

Today's genetic tests revive, in a rationalized, high-tech setting, the ancient obsession with divination.

—Richard Powers, “A Brief Take on Genetic Screening” (2006)

It seems to me that germ-line modification is not that many years away and will emerge gradually and inexorably as a by-product of all the different kinds of genomic research currently being pursued. What we can only think of in terms of science fiction is about to become social fact, and none of our institutions are ready for the transformation. Perhaps fiction can provide a way of thinking about the revolution in life that other disciplines are bringing about but are not yet equipped or permitted to evaluate.

—“An Interview with Richard Powers” (2008)

**F**rancis Collins, director of the National Institutes of Health, had planned to spend 24 August 2010 working with scientists invited to Washington, D.C., to review the latest grant applications for human embryonic stem-cell studies. Aimed at finding treatments for diseases like Parkinson's and diabetes, this research attracts controversy because it requires the destruction of blastocysts, multicellular clusters created by divisions occurring over several days following fertilization. Objections to the process vary in their details, but most involve the view that an embryo aged several days deserves the same protection granted to an infant or adult. At a crucial level, say many of those who inveigh against morning-after pills and abortion at any term, this cluster of cells is a person. Or even if not yet a person, it

has the potential to become one, and therefore should be treated with reverence, not subjected to microscopic manipulation. Notwithstanding the fact that a full two weeks after fertilization the embryo can still split, leading to two completely separate individuals (twins), or conversely, fuse with another blastocyst on the way to becoming a single person (a chimera with two separate sets of DNA), the claim is that this group of cells has a soul.

As was widely reported, Dr. Collins and his team of reviewers did not spend last 24 August as planned. The day before, Chief Judge Royce Lamberth of the Federal District Court for the District of Columbia had issued a ruling questioning the legality of not only the Obama administration's rules about stem-cell research, but even those of George W. Bush.<sup>1</sup> This created immediate chaos for scientists across the country, who spent the ensuing weeks asking whether currently active studies were suddenly illegal, inquiring about the status of grant applications and promised funding, and even considering relocation of their laboratories outside the United States. Of course Judge Lamberth's decision has since been appealed, effecting a cease-fire for both sides to prepare arguments, but regardless of whether his ruling is ultimately overturned or rendered moot by congressional action, the anxieties it expressed will remain. While polls over the last decade show that stem-cell research has been consistently supported by a majority of Americans, it raises the same questions about biology and identity that appear in discussions of genomic testing and modification. Whether bioethicists are asking when to grant society's protection to a growing organism, or how many of the eventual person's traits can be predicted via cellular analysis, they are probing the foundations of human agency. The resulting discourses tend to pit scientists against religious believers, religious believers against humanists, humanists against scientists, and members of these groups against each other. The debates get messy quickly, and as Richard Powers suggests above, the rate of complication is only likely to accelerate.

What Powers also proposes, though, is that fiction can make a difference in reconciling these tensions. I share his instinct, and although literature and literary criticism may impact culture only gradually, both can build bridges across unnecessarily absolute disciplinary walls. In this essay, I make a case for science fiction's unique mediatory capacity, eventually focusing on the slipstream subcategory employed by Powers in his most recent novel, *Generosity: An Enhance-*

*ment* (2009). My argument begins with a key tension that genomic fiction addresses, that between the dangers of genomic determinism, which are quite familiar, and those of genomic dismissivism, which are less recognized but equally problematic. After brief looks at earlier fictional treatments of these problems, I examine the particular strategies utilized in Powers's work, which benefits heavily from unusually extensive experience with personal genomic testing. As postsecular, metanarrative science fiction, *Generosity* challenges both inflated and deflated rhetoric about new possibilities for genomic testing and modification. Defending scientific research but cautioning against its mutation into techno-transcendent spectacle, Powers's novel invites readers to appreciate how both fictional and biological evolution depend on painfully slow, bottom-up "compositing." In both processes, complexity emerges from simplicity, purpose appears in apparent randomness, and agency persists in tension with inherited and environmental factors. Especially when we discover the narrator's identity in the novel's final scenes, *Generosity* becomes an invitation to rethink what counts as possible and as actual, or as Powers calls it, the relationship between "science fiction" and "social reality."<sup>2</sup>



Discussions of genomic testing and possibilities for genomic modification often succumb to one of two mistakes. The first, a simplistic, unqualified genomic determinism, responds to discoveries enabled by the Human Genome Project, but it can be traced to a sense of predestination found as far back as Genesis. In the more recent incarnations, biology popularizers and sometimes overzealous scientists themselves speculate about "the homosexuality gene," "the God gene," or "the happiness gene," as if an element of individual character as complex as sexual orientation, faith, or emotional disposition could be decided by a single microscopic on/off switch. The second mistake, which I call genomic dismissivism, is less regularly discussed but equally pervasive, and not just among those who believe the Earth is six thousand years old. Many Americans, perhaps even many scholars of American literature, prefer to emphasize culture and downplay biology. However, ignoring the arrival of the genome age is no wiser a strategy than imagining this science as an unambiguous means of posthuman salvation. There is overwhelming evidence that our cells profoundly shape our selves, and so the challenge lies in holding

together that reality with a healthy suspicion of the genome's cultural representations, which are often grossly inaccurate.

Before looking at how genomic fiction may contest determinism and dismissivism, it is worth understanding several factors contributing to these extremes. On the determinism side, there is *astrological genetics*. This term, coined by Barry Barnes and John Dupré, describes a demetaphorization by which genes become light switches, as if they had one-to-one correlations with human traits. Informatics is essential to genetics, of course, but as Barnes and Dupré explain, we need to realize that "if genes are objects, then they are objects that vary enormously in their constitution, and they are composite rather than unitary objects—objects only in the way that the solar system is an object, or a forest is, or a cell culture."<sup>3</sup> Snipping a human genome into twenty thousand pieces will not produce twenty thousand genes, and that we imagine this to be possible is a product of cultural misrepresentations, not the science itself. In fact, biologists remain baffled about why the number of an organism's genes has so little apparent relation to its size or complexity, so that pufferfish can have a genome one-tenth the human size, but single-celled protista a genome four hundred times larger. And it is when popular science glosses over puzzles like pleiotropy, whereby a single gene is responsible for many different phenomic expressions, that the largest mistakes occur. We end up hearing far less about actual genomics than its astrological cousin, "a crude form of genetic determinism currently thriving in the media and the wider culture, which has proclaimed the discovery of 'genes for' intelligence, homosexuality, aggression, and a succession of other human behavioral traits."<sup>4</sup> This critique of fortune-telling genomics should not be taken to trivialize expanding correlations between sets of genes and various maladies, but only to reject an unbridled scientism that would trade on such discoveries with claims of an all-encompassing cellular determinism.

