

## UNC GLOBAL AMERICAN SOUTH

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### Technology for a Global Economy Panel

When I discovered that our topic this morning was technology and the global economy, I viewed that as an opportunity to talk about anything I wanted without PowerPoint slides. However, upon further reflection I decided to take a shot at sticking to the general subject by talking about three things. First, I would like to answer the cosmic question of why we are here even talking about this to start off with. Second, I would offer some comments about why we think “technology” is important ..... and why “high technology” it is not. And finally, I would like to direct some comments to the global dimension of this but in a very narrowly defined context.

So...why are we even talking about this? As we work through all of these very complicated, nuanced and dynamic issues it is easy to lose sight of the point – the economic development purpose. So here it is.... we want to generate higher wage employment opportunities for all income levels so we can increase the standard of living across all income levels and build wealth in communities – wealth that can be reinvested back in communities to build capacity to perpetuate this process. I would like to emphasize that from our perspective equity is important. It is paramount that everyone participates in new growth opportunities, not only because it is fair but also because the arithmetic doesn't work otherwise. Economies simply can't progress and compete in national and international markets if a large portion of the population is left behind. So in short, from the RTS perspective, economic development is increasing the capacity to generate better jobs – and all that that implies.

So -- better jobs -- if we are going to pay people more – then we need more income. Its gotta come from somewhere or we are just reshuffling around what we already have. When we work in regional economies we use a keep it simple stupid approach – we use two rules. Rule One – export services, import cash – concentrate on sectors and companies that compete outside the region as – attracting people in to spend money as well as substituting local goods and services for those you were importing also count – though that kind of import substitution approach has its limits. So...bring in new income.

Rule 2 is commit to pushing to higher value added levels regardless of the starting point. Its not enough to import cash, if you want to pay people more then you have to increase the difference between the cost of the inputs and the price. Economists call this value-added. Grown-ups call it a gross profit margin. Regardless, the idea is that you have to offer services or make products that are worth more. Increasing the difference between what you pay - -the cost of inputs - and what the customer pays – price -- is the source of new cash.

The alternative -- For US producers, if you compete solely on price, you are an endangered species.

In these volatile, hypercompetitive markets they create this difference – this margin – by adding value in design, in engineering and function, in precision, in speed of delivery, in appearance, and on and on.

There are at least two interrelated ways to create this new value -- to increase the price people are willing to pay.

First -- Technology - making something more powerful or customized or faster etc – when you think about what is required to do that -- you get to the role of technology and all that it implies in terms on knowledge, know-how and skills real quick - PPT vs overhead projector.

Second - Creativity-- making something more aesthetically powerful or pleasing, more functional, etc - certainly Design is a major value creator

Technology is important to us because it is a means to an end – it generates more value in the market place -- it increases gross profit margins. As an aside, when it comes to regional competitiveness measures and issues, I have on occasion wondered why we don't just bag the value-added language and substitute a new one – regional gross profit. People understand gross profit – and when they begin to think about how to increase the difference between what they can sell it for and what it costs them then they get to the roles of technology and creativity on their own and on their own terms ,

Why is high technology not important? I'm being a little facetious here but only a little.

We don't care about high technology strategies – we care about wealth generation strategies - everyone plays – the key is to add value regardless of the starting point. It doesn't matter whether you are producing bioassays or blue jeans or craft products or microprocessors the key is to add value through technology and creativity.

Additionally, high technology as a concept has lost its meaning– everyone uses technology – just a matter of what it can do and how much it costs. The lines have blurred across sectors and platforms – a bioscience firm may be IT driven – an IT firm may be nano-driven – a nano –firm may be coating driven. – You will find sophisticated technology at Genetech but you will also find it at a textile operation – especially non-woven.

So we like technology because it is a value igniter. It is the means to our end.

Okay that was the technology part – the final and main thing I wanted to talk about is the global economy part but in a narrow way.

Just over 10 years ago during some work in New York State I came across this analysis of their bioscience technology industry. It was done for the biotech

association there – I had a draft copy and I am not even sure it was ever published. Some of the findings from it have really stuck with me – mainly because in the course of our work in regional economies and especially with knowledge intensive companies and clusters we keep seeing it played out. The author's name was Kelvin Willoughby – who is now a Professor, Chair-holder and Entrepreneurship Center Director at Mahidol University in Bangkok.

The analysis was based on detailed information from over 100 bioscience companies and featured the usual exploration of competitiveness issues and challenges. It also looked at locational factors. But what captured my interest at the time was that it also tried to find out if the nature and quantity of firms' external relationships with other people and organizations seemed to impact their performance. What the author really wanted to test was in addition to the usual external locational factors such as the cost of doing business, the regulatory environment, labor supply – high quality scientific personnel – if there was something else in play. He used two kinds of relationship measures. One he called local embeddedness to gauge the extent to which firms were embedded in a local network of other firms, other specialized suppliers, support organizations, university connections, access to complementary capabilities, competitors and market information, scientific information flows and so on. At the time we were interested in this same concept and still are. His reasoning was that these relationships might improve a firm's innovation and competitiveness capacity enough even to overcome locational disadvantages.

