

DISCUSSION NOTES
COB/CEET/ROCK PROGRAM PANEL DISCUSSION
September 27, 2006
NIU Rockford

Moderator:
John Lewis

Panelists:
Dr. Promod Vohra, Dean-CEET
Dr. Denise Schoenbachler, Dean-COB
Dr. Richard Johnson, Assoc. Director, CEET Outreach
John Oller, Executive Director-MARRV
Andrew Mealy-Hamilton Sundstrand (unable to attend)

Dr. Lewis introduced NIU Provost Raymond Alden III who welcomed the attendees. Provost Alden, who was appointed NIU Executive Vice President and Provost beginning July 1, 2006, spoke of the entrepreneurial spirit he has seen in this region since joining the NIU Community. He offered his support of additional activities to strengthen the collaborative efforts between the various colleges of NIU and between NIU and the business/industrial sectors of the Rock River Region.

Dr. Lewis introduced each of the panelists who each presented a bit of information about his/her organization and some ideas they feel are important for the future of America and how we can become more competitive in the global marketplace.

Dean Schoenbachler spoke first and shared her ideas about the need for a paradigm shift and the need for the use of innovative points of view. She stated that in order for our region (and country) to survive in the global marketplace, we will have to change and do things differently than they have always been done. She referred to classic Darwinism and the belief that those who can change and adapt will be the survivors. She foreshadowed further future activities in which the College of Business could strengthen its partnership with the College of Engineering and Engineering Technology.

Dean Vohra said that partnerships, such as this between the College of Engineering and Engineering Technology and the College of Business, brings together the creators of value and the managers of wealth. He said that the newly forming global marketplaces can be considered either a threat or an opportunity. He prefers to look at it as an opportunity and will continue to address the three problems he defined as the “three P’s”: perception; pipelines; and preparation. He described the problem of the common perception of manufacturing as an aged industry that consists of factories covered with grease and dirty floors. The solution to this problem is to change the perception of manufacturing, especially with younger generations of students, and to share the reality of today’s manufacturing with them, which is high-tech and requires highly educated and highly-trained individuals to effectively and efficiently succeed in today’s manufacturing environment. This lead into the second problem Dean Vohra identified: “pipelines.” Our

universities must continue to create a pipeline delivering trained engineers into industry. The third problem, preparation, is a continued, sustained effort to prepare the workforce that is needed to bring the best products to market, creating greater profits for our economy. He stressed the need for innovation to start in academic institutions. He said that a greater emphasis on research and development and new product development can lead us to the next level and that we need to look at the global market to sell our products. He also stressed the need for partnerships of all resources in industry, the government and academia and how these partnerships need to actively participate in the formation of public policy. He stated that Congressman Manzullo currently serves as our spokesman in Washington and that we are greatly indebted to him for his hard work on our region's behalf.

Mr. Oller began his brief overview of the Manufacturing Alliance of Rock River Valley (MARRV) by asking the questions: *How* do we change? *How* do we compete? *How* do we bring more job opportunities to our region? The first answer he offered was that we must take advantage of our capabilities. We also need to get out of our own backyard and look further from home into the global marketplaces. Mr. Oller stated that he is also very glad to see business and engineering entities working together on new initiatives.

Dr. Richard Johnson shared his love for research and technology with the audience and explained how he believes that in order for our region and our country to thrive we will have to focus on areas of advanced technologies. He feels that much of these advanced technologies come out of universities and that he would like to see the business and industrial sectors of our region reaching out to faculty of NIU for help with solutions to their manufacturing and business-related challenges. He explained how the ROCK Program is trying to build a bridge between the Rock River Region and DeKalb to allow for stronger partnerships with industry. Because we can't realistically compete with China in labor costs, our only chance is to develop new products and technologies that China doesn't have.

Dr. Lewis thanked the panel participants for their overviews and spoke of how America needs to regain its ranking among the top countries in the area of innovation. He said he sees three general areas for improvement: Talent (continuation and expansion of programs to provide quality training and education for the workforce); Investment (we need to focus on the returns on investment in longer range terms rather than setting short-sighted goals to recoup investment. We need to be looking at ROI ten years, fifteen years down the road); and Infrastructure (make sure we have the roads and highways in place to provide efficient transportation of products and also important are communications networks).

To begin the panel discussion, Dr. Lewis referred to an article published September 17, 2006 in the Rockford Register Star that stated that Patents in the Rock River Valley have dropped 35% since 1999. Dr. Lewis asked the panel to each share their opinion about whether the number of patents awarded to a region is a good indicator of the overall culture within an area.