Perhaps Barnes and Dupré's most valuable point is that "genomics/genetics confront us not just as practice and technology, and as knowledge and understanding, but as myth and ideology as well. And just as technology and knowledge systematically change over time, so too do the associated myths and ideologies."<sup>5</sup> In short, we need to understand not just genomic science itself but the evolution of its cultural representation, which is just beginning to be studied. Among the early consensus, though, is that excepting descriptions of rare

single-gene disorders like Huntington's and Tay-Sachs, genomic determinism is routinely exaggerated. The more that educated subjects have submitted to testing, the more extensive has been their agreement about the currently dubious "action value" of the experience. As Heidi Kathleen Kim details in a recent conference paper, for instance, when Chicago's Silk Road Theater invited a half-dozen playwrights of Asian descent to take a commercial DNA test and create short plays about the results, they all expressed disillusionment with the technology.<sup>6</sup> Notwithstanding heartwarming discoveries about ancestry among celebrities in Henry Louis Gates Jr.'s *African American Lives* and *Faces of America* documentaries, the most expansive tests have regularly evoked this cautionary tone about genomic science's present capacities. When Harvard psychologist and genomic enthusiast Steven Pinker published a lengthy article in 2009 about his participation in George Church's Personal Genome Project, even he concluded, "The fallacy is not in thinking that the entire genome matters, but in thinking that an individual gene will matter, at least in a way that is large and intelligible enough for us to care about." Most revealingly, Pinker recognizes that in analyzing his results, "I was using my knowledge of myself to make sense of the genetic readout, not the other way around."<sup>7</sup> His admission points to the way individual narratives underlie and connect cellular data, in most cases yielding approximations, relative likelihoods, and various possibilities rather than a sense of a single, unavoidable fate.

At the same time, this skepticism can also be overextended. However limited genomic testing's current capacities, it is maturing at an astonishing pace, and disregarding that growth is irresponsible. Yet genomic dismissivism remains a common recourse in many contexts, perhaps especially religious ones. *Dignitas Personae*, the Vatican's latest instruction about reproductive technologies, shows that religious perspectives can be quite nuanced, but in the classroom, I more often see theology driving an incurious fear. Once genomics is on the table, it seems, the questions quickly turn to evolutionary theory, stem-cell research, abortion, and definitions of personhood. Religion is inevitably activated here because as Jay Clayton puts it, genomics creates a new sense of a "perpetual present, which paradoxically takes an eschatological stance toward the future and replaces the past with a New Age vision of evolution."<sup>8</sup> Rather than promoting an established religious tradition, Clayton sees this science engendering a more fluid

phenomenon, a simultaneously cosmic and microscopic spirituality that many find discomfiting. Analyzing Powers's earlier novel about genetics, *The Gold Bug Variations*, Clayton highlights a character's bewilderment that "if every word and metaphor she writes, every cell in the bacteria on her hands, every city and infinitely dense ecosystem, are just variations on a single code, then what has become of history?"<sup>9</sup> For her, the gene's compression of past, present, and future into a single mass is "terrifying and salvific," but for others, only the first adjective applies.<sup>10</sup>

Genomic transcendence is even more central to Priscilla Wald's groundbreaking article on this science's "future perfect" tense. Heralding genetics a decade ago as "perhaps the most important field through which contemporary conceptions of identity are being shaped and articulated,"<sup>11</sup> Wald turns to a metaphysical vocabulary in her conclusion: "Like all creation myths, genetics . . . re-poses traditionally religious or philosophical questions of will and determinism in the language of science . . . . To understand genetics in this way is not to downplay the importance of the medical technologies it makes possible. Rather, it shows how that importance is compounded by the importance of the representational technologies through which it registers and partly transforms world views and through which it risks becoming a belief system in its own right."<sup>12</sup> Genomics as a religion, as a belief system? Wald might be misunderstood as warning against this science, but she does not mean it must become a new form of crystal gazing. Rather, she cautions against both terror and enrapture, offering a balanced approach congruous with the postsecular lexicon I will utilize here. This vocabulary, cultivated by such scholars as Tracy Fessenden, Michael Kaufmann, and John McClure, challenges both religious absolutism and the equally narrow scientific variety. Instead, postsecular thinking—and by extension, postsecular fiction—enables interpretive agility about traditional religions and spiritualities by complicating fixed meanings, embracing ambiguities and diverse subcategories, and recognizing how across history and geography, mystically inflected language is regularly inscribed within secular statements of identity and purpose. This theoretical approach eschews not only the apocalyptic rhetoric of extremist positions, but also the assumption that religious and scientific approaches to questions of ultimate meaning are necessarily incompatible. For Kaufmann, postsecular thinking "stems from a desire to resist any master

narrative—whether it be a supersessionary narrative of secularization, or a triumphal narrative of the return of religion.”<sup>13</sup> Likewise, my reading of *Generosity* shows how a postsecular mindset can reveal more than a disdain for all metaphysical questions. In fact, metafiction may particularly reward a postsecular approach, as both discourses actively pursue provisional, tangible meanings and refuse to shut down readers’ interpretive processes.

Before turning to fiction, I should note one other factor exacerbating genomic dismissivism—its popular identification with eugenics. Not only are Americans attracted to visions of neo-Nazi scientists whipping up doom in a tube, but we have a difficult time distinguishing preference from prejudice. Undoubtedly there is a connection: what we say we like, what we imagine as normal, often exposes things we do not like, that we consider abnormal. But as bioethicist Ronald M. Green explains, genomics and eugenics are very different choices: “[T]here is a world of difference between caring to have a child with some trait and caring about that child once the child is born.”<sup>14</sup> He argues that in a world where genomic interventions against disease inheritance or toward particular abilities were available, future parents might modify their children’s genomes without expressing bias against those who suffer from maladies they would avoid or lack attributes they admire. Green shows that parallel situations already exist, that all children are heavily influenced by their parents’ decisions before conception, and that loathsome as eugenics is, genomics need not raise its specter. Undoubtedly this technology could lead to new forms of social ostracism, and we are right to be wary, but if we can avoid the oversimplifications, the payoffs may be considerable. Like the exaggerations that enable determinism, handcuffing genomics to eugenics excuses us from better understanding the ties between our bodies and our identities, and that is an error genomic fiction can help overcome.



In bioethics classes today, the most commonly taught example of such fiction is probably not literary, but cinematic. Andrew Niccol’s 1997 film *Gattaca* imagines a future when most human beings begin life in petri dishes, so that after the hero is conceived via traditional means, he must strive to overcome his “degenerate” fate. A crucifix dangling above his parents’ backseat lovemaking contrasts sharply with the sterility of their eventual birthing room, and the tension between trusting

in religion and in science rises when the infant's heel is pricked and a computer quickly appraises his genetic stock. "Neurological condition, 60% probability; manic depression, 42% probability," an attendant reads. "Attention deficit disorder, 89% probability; heart disorder, 99% probability; early fatal potential; life expectancy, 30.2 years."<sup>15</sup> The film eventually questions these prognoses, but the scene so effectively encapsulates the determinism involved in many portrayals of genomics that viewers may lose sight of the critique. The more we learn about genes, the more absurd is this test's disregard for environmental factors and individual will, but its instantaneous empiricism is nevertheless regularly transferred to the actual science.

Similar anxieties are prominent in other genomic fiction. Such works may engage genomic testing, modification, or cloning, and they may imagine themselves as rigorous forms of scientific self-representation or utilize scientific possibilities only superficially en route to other concerns. Of course the subgenre has a long prehistory; Mary Shelley's *Frankenstein* (1818), H. G. Wells's *The Island of Dr. Moreau* (1896), Aldous Huxley's *Brave New World* (1932), and Arthur C. Clarke's *Childhood's End* (1953) all interrogate biology's potential to confer godlike status. But the genomic fiction that interests me here began appearing most regularly in the 1970s. That decade saw dystopias like Nancy Freedman's *Joshua Son of None* (1973), Ira Levin's *The Boys from Brazil* (1976), and Kate Wilhelm's *Where Late the Sweet Birds Sang* (1976), which imagined genetically engineered posthumans with a mix of fascination and horror. As the Cold War ended, these tales were followed by more complex characters in Octavia Butler's *Lilith's Brood* trilogy (1987–89), Nancy Kress's *Beggar* series (1993–96), and at the turn of the century, Greg Bear's *Darwin's Radio* (1999) and *Darwin's Children* (2003). Most recently, in the wake of the Human Genome Project's 2003 completion, slipstream treatments of genomic identity have been multiplying beyond the genre shelves. Kazuo Ishiguro's Hollywood-adapted *Never Let Me Go* (2005), Margaret Atwood's *Oryx and Crake* (2003) and *The Year of the Flood* (2009), and Steve Tomasula's multimedia novel *VAS: An Opera in Flatland* (2004) suggest how contagious genomic metaphors are becoming. Equally worth mentioning is *Middlesex* (2002), Jeffrey Eugenides's Pulitzer Prize-winning search for the genomic and cultural foundations of hermaphroditism, and *White Teeth* (2000), Zadie Smith's similarly intergenerational novel of human beings and oncomice.

