

THE AMERIMAC

Presumably because of Apple's rocky PR and financial results of late, Tim Cook gave two purportedly "Exclusive!" interviews, to NBC News and Businessweek. The big takeaway from both "Exclusives!" was the same, however: that Apple will move some production of the Mac back to the US next year.

You were instrumental in getting Apple out of the manufacturing business. What would it take to get Apple back to building things and, specifically, back to building things in the U.S.?

It's not known well that the engine for the iPhone and iPad is made in the U.S., and many of these are also exported—the engine, the processor. The glass is made in Kentucky. And next year we are going to bring some production to the U.S. on the Mac. We've been working on this for a long time, and we were getting closer to it. It will happen in 2013. We're really proud of it. We could have quickly maybe done just assembly, but it's broader because we wanted to do something more substantial. So we'll literally invest over \$100 million. This doesn't mean that Apple will do it ourselves, but we'll be working with people, and we'll be investing our money.

Thus far, I have not seen any acknowledgment that this move comes just two months after Lenovo made a similar announcement, that it was going to bring production of formerly IBM products back to Tim Cook's old stomping grounds in IBM's former production hub of North Carolina.

And so, perhaps predictably, the analysis of the move has been rather shallow. NBC first focuses on the jobs crisis here, and only later quotes Cook's comments about skills (which echoes Steve

Jobs' old explanation for why Apple produced in China).

Given that, why doesn't Apple leave China entirely and manufacture everything in the U.S.? "It's not so much about price, it's about the skills," Cook told Williams.

Echoing a theme stated by many other companies, Cook said he believes the U.S. education system is failing to produce enough people with the skills needed for modern manufacturing processes. He added, however, that he hopes the new Mac project will help spur others to bring manufacturing back to the U.S.

"The consumer electronics world was really never here," Cook said. "It's a matter of starting it here."

Businessweek also focuses on job creation (though Cook makes it clear that he doesn't think Apple has to create manufacturing jobs, just jobs, which is consistent with his suggestion that **someone else** will be assembling the Mac in the US).

On that subject, it's 2012. You're a multinational. What are the obligations of an American company to be patriotic, and what do you think that means in a globalized era?

(Pause.) That's a really good question. I do feel we have a responsibility to create jobs. I don't think we have a responsibility to create a *certain* kind of job, but I think we do have a responsibility to create jobs.

Matt Yglesias purports to look for an explanation of Apple's onshoring in this excellent Charles Fishman article on the trend. But with utterly typical cherry-picking from him, he finds the explanation in the 125 words

that Fishman devotes to lower US wages rather than the remaining 5,375 words in the article, which describe how teamwork—teamwork including line workers—leads to innovation and higher quality.

Which is too bad, because Fishman's article and Cook's comments to Businessweek set up a pretty interesting dialogue about innovation.

Before I look at that, though, let me point to this other comment from Cook, which may provide a simpler explanation for the insourcing.

The PC space [market] is also large, but the market itself isn't growing. However, our share of it is relatively low, so there's a lot of headroom for us.

We know Lenovo is insourcing to better provide customized ThinkPads quickly. Here, Cook suggests he sees a way to pick up market share in the PC space. I would suggest it likely the Mac insourcing relates to this perceived market opportunity, and would further suggest that Apple's reasons might mirror Lenovo's own: to deliver better responsiveness to US-based customers, if not actual customization (though that would be news).

But that's not what I find so interesting about the way the Fishman article and Cook interview dialogue.

Fishman's article largely focuses on why GE has brought production back to its Appliance City in Louisville, KY. And while more docile unions and energy costs are two reasons GE has made the move, the biggest benefit is that when entire teams—including line workers—focused on products, they could build better quality move innovative products more cheaply. Fishman uses GE's GeoSpring water heater as an example.

The GeoSpring in particular, Nolan says, has "a lot of copper tubing in the top." Assembly-line workers "have to route the

tubes, and they have to braze them—weld them—to seal the joints. How that tubing is designed really affects how hard or easy it is to solder the joints. And how hard or easy it is to do the soldering affects the quality, of course. And the quality of those welds is literally the quality of the hot-water heater.”

Although the GeoSpring had been conceived, designed, marketed, and managed from Louisville, it was made in China, and, Nolan says, “We really had zero communications into the assembly line there.”

To get ready to make the GeoSpring at Appliance Park, in January 2010 GE set up a space on the factory floor of Building 2 to design the new assembly line. No products had been manufactured in Building 2 since 1998. An old GE range assembly line still stood there; after a feud with union workers, that line had been shut down so abruptly that the GeoSpring team found finished oven doors still hanging from conveyors 30 feet overhead. The GeoSpring project had a more collegial tone. **The “big room” had design engineers assigned to it, but also manufacturing engineers, line workers, staff from marketing and sales—no management-labor friction, just a group of people with different perspectives, tackling a crucial problem.**

“We got the water heater into the room, and the first thing [the group] said to us was ‘This is just a mess,’ ” Nolan recalls. Not the product, but the design. “In terms of manufacturability, it was terrible.”

The GeoSpring suffered from an advanced-technology version of “IKEA Syndrome.” It was so hard to assemble that no one in the big room wanted to make it.

