

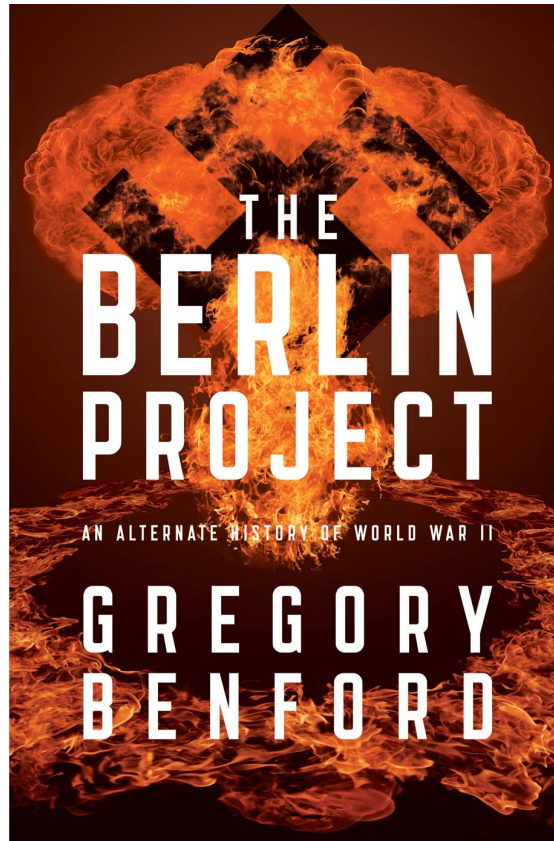
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MAKING A BETTER WORLD WAR II

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My twin brother and I grew up during World War II, and then in its long aftermath, when we lived with our military family in occupied Japan and Germany. WWII was the central pivot of the 20th Century. Before it, there were seven world powers; after, two.

I later was a postdoc working with Edward Teller, who told me many inside stories about the Manhattan Project that built the nuclear (“atomic”) bombs. My natural, science fictional instincts tinkered with the many *what-if* notions about how the war might have been different, and one became concrete in my mind: what if we’d gotten the bomb earlier?

Teller thought it could have, and so did my father in law, Karl Cohen, who worked in the early nuclear days and the Manhattan Project.

Everybody loves success, so historians have papered over the fact that when we developed the atomic bomb we made a decisive bad judgment that cost over half a billion dollars of 1940s dollars and delayed the war’s end by about a year.

The bad decision came in 1942 from General Leslie Groves, who directed the Manhattan Project, which was the US R&D program to develop the first nuclear weapons. To make uranium suitable for an atomic bomb, you must 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—Karl Cohen and Harold Urey's centrifugal separation—to enrich uranium up to weapons-grade.

We know that was a huge mistake, now. Karl Cohen and Harold Urey said so, back then.

If we had stuck with centrifugal separation for another six months we would've solved its engineering problems, without question. Gaseous diffusion did not have the necessary semi permeable membranes when Groves decided to use it, and it took two more years—until 1944—to develop them. Nobody uses diffusion to separate isotopes now; too expensive and slow.

The crucial turning points in my alternative history are the events early in the Manhattan Project, when the Urey group at Columbia could not get funding for centrifuge development. We forget the style of science in that era, when government did little research and corporations gave small sums for specific developments. All such work focused on acquiring technologies useful in the short term.

Big Science came into being for the first time in the Manhattan Project's large laboratories and intricate coordination, invented chiefly by Groves, Oppenheimer, Fermi and Lawrence. Karl Cohen once remarked to me that in 1939 he and Urey estimated that to develop fast centrifuges might take as much as \$100,000 – “so then we *knew* it was impossible!” At that time Karl was earning less than \$2000 a year.

Suppose we do the Manhattan Project job right, first time.

So how to use a bomb? There would be a fresh one every month or two, at best, so what's the first target?

