

Carnegie Mellon University

**FINAL ORAL REMARKS
FOR TESTIMONY**

BY

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**HEARING ON TRADE, MANUFACTURING, AND CRITICAL
SUPPLY CHAINS: LESSONS FROM COVID-19
HOUSE WAYS & MEANS COMMITTEE
SUBCOMMITTEE ON TRADE**

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Thank you Chairman Blumenauer, Ranking Member Buchanan, and Members of the Subcommittee.

During the pandemic, I spoke with a medium-sized U.S. medical supplier, which had imported equipment from China capable of manufacturing 9 Million masks per month. Surprisingly, their most challenging bottleneck was the ear loops. To work in the automated machines, the elastic needed no latex, a precise width and elasticity, and to come in a bag. They found a domestic supplier for a small fraction of the necessary elastic, but on a spool -- and for a while, a worker hand-unspooled the elastic, with the expected productivity slow-down.

When discussing critical technologies, we wouldn't think elastic; and yet that lack of elastic cost our country millions of masks *a week*. The lesson from this story is *not* that we need to produce elastic. What's missing is the capability to pivot: diversify the suppliers internationally, adapt the equipment, change the elastic, change the mask to not require elastic, change the regulations.... That inability to pivot is the tip of the iceberg for how dilapidated the U.S. manufacturing ecosystem is.

FIRST

For the U.S. to compete, we must make innovative products here, that are demanded by the world.

If we do it right, it can be a win-win for national security, the economy, *and jobs*: making advanced products domestically *can create good jobs for hardworking high-school graduates*.

I'm not talking about automating everything. While automation, IT, and digitization are clearly important, they are just one set of a range of innovations.

Our research shows that many of the advanced manufactured products on today's "critical technology lists," are likely to create more demand for skilled craftspeople and empower those skilled high school graduates to have more involvement in the innovation process itself.

How do we get that technology manufactured in the U.S.?

Unfortunately, my research shows that the globalization of production makes it harder for U.S. innovators to bring their ideas to market. When firms move manufacturing to developing countries, it reduces the costs of the old products, making innovative, new products have to be that much better to compete. We need to help U.S. innovators leap over this valley of death through mechanisms such as increased and extended *SBIR funding*.

SECOND

The U.S. needs to rebuild its manufacturing ecosystem through strategic investment in *infrastructure*. Infrastructure - for transit, energy, communications and data - address needs of society *and* manufacturing. Done right, it also can build national capabilities in the companies and skilled workers who become the manufacturing workforce of the future. To lead in manufacturing the products of the future, we need to build the infrastructure of the future. The mason, foreman, engineer, and computer science skills relevant to intelligent transportation and urban infrastructure systems have corollaries in resilient grid infrastructure, privacy-preserving health infrastructure, and intelligent manufacturing. Our investments and training should be strategic to leverage these overlaps, and career transitions between them.

THIRD

As you've heard, manufacturing the right advanced products domestically can increase national security and demand for skilled high school graduates. The right investments in infrastructure can serve triple-duty in creating the groundwork for manufacturing success. But we must make the right investments. Which brings me to my third point.

We cannot just produce more reports with lists of (critical) technologies. The U.S. needs a nimble entity that combines program managers and analysts *to make strategic investments that ensure national technology competitiveness*. That entity needs enough money for its investments to be influential, but a sufficient lack of money such that it is required to engage and influence other agencies to have a larger effect.

Getting these decisions right is going to require an organization with technical depth run by interdisciplinary teams of our best and brightest. Otherwise, as we are currently with COVID-19, we will be flying blind.