Tech Flesh 4: Mitochodrial Combustion at Club Parasite

An Interview With Hideaki Sena

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Hideaki Sena is most likely the only untranslated contemporary Japanese science fiction writer with a cult following in the United States. His 1995 novel, *Parasite Eve*, was made into a Playstation game soon after it became a bestseller in Japan. Since then, over 1.5 million copies of the game has been sold and the American film rights to the novel have been optioned by the singer Madonna. Finally, there are plans underway to translate the novel into English. Sena is a bit stunned by the success of his work both in Japan and internationally: a pharmacology graduate student, he didn't imagine there would be such a tremendous response to a story about human mitochondria that plan a coup against the human race.

***Parasite Eve* takes** as its starting point the 1987 announcement by a team of American molecular biologists that they had discovered the ancestral origins of homo sapiens. Working on the assumption that the DNA of mitochondria (complex organelles that exist within cells and provide energy for respiration and metabolism) have been passed down more or less intact through the maternal lineage since the beginning of humankind, the team collected mitchondrial DNA (mtDNA) from 136 women of diverse geographic and racial origins. Running their data through a computer, the biologists then matched their findings to a single ancestral mtDNA molecule (believed to be from an African woman just under 200,000 years old).

Paleontological evidence and statistical reshuffling have since undermined African Eve's legitimacy as a historical reality, but during the late 80s and early 90s she was a persistent icon, appearing on the cover of *Time* and *Newsweek* and sparking both scientific and social debate. At the time, most commentators seemed to find the idea of a common African ancestor comforting, symbolic perhaps of the primacy of human connectedness over racial divisiveness. Sena, however, saw the dark potential of this retelling of the "human family." He conceived of a grim fantasy inspired by the pairing of the African Eve hypothesis with the theory of the endosymbiotic origins of mitochondria (the idea that mitochondria might have evolved from symbiotic bacteria that once lived within the cells of other organisms). What if, he speculated, the very mitochondria of "African Eve," passed down through countless generations as organelles subsumed within human cellular structure, suddenly decided to assert their biological right to autonomy? If that were to occur, the common mtDNA that bound

together the human race could be, to put it mildly, a nasty liability: it would be as if a dormant, united army within our collective selves suddenly awoke and declared it was independence day.

This, more or less, is the plot of *Parasite Eve*: a colony of mitochondria, assembled in one unsuspecting human host, attempt a takeover of the planet. The host (a young woman named Kiyomi) happens to be the young wife of a genetic scientist, Nagashima Toshiaki. When Kiyomi is rendered brain-dead in a car accident, Toshiaki decides to keep her alive by cultivating tissue from her liver. Soon, however, Toshiaki discovers that he has been manipulated: the tissue, which Toshiaki calls "Eve-1," becomes a dense culture of sentient mitochondria, which then incorporate into an entity resembling his dead wife. Toshiaki is a classic Frankenstein figure updated for the 21st century; his pride and selfishness cause him to bring to life a destructive force he cannot control, and his sheer love of the technologies of genetic engineering blind him to his very human limitations.

Though he claims allegiances to some horror and science fiction authors, Sena's particular brand of hard-science biotech horror fiction is fairly unique. If there are relatively few science fiction writers in the United States who have begun to actively concern themselves with the anxieties of the genetic age, there are even fewer in Japan. Surprisingly, given that anime is one of the country's most prominent cultural exports, there is a relatively small market for science fiction in Japan, and Japanese science fiction writers (including Hideaki Sena, whom *Asia Week* has now dubbed the "Steven King of Japan") generally pitch their novels as "horror" fiction instead of sci fi.

In the following interview, I corresponded with Sena about his past, current and future projects, and asked him what he thought about the interface between science, science fiction writers, and a biotech-obsessed, biotech-anxious public.

CTheory: First, I would like to ask you about your decision to write science fiction. Am I correct in understanding that you are a scientist who has decided to become (at least for part of the time) a science fiction writer? What motivated you to do this? You mention that you have written other novels that featured biotechnology: could you say more about this?