Mr. Oller was the first to address the topic. He stated that the culture within a company changes from year to year—some years patents are a big focus and some years they are not. Some companies just don't want to publicly share their information, which is required when filing patent applications. Sometimes companies feel it is best to just produce the part and keep it quiet—so maybe the number of patents isn't a very good indicator. It could just mean that more companies want to keep their information private because patents are public domain, a competitor can review the drawings submitted with the patent application, change one thing and then produce what is essentially the same product.

Dr. Vohra shared an opposing opinion as he thinks the number of patent applications filed can be a good indicator of how much emphasis in a certain region is being placed on research and the development of new products.

Dr. Johnson's opinion was between Mr. Oller's and Dr. Vohra's opinions. He stated that as a general rule of thumb, a company should not file patents on newly developed manufacturing processes, but that it probably is beneficial for them to file patent applications for new products. So, he felt that a drop in patent applications in the area of newly developed products would indicate the lack of development of competitive products being developed in a certain region.

Dr. Johnson shared some information he learned from participating in talks with a delegation from Taiwan that visited *EIGERlab* recently. He said that Taiwanese companies focus on six month product cycles and in that format, filing a patent is the only way to protect themselves. They essentially focus on gaining profit from their product during that 6 month time-frame and then realize the necessity to move onto other products to begin a new six month product cycle. They realize the importance of constant development of the "next" product.

Dr. Schoenbachler passed on commenting on this topic.

The first question received from the audience was posed by Dr. Ibrahim Abdel-Motaleb, a professor in the electrical engineering department of NIU's College of Engineering and Engineering Technology. Dr. Abdel-Motaleb stated that the findings of some research has been that countries with higher populations that contain larger amounts of knowledge and capital have an advantage over countries with smaller populations and he asked if the panel members feel that population is a determinant of who will be the leader in product development and distribution?

Dr. Vohra's response was that he does not feel that population is the determinant for what country is the market leader of new products; he feels that whatever countries lead in the creation of advanced technologies have the advantage of becoming the market leaders. He stated that population isn't necessarily a factor because the countries with the highest populations actually have 70% of their populations residing in rural areas that do not have adequate access to education and the infrastructure that is needed to produce and distribute products.

Dr. Schoenbachler pointed out that the question asked is part of the problem of why there needs to be a shift in the perception of how we view competitiveness. Rather than viewing each nation as its own market, we need to realize that we have access to all of the populations and view that as an opportunity to expand our markets rather than as a barrier.

Mr. Oller, who has spent time working in China, said that China has most of the same problems we do in the US. In fact, the greater population of their country makes it more difficult for them to provide adequate education for their citizens. He said that where China has the advantage is that they are hungrier to learn and advance their wealth. The Chinese just plain want it more than we do. To help solve that problem, we need to be reaching out to future generations and getting kids more interested in manufacturing and engineering and helping them better understand the implications of our country's future.

Dr. Johnson brought up his recent experience with the delegation from the Metals Research Institute of Taiwan. He said that Taiwan has 500 researchers working today to develop new products and processes. They realize they can't compete with China on labor rates either and they know they must beat them in the technology they develop. They set extremely high production goals in short amounts of time on each new product they develop. For example, they are currently working on producing 2.5 billion motors for DVD players - at 25% of the current production costs. They will do this through use of advanced manufacturing technology they are developing. They look to Rockford for help on micro-machine tools. They want NIU to help them on micro-forming tools. This is an example of the outlook countries like Taiwan have that we lack here in the U.S. We need to help businesses feed into the supply chain more effectively and efficiently. We need to create a lot of value from the labor pool and sell things the Chinese can't offer. We have to have the mentality that we can not be selling the same things in six months that we are selling today. Each company needs to be working at all times to obsolete its own products. We must change the culture for our kids.

Kurt Paquin from Bacon's Information Service posed the next question to the panel. He stated that in addition to engineering, we also have the opportunity to compete on the services side of business. He asked what programs NIU might have planned for the future to address this opportunity.

Dr. Schoenbachler said that they are working on a partnership with IBM to offer a program on campus to address this need. She said other corporations need to be reaching out to academia because we need their help to prepare students to understand all aspects of a company—the operations side, the business side, the engineering side. They also need to understand the marketing side and the customer relations/customer service sides.

Dr. Vohra added they realize they must be more responsive to these needs, which is why they are participating in a forum such as this. The first step is the assessment of needs and then to act to meet those needs.

Dr. Johnson pointed out that the service sector needs brainpower also and that it is very hard to leverage service industry brainpower, especially when the Asians have a huge number of trained engineers – 10 times our numbers annually. We need to find ways to recapture the \$500 billion we spend buying products from China and other countries annually and that is very hard to make up with service. He said he would rather fight the battle in the world of manufacturing than in the world of service.

Reid Montgomery, representing the City of Rockford, pointed out how shows like CSI Miami are encouraging growth in fields such as forensic science and that he feels that there needs to be a more cohesive marketing strategy to target kids into careers related to manufacturing. He asked the panel what their thoughts on that topic are.

