Motley #16

Jim Benford **May 2021, FAPA # 335**

FANAC Interview of the Benfords
For those of you who weren't there online, the 2-hour interview of us is here:
Part 1 is at https://youtu.be/jKbAubYsF24,
Part 2nd at https://youtu.be/8mmkN3fCMrE

From the YouTube writeup: "Jim and Greg Benford continue with their history in science fiction and fandom. They discuss fandom at UCLJ (now UCSD), travelling ghiants, and the talented writers of the Bay Area. There are stories of famous names, from Poul Anderson and Robert Silverberg to Edward Teller, Elon Musk, Martin Rees and Stephen Hawking. The relationship of science fiction to technical advances in weaponry is discussed, and regional differences in fandom. The anecdotes shine, and Greg tells a particularly fine tale about Buzz Aldrin, almost the first man on the moon. To cap it off, there's the *Void* Boys song, and a little of its history, including some comments by Ted White."

Here was some conversation after it where I described my idea of how *Void* went through several phases as we got older and the editors changed:

Eras of *Void*

Greg has said that he thought that the best issues *Void* were roughly number 21 to 28.

But I look at a rather differently. I think the issues of *Void* encompass *many fanzine styles* in its evolution through eras over the 29 issues.

The early issues were done almost entirely by Greg at myself and were commentaries on science fiction mostly. That was the first era. With *Void* 6 we broke away and started to incorporate derogations and satirical material about fandom itself, attracted writers and artists, from Europe especially. We also attracted regular contributors and letterhacks. That was the second era.

The third era arose when we moved to Dallas and those issues were the best of the 13 issues that Greg and I edited. Greg improved his editorial style substantially and we had many varied contributions from both the European and American fans.

The forth era started with Ted White becoming the production editor. That break occurred both because of the death of Kent Moomaw and Greg & I going off to university. That era continued for some time and was clearly trying to be a better general fanzine.

The fifth era was the when Pete Graham and Terry Carr became editors and the tone changed to feature the interaction between the editors with an increasingly chitter-chatter Burbee-like style.

If *Void* is to be considered an eminent example of fanzines, it may be because *it went through many phases, was in fact several types of fanzines* in a long sequence over a period of 8 years. Thus it may be an embodiment of the things that a fanzine can be.

An Alternate History of the Atomic Age

Interview of Gregory Benford by Lee Billings of *Scientific American*

The atomic bombings of Hiroshima and Nagasaki and the resulting deaths of tens of thousands of Japanese citizens in the summer of 1945 did more than decisively end World War II. The U.S. strikes that brought nuclear destruction of those two cities also thrust the world onto a new trajectory—one that led to the terrifying development of the far more powerful hydrogen bomb and the ruinous arms races of the cold war it entailed. In retrospect, one might wonder how our modern world might look today if World War II's nuclear conclusion had played out differently. A new work of alternate historical fiction—*The Berlin Project*—is author and physicist Gregory Benford's best attempt to explore that question. Benford makes the case for how a single fateful decision could have armed the U.S. with effective nuclear weapons a year ahead of schedule—early enough to deploy them on the western front in Europe, rather than only in the Pacific. The result, he says, could have been a faster and less devastating end to World War II as well as a profound shift in the course of world history. Through an informed exploration of what might have been, *The Berlin Project* provides a unique and darkly enthralling perspective on the events underpinning the advent of the atomic age.

Scientific American spoke with Benford about the factual basis for his book, the appeal of "alternate history" and the surprising origins of some real-world nuclear tactics in works of science fiction.

An edited transcript of the interview follows:

What is the appeal to you or your readers of reimagining historic events?

The idea of "alternate history" restores to history the sense of contingency—that is, the people in the past did not have the assurance of knowing the outcome! So we have to get into that mind-set to understand why certain choices were made.

What made you want to revisit this particular part of history?

World War II, as my editor at Simon & Schuster once said, "is the gift that keeps on giving." It touches on and in some cases helped create many of the greatest problems we have today—especially the existence and use of weapons of mass destruction, whether nuclear, biological or chemical. It's the greatest war in human history, and so its history is filled with many fascinating details.

