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Turning plows into swords into plows

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By Alex Féthière

Photo in the print edition: Dr. Evil suffering a military-industrial complex? No, Fritz Haber in his Prussian Army captain's uniform. (Public domain)

At one point in this history of agriculture, a link was forged between food and war. This link has since been stamped into a chain, and that webbed into a net: Nitrogen is modernity's mother of birth and death.

Every mother needs a midwife, and the 20th century's appears as Fritz Haber. This frumpy German Jewish midwife delivered the Haber-Bosch process that today is responsible for over half the nitrogen in our bodies.

Synthesizing ammonia from a reaction between atmospheric nitrogen and hydrogen has manufactured more than a century's worth of nitrogen fertilizer. It filled the munitions that propped up the Kaiser's flagging military in World War I. Haber also did distinguished work in poison gases and presided over the 1915 deployment of the world's first weapon of mass destruction.

Mastering these processes on an industrial scale earned Fritz Haber a Nobel Prize, and he went on to invent key components of the Nazi death camps. His wife killed herself with his service pistol along the way.

His wife, Clara Immerwahr, was the first German woman awarded a German Ph.D. in chemistry, and an opponent of her husband's murderous service to power. She thought his participation a "perversion of the ideals of science" and "a sign of barbarity, corrupting the very discipline which ought to bring new insights into life."

Her 1915 suicide spared her the Holocaust that killed millions of their people, though this association is a little too pat. Each of them had converted to Christianity years prior.

Immerwahr's opinion of the Haber-Bosch process (Carl Bosch helped mainly in commercializing it) is lost to history. The factories that made explosives were easily converted to produce fertilizer, and Germany was forced at the point of a pen to share the formula with the world by the Treaty of Versailles.

Today's principal feedstock for the Haber process is natural gas. Metaphorically speaking, a key element of our bodies is a petroleum age product. With a worldwide output of 253.5 million tons in

2018, Haber uses 3% to 5% of the world's natural gas. It's been called "the detonator of the global population explosion" from 1.6 billion in 1900 to 7.7 billion in 2018.

When permaculturists speak of nitrogen-fixing plants and bacteria and obsess over capturing and cycling fertility, it is this kind of centralized industrial production from finite resources that we aim to avoid.

Don't even get me started on phosphorus fertilizer production — I'm already out of space. The guano mining of yesteryear is beyond our means now. Victor Hugo foresaw the waste treatment plants of today in "Les Misérables" when an entire chapter was dedicated to rendering Parisian sewage as fertilizer. Somehow that was distilled down to Jean Valjean running through the sewers in the musical.

Brilliant solutions to maintaining soil fertility without the waste of Haber (less than half of applied factory nitrogen is actually used by crops) were pioneered by the likes of Sir Albert Howard and Edward Faulkner, but World War II overshadowed the work of both men.

Haber's processes are integral to burying their scientific holism, to the wars' deaths, and to the tenuous boom in human life that followed. We have enjoyed this prosperity at the expense of all other life forms on earth. It's time to start paying it forward.

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