



Atomic visions

One can straighten out the beds of large rivers to construct gigantic dams, cut canals literally in minutes... the cold current that washes our transpolar region can be made warmer than the Gulf Stream. The tundra will disappear, the subtropics will reach up to Moscow, and in Kolyama, there will be the climate of France

Prof. G. Poskrovsky in 1954. But the Soviet Union didn't start their program until ten years later.

"The great and violent power of nuclear explosions can be used for peaceful purposes"

Edward Teller "Project Plowshare" promotional film, 1957

"Nuclear explosions can be used to blast harbours in otherwise inaccessible coasts, to break up the rocks and make them yield up their riches, to reshape the land to your pleasure."

Edward Teller, commencement address, University of Alaska, 1959. From a tape in the University of Alaska, Fairbanks archives.

"He used to have a hundred ideas a day. 99.9 were terrible, but that tenth one was a good one, and so compared to other people, you know, one good idea per day is pretty remarkable, even though the 99 others were awful."

Project Plowshare team member Fred Holzer recalling working with Edward Teller. From an interview for *Nuclear Dynamite*, 1999.

"If your mountain is in the wrong place, just drop us a card"

Edward Teller quoted in the Anchorage (Alaska) Daily Times, 26 June 1959 p 11.

"He tells the people it's not dangerous. When this happens, nuclear tests or the bombing, I can take my family over there and live there. He said, 'It won't affect anything.' I didn't really believe it, myself. "

Point Hope Inupiat resident Elijah Attungana recalls reassurances by atomic scientists that an experimental 240 kiloton explosion to excavate a harbour 50 kilometres from the village would be harmless. 1999 interview for *Nuclear Dynamite*.

"What interested me about it was the degree to which ordinarily intelligent people would distort their minds in order to find something supposedly useful in an inherently very dangerous force."

"It was the Atomic Energy Commission that converted me into an ecologist. "

Barry Commoner, 1999

" I think the Panama Canal idea is biological insanity" "Just who the hell has the right to decide that you shall take a dose of radiation for this Plowshare project? "

Dr. John Gofman, former director, Biomedical division, Lawrence Livermore National Laboratories recalling his statements to Teller and others at meetings at Livermore in the 1960s. Interview for *Nuclear Dynamite* , 1999

Nuclear-pulse-powered rocket ships

"I think it was a kind of intoxication with the power and scale of things you could do with your mind, and it gave you a feeling of playing God, in a way."

Physicist Freeman Dyson discussing the invention of a huge rocket ship powered by nuclear explosions. 1999 Interview

"In the early '60s, Sakharov, I remember, once invited us into his office and told us about this idea for an interstellar space ship that would be propelled through space by micro nuclear explosions. "

Former USSR Minister and current Russian Deputy Minister of Atomic Energy (MinAtom) Victor Mikhailov recalling discussing nuclear powered rockets with Andrei Sakharov ca. 1961. From an interview for *Nuclear Dynamite*, 1998.

"We were talking about ships that weighed 5,000 tons, and carried 1000 bombs, and so it was built more like a submarine than like an airplane."

"We were thinking in terms of huge manned expeditions. We planned to have 50 people on board this ship and live on Mars for five years, or something like that."

Freeman Dyson, recalling plans for the Orion Project in 1960. 1999 interview.

Peaceful Explosions?

"Any explosion, peaceful or weapon, will kill people. The difference, basically, is that peaceful nuclear explosions are designed physically and chemically so that they are optimized for the peaceful nuclear explosion use. They are either bigger or smaller or heavier than a weapon, and so they generally are not optimum for weapons use. But there's nothing to keep them from being used as weapons. "

Plowshare cratering expert, and later arms control negotiator physicist Milo Nordyke, 1998 interview. After Plowshare ended in 1974, Nordyke helped to negotiate the 1976 PNE draft treaty between the US and USSR.

Fallout, Baby Teeth, the Environment

"How can you avoid getting the public concerned when fallout is dust coming down from the sky, and people begin to think, 'Well, what's that on my lawn?' It gets very personal. "

Barry Commoner, 1999, recalling public protests against atmospheric testing.

"Every kid that gave a tooth got a little button that said, 'I gave my tooth to science' and I still meet people who say, 'You know, I walked around Grade One with a button like that'. "

Physicist, and founding member of the Voice of Women, Ursula Franklin recalls the baby teeth campaign of the early 60s. Children's teeth were tested for the presence of radioactive strontium which had infiltrated the food chain from atmospheric testing of nuclear weapons.

"In the end, the thing got so much publicity that we were getting teeth from all over the world. "

Barry Commoner, recalls the baby teeth campaign organized by Citizens for Nuclear Information, in St. Louis, Missouri. 1999 interview

"That was a recruitment for the peace movement as well as an immense education in what living in a common environment means. You don't muck around with that, because you can't clean it up. "

Ursula Franklin recalls the baby teeth campaign. Interview for *Nuclear Dynamite*

"I'm biased, but I think that what stopped the American program was the clear public position that really has been unshakeable that radiation is bad stuff. "

Barry Commoner commenting on the end of the Plowshare program in 1974. 1999 Interview

"People started worrying about radioactivity, radioactivity.. moving mountains just didn't seem to appeal to too many people any more " engineer Paul Kruger, 1999.

"Chernobyl elicited a very strong wave of fear of how terrible radioactivity was. This affected all the nuclear programs. That was the main reason. "

Evgeniy Avrorin, commenting on the end of the Soviet program in 1988. 1998 interview.

The Future of Peaceful Explosions

"I look at Plowshare as something that will be re-established if and only if the present anti-scientific trend, the present trend to be afraid of anything that is new, if that can be brought to an end. "

Edward Teller Interview for *Nuclear Dynamite*, 1997.

"All that we did in those decades will belong to the future of mankind... like the invention of the wheel, it just keeps rolling along in all kinds of ways."

Vadim Simonenko, 1998 interview

"I just feel that weight of the human conceit of thinking that human beings are entitled to create elements that have not been in the ecosystem before, like plutonium, and then say, 'It's business as usual. I just did it because it was Tuesday and it was very convenient.' The enormous moral and ethical burden of this seem to be so unrecognized. "

Ursula Franklin, 1999 interview

"The test ban treaty said that in 10 years, we could discuss resuming peaceful explosions. This is a good idea. We should consider it. "

Nikolay Voloshin, former participant in the Soviet program, current head of weapons design, MinAtom, commenting on the test ban treaty that provides for a review of the ban on explosions in 2006.

"There's nothing that nuclear explosions can do in the way of digging holes that you can't do without nuclear explosions. It only takes a little longer and costs a little more, but there's nothing indispensable about bombs. I think that the only thing bombs can do that nothing else can do is something like Orion. "

Freeman Dyson , 1999 interview