Instead they redesigned it. The team eliminated 1 out of every 5 parts. It cut the cost of the materials by 25 percent. It eliminated the tangle of tubing that couldn't be easily welded. By considering the workers who would have to put the water heater together—in fact, by having those workers right at the table, looking at the design as it was drawn—the team cut the work hours necessary to assemble the water heater from 10 hours in China to two hours in Louisville.

In the end, says Nolan, not one part was the same.

So a funny thing happened to the GeoSpring on the way from the cheap Chinese factory to the expensive Kentucky factory: The material cost went down. The labor required to make it went down. The quality went up. Even the energy efficiency went up. [my emphasis]

Compare Fishman's description of that team process to the language Cook uses to describe how Apple innovates.

Creativity is not a process, right? It's people who care enough to keep thinking about something until they find the simplest way to do it. **They keep thinking about something until they find the best way to do it.** It's caring enough to call the person who works over in this other area, because you think the two of you can do something fantastic that hasn't been thought of before. **It's providing an environment where that feeds off each other and grows.**

So just to be clear, I wouldn't call that a process. Creativity and innovation are something you can't flowchart out. Some things you can, and

we do, and we're very disciplined in those areas. But creativity isn't one of those. A lot of companies have innovation departments, and this is always a sign that something is wrong when you have a VP of innovation or something. You know, put a for-sale sign on the door. (*Laughs.*)

Everybody in our company is responsible to be innovative, whether they're doing operational work or product work or customer service work. So in terms of the pressure, all of us put a great deal of pressure on ourselves.

[snip]

I wouldn't say we don't have meetings. I wouldn't go that far. I'm talking about how the kernels of ideas are born. **We want ideas coming from all of our 80,000 people,** not five or three. A much smaller number of people have to decide and edit and move forward, but you want ideas coming from everywhere. You want people to explore. So that's what I was talking about before. [my emphasis]

Both are saying every single employee can and should be part of innovation.

Now look at the number Cook uses: 80,000. He may say every Apple employee has a responsibility to innovate, he wants ideas coming from "all of our 80,000 people." But that leaves out a million people that—GE is discovering—can help to drive innovation, the line workers, because Apple doesn't employ the million people who manufacture its products.

To his credit, Cook doesn't treat Apple's Foxconn employees entirely like drones. He boasts about Apple's efforts to make life better for its contracted manufacturing employees.

If you look at our website, we're publishing working hours for almost a

million people across our supply chain. Nobody else is doing this. We are very much managing this at a micro level. And you know, maybe as important as that, we are training workers on their rights. We have trained 2 million people, and we've brought college courses to the factories where people can begin to earn their degrees.

So we're doing a number of things that I think are really great, really different, and industry-leading.

And, tellingly, a move that had been spun as an effort to better monitor the manufacturing process—sleeping in Foxconn's employee dorms—turns out to have been an effort to get closer to the manufacturing process.

We have executives that have stayed in dorms. It's not unusual. Honestly, this wasn't to see what life was like in a dorm. It was that we worked so closely with these manufacturing partners and in the manufacturing plants [that] it's convenient to do. And actually several of our people wind up doing that.

In addition, we have hundreds of people that reside in China in the plants on a full-time basis that are helping with manufacturing and working on manufacturing process and so forth. The truth is we couldn't innovate at the speed we do if we viewed manufacturing as this disconnected thing. It's integrated. So it's a part of our process.

But it's not—at least not yet—part of what Apple considers integral to Apple, those 80,000 employees expected to push innovation. (And of course Cook refers to manufacturing as a process but insists creativity is not one.)

At least according to Fishman, seeing

manufacturing as separate from the innovation at the core of the business misses out on key opportunities.

For years, too many American companies have treated the actual manufacturing of their products as incidental—a generic, interchangeable, relatively low-value part of their business. If you spec'd the item closely enough—if you created a good design, and your drawings had precision; if you hired a cheap factory and inspected for quality—who cared what language the factory workers spoke?

This sounded good in theory. In practice, it was like writing a cookbook without ever cooking.

[snip]

GE is rediscovering that how you run the factory is a technology in and of itself. Your factory is really a laboratory—and the R&D that can happen there, if you pay attention, is worth a lot more to the bottom line than the cost savings of cheap labor in someone else's factory.

[snip]

Bringing jobs back to Appliance Park solves a problem. It is sparking a wave of fresh innovation in GE's appliances—every major appliance line has been redesigned or will be in the next two years—and the experience of “big room” redesign, involving a whole team, is itself inspiring further, faster advances.

In fact, insourcing solves a whole bundle of problems—it simplifies transportation; it gives people confidence in the competitive security of their ideas; it lets companies manage costs with real transparency and close to home; it means a company can be as



nimble as it wants to be, because the Pacific Ocean isn't standing in the way of getting the right product to the right customer.

Now, it's unclear whether Apple needs—or would benefit—from using its factories as laboratories (though some of Apple's most famous screw-ups might have been avoided by the process). But it's telling that at least one of the two things Cook points to as made in the US—the iPhone glass—was developed in that kind of manufacturing environment (albeit many years ago). And the other US-made component—the Samsung processor made in Austin—probably has to do with security, given how cutthroat Apple and Samsung also compete on smart phones.

But who knows? Once Apple starts making the ameriMac, it may learn what GE has: that having a million badly paid workers in China isn't worth the trouble—and more importantly, the trade-offs in innovation—that it causes.