

**Written Testimony of Representative Mark Takano (CA-41)**  
**Make It in America: What's Next?**  
**PANEL 1: American Innovation**

As we all know, the last few decades have seen a steep decrease in domestic manufacturing. Analysts became resigned to the idea that labor costs in Asia and Mexico would never allow us to be competitive, and that we needed to shift the fundamentals of our economy to reflect this. We shut down factories, focused on the creation of vast supply networks, and began retraining our students to look for jobs outside of factories.

However, some of the fundamentals of manufacturing are changing, and with this change we have an opportunity. The changes are being driven by advancements in technology, increased access to new forms of capital, an easier transition from idea to prototype, changes in consumer purchasing patterns and a direct line to sell to those consumers through the internet.

An example I'll share is of Anton Willis, an avid kayaker who after moving in to a San Francisco apartment had no place to keep his kayak. He brainstormed a solution. To build a folding kayak out of corrugated plastic that would fit in his closet.

That idea has become a successful business known as Oru Kayaks, which are designed and manufactured in California. Their website boasts: "We're proud to be part of a new wave of American manufacturing—focused on quality, flexibility and continuous innovation. We believe in American workers, American suppliers, and American quality."

Along the way from idea to business he used a variety of new tools now available to the American innovator. The first step required him to create a prototype, and since his apartment wasn't large enough to hold a kayak, it also wasn't large enough to hold the tools he needed to create one of the 20 full-scale prototypes he initially put together.

However, Anton was a member of a Makerspace in San Francisco.

While we associate garage workshops with early inventors—like the home computing clubs that led to the PC revolution—this new generation of innovators have set up shops in large warehouses, or "Makerspaces," that operate on a gym membership type business model. For an average of \$100 a month, members receive access to millions of dollars' worth of advanced manufacturing equipment. Once members are trained, they can use that equipment for any type of project they want to pursue.

Anton's team worked on dozens of small paper prototypes before they began the process of fabricating their full size prototype. They worked with a number of traditional shop tools for fabricating in metal and plastic, and then they added in more advanced tools and Computer Numerical Control machines, also known as CNC. Thankfully, the cost of these machines, and the technical knowledge needed to use them have dropped in the last few years.

Once he had a solid prototype, he needed to scale up production to take it to market, which meant he needed capital. He used the popular crowdsourcing website Kickstarter to raise money from future customers, rather than having to pitch his idea to investors that might not see his vision, or have shared his experience as a

kayaker looking for a solution to a common problem. His goal was \$80,000, but he quickly blew past that and raised \$443,000.

This is the story of one business. But this is happening across the county.

Consumers are demanding higher quality goods that provide a more personal experience, and Artisans, Makers and Small-Scale producers are better equipped to handle that demand than our international competitors.

They're better equipped to locate demand in their community or online, they're able to learn the skills and access the tools needed to prototype their ideas at Makerspaces, they can raise money through crowdsourcing, and they can take their products to market through sites like Ebay and Etsy.

But a gap still remains. That gap is how to scale up production thoughtfully and sustainably, without moving their production operations overseas.

And here lies the great opportunity. Manufacturing is not as dirty, loud or dangerous as it was a generation ago. And "Small-Batch Manufacturing" can actually act as an anchor in the redevelopment of a neighborhood; in the same way that bringing in retail has been for decades.

These are small businesses that are locally owned and produce tangible goods for other businesses or for consumers. What they need, and often don't have is the proper space to set up shop. Their operations are generally much smaller than traditional factories, often less than 2000 square feet, and they can run in to zoning and technical problems with buildings not intended to be used in this way.

Manufacturing in residential areas has a series of added benefits. Your employees can live nearby and it's easy to add a retail component to your location. By adding in tours, events and workshops you are strengthening your brand, attracting a local audience to your product and turning your neighborhood in to a destination.

As legislators we can visit and support our local Makerspaces, we can push to make crowdsourcing rules simpler, while ensuring strong oversight and consumer protections and we can incentivize local zoning and development of small batch manufacturing as part of redevelopment plans.

If we as policy makers can come together and be supportive, this may be the catalyst that brings manufacturing back to America.