

Margaret Atwood

Imagine a world in which biotech could satiate every human desire and correct every human imperfection. Margaret Atwood's latest novel paints a picture and it's not all that rosy.

"It is not biotech that's dangerous," claims Margaret Atwood, her sparkly blue eyes betraying the intensity of her conviction. "It is people's fears and desires." Her latest book, *Oryx and Crake*, paints a grim picture of the future in which a genetically engineered virus has devastated the world, leaving behind a nightmarish wasteland where insects proliferate and chimeric animals run amok.

Atwood, a Canadian author with more than 30 books of fiction, short stories, poetry and literary critiques to her credit, has created a chilling vision. Even the precatastrophic world in *Oryx and Crake* is bleak—fixated on physical perfection and longevity, with economic and intellectual disparities reminiscent of our own. Biotech is the tool of the elite, who live in tightly protected compounds. Everyone else remains on the outside.

Despite the negative tone of her book, Atwood stresses she is not antibiotech. "Biotech is not dangerous," [it is] neutral," she says. Only its uses "can be evil," she adds, especially once business interests kick in. By writing the book—part of a long dystopian tradition in fiction, including Huxley's *Brave New World* and Orwell's *1984*—Atwood wants to warn her readers by presenting "a blueprint of what you don't want to happen."

According to John Durant, professor of public understanding of science at Imperial College, London, similar to other popular media, Atwood's book provides "a thermometer... showing what's going on in public opinion." At the same time, he adds, it shapes and reinforces the public's opinion about biotech. Indeed, Atwood hopes her readers "may at least become aware of the problems facing them" in a society that has come to rely heavily on biotech and that "they may then give some thought to what they are going to do about those kinds of problems."

One of the key themes of the novel is the corrupting influence of commerce on science. When business interests dominate "you enter a skewed universe where science can no longer operate as science," Atwood says. The book takes this to extremes. For example, biotech company HelthWyzer puts "hostile bioforms" into vitamin pills while at the same time marketing antidotes. "The best diseases, from a business point of view," the author writes with irony, "would be those that cause a lingering illness."

Some see Atwood's book as a bellwether for public concerns about the impact of biotech on society. According to Evelyn Fox Keller, professor of history and philosophy of science at the Massachusetts Institute of Technology in Cambridge, many of these fears result from the tendency of scientists to hype the importance of genes in determining who we are. "If the public has been persuaded that this is the case, no wonder they are alarmed." It does not matter whether that anxiety is misplaced.

Atwood grew up among biologists; the "boys at the lab" mentioned in the novel's acknowledgments are the students and postdocs who worked with her father at a forest-insect research station in Northern Quebec. What's more, her brother, Harold, is a professor of physiology and zoology at the University of Toronto. The genesis of *Oryx and Crake* comes from her lifelong observance of, and interest, in science.

Several of the ideas in the book are drawn directly from her childhood in Canada and later stays in the United States, Europe and elsewhere. During her time in Australia, for example, she became acquainted with the ecological havoc wrought by colonial introduction of nonindigenous species, such as pigs. In *Oryx and Crake*, Australian pigs translate into transgenic oddities called 'pigoons'—animals engineered to provide transplant organs, rather like those that have come from Cambridge, UK-based biotech company Immutran, now part of Novartis in Basel. These pigoons run wild after escaping the highly secluded laboratories where they were created. They have not only humanized organs but also human neocortex tissue, enabling them to compete with wild relatives and with humans in the struggle for survival following the pandemic.

When pressed for present-day concerns in science ethics that prompted her book, Atwood says she feels particularly strongly about the loss of independence of scientists, citing the suppression of negative data by corporate sponsors. "If you get results that are contrary to what you want to market, the temptation to suppress those results is very strong," she says. Such competing interests are becoming increasingly common as governments across the world encourage more and more scientists to become involved in commercial enterprises.

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Atwood describes her book as speculative, rather than science, fiction. Joan Leach, editor of the academic journal *Social Epistemology* and a lecturer in science communication at the University of Queensland, in Brisbane, Australia, agrees. "It's a kind of cultural critique," she explains. How far should society allow biotech to be exploited on the basis of commercial imperatives? And what are the moral and ethical responsibilities to limit the application of biotech? In her book, Atwood describes the 'ChickieNob,' a type of genetically enhanced chicken with a dozen wings on two legs. With such creations, the book's hero wonders "has [some line] been crossed, some boundary transgressed? How much is too much, how far is too far?"

The lack of oversight for biotech applications is a key problem for biotech today, according to Atwood. She believes an independent watchdog is needed to provide guidance. It would be somewhat like a "restaurant reviewer," she says, forcing scientists to "tell the truth" and rejecting biotech applications that might be ethically dubious or morally distasteful. She also suggests that new legislation should be introduced to protect whistleblowers who wish to come forward and reveal corruption or conflicts in corporate-sponsored research.

Biotechnology "is the biggest toy box in the world that we've now opened," Atwood says. The question is should those toys come with more health warnings?

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