Powers's *Generosity* epitomizes the subgenre's increasingly predominant vision of "predisposed agency." I mean this term to register the immense impact of microbiology on identity without suggesting that selves can be reduced to cells. We are not fated to particular deaths at specific times, as the *Gattaca* scene suggests, but retain considerable willpower. Still, human beings are predisposed to some ailments and character traits, and appreciating how culture shapes genomic expression may help us become much more proactive in pursuing individual and communal health. In short, predisposed agency is the balancing principle by which genomic fiction is critiquing both determinism and dismissivism, thus mediating between science and public understanding. To be sure, not all of the works in this subgenre are triumphant tightrope walkers; in some cases, the scientific homework remains incomplete or the priority is spectacle rather than substance. But I want to show that even these cases can provide valuable foils, as with Michael Crichton's 2006 page-turner, *Next*, and Angela Hunt's 1999 "inspirational fiction" title, *The Truth Teller* (republished in "updated" form in 2006). Like *Generosity*, both works rely on tensions between freewheeling genomic entrepreneurs and main characters who appear to be genomic freaks, and both highlight the extent to which religious views are shaping attitudes toward genomics. However, these texts eventually surrender to determinism (*Next*) or dismissivism (*Truth Teller*), and recognizing these processes of capitulation will prepare us to appreciate *Generosity's* achievement.

First, what does Crichton's novel do well? By blurring the line between human beings and other primates, *Next* valuably undercuts notions that genomes are easily manipulated texts. While often conflating near-term and distant technological possibilities, Crichton effectively uses hypothetical newspaper clippings to satirize genomic oversimplifications. One of the more grandiose is titled "Scientists Isolate 'Master' Gene: A Genetic Basis for Controlling Other People?"<sup>16</sup> To his credit, Crichton gestures here to the role of interpretation in making genomic meaning, grasping that no matter how much computers advance in their capacities to analyze DNA samples, their projections of an infant's strengths and weaknesses can never be absolutely neutral. Ideology shapes any move from data to significance, or from scientific method to technological application. Crichton makes this especially clear after a biologist demonstrates that Neanderthals carried a gene that led them to resist innovation, whereupon readers

encounter both a faux *New York Times* article toasting humanity's forebears as enlightened environmentalists and a *Wall Street Journal* piece ridiculing their fear of free markets. What Crichton firmly grasps is the danger of reducing a complex set of biological influences to the "smart gene," "wisdom gene," or "happy gene" (*N*, 155). *Next* even dares to provide technical clarifications that may escape many readers, like the qualification that "transgenics was never a matter of inserting a single gene. Researchers also had to insert the associated genes necessary for the primary gene to function" (*N*, 169).

Despite these strengths, though, Crichton's genetic follow-up to *Jurassic Park* (1990) and its sequel, *The Lost World* (1995), endorses informatic assumptions that leave the gap between human persons and mathematical formulas perilously thin. Soon after the qualifications noted above about transgenic organisms, Crichton's narrator explains, "in reality, the task of injecting a gene into an animal and making it work more closely resembled debugging a computer program than it did any biological process. You had to keep fixing the errors, making adjustments, eliminating unwanted effects, until you got the thing working" (*N*, 169). Echoing a tendency of mid-twentieth-century hard science fiction by writers like Robert Heinlein, *Next* essentially portrays humans and other organisms as the products of an all-determinative, inflexible code. Examining this habit almost a decade before Crichton's book was published, José Van Dijck cautioned that rendering a human being as simply a collection of genes "yields a view of the body as the flawed version of the perfect code." Anticipating Barnes and Dupré, she emphasized that in forgetting that a "gene" is a metaphor, we become vulnerable to promises of "an easy genetic fix."<sup>17</sup> In the case of *Next*, the result is considerable didacticism, most blatantly in an afterword spelling out Crichton's recommendations for humanity's genomic future. Against Van Dijck's warning that while decoding can be "performed by a CD-player," a "narrow definition of reading prohibits any interpretive activity," Crichton leaves little room for readerly decisions.<sup>18</sup> As we will see, *Generosity* is quite different, as its intricate plot draws one further into the interpretive possibilities, and therefore the bioethical ones as well.

Crichton is also distinct from Powers in his novel's simplistic alignment of genomic enthusiasm with American Protestantism. *Next* examines the intersection of religion and science primarily through Robert Bellarmino, "an evangelical Christian and a leading researcher

at the NIH" (N, 72), a character rather plainly inspired by Collins, who had just finished directing the Human Genome Project when *Next* was published. The author of *The Language of God: A Scientist Presents Evidence for Belief* (2007), Collins has long combined his research endeavors with popular efforts to reconcile science and religion. When he received Barack Obama's nomination to his new post, that commitment earned a loud censure from militant atheists like Sam Harris.<sup>19</sup> Crichton's sympathy for his character is similarly limited, and the chapter in which Bellarmino keynotes the "Congressional Biotechnology Prayer Breakfast" as "our man of God and science" quickly becomes sarcastic (N, 119). After Bellarmino expresses his conviction that "genetic engineering uses the tools the Creator has given us to carry out good works on the planet" (N, 120), Crichton returns repeatedly to his character's egotism. Bellarmino lets nothing interfere with "his lab, his research, and his reputation. He was very good at protecting all three" (N, 122). When he leaves for Ohio to work on "the novelty gene," he also plans to meet up with a *60 Minutes* crew and interact with "ordinary people." The free, indirect discourse is ruthless: time with the masses "was really important, especially with a man of science, and especially on television" (N, 123).

But if Bellarmino represents a threatening combination of scientific and religious fame, he is nothing compared to the villain of Hunt's *The Truth Teller*, a novel published by a house known primarily for devotional literature. Whereas Crichton's religious convictions remained vague upon his death in 2008, with most sources declaring him an atheist but others claiming he believed in God, Hunt more explicitly represents one side of the culture wars. She advertises her theological commitments in a preface affirming that human beings "follow a path God *knew* we would choose."<sup>20</sup> Nonetheless, even as Hunt embraces predestination via romance-novel conventions that sentimentalize her tale's attractive young widow, her novel joins Crichton's in warning against mixtures of genetic engineering and religious punditry. Hunt's billionaire scientist, Devin Sloane, is a biblical literalist who believes that by combining technology and capitalism, humanity's devolution may be reversed. For Sloane, the biblical Adam was a superman who named the entire animal kingdom and dramatically outlived his descendants. Joining most readers today in failing to realize that the Hebrew *adham* was not originally a proper noun, but referred to humanity in general, the entrepreneur regards the early chapters of Genesis as scientifically

factual and hopes for a literal genetic redemption of humanity. If not quite reaching back to Eden, Sloane intends to rewind the species's genome at least to that of the primordial iceman whose Alpine grave has provided the necessary DNA. "The wisdom of Solomon, the strength of Hercules, the extrasensory perception of Greek gods and goddesses—they shall be ours again" (*TT*, 20), he muses.