Hideaki Sena: I have been writing so-called stories since I was an elementary school student. At first, I wished to become a comic book artist, and as time went by, a mystery writer. I started to write science fiction when I was 14 or 15 years old. My first published novel is *Parasite Eve* (1995). It won a Japan Horror Novel Prize but

you can say this novel is science fiction. My second novel is *Brain Valley* (1997), which was the winner of the Nihon SF Taisho Award (Japanese Nebula). My third novel *The August Museum*, which was published in October 2000, is a sort of modern fantasy & science fiction novel. *Parasite Eve* and *Brain Valley* featured biotechnology, and my novella "Gene" (1996) is about the genome project. Frankly speaking, I do not feel like a science fiction writer, since my first published novel *Parasite Eve* received a horror fiction award. I am a member of Science Fiction & Fantasy Writers of Japan, but I also attend Mystery Writers of Japan and The Japan Writers' Association meetings. But basically I do like to think about science, to take science into account so I always describe scientific concepts in my books. I read many science fiction stories in my childhood, and consequently my stories have a trace of science fiction.

CTheory: Do you find that your fiction communicates ideas that scientists are themselves discussing, ideas about science that capture the popular imagination, or some of both?

Hideaki Sena: Both, I think. Always my stories are a mixture of scientific speculations and popular imagination. But the ratio of two ideas is different in each story: *Brain Valley* is constructed mainly of practical scientific speculations, but the most important idea of this book is fictional, I mean, we can't write scientific papers using this idea. *Parasite Eve* is constructed with a more popular imagination than *Brain Valley*. So many readers in Japan consider *Parasite Eve* as horror fiction and *Brain Valley* as science fiction.

CTheory: Do you feel that your work is read differently by scientists and non-scientists? Have you gotten any particularly notable reactions to *Parasite Eve*? You seemed to suggest in your email that you might have an overly enthusiastic following.

Hideaki Sena: Most of my readers are non-scientists. Simply they are amazed and enjoy the vivid descriptions of scientific experiments, an operation of organ transplant, or the environment of biochemical labs, since there are very few novels which describe this field in Japan. Many biochemists welcomed my novel, because they felt my novel is introducing the true atmosphere of science labs. But some scientists are repelled because they didn't like my 'fictional ideas'. They thought scientist should not tell a 'lie', even in a novel. When my second novel *Brain Valley* was published, I analyzed readers' impressions using reader cards included in the books. In these questionnaire cards, there are categories about readability and difficulty. About 56% of my readers felt the book was difficult or very difficult. But also, 84% of readers felt this book is enjoyable or very enjoyable. It is obvious that: my readers were enjoying the difficulty of scientific terms and scientific descriptions. The rather difficult scientific description does not spoil the interest of the story.

CTheory: What science fiction writers have you found particularly influential? If you include Japanese science writers in this list, can you describe their work for an audience that might be unfamiliar with them?

Hideaki Sena: I love books by Dean Koontz, Richard Matheson, William Goldman and Richard Preston. I know they are not science fiction writers, but I studied how to write novels from them. I am a big collector of Koontz' books. In 1998 an immensely critical book about Koontz was published. This is a collaborative work with one of my friends, a translator (the title is *Complete Dean Koontz*). I was influenced by his book *How to write Best-Selling Fiction* (1981). When I was young, my favorite science fiction stories were by Sakyo Komatsu (1931 -), Taku Mayumura (1934 -), and comics of Osamu Tezuka (1928 - 1931) and Fujio Fujiko. Mr. Komatsu is the author of the Titanic bestseller *Japan Sinks (Nihon Chinbotsu)* (1973). Mr. Mayumura wrote many excellent juvenile science fiction stories, some of them were made into movies, TV dramas or animation movies. Mr. Tezuka is the most famous comic book artist in Japan. There are many masterpieces, including *Astro Boy (Tetsuwan Atom*) *The Firebird (Hinotori) Here goes a third-eye boy (Mitsume ga Toru) The Crater The Jungle Emperor (Jungle Taitei) Black Jack* etc. Especially I love the comics of Mr. Fujikos. Fujio Fujiko is the pen name of two comic artists, Mr. Fujio A. Fujiko (1934 -) and Mr. Fujio F. Fujiko (1933 - 1996). They were influenced by American movies and books. Particularly Mr. F read a lot of science fiction from the golden age of comics, and he borrowed many ideas from them when he wrote comics. I learned about the writings of science fiction through his comics.