In the novel, everybody thinks Berlin is the obvious target. I asked military types and they said no, you must leave in place the civilian authority that can surrender. This is standard doctrine. But in 1944?

We now know that the Prussian wing of the German Army's General Staff tried to negotiate through the British for at least a cease-fire, from 1943 onward. They tried to kill Hitler and nearly did in July 1944. The commanding generals were all on battlefields in 1944, not Berlin--where the Nazi Party types, whom the Prussians hated, were dug in.

So... What to do with these elements?

I researched many off-trail threads that really happened, but we forget: That both sides thought of using radioactive uranium as a pollutant, akin to poison gas and worked out details. That Eisenhower sent teams with Geiger counters to measure such use at Normandy. That we so feared a German nuclear program, the General commanding the Manhattan Project, Leslie Groves, sent in his top agent to assassinate Heisenberg if the agent thought Heisenberg's team was getting close to a bomb.

Blend these and many existing letters and memos, my memories from knowing most of the characters in the novel--season to taste, heat, stir.

One essential element in the novel is how well I knew the characters. I worked with them as a young physicist, when they were the wise men of the field. These choices fill out the novel. That gave me insights to go beyond the stacks-of-

facts approach historians and alternative history writers suffer under: I knew how they spoke, acted, joked.

The war ends in 1944. What does that do?

First, the Soviets don't get to reign over Eastern Europe, because they're kept out of the lands they occupied in 1944-45. Second, we see what use "tactical" (less than a megaton) weapons have. Third, ten million more people survive the war. Plus other benefits, which come to life in a long coda to the novel, fiction set in 1963.

To write that part, I summoned up my own memories of the postwar era. There was much terror and thought about the introduction of the H-bomb and the arms race following.

Many thought the world could not survive such forces for long. Such views had accelerated after the grave gray giants of the world, such as Bertrand Russell and even Einstein himself. They made clear predictions in the mid-1950s. They felt that hydrogen bomb war between the USA and USSR was inevitable unless some higher body held *all* such weapons: the United Nations. Russell had even predicted that the death of civilization under a myriad of the H-bomb's crimson blisters was inevitable and would happen before 1960.

Can you imagine how the United Nations, holding all the weaponry, could make sure no one else got them? I can't, and I'm a science fiction writer.

How do the novel's ideas play out, giving us a different post-WWII world? *The Berlin Project* to see how we might have had a better world than the one we're in. Hint: H-bombs aren't a really good idea.

MAILING COMMENTS

A Different Drummer: Your story, *Last Midnight On Amalthea*, seemed headed toward finding that the Amalthea is in fact artificial, perhaps disguised as an asteroid. Of course the current thinking is that this is simply a pile of rocks and ice and which explains its very low density, about 86% that of water. The other Galilean satellites have an average density about 3.5, so Amalthea is quite an anomaly. If Amalthea were rock, it would have a volume a quarter that of the real moon. So if you were to make it a shell of steel, for example, with the density of 7.8, it would have a shell thickness of 11% of the real moon. That would be about 15 km. That's much too thick for any practical construction, so I wondered where you were going to go with the story.

I looked forward to reading the 2nd part, so when it concluded with Amalthea coming apart due to the perturbation of the ship landing it lost credibility. Why? Because the tidal forces from Jupiter would have done that long ago if it was that fragile.

