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Subject: Re: Ramping Up Again  
Posted by [Wayne Parham](#) on Tue, 29 Jan 2019 18:59:29 GMT  
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You're so right. I've noticed it too; Watched it happen as the years went by.

In the beginning of my career, there were several manufacturing companies in Tulsa, Oklahoma, where I grew up. Machine shops, both for one-off jobs and for assembly lines, were commonplace in many fields. Tulsa had a lot of manufacturers in aerospace, oil and equipment like cooling towers.

We also had electronic assembly houses which had lots of employees to solder and hand-assemble small production runs and wave solder machines for production runs that exceeded a couple thousand boards. There was enough local manufacturing to have printed circuit boards made, have the boards assembled, chassis made from sheet metal, boards installed along with transformers, front panel lights, switches, gauges and what-not, backpanel connectors, etc. Then printing the user manuals, packaging the individual components into an attractive cardboard box and palletizing the boxes for delivery.

Tulsa is a small city of barely a million people. In the early 1980s, it was like a quarter-million people. But even a city that size could support manufacturing that meant I didn't even need to leave the city to have anything I designed made. I'd build the prototypes by hand with point-to-point wiring on a perfboard, then put that in a chassis that looked professional. Test the prototype and let the customer use it, and if it did everything the customer wanted, I'd write contacts with various manufacturers and go to production. I did a lot of that, mostly to support a handful of corporate customers. Lots of individual special-need products, mostly communications and industrial control devices.

Now days, there are no assembly houses in Tulsa. There are some machine shops, but there are no electronics houses. It has all gone to China.

I was doing a project in 2010 to develop a tablet, something like the Apple iPad. I was doing mostly firmware/software work, because the company that hired me had already contracted with a Chinese firm to develop the hardware. Several prototype devices had been shipped to me, all that were failing in some area or another. They were junk, to be honest.

So I told the company that hired me that I'd prefer to manufacture the device myself, but they were afraid of the cost. They wanted the device to be cheap, so they thought they could only do that by building the device in China. That meant I had to work with what I had, testing some features on one prototype where the features would work, and other features on another prototype. One had no sound, for example, so couldn't be used to test sound events.

I can still do everything it takes to manufacture something in America, but my vendor choices have greatly dwindled. Because of that, a lot of what we used to be able to do - just 20 or 30 years ago - we can no longer do. Buyers for small manufacturing companies don't even try to source locally anymore. They just get it from China, and deal with high-reject rates.

Sorry for the long-winded rant. I'm just commiserating with you, Bruce. I know exactly what you are dealing with here. I stand to applaud you for making quality products right here in the U.S.A.

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