CTheory: Are there any Japanese science fiction writers even if they haven't been particularly influential who are also writing about biotechnology? Would you say that their work is different in any way from the work of the few American science fiction writers who are engaging with this topic?

Hideaki Sena: Mr. Tatsuaki Ishiguro (1961 -), an M.D. at Tokyo University, writes marvelous science fiction about biotechnology. He usually writes his story as a medical paper or a scientific review: they include some figures (such as DNA sequence data), tables, and photos. Mr. Sakyo Komatsu wrote *The Day of Resurrection (Hukkatsu no Hi)* in 1964. This is a classic virus disaster novel set in Japan and was made into a major motion picture as *Virus* in 1980. Some novelists write books about biotechnology in Japan, but I think most of them are not considered science fiction writers but mystery or mainstream fiction writers. In Japan, science fiction does not have a wide market, so publishers avoid labelling them as science fiction writers.

CTheory: Why do you think so little current Japanese science fiction has been translated into English? It seems, at least, that far more is being written than translated.

Hideaki Sena: I heard that Americans do not like to read foreign books as entertainment: many American people want some exoticism in foreign books. I think you might know a writer Ms. Banana Yoshimoto. She is one of the best-selling authors in Japan. Her most famous novel, *Kitchen* was translated into English several years ago. But I was amazed when I saw a photo of a geisha on the cover jacket of the translated version, even though her story is not **exotic** at all. American people enjoy Japanese comics and animations. Many are translated into English. On the other hand, for Japanese entertainment novel writers, it is very hard to find a good professional translator. There are some people who can translate classic literature, or non-genre mainstream fiction, like Yukio Mishima or Kensaburo Oe, but there are very few people who can translate Japanese mystery, horror or science fiction.

CTheory: When you wrote *Parasite Eve*, did you think of yourself as writing for a Japanese audience or an international audience? Can you think of any concerns in your work that are specific to Japanese science fiction?

Hideaki Sena: When I wrote *Parasite Eve*, I didn't think of myself as writing for a specific audience. But I think my novel is enjoyable to an international audience since my story is entertaining. I tried to write some sociological discussions about the Japanese medical system in *Parasite Eve*. Even though it is not an international issue, I think readers can understand this is one of the themes of the book.

CTheory: Can you tell us something about the reaction to your novel in Japan? I know that it was very popular: were you surprised at its popularity?

Hideaki Sena: I was very surprised when my book was ranked at the top of the bestseller list. I think people loved the novelty of this book: since *Parasite Eve* was awarded the Japan Horror Novel Prize, many people were amazed that 'science' was introduced to the field of 'horror' fiction. Also I could say that there are many medical doctors who write novels but there are very few people writing novels who study basic molecular biology in Japan. Consequently many people are interested in my work.

CTheory: I'm curious about all of the different media versions of *Parasite Eve*: book, game, TV movie, now possibly feature film. How did it happen that your novel was transformed into a PlayStation game? Have you seen or played the game? If you have, how would you say it relates to the book? Are there any other current or pending versions of the story?

Hideaki Sena: There are several different media versions of *Parasite Eve*: a movie (not a TV movie, but a Big Screen film), a comic (manga), PlayStation game (part 1 and part 2), and a manga version of the PlayStation game story (the title is "*Parasite Eve* DIVA"). The manga version is the most faithful version to my novel. The story of the Play-Station game (part 1) is the sequel to my novel. But none of characters is identical to my story. The story was written by game designers, so I did not know the game story until it was sold. The project of the PlayStation game was between Square Company and my publisher. So far, there is no other pending version of the story.

