freeman, 1995).

34. Peter Conrad, "Public Eyes and Private Genes: Historical Frames, News Constructions, and Social Problems," *Social Problems* 44, no. 2 (1997): 139–54; and Peter Conrad and Dana Weinberg, "Has the Gene for Alcoholism Been Discovered Three Times since 1980?" *Perspectives on Social Problems* 8 (1996): 3–24.

35. José Van Dijck, *Imagination: Popular Images of Genetics* (New York: New York University Press, 1998).

36. Rick Weiss, "Life's Blueprint in Less Than an Inch," *Washington Post*, February 11, 2001, A1.

37. Peter Gerner, "Embryo is Picked to Try to Save Sister's Life," *Chicago Tribune*, October 2, 2000, 1.

38. Rick Weiss, "Scientists Create First Genetically Altered Monkey," *Washington Post*, January 12, 2001, A1.

39. Brian Alexander, "The Remastered Race," *Wired* 10, no. 5 (2002): 68.