*The Truth Teller* amplifies the warnings of *Next* by aligning genomic modification and religious manipulation with male aggression. As in earlier genomic novels like *The Boys from Brazil* and *Joshua Son of None*, the rich male benefactor of Hunt's novel requires a naive female host, a Mary for his messiah. It may feel heavy-handed that Hunt names this protagonist Lara Godfrey ("God's peace") and the eventual child "Hunter" (apparently after herself), but it is key that the novel charges these characters with *resisting* techno-religious capitalism. In fact, although one might be tempted to dismiss the work as merely pitting science against religion, the more tangled truth is that Hunt's heroine embraces some technological interventions precisely because of religious revelations. Debating about pregnancy through in vitro fertilization (via her now-deceased husband's sperm, she believes), Lara relies on a popular method of scriptural divination. Opening her Bible at random, she lets her gaze fall on a verse in Proverbs: "Hope deferred makes the heart sick, but when dreams come true, there is life and joy." More than any assurance science provides, this prophesy is the novel's ultimate truth-telling, one that yields a "pulse-pounding certainty" that "God had just promised" motherhood and happiness (*TT*, 62), rendering questions about the means unnecessary. Although occasionally faltering and eventually requiring "the sheltering hand" of a new husband (*TT*, 386), Lara can therefore spend the next five years evading the businessman who plotted to implant his ancient DNA sample in her innocent womb.

In the end, the resulting child is the crucial character. Unlike the ape-boy of *Next*, but anticipating the innocence of Powers's own genomic freak, Hunter is uncannily, implausibly good. He is steadfastly honest, a type of the mythological George Washington, though evangelical rather than deist. Upon hearing a television preacher declare that God wants everyone to be rich, for example, Hunter strenuously objects, and when a Buddhist says that all paths lead to God, he politely responds, "'That's a great big lie'" (*TT*, 289). The child is not perfect, but from Lara's perspective, he sees beyond "half-

truth” to “*absolute* truth” (*TT*, 367). Asked how this is possible, Hunter resorts to the easiest of refrains, “I just know” (*TT*, 416). And he does, it seems: the novel hints that Hunter’s amazing sensitivity to truth is the result of genomic differences between modern and ancient human beings. However, the final pages reveal that the technician enlisted by Devin did not actually achieve Lara’s pregnancy via germ line therapy as promised. Instead he merely “mixed sperm infused with the ancient DNA with unaltered sperm from the late husband’s donation” (*TT*, 404), a development which suddenly casts the identity of Hunter’s father into doubt. This might have been a nicely unresolved point at which to conclude, but Hunt instead definitively links the boy’s ability to discern truth to his inheritance of dystonia, a disease that will shortly prove terminal. When all is said and done, *The Truth Teller* makes crystal clear that Hunter does not actually represent a triumph of genomic engineering, but is simply the miraculous son of Lara’s late husband, for as a judge announces in his climactic decision about paternity rights, science is vastly inferior to divine will. With “his voice ringing with depth and authority,” the magistrate enjoins, “Do not speculate about this child; do not search for answers in science or psychology. This boy is a gift from God” (*TT*, 416). A novel that began by acknowledging the potential blessing of scientific knowledge—even suggesting its compatibility with religious wisdom—ends by drawing the division as starkly as ever.

Even after recognizing that science and religion can assimilate each other’s rhetorical power, then, *Next* and *The Truth Teller* push readers back toward choosing determinism or dismissivism as unequivocally as their main characters. On one hand, they succeed in powerfully demonstrating how the genome is gaining attention as a contemporary icon, even as the source of the soul. On the other, they indicate how much American culture could benefit from some updated science homework, wherein we might recover the metaphorical nature of our genomic vocabulary. This focus could enable more fiction to be constructed on solid ontological foundations, ones that recognize biological knowledge, religious faith, and their textual representations as distinct phenomena. In sum, Crichton’s and Hunt’s novels are most provocative in their shortcomings, affirming the need for genomic fiction that respects without sensationalizing biological influences on behavior. Many of the novels surveyed above inhabit this tension more fully, and Powers’s latest work may be the most densely multilayered.



Science fiction is sometimes criticized for an obsession with technical details, but the richness of Powers's novels is directly tied to his scientific thoroughness. Now a professor in the Department of English and a full-time member of the Beckman Institute Cognitive Neuroscience group at the University of Illinois at Urbana-Champaign, Powers has evinced a fascination with genetics since his 1991 *The Gold Bug Variations*. As noted in a recent personal conversation, however, that was the work of a younger writer in a much earlier biological era. His more recent foray into microbiology began with a 2006 essay about personal genomic testing, in which he described such assessments not as "palmistry," but as at best "informed weather prediction." Powers's emphasis was on shifting expectations from "divination" toward proactive engagement,<sup>21</sup> recognizing that even on the rare occasions when tests point to definitive single-gene disorders, "knowing what's coming does not shield us from living it."<sup>22</sup> His interest was less in the fates these screenings implied than in affected individuals' responses. "Tests that increase a patient's ability to write her own life are deeply desirable," he reasoned, but "tests that decrease the patient's ability to write her own life are not. Which tests do which depends upon their taker."<sup>23</sup>

Powers's reflections became even more trenchant in 2008 while writing "The Book of Me," a long essay commissioned by *GQ* in exchange for a unique, six-figure process in which twenty-three scientists fully sequenced his genome ten separate times. At that point one of only eight individuals to have undergone such extensive genomic scrutiny (by comparison, commercial tests like those from agencies such as 23andMe and Navigenics sample only about .02% of customer genomes), Powers enjoyed a unique vantage point while composing *Generosity*. Not surprisingly, his essay reads partly like an abstract for the novel, both in terms of its injunctions and its commendations. Powers wonders "if we aren't in danger of pathologizing ordinary health, turning us all into pre-patients for diseases we are only at risk of contracting," and he concludes that "the dream of molecular management notwithstanding, we are unthinkably far away from ever being able to control the story." At the same time, he acknowledges that genomic technology's widespread application is now virtually inevitable, and that it may afford considerable benefits. Characteristically explicating technological developments via literary tropes,

he summarizes, "For a very long time, we have been moving from scripted characters to the co-authors of our own lives. The personal genome is one more tentative step from fate to agency, from fatalism to risk management. We are determined not to be determined."<sup>24</sup>

For some time, then, Powers's apparent goal has been to weave biology and narrative into a vision of human agency that reaches beyond polarizing conclusions like those of *Next* and *The Truth Teller*. Perhaps not surprisingly, his Promethean metaphors recall those of literary critics like Clayton and Wald. As Powers observes in "The Book of Me," personal genomics is most often about "the gradual replacement of luck with control. Once upon a time, we were dealt a hand by Fate, God, or the Unreliable Narrator, and the task of life was to deal with that hand. Now the task is to improve the deal." However, as much as the hero of today's genomic testing project may "consult the Oracle in order to circumvent the information the Oracle gives him," nine times out of ten he "can't tell what the hell the Oracle is saying until the murk comes true and reveals how to read it."<sup>25</sup> Driving home our current unpreparedness to make sense of most genomic information, the essay anticipates an even stronger sense in *Generosity* that the gene is emerging as a cultural register of the sacrosanct.

