

THE DATAR FLOP

History is full of inventions that were just a little too far ahead of their time. Here's one of them.

GOING UNDER

In 1948 Canadian navy engineer Jim Belyea was assigned to worry full-time about the new Russian submarines. There was reason to worry: These new subs were faster and able to stay underwater for longer periods than the German U-boats the Allies had battled just a few years earlier, and Canada's top brass were concerned that the Russian subs could converge on a convoy of ships for a coordinated underwater ambush. They ordered Belyea to develop a countermeasure that would keep a lid on the Russians. And he did.

Belyea's big idea was the "Digital Automated Tracking And Resolving" system, or DATAR for short. It would be able to create a visual display of the positions and movements of all attackers and defenders in a sea battle, but it required stretching the limited capabilities of 1940s computers. Not just that, he wanted to link together every Canadian navy ship and submarine so they could share battle information instantaneously. If one ship saw a new attacker coming, the operators could instantly give its location, speed, and direction to the others. Every ship's sonar and radar information would go into the mix, too, so that all ships would constantly be on the same page. Instead of the chaotic system of radio operators shouting over each other to report ship information, Canadian officers could instantly see every bit of known information about their battle zone on a glowing cathode ray screen. The brass loved it.

GETTING THE BALL ROLLING

Belyea got the okay to make a prototype, with the hope that it might someday be used on the 100 new ships the navy had just ordered. He began working with the Canadian subsidiary of Ferranti, a U.K. electronics firm, and by 1953, they had a prototype ready for testing. It was unlike anything that had ever been seen before. For one thing, it could store data for 500 ships on its magnetic drum, an early form of the modern hard drive. And there was

another advancement: DATAR had a brand-new tool for entering data: the very first trackball, invented by engineers Tom Cranston and Fred Longstaff. (The trackball's main moving part was a small bowling ball from Canadian five-pin bowling.)

WAR GAMES

That fall Belyea's team tried out the system with a three-ship convoy on a simulated Lake Ontario battle zone. It worked exactly as planned. That success put Canada way ahead of American and British engineers, and there was more on the line than just the cost of the system—there was prestige. Canada's nascent electronics industry had a chance to lead the world in technology and sell the system to the well-financed navies of the U.S. and England, not to mention all of their NATO allies.

Canada promptly (and eagerly) demonstrated DATAR to American and British military officials, and they were duly impressed. It's been reported that one American officer was so convinced it was a fake, he crawled under the table to see if there was somebody under there manipulating the dots on the screen. But when invited to partner with Canada in financing further implementation, both countries declined. While there might have been a reluctance to admit being bested by Canada, they had other, more practical reasons as well.

BUGS IN THE MACHINE

For one, DATAR was going to be very expensive to build and debug. Worse, it was huge and heavy, making it cumbersome even on full battleships, much less on submarines. Finally, DATAR used vacuum tubes—almost 20,000 of them. That many tubes in one place require a lot of electricity, a refrigerated room to neutralize the copious heat they generate, and continuous vacuum tube replacement. The tubes burned out relatively quickly; the DATAR prototype was frequently nonoperational, sometimes for days at a time.

The Canadian navy couldn't afford to do it alone, and the Americans and British wouldn't budge. So the Canadians offered to rebuild the system using a new American invention that was proving to be much smaller, lighter, cooler, longer-lived, and less of an energy hog: the transistor. No dice. The Americans and British came, saw, and decided to build their own systems...and DATAR was shelved for good.