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A New Frontier: Unintended consequences and unintended opportunities

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In Vannever Bush's post- World War 2 letter on behalf of Federal science, he spoke of the new opportunities for science in a metaphor – it was to be an “endless frontier.” The Lewis and Clark expedition had been reunited with Jefferson only a century or so before Bush wrote. So here was a newly described terrain that might function as a “science commons” – a place that could welcome Bush's foreseen partnership between government and research.

For a time, that vision worked perfectly: tax money supported good science practiced in universities or a few independent laboratories. But in 1980, the Congress recalled that a major objective of Bush's was that publicly supported research should yield benefits to commerce – where, they wanted to know, were the patents they had expected?

The solution reached in the Bayh-Dole amendments of 1980 was for the government to give up intellectual property rights on tax-supported research. A researcher could patent his or her discovery, or their institute could do so on their behalf. As I became President of Stanford in that very year, some new opportunities for our faculty emerged: Professor X could patent through Stanford a new technology for gene-splicing, start a company funded by others, and then build an independent off-campus laboratory to work on the applications.

You may imagine that administering such arrangements presented problems for the university. But despite the administrative challenges, why shouldn't we consider what else is going on in the Endless Frontier? If we hoped for that “science commons” Vannever Bush had offered, did we not nevertheless permit some new opportunities for limited enclosure? The Bayh-Dole amendments much later

allowed patents to appear, and did they thereby create new incentives for intra-commons disputes over intellectual property?

It would be appropriate to note that something similar is going on with real property. The public, drawing a lesson from what Lewis and Clark had shown about opportunities for civilization on the Frontier, provided a brisk flow of citizens eager and ready to colonize the space west of the Mississippi. The Homestead Act of 1862 converted large areas into 160-acre lots free to those who would cultivate and improve them. So it took just a single statute to accomplish a massive enclosure of much of the lands west of the Mississippi.

It is not unfair to view Bayh-Dole as the Homestead Act for intellectual property -- in the first case, scientific ideas and the competition between them led to some private ownership of public space, while a government commitment to people and their land produced a major change in the new nation's terrain. We should recall that the real estate piece did well for much of the country's midsection, but bogged down and collapsed in much of the mountain West -- leaving the rest of us out here some splendid recreational sites, along with some new scientific disputes about harvesting rates and endangered species.

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