The novel centers around a young Algerian woman living in Chicago on a student visa. Thassadit Amzwar's unique problem, it would seem, is that she is too happy. Like Thassa's fellow arts students, her adjunct professor of creative nonfiction, Russell Stone, is awestruck by this apparently unabated exuberance for ordinary life. Gradually, the immigrant's admirers expand to include Candace Weld, a counselor at Thassa's college; Thomas Kurton, a genomic scientist and entrepreneur who succeeds in convincing Thassa to undergo genomic testing; and Tonia Schiff, the witty host of a popular science edutainment show that does an episode on the Algerian. Together, these characters' responses to Thassa's zest for existence probe many of the major questions raised by genomic testing. What determines individual identity? Who gets to decide what constitutes being "well"? Powers's latest set of suggestions comes via a character with a year of life for each pair of chromosomes, a young woman determined not to let her nation's civil war or her parents' resulting deaths dictate her life, a complex messiah-turned-scapegoat for whose portrait Powers draws as much on ancient mythology as the futuristic variety.

Among the novel's most memorable scenes is the shooting of an

episode of *Oona*, a lightly disguised adaptation of the *Oprah* show. As a featured guest, genomicist Kurton knows how to appear the very embodiment of scientific eminence but also a humble man who only wants to serve the public good. We see enough behind the scenes, though, to sense that Kurton suffers from as great an obsession with public attention as his narcissistic counterpart in Crichton's novel. Ultimately, his work is driven by a Martin Arrowsmith-like addiction to being the first to uncover new, secret knowledge. And to the envy of colleagues with less charisma, he regularly profits from audiences like *Oona*'s that are exhorted before showtime about "how important it is that everyone be themselves and respond honestly to any melt-downs that *Oona* and her guests get into," but are then unapologetically trained to make unified chuckles and gasps when offstage monitors "give simple cues to help indicate where laughter or surprise might be appropriate."<sup>26</sup> This soundstage of postmodern mythmaking, it soon emerges, is the pseudointellectual environment in which American culture is making its crucial early judgments about genomics and ethics, and it is a realm to which Kurton is very favorably adapted. Yet we sense that his determinism only convinces part of the audience, in some measure because he is sliding beyond science as a method toward scientism as an all-sufficient ideology.

Recognizing this shift depends on being attuned to Powers's simultaneous sympathy for and distance from his character. This is where a postsecular approach pays dividends: it can expose how the secular and the scientific have become ideologically charged without assuming these categories are antireligious, inhuman, or unethical. For those who might shrug off this assertion, insisting one need not think about religion to recognize scientism's conceit, I would note the way a binary approach to religion and science leads an earlier article about *Generosity* to misinterpret the novel. Writing for the *Hastings Center Report*, a journal with a long dedication to bioethics, physician John Lantos quite rightly observes how the text depicts "science as the ultimate redemption story of our age."<sup>27</sup> However, Lantos misunderstands Powers to be actually affirming this brand of scientism. He assumes the novel as a whole supports Kurton's view of contemporary novels as "obsolete," valuable today "merely as inefficient mood-stabilizing devices." As a result, when Kurton debates a novelist and then a bioethicist about the virtues of the coming genomic revolution, Lantos decides that "Powers clearly prefers the witty, visionary scientist to

the dowdy bioethicist” and that “ethics, for Powers, is old and tired. Science is young, new, and fresh.”<sup>28</sup> In other words, Lantos allows our culture’s habit of polarizing religion and science to make him read an equally absolute division between bioethics and biology into Powers’s novel. As will become evident, this interpretation entirely neglects the novel’s metanarrative, wherein the narrator rejects Kurton’s determinism even in composing the text we read.

For now, the *Oona* scene is crucial for dramatizing the shrinking distinction between popular fame and scientific prominence and for rejecting both under- and overestimates of individual willpower. At first glance, it might seem impossible that Kurton’s and Oona’s worldviews could merge: her self-help empire is based on “the belief that fortune lies not in our stars but in our changing selves” (*G*, 210), while the biological certainty he sells is “exactly the kind of fatalism [she] is determined not to be determined by” (*G*, 211). In the audience’s eyes, though, the show’s scientist guest and its billionaire hostess are closely aligned. Both promote rhetoric the viewers have little time to investigate, and the main question is which side sounds more immediately attractive. When Kurton explains that genomics never reduces individual options, but only expands them, it matters little whether this is actually true. The audience’s concerns were handled years before the scientist came onstage, when he donned an expert’s mantle, shed two decades from his physique through experimental regimens of diet and exercise, and learned how to make them laugh. The same phenomenon is evident earlier in the novel when Candace observes that the pace of genomic change means the data no longer really matter: “[E]very conclusion in [Kurton’s] article could be discredited next month, and journalists will still be reporting it five years from now” (*G*, 166). Once science makes it to daytime talk and breathless media coverage, in other words, it is no longer science. “The man can say anything at all,” she continues; “Sober measurement or wild prediction—it makes no difference. He’s on the show. And the show, not the lab, is where the race will engineer its future” (*G*, 217). By the novel’s 2013–14 setting, if not already, Powers intimates, the actual nature of genomic testing and modification may matter less than its public mythology. What will influence humanity’s future more than the latest laboratory study? Nielsen ratings.

Powers’s concern about genomic commoditization becomes even clearer when we turn from Kurton to the woman who nearly ends up in

his bed, Schiff. Like a wiser little sister to Oona, this representative of popular media gradually realizes how much her science edutainment show eliminates the ambiguities of its material. Schiff's colleagues, by contrast, are committed to satisfying the audience's lowest common denominators and show little patience for her growing conscience about the oversimplifications. Increasingly sensitive to the distinction between making good television and simply lying, Schiff decides she can no longer bifurcate her on-screen and actual selves. When Kurton makes his move after an interview at one of his homes, then, the journalist finds herself asking whether perceived happiness and the real thing are the same, whether the shifts in "dopamine, serotonin, oxytocin" that come with the man's touch are sufficient (*G*, 176). She demands, "If you moved us all up a notch, wouldn't we just acclimate and forget, like we do with everything else? Wouldn't ten just become the new seven?" But it is more than the man's presumptuousness—she catches him appraising her hair—that helps her seize control of the moment and reject Kurton's advances. Having sought a moment alone, she hears a noise from the woods that recalls the cranes so pivotal in Powers's *The Echo Maker*: a "mammal, bird, or something stranger," a creature that "moans in spectral restlessness" with "a call from back long before contentment and agitation parted ways." Gain-saying Lantos's equation of Powers with Kurton, this primordial voice pierces the day's high-tech staging and reminds Schiff of her creaturely essence. If the scientist proves incapable of grasping why Schiff might decline his attentions, Powers's readers have every opportunity to share her pained realization that she has sunk from a person into a role. Rather than endorsing Kurton's technoreligion, Powers ends up affirming Schiff's urge to beg the biologist "not to cure melancholy, not for another century or two, anyway" (*G*, 180).

This inclusion does not make *Generosity* technophobic. While Powers resists any impulse to make his lead scientist into a messiah, he is equally unwilling to divinize his humanistic alternative, Thassa. Initially, of course, it appears otherwise: the young woman first shows up in Russell's classroom "glowing like a blissed-out mystic" (*G*, 35), her early journal entries represent "something out of the dawn of myth, set in a Chicago all but animist" (*G*, 25), and she is so striking to her classmates as to "reduce all actual women to pale, insufficient reminders of the full-throated real" (*G*, 34). The vitality she exudes is intoxicating, charging the room's atmosphere with her presence. Yet

this does not make her as otherworldly or naive as one might guess. Surprising Russell, she turns out not to be a religious devotee, but calls herself a “half-Christian atheist” and quips, “‘If there is a God, he is just laughing at every religion we invent!’” (G, 48). Nor do environmental factors provide easy explanations for her strangely consistent joy. She is a child of civil war whose father was murdered by Islamic extremists, whose mother died of cancer less than two years later, and who is no stranger to suffering. The cause to which circumstances instead point is genomic. Candace, the novel’s representative of clinical psychology, speculates that Thassa is exhibiting hyperthymia—a condition characterized by unusually resilient cheerfulness—and lacking an equally impressive hypothesis, Russell buys in. When Kurton learns of Thassa’s unusual attributes and seeks permission to study her genome, both characters acquiesce, letting curiosity overshadow the protectiveness with which they generally regard the young woman.