Much of this has now become a fairly standard aspect of industrial cluster analysis.

His other measure of external relationships focused on global connectedness. He reasoned that these bioscience firms depended on scientific knowledge and to an extent, technical information that have a global transmission and distribution system.

Information was gathered through interviews with these firms in which a series of questions were asked about informal communications and formal collaborations during the previous year with various types of organizations – their location was also charted – local, national and international.

For the performance measure, they looked at revenue growth rates.

In this case, bioscience firms means the expanded definition that includes medical devices, environmental, agricultural applications etc. rather than the narrowly constructed definition that is limited to firm that manipulate RNA and DNA.

Here is what they discovered. Local embeddedness was certainly beneficial and some kinds of firms were more likely to benefit from informal and formal relationships than others. BUT...here is the big surprise: as stated by the author “the mean revenue growth index for firms which exhibit an above-average level of international informal communication is almost 900% higher than the mean for the rest of the firms—let me say that part again - “the mean revenue growth index for firms which exhibit an above-average level of international informal communication is almost

900% higher than the mean for the rest of the firms. Continuing in the author's own words, "The benefits of global connectedness appear to be overwhelming for this group of firms." That is the finding that stuck with me.

Our own anecdotal experience in working with groups of knowledge intensive firms throughout the US tracks with this – which is why I continue to think about it. Nonetheless, from a policy action standpoint, the question is -- would this be the case for other industries or sectors – back then biotech was almost in a category by itself as an industry that was science (as opposed to technology) driven. You could certainly argue this is no longer the case today because large amounts of science and knowledge are embodied in growing group of ubiquitous, enabling technologies like nanotechnology, advanced materials, information technology, biotechnology which in turn are embodied in constellations of products, services and processes all almost all industries and sectors.

Science and knowledge are not anchored to place like other inputs that create value

If this is true – then creating mechanisms and finding ways to connect young or small innovative firms into international networks becomes very important. Not just to get access to new markets but also rather to get access to information and the individuals and organizations attached to the information – opportunities get multiplied.

I would argue that fomenting this kind of global connectedness will not happen in many places on its own nor is it the stuff of trade missions or the province of state level international trade offices. The impulse and capacity for young or small innovative companies to plug into global networks needs to take seed and grow within the local business culture. Certainly there are places where global connectedness is part of the collective business psyche – like the Triangle. But there are other places we work – not just rural areas and small towns but some cities where this is not on the radar.

So..what could be done? Here are four considerations I would include in implementation notes

1. First, state offices can help (especially with say, matching funds) and regional organizations can help – certainly the Southern Growth Polices Board has done a stellar job at getting this on the table over the last 10 years BUT this has to happen on Main Street. – The local economic development community is where this gets done and in most places this is not standard fare for the local chamber or economic development foundation. Once again I am not talking about trying to find an overseas market for a company that is selling a new biodegradable, disposable syringe or a smart fabric but rather finding ways to connect to the complex and dynamic network of potential collaborators and competitors generating similar products or base technologies, specialized suppliers, academics working in these areas, etc.

2. Second, the local economic development community should view and recruit its local university, regional college or community college as valuable resource and partner. They often have the reach, the outreach mission and faculty who are already globally embedded in the scientist community.
3. To the extent possible, efforts should be cluster or sector based. It is easier and more productive to work with and connect larger groups or local networks of knitwear firms or environmental firms into global information webs than to work at some generic level. Working with groups within clusters or sectors also helps you get to scale – more bang for the buck.
4. The fourth consideration is probably the biggest challenge – the people challenge. I would much rather have great people charged with implementing a mediocre idea than mediocre people charge with implementing a great idea – Not that what I am suggesting is a mediocre idea. This is not really an industrial developer skill set – finding people with the appropriate mix of business, technical and interpersonal skills will be a challenge. I will leave it up to you to write the job description. Perhaps it's like pornography – you can't define it (or don't really care to) but you know it when you see it.

I would like to end at the beginning. We are interested in global connectedness for young and small companies because we think it is an important avenue for pushing to higher gross profit levels for companies and regions so standards of living can rise for everyone. At the heart of this is innovation – creating new value. Because of this there may be another less tangible value in play here. Innovation in the U.S. is driven by ingenious, tenacious, poetic and irascible people – we like different, we like edginess. Connecting to people who perceive the world differently that you do and act differently - -this newness, this foreignness, this edginess – fires innovation. We are good at innovation but connecting young or small innovative companies into global information and collaboration networks will make us better.