The real incentive for this novel, though, comes from when I was a postdoc at Lawrence Livermore National Laboratory, working for theoretical physicist Edward Teller straight out of grad school. One day over lunch he told me about a turning point in World War II that very few people knew about. Teller remarked that, of course, everybody loves success. So historians had papered over the fact that when we developed the atomic bomb we made a decisive bad judgment that cost more than half a billion of 1940s dollars and delayed the war's end by about a year. The bad decision came in 1942 from Gen. Leslie Groves, who directed the Manhattan Project, which was the U.S. R&D program to develop the first nuclear weapons. To make uranium suitable for an atomic bomb, you have to somehow enrich it up to weapons grade, so that it is almost pure U 235, the element's most fissile isotope. Groves chose to pursue gaseous diffusion over an alternate concept—Harold Urey's centrifugal separation—to enrich uranium up to weapons-grade. And we now know that was a huge mistake. If we had stuck with centrifugal separation for another six months, we would have solved its engineering problems, without question. By contrast, gaseous diffusion did not have the necessary semipermeable membranes when Groves decided to use it, and it took two more years—until 1944—to develop them.

If you use centrifugal separation, you get an A-bomb in the spring of 1944, and you then might drop it on Germany. And then you get a very different and more rapid ending to World War II. The death rate in the

last year of the Second World War—civilian and military together—was mostly due to starvation, and was roughly a million people per *month*. And that devastated Europe for decades. Whole societies collapsed. Imagine the millions more people who would have survived if the war had ended earlier. I wanted to explore that.

So in the book we drop a bomb on Berlin?

Well, we do. Because everybody assumes that the smart thing to do is to drop a bomb on Berlin. It turns out, though, that's not the smart thing to do, for reasons you'll discover if you read the book. If you look at Leo Szilard, whom I talked to about this when I was a grad student at the University of California in San Diego, he said nobody thought a demonstration would really make any difference—certainly not to the Germans. In the book we use what's called in the trade a "ground pounder,"—a surface detonation rather than an airburst because then you can knock down a hell of a lot of buildings and bust up buried bunkers and tunnels with the shock wave. It creates a much greater blast effect than infrared radiation, or heat—which was the primary means of destruction from the bombs we dropped on Hiroshima and Nagasaki. Ground pounders are really terrible things—they'll blow down everything and bury everybody. So in the book we use them together—the D-day invasion at Normandy as well as the ground-pounder in Berlin—to try to take out the Nazi leadership. We do still bomb Japan, though—just different targets.

Tell me more about your research process, how you developed this.

I simply went in and read enormous amounts of known correspondence, mostly in the Manhattan Project. It took me four and a half years of work and writing, plus personally knowing most of the characters.
I found all sorts of amazing things—like a memo between Groves and Gen. Eisenhower, where Groves asked Eisenhower's permission to deploy Geiger counters with every infantry battalion that made a landing at Normandy on D-day. I asked my father James Benford about that—he went into Normandy on the fifth day. He said he remembered them vaguely, and then I found in fact the Geiger counters stayed in the field for about a month before we realized the Germans were not going to use their uranium—of which they had over 150 tons—as essentially a pollutant, a crude terror weapon. But they certainly contemplated doing it—we know that.
The entire history of nuclear weapons is filled with scientists considering the future using science fiction as a prompt. As a scientist and an author of science fiction, I find that fascinating. The idea of using radioactive dust as a weapon came from a short story by Robert Heinlein: "Solution Unsatisfactory," published in *Astounding Science Fiction* in 1941, which was about the strategic standoff that would occur from the development of nuclear weapons. But in Heinlein's story the weapons aren't explosives, they're contaminants. That idea went through *Astounding* directly into the ears of the German rocket scientist Wernher Von Braun, who was still receiving and reading the magazine through a subscription he began in the 1930s via deliveries through the German embassy in Stockholm. He read about it and relayed it to Albert Speer, so the Nazi elite must have known of it as a weapon. The U.S. kept it secret because it occurred to them also, at the same time as Heinlein—in fact, some believe *because* of Heinlein. There are a bunch of now-declassified memos I have read about uranium as a contaminant, and I quote them in the book! All the memos, letters and so forth in the book are real. I didn't make them up!
But, as I said, there is also a personal side to this story for me. I knew many of these historical figures, and I tried to depict them as close to reality as possible. I worked with Edward Teller; Harold Urey was on my thesis committee. Freeman Dyson is a major figure in the story and so is Richard Feynman. I managed to find Feynman's Los Alamos ID badge! It's in the book. He has this smirk on his face that is pure, classic Feynman. Groves looks like you would expect—this uptight, harrumphing general, and they misspelled his name on the badge so it's hand-corrected. You can't make this stuff up.
Most importantly, I knew my father-in-law, Karl Cohen. I'd known him since the 1990s. Karl was a research assistant for Harold Urey in 1938 when news of the reality of nuclear fission arrived. Karl was put in charge of calculations for the centrifugal separation of uranium, and he invented the two-flow