As Powers signals, then, the novel’s exploration of determinism and agency begins long before Thassa hands over her DNA. Prior to genomic testing entering the picture, the problem is the extent to which both psychologist and professor, like the genomicist and the journalist, make Thassa “special.” The danger of this honor first materializes when one of Thassa’s adoring classmates takes advantage of her apparent naïveté and attempts to rape her. Holding Thassa in the most vulnerable of positions, the young man feels in control. “[H]er fear thrills him,” and this alleviates his previous intimidation by her self-possession. “It thrills him to see the happiness vanish at last. She can do nothing, and that is more moving than any art” (G, 104). Yet without glossing over the moment’s horror, Powers indicates that Thassa retains significant agency. Astonishingly, she shifts the focus back to her attacker with heartrending concern, crying that what he is doing will destroy *him*. The message breaks through, the young man collapses in self-hatred, and Thassa’s powers of unrelenting optimism become even more legendary. In the process, Powers indicates how fully the scapegoat mechanism detailed by René Girard is the flipside of the messianic coin. Elevation to a pedestal is no less dangerous than ostracism; the object of desire can excuse human beings from facing their own shortcomings just as effectively as the victim of hatred. Long before Kurton notices her, Thassa is fueling others’ lives. As Russell decides after a few months of knowing her,

“today, he’s well. He himself may never be happy for more than a few island moments. But someone he knows is free, unsponsored, safe, well. He can stand near, catch the spillover” (G, 115). And he is one of the more appreciative, innocuous recipients of the young woman’s blessing. Others deplete Thassa’s well of kindness more greedily, as she is “hounded by the hungry, clutched by the desperate, reduced by the scientific, dissected by the newshounds, stoned by the religious, bid on by the entrepreneurs, denounced by the disappointed” (G, 279).

Thassa’s elevation to sainthood and eventual sacrifice for her virtue should suggest how much more is in play here than biological factors. The gulf between her experience as research subject and Kurton’s captivation by new knowledge is especially telling. He proclaims at the height of his public triumph, “[D]iscovery is better than any drug, any luxury commodity, or any religion. Science should be enough to make any person endlessly well. Why do we need happiness when we can have knowing?” (G, 252). This is not just a celebration of science, or methodological naturalism, but a profession of scientism, or metaphysical naturalism. Admittedly, Kurton is a winsome lover of the natural world. When Thassa shows him the leafy sea dragons at the Shedd Aquarium, Kurton is “boggled” by these creatures that are “beyond fiction, madder than anything out of Tolkien.” He “stares into pure possibility, feeling how feeble imagination is, alongside evolution” (G, 145). But Kurton twists his discipline’s tool into an ideology, declaring that because of science, “[t]hree billion years of accident is about to become something truly meaningful” (G, 252). In other words, he assumes that until humanity was able to influence its genomic programming, real purpose was impossible. This audacity renders him oblivious to the fact that his work does the exact opposite of making Thassa “endlessly well.” Exhausted by public obsession with her reputed bliss, she becomes so weary that she sells her eggs, hoping this will satisfy the media and she can be left alone. She fears that even her friends now view her genes as “‘the secret real me’” (G, 241), and gradually we discover that much of her routine cheer has been constructed. Powers does not entirely withdraw the novel’s premise that Thassa is biologically unique, as in *The Truth Teller*; the only hint that Kurton’s tests might have been compromised is a reminder that his interpretations of the data are based on self-reporting, since “[e]ven science asked her to tell them a story” (G, 283). Rather, with the revelation near the novel’s conclusion that the

young woman has been desperately clinging to her predisposition toward contentment rather than effortlessly submitting to it, Powers points to his deepest questions about the nature of fiction. Only when Thassa collapses in exhaustion do we understand how fully she has been living by myth, bearing out a motto Russell summarizes with a Shakespearian flourish, as if Hamlet's words to his apparently unfaithful mother were meant seriously rather than sarcastically: "*Assume a virtue, if you have it not. A little creativity with the facts. Lie, if it keeps you alive*" (G, 285). Beneath the novel's questions about genomic identity are even more profound ones about fiction and survival.



Powers's treatment of "creative nonfiction," as Russell's class is titled, provides the novel's main suggestions about its bioethical questions. With genomic discovery advancing so rapidly, how do we unflinchingly acknowledge biological influences on identity while retaining genuine openness to personal agency? Readers' responses to the final pages' revelations about Thassa's character will say a great deal about their answers. When she admits to her former instructor that the writing exercises in which she had depicted the grace of the most ordinary actions—an elderly woman laboriously climbing a staircase, for example—were as "composited" as her films, Russell is shocked. Does her introduction of fiction into a purportedly nonfictional essay constitute the betrayal it seems? Or does Thassa's "creativity with the facts" bring daily experience to life in a measure otherwise impossible? Just as she grafts animation onto filmed scenes of Chicago's less-visible citizens, she admits to having rearranged temporal order and geographical locations to boost the emotional impact of her "nonfiction." Her revelation is so disturbing, we realize, because Russell has unconsciously expected clear demarcations of any shift from the actual to the possible, and she has erased them. Yet the text we are reading relies on the same kind of categorical transgression, because as we learn only near the end, Russell is its narrator. Following Thassa's example, he finds the courage to write, to "take the responsibility of making something happen" and seize the unique freedom to modify reality that fiction affords (G, 273). If it remains possible to read the novel's conclusion without grasping how dramatically it reframes the narrative, it is only because Powers refuses to corner his audience.

As Stephen Burn notes in a new collection of Powers criticism, the

author habitually invites readers deep into his fictional worlds, but not as ends in themselves: “Having established a haven for the reader through the mimetic foundations of his fiction, Powers ultimately challenges the realist illusion by revealing its constructed nature.”<sup>29</sup> That Powers refuses to absolutely determine his works’ significance does not mean he never offers well-placed hints, especially those apparent only upon rereading. As early as the novel’s second page, for example, the narrator observes of the commuters around Russell, “Just brushing against them in memory makes me panic.” On a first reading, we lack the necessary context, but the second time, when the narrator adds, “I know this story, like I wrote it myself” (*G*, 4), we are in on the joke. Russell *is* writing the story himself. Yet Powers is going for more than cuteness. In allowing Russell to constantly undercut the story’s mimetic potential, Powers suggests that its accidental evolution and its intentional construction are not the mutually exclusive possibilities they might appear. Both require gradual, voluntary responses to the limitations of a particular environment. Fictional narrative and genomes reflect a similarly predisposed agency.

Consider a second clue from the opening pages: still on the train, Russell sees a dark-haired boy “with a secret quickening in his hands. Something yellow floats on the back of the boy’s curled fist. His two knuckles pin a goldfinch by the ankles. The boy quiets the bird, caressing in a foreign tongue” (*G*, 5). Russell asserts later that “every novel is allowed one major coincidence and one minor one” (*G*, 147), and this is at least the latter. Darwin readers will remember that the Galapagos finches were especially critical to his discovery of natural selection. How are human personhood and meaningful agency reshaped by the realization that we are animals, and therefore as much the products of environmental and genomic factors as any other species? With the image of a finch, Powers suggests that we accept our biological boundaries not as the manacles of fate but as prerequisites to slow revision. At one point Russell ruminates on the kind of novel he would like to write (and, as we discover, is writing), the kind that existed “back before fact and fable merged,” “the kind that invents itself out of meaningless detail and thin air. The kind in which there’s no choice like chance” (*G*, 120). No choice like chance, Powers and Russell aver together: no willpower like that which emerges from chaos, no natural selection without environmental constrictions, no real character without profound conflict.