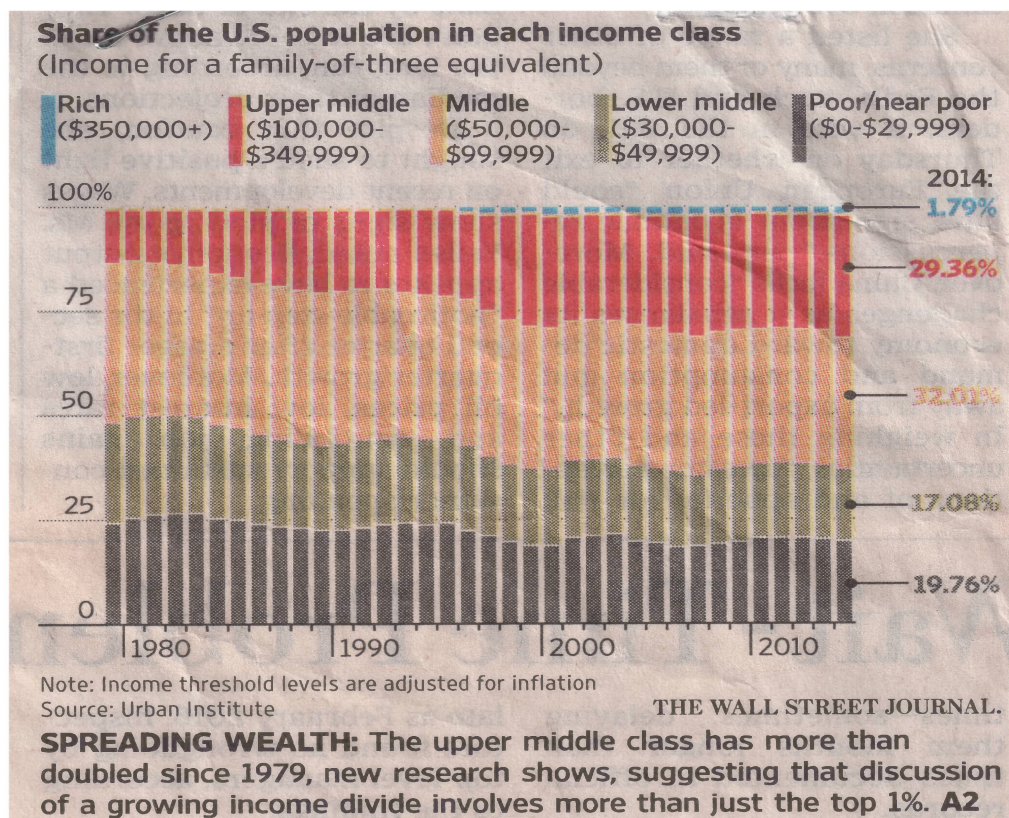
Entropy Blues: I'm glad to hear that you support to the Star Shot concept. It's a pretty risky project but all that is at risk is money. I'm not sure what your words mean because you move from Star Shot to the NASA budget. I'm guessing you think that NASA might cut its budget. But Star Shot is entirely privately funded and will not be subject to any NASA funding matters. In fact, NASA has no representation in the Star Shot meetings I go to.

I think you're wise to ignore Trump and not get involved in the to and fro that the media seem to be consumed with. /Yes, Les Johnson is somebody I interact with a lot. I see him

at meetings. With him, I'm on the Tennessee Valley Interstellar Workshop (TVIW) program committee and the operations committee. With brother Greg, under the name of Starship Century (our vehicle for supporting interstellar matters, funded by income from our book of the same title), we are sponsors of TVIW, meaning we've given them money to defray costs. At TVIW I've organized the 1st public in-depth presentation of Star Shot technical matters, taking up most of the 1st day. That 1st day is Wednesday, October 4, which is the 60th anniversary of the launch of Sputnik. It's in Huntsville, Alabama. Anyone who's interested in Star Shot should go to it. See:

<https://tviw.us>

Interesting Data on Income Distribution



While the media have been fixated on social issues such as inequality, the "one percent" and such cultural/class warfare issues, the above study shows that over the last ~40 years the real story is the rise of the upper middle class. From about 13% in 1979 the upper 2 categories are now over 31%. It's interesting that the truly poor have declined slightly as a percentage of the population, as have the lower middle class. That stands to reason as the gradual increase in real income has elevated many while decreasing the number of people at the lower end of the distribution (~50% to ~37%). I think this is due to the increasing effect of more higher education and the upward mobility of people with information technology skills.