CTheory: *Parasite Eve* takes as a starting point the idea of 3Mitochondria Eve2 or 3African Eve2. In discussions of this 3Eve2 in the American media and in statements made by some American scientists what seems to be emphasized is the idea that this 3Eve2 is an indication that all mankind is genetically intertwined: this is supposed to be a good thing, a strike against racial particularity. Your novel focuses instead on the dangers of this genetic interconnection: Eve is able to communicate to the mitochondria in humans, forcing spontaneous combustion. What was the genesis of your thinking about 3Eve2? Was it related at all to discussions of 3Mitochondria Eve2 that were taking place in Japan at the time, and if so, what were those discussions?

Hideaki Sena: When I wrote *Parasite Eve*, I engaged in research work about the fatty acid metabolism in rat liver mitochondria so mitochondria was of primary interest. At that time, a TV program about mitochondrial symbiosis was on the air. Also, there was a best-selling popular science book (non-fiction) about Mitochondrial Eve and the selfish gene, so a concept of "Mitochondrial Eve" was somehow familiar in Japan. But many scientists criticized that popular science best-seller because of many questionable descriptions. When *Parasite Eve* was published, many scientists thought of me in the same category, but gradually they recognized I had a different policy about science writing. Today the author of that first book is regarded as a pseudo-science writer. The monster in my book *Parasite Eve* is not identical to the genetic meaning of "Mitochondrial Eve". SHE is a monster made from hepatocytes of a modern human, Kiyomi, a wife of a main character. So there is a little trick of description in my book. SHE is just borrowing an image of "Mitochondrial Eve".

CTheory: How much of the actual science of *Parasite Eve* is speculative?

Hideaki Sena: I am not sure the following is the proper reply to this question or not. I have recently written a popular science book *Life with Mitochondria*, which was published in December, 2000. In this book, I have introduced some recent scientific topics about mitochondria with reference to *Parasite Eve*. Mitochondiral RNA sets the development of the host. Also mitochondria works as a switch of the host death.

CTheory: I have seen the Japanese television version of *3Parasite Eve2* what are some of the differences between this film and your book?

Hideaki Sena: The first half of the movie is very similar to my story, but the latter half deviates from the original story. I think it would have cost a lot of money to produce a film completely faithful to my story.

CTheory: Do you think that the novel suggests that there is something very seductive about the power of biotechnology itself? In other words, the scientist seems driven to regenerate his wife's cells simply because he can do so. So what do you feel personally about the ethics of biotechnology research? What has influenced your beliefs on this subject?

Hideaki Sena: First of all, my novels are entertainment fiction. So sometimes I overstate the facts, sometimes I pick up a special case to entertain readers, or to tell readers the symbols. I'm not insisting on the danger of biotechnology in *Parasite Eve*. But I would like to point out that scientists sometime 'fall in love' with their cultured cells or their experimental animals. They often say cancer cells are 'cute'. Some scientists have said to me they could understand the feeling of culturing cells of their wife. I tried to describe this feeling between scientists and the general poublic in this book. I believe scientists should think about bio-ethics in the same way. I think most scientists in Japan do not have a chance to think about bio-ethics. Sometimes I participate in symposiums on bio-ethics as a writer, and talk about these issues.

CTheory: Can you tell us something about your current writing project? Is it also related to biotechnology? What current debates about biotechnology does it touch on?

Hideaki Sena: I have just published my third novel, *The August Museum*. This is a sort of a modern fantasy about virtual reality, Egyptian archaeology and museology. My second novel *Brain Valley* was published in 1997. In this novel, I wrote about brain science, the sign language study of chimps, artificial-life, and also a lot of scientific research results of alien abduction, near-death experience, and out-of-the-body experience. I tried to write about occult phenomena in a scientific way. I have just finished my newest science nonfiction book, *Life with Mitochondria*, which was published in December, 2000. Now I am writing a nonfiction science book about robotics. Also, I have a plan to write some novellas about robotics, a novel about the influenza virus, and a nonfiction book about museology.

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