The early nod to Darwin's finches becomes even more revealing at *Generosity's* conclusion. By the time we reach the final scene, Thassa's exuberance has been sapped not only by Kurton and the media, but also by opportunists like the megachurch pastor who shifts from citing her as evidence for American exceptionalism to joining in the public condemnations and thanking God for pardoning his misinterpretation. For her part, Thassa has returned to Algeria, but due to the nation's ongoing violence, can only meet with Schiff by walking across yet another border into Tunisia. As the now-independent filmmaker and her former subject talk, we gather that Thassa has found a new, more sober "ease" (*G*, 291). Then she glances across the dusty street, and although it is easily overlooked, what she sees is Powers's least disputable marker of his work's generic hybridity: "a shirtless boy sitting on a three-legged stool talking to a yellow bird he pins gently between two fingers" (*G*, 291–92). The match cut takes us beyond coincidence into the heart of Powers's evolutionary ethic: the image nearly mirrors that of the novel's opening pages, but remains distinct, transposed from inner city Chicago to a remote African town. Or is the other way round? Powers dares us to ponder which goldfinch-holding, foreign-tongued boy inspires which, and yet it hardly matters. The moment confirms not only that Russell is our narrator, but that his composition itself is "creative nonfiction." The novel becomes a story about science that constantly transgresses generic borders between the fantastic and the real, between the literarily meaningful and the technically factual. In short, Powers's narrator has reclaimed the burden of story he took up as a graduate student, dreaming of changing the world with literature, then dropped in terror of the "permanent public record" (*G*, 152). He had bought into the same mistaken assumption about fiction—especially science fiction—that Kurton expresses so flatly, that it is merely "the engine of future fact" (*G*, 139). Instead, the text indicates Russell has taken the next step, that he is now imagining a fiction both hopeful and cautionary but not necessarily predictive.

Had the novel ended with Kurton's vision of fiction, it might have complemented that of a budding school of Darwinian literary criticism. Evocritics like Brian Boyd see their emphasis on human universals as providing a corrective for scholarly overattention to geographical and temporal context; among their principal claims is that evolution has selected for fiction because "it has sharpened social cognition and extended our capacity to think beyond the here and now,

to entertain other possibilities and not simply accept the given.”<sup>30</sup> This makes good anthropological sense, but in Boyd’s *On the Origin of Stories* (2007), it also mobilizes an all-too-familiar, antitheoretical secularization narrative whereby religion can only serve as the most sentimental fiction, a childish fantasy to be surrendered as humanity matures. This is almost exactly Kurton’s line. “‘For most of human history,’” he announces, “‘when existence was too short and bleak to mean anything, we needed stories to compensate’” (*G*, 140). His condescension hardens the further we read, culminating with a lengthy soliloquy about fiction’s dangers. Whereas Russell finally discovers his fictional voice, Kurton lambasts the writer who provides the novel’s epigraph. Camus wrote that “true generosity toward the future means giving our all to the present,”<sup>31</sup> but the genomicist has no patience for such a limited scope: “The whole grandiose idea that life’s meaning plays out in individual negotiations makes the scientist wince. Intimate consciousness, domestic tranquility, self-making: Kurton considers them all blatant distractions from the true explosion in human capability. Fiction seems at best willfully naïve. Too many soul-searchers wandering head-down through too many self-created crises, while all about them, the race is changing the universe” (*G*, 229).

Meanwhile, Powers’s self-conscious narrator repeatedly announces the subjectivity of his narrative. Just as Thassa admits that her essay-writing methods mirror natural selection—she “assembled from some separate parts” (*G*, 279)—the narrator “assemble[s] the missing bits from out of the reticent archive” of his memory (*G*, 109). Occasionally this effort makes Russell sound removed, as when he notes that “someone has invented the scene just to create rising action” (*G*, 104), or desperate, as when he fears that “the story wanted to break away, lose itself, escape altogether its birthright plot” (*G*, 269). But like Thassa lending an ear to strangers who must tell their stories, Russell devotes himself to the plot we experience as *Generosity*. And once we understand his role, the effect adds immense metanarrative weight to details like Thassa describing her murdered father being found with “two finch-eyed holes” in his skull (*G*, 279). Indeed, recognizing Russell as narrator makes the entire novel into a record of its own composition—rather like the human genome—and renders impossible any easy distinction between events that “actually happened” and those relying on “creativity with the facts.”

Discerning this metanarrative layer is especially critical for the

novel's climax. Months before the tranquil final scene in Tunisia, the novel's untouchably joyful main character cracks, and her habitual happiness disappears. She has hidden from an obsessive media by shuffling among friends' apartments for weeks, but eventually the attention grows so intense that she convinces Russell to help her flee. His mistake is to leave her alone in a motel room near the Canadian border. When he returns and finds her unconscious, having downed dozens of pills, Russell "holds his finger underneath her nose" and feels only "the vacuum of deep space" (*G*, 288). This is crucial to mark: she is not breathing. The subsequent paragraphs, then, say a great deal about the relationship Powers uses Russell to imagine between biology and narrative:

He scrambles to his feet and heads for the door, the phone, the bathroom faucet, all at once. He hears a voice tell him that he needs to get her to throw up. He can't figure out how he's supposed to do that. He sits down on the floor, shaking, clouded, and adrift. And in that instant of annihilation, art at last overtakes him, and he writes.

He can rescind this. He works his way back to the bed, pauses his hand under her nose again: the slightest, world-battering typhoon. (*G*, 288–89)

In these two paragraphs, Powers confronts readers with a set of disorienting but evocative questions. Is Russell simply narrating events as he experiences them, so that there is only a brief pause in Thassa's respiration, but then it resumes? This is unlikely; we have already seen that Russell is writing something other than nonfiction. Instead, might not the crisis of Thassa's suicide attempt be what finally gives Russell the desperation needed to resume the risks of authorship, so that he can compose the novel and indeed this climax? Yes, and it creates an infinite feedback loop, the Möbius strip we find represented by the novel's section-break glyphs. A character writes a novel in which he has an experience enabling him to write a novel in which he has an experience . . . ad infinitum. What Powers has constructed is a narrative thought experiment that seems impossible but that works, much like a two-dimensional surface twisted so as to have only one side. Paradoxically, the climactic scene of the novel indicates how for its narrator, there can be no actual biological events until the plot creates them, and then it can always "rescind" them.

Powers does not force this realization on his readers. Crichton and

Hunt pressure their novels to arrive at tidy endings, but Powers uses Russell's creative writing textbook to remind us that "'denouement *doesn't mean tying up all your loose ends. Quite literally, it's French for untying*'" (G, 112). This assertion is fascinating for two reasons. First, the word "religion" is derived from the Latin *religare*, "to bind up," implying that Powers is striving for a fiction that operates quite oppositely to dogma, a hybridized creative nonfiction in which metanarrative layers are not just aesthetic glosses but critical elements for making and then unmaking mythology. Second, consider that in his 2006 essay on genetic testing, just after Powers hinges his response on whether a given examination "increase[s] a patient's ability to write her own life," he adds, "it pays to keep in mind that the *denouement* is not the tying up: the word means, quite literally, 'untying.'" <sup>32</sup> Thus Powers's narrator in *Generosity* offers the exact advice about writing and interpreting novels that the author himself gave about interpreting one's personal genome. Taken together, these moments provide further testimony that for Powers, human beings are neither the meaningless products of biological or authorial determinism nor all-transcending entities who can self-help their way out of anything. Instead, they are possessed, for a time, of a hybrid status, a predisposed agency. Their genes are not predictors of an absolute fate but prerequisites for multiple futures, each of which remains free to unwind in its own unforeseeable manner.