centrifuge, still a classified patent. You can find a diagram of it in the book but technically the design is still classified. I decided to focus the story on my father-in-law and what would've happened to him if centrifugal separation had gone forward. He's the protagonist, and the book covers his life, including when his wife gives birth to his daughter—my future wife! Karl died in 2012, age 99, shortly after I had begun working on the novel.

In real life, once Groves decided to kill centrifugal separation in favor of uranium enrichment by gaseous diffusion, Karl became one of the planners for the big gaseous diffusion plant in Oak Ridge, Tennessee. He also continued to work with Enrico Fermi on the reactor in Chicago, because he felt at that point that he'd rather work on nuclear power, which he believed had more of a future than working on bombs. In the book his life takes a different path—and so does the world. After the end of the war the book jumps to 1963, and you see how things turn out for the story's major figures. You get to see what this other world looks like, similar but still very different from our own.

How is that future different? Is it better? Worse?

Better. First, the Soviets don't get into central Europe, because we defeat the Germans before they can get close. Second, you save the lives of about 10 million people. Third, you show that nuclear weapons used intelligently and tactically can be decisive in a large land war. And not just like the punctuation point at the end of a long sentence, but in the middle of a war. I speculate that this alternate history would likely have led to a treaty banning the development of the hydrogen bomb—thermonuclear weapons that use not only nuclear fission but also nuclear fusion, which makes them far more powerful. Without the H-bomb, the strategic risks to civilization would be much, much lower—you don't get such a nasty arms race, you don't get megaton warheads on intercontinental ballistic missiles with multiple targeted reentry vehicles, and so forth. All that technological development does not occur because you don't have an H-bomb. So the result is a less dangerous world, and one in which the Soviet Union was not nearly as grotesque as it came to be. Maybe people would be happier there—certainly that would be less endangered.

Is that the real value of alternative fiction, imagining how things might have been and applying those lessons to the real world?

Right. Generally, in alternative stories you try to rethink events without knowing the outcome first. This puts us in the mind frame of how history happened to people then. Their reality was contingent on many forces.

The nukes ended World War II. What can we learn from that now? I've worked on studies of how such "tactical" bombs could be used *now* amid an otherwise conventional war. On red/blue teams we considered cases like an India–Pakistan war (of which they have already had three). Use nukes against armies alone? Or the enemy's nuclear assets alone? Or, in desperation, on cities? These are real, current issues—not only in India and Pakistan but also in Korea and the Middle East as well. How do you use your few bombs to bring down a regime? It's not easy! Politics comes into play, not just military ideas. Such ruminations decades ago led to the novel's central idea.

For this novel, I had to revisit the many feelings scientists and others had about using the bomb. Widespread disappointment came when Manhattan Project people saw they could not get the bomb before Germany was defeated. So the question became: "How could the bomb be used against Japan?" Scientists raised petitions, argued, even tried to reach the president to make their case favoring a remote 'demonstration' [detonation] rather than using the bomb on Japanese cities. They lost, because Pres. Truman knew how hard the Japanese resisted surrender. Truman decided they needed a wake-up call. Perhaps not coincidentally, he had also been a reader of 1930s science fiction stories about superweapons, in which big bangs win wars. The rest, as they say, is history.