Dr. Vohra said that he realizes higher education and business/industry need to collaborate more on this effort. He said they are working with 5 schools in Rockford to offer a more in depth look at manufacturing to students and had 90 students participate this year. He said excitement for technology needs to be brought into the classroom. He offered the example of how video games can be developed to introduce topics to students. He said automation and robotics projects can be shown to students and when they are broken down into smaller parts, students can see how mathematics and physics play a part in the creation of products.

Mr. Oller responded that communities can offer direction to figure out how to introduce students to the new world of manufacturing. Most manufacturing shops of today are modern, computerized environments with clean floors. Manufacturing has been transformed into a very high tech industry. As an example, new software programs can be used to test gears and how they will react and interact with other components before they are ever actually produced. He said to change perceptions of the younger generation about manufacturing, we need to show them what manufacturing has become. We have to bring them to manufacturing and bring manufacturing to them. He said he recently participated in an effort that took four bus loads of kids to the IMTS show and he was thrilled to see the excitement these kids had for what they saw at the show and that many of them wanted to return again the following day with their parents to spend more time at the show.

Dr. Johnson said that we need to be showing kids technology that we can make here—he said the iPod is a great invention, but it isn't made here. He spoke of how the process of book making has changed to allow one custom book to be printed for the same cost as one that is being printed en mass. Engineers and technicians have made such advances possible. He said the Europeans, Japanese and Taiwanese understand this and we need to have the better understanding that it may not be high volume consumer goods that help us compete in a global environment; it may more likely be manufacturing processes that can give us the competitive advantage.

Mark Podemski from the Rockford Area Economic and Development Council brought up the next point that was addressed by the panel. Mr. Podemski said that he feels that educational institutions have remained the same even though everything else is changing.

He asked how NIU plans to respond to changing markets and how they will overcome barriers of the deliverance of educational services.

In response, Dr. Schoenbachler said there are a number of different markets served by educational institutions. NIU represents a more traditional approach to education but that they are working on ways to change the curriculum and approaches to teaching the curriculum. She discussed the need for departments to become more creative, suggesting that they create different models of education that combine students of various fields working collaboratively. She said if you create a team of students who represent fields of study such as business, fine arts, and engineering and put them together to work on a project that is backed by a solid business plan the product produced will be much more creative than if any of the entities worked independently of each other. She said the Outreach centers are reaching out to a different market by bringing educational delivery closer to home for those who live near outreach centers. She said she can speak for the College of Business which is trying to be responsive to the needs of different markets. For example, when determining what they could do to enhance their offerings in Rockford, they learned through market research that what the Rockford area wanted and needed was a degree completion program in business administration and that those in this area wanted it to be a traditional, daytime program and that program is now in place to meet the needs of the Rockford area.

Dr. Vohra responded by explaining that they are trying to respond but that one of the barriers they face is the lack of information that is offered at the high school level. He pointed out that he feels female students who don't show an interest in engineering can be shown ways in which engineering is social, which might make it more appealing to them. These messages have to be shared with students. He said we are asking our youth to pursue certain goals without any information. We need to bring real life applications of engineering to schools. One way they make this connection for the students in the College of Engineering and Engineering Technology is through the senior design project where students must find real solutions to real problems. He said another key is to make education accessible.

Brian Hulsebus, a student at Rock Valley College who also works as an independent consultant, asked the panel how the Rock River Valley region can foster a culture of global competitiveness.

Mr. Oller responded first by saying that we need to find ways to better disseminate information to the region. We need to combine all of the resources and better communicate the availability of these resources to those who need them. He said there are many small entities that can provide resources, but that don't have very much money to communicate that to the region but if many of these smaller entities could come together to work as a center or something like that to provide resources they can help small businesses succeed. These smaller entities need to work together to reduce overlap to offer better services to everyone in the region. He described many new technologies such as web conferencing that need expensive equipment, which most small companies lack, but could be shared among the region.

Dr. Schoenbachler said that they need to work more with businesses to understand what resources are available and how to access them.

Dr. Vohra said that four things can contribute to fostering global competitiveness in the Rock River Region:

- 1) Sharing a common vision
- 2) Responsible collaboration
- 3) Aggressive Ambition
- 4) Loyalty to the region

He said if the region can accomplish these four things, it would definitely contribute to a more globally competitive region.

Dr. Johnson said that the transfer of technology and information to plant owners is key and that we need to connect them with the faculty resources of NIU. We need to develop a process of more interaction between industry and the university to provide solutions to the challenges faced by companies in the region.

Dr. Lewis concluded the panel discussion by thanking each of the panel participants. He invited all of the attendees to join in the networking reception that was to follow the panel discussion.