In a 2005 special issue of *New Literary History*, Geoffrey Galt Harpham summoned fellow scholars to adopt interdisciplinary approaches not only to problems in the humanities, but also beyond them. His call was to "confront not only such new subjects as genetic engineering, environmental trauma, and the cognitive capacities of animals or machines, but also, and most intriguingly, such traditional subjects as the nature of language and the distinctive features of a specifically human being."<sup>33</sup> Alongside other respondents, Susan Stewart amplified Harpham's manifesto by emphasizing how the humanities are "all the more pressing and constant in this period of remarkable interventions in biology, and in nature more broadly, for good or ill."<sup>34</sup> This essay is similarly aimed at kindling cross-disciplinary efforts, because even if representations of popular science can be misleading, the real changes enabled by practices like stem-cell research and genomic sci-

ence will require assessment from multiple quarters. Biologists now project that within a decade or so, physicians will routinely examine their patients' personal genomes as they evaluate symptoms and choose medications, and like most new technologies, this is likely to prove a mixed blessing. Insurance companies will be tempted to misuse such information, for instance, and what happens when a patient learns of a single-gene disorder that may extend to family members? Who has the right to that information? Yet the ethical debates usually lag behind the technology, so today even medical practitioners often remain unaware of potential abuses until they occur. After a recent doctor's visit, in fact, my physician glanced at the genomics text I carried and jubilantly declared, "You know, all this is going to get easier once we know how you're programmed. We're all set up to die of something, right?"

Well, sort of. Genomic testing may provide much valuable data, but it will only mean a net gain if digested slowly and thoughtfully. My sense is that this will require becoming much more conscious of the metaphors and approximations involved, and that both fiction and literary criticism can assist in that process. Novels like *Generosity* constitute an invitation to scientists, humanists, and religious thinkers alike, an opportunity to return to the table, compare vocabularies, and discover that the human beings on all sides need each other's insights more than it might have appeared. As Powers observes through his narrator, Saint Augustine once declared, "*Dilige et quod vis fac*: Love, and do as you wish." Then Russell adds, "But that was before our abilities so far outstripped our love" (*G*, 252). In this essay's terms, if ethics is going to catch up with genomics, considerable interdisciplinary and intercultural cooperation will be required.

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## Notes

All of my scholarship owes an immense debt of gratitude to my family, but this essay especially would not have happened without their extraordinary determination to give me the necessary time.

- 1 For the status of the Royce C. Lamberth stem-cell decision at this writing, see Gardiner Harris, "Stem Cell Financing Ban Ends, for Now," *New York Times*, 9 September 2010, [www.nytimes.com/2010/09/10/health/policy/10stem.html](http://www.nytimes.com/2010/09/10/health/policy/10stem.html).

- 2 Richard Powers's use of these terms here and in the second epigraph may be found in Stephen J. Burn, "An Interview with Richard Powers," *Contemporary Literature* 49 (summer 2008): 163–79.
- 3 Barry Barnes and John Dupré, *Genomes and What to Make of Them* (Chicago: Univ. of Chicago Press, 2008), 53.
- 4 *Ibid.*, 13.
- 5 *Ibid.*, 5–6.
- 6 Heidi Kathleen Kim, "Racial Disappointment: Heredity Testing in the Collaborative Play *The DNA Trail*" (paper presented at the annual meeting of the American Studies Association, San Antonio, Texas, November 2010).
- 7 Stephen Pinker, "My Genome, My Self," 7 January 2009, [www.nytimes.com/2009/01/11/magazine/11Genome-t.html](http://www.nytimes.com/2009/01/11/magazine/11Genome-t.html).
- 8 Jay Clayton, "Genome Time," in *Time and the Literary*, ed. Clayton, Karen Newman, and Marianne Hirsch (New York: Routledge, 2002), 33.
- 9 *Ibid.*, 47.
- 10 *Ibid.*, 53.
- 11 Priscilla Wald, "Future Perfect: Grammar, Genes, and Geography," *New Literary History* 31 (autumn 2000): 695.
- 12 *Ibid.*, 705.
- 13 Michael Kaufmann, "Locating the Postsecular," *Religion and Literature* 41 (autumn 2009): 68.
- 14 Ronald M. Green, *Babies by Design* (New Haven: Yale Univ. Press, 2007), 132.
- 15 *Gattaca*, DVD, directed by Andrew Niccol (1997; Culver City, Calif.: Sony Pictures Home Entertainment, 2008).
- 16 Michael Crichton, *Next* (New York: HarperCollins, 2006), 46. Further references are to this edition and will be cited parenthetically in the text as *N*.
- 17 José Van Dijck, *Imagenation: Popular Images of Genetics* (New York: New York Univ. Press, 1998), 122.
- 18 *Ibid.*, 124–25.
- 19 On Sam Harris's objection to Francis S. Collins's post, see "Science Is in the Details," *New York Times*, 26 July 2009, [www.nytimes.com/2009/07/27/opinion/27harris.html](http://www.nytimes.com/2009/07/27/opinion/27harris.html).
- 20 Angela Hunt, *The Truth Teller*, rev. ed. (Nashville, Tenn.: Thomas Nelson, 2006), vii. Further references are to this edition and will be cited parenthetically in the text as *TT*.
- 21 Richard Powers, "A Brief Take on Genetic Screening: Does Medicine Increase a Patient's Ability to Write Her Own Life?" *Believer* 4 (March 2006): 30.
- 22 *Ibid.*, 29.
- 23 *Ibid.*, 46.

- 24 Richard Powers, "The Book of Me," *GQ*, October 2008, [www.gq.com/news-politics/big-issues/200810/richard-powers-genome-sequence](http://www.gq.com/news-politics/big-issues/200810/richard-powers-genome-sequence).
- 25 *Ibid.*
- 26 Richard Powers, *Generosity: An Enhancement* (New York: Farrar, Straus, and Giroux, 2009), 215. Further references are to this edition and will be cited parenthetically in the text as *G*.
- 27 John D. Lantos, "A Better Life through Science?" *Hastings Center Report* 40 (July-August 2010): 25.
- 28 *Ibid.*, 24.
- 29 Stephen J. Burn, introduction to *Intersections: Essays on Richard Powers*, ed. Burn and Peter Dempsey (Champaign, Ill.: Dalkey Archive, 2008), xxxi.
- 30 Brian Boyd, *On the Origin of Stories: Evolution, Cognition, and Fiction* (Cambridge: Harvard Univ. Press, 2009), 206.
- 31 I have translated the epigraph from Albert Camus, *L'Homme révolté (The Rebel)* (Paris: Gallimard, 1951): "La vraie générosité envers l'avenir consiste à tout donner au présent."
- 32 Powers, "A Brief Take," 46.
- 33 Geoffrey Galt Harpham, "Beneath and beyond the 'Crisis in the Humanities,'" *New Literary History* 36 (winter 2005): 35.
- 34 Susan Stewart, "Thoughts on the Role of the Humanities in Contemporary Life," *New Literary History* 36 (winter 2005): 97.