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**A New Social Compact:  
How University Engagement  
Can Fuel Innovation**

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# A New Social Compact: How University Engagement Can Fuel Innovation

## *A Case Study of North Dakota*

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## **Abstract**

Richard K. Lester feels that colleges and universities, because they are immobile, can replace local institutions whose leadership has been eroded by globalization. However, university attempts to improve the regional economy must be well-planned. North Dakota clearly illustrates benefits of a strategic approach to university and college interaction with the economy. This paper examines the degree to which their Higher Education Roundtable fits into the specific model of engagement proposed by Lester. Much of the specificity of the North Dakota plan came in the implementation, which has been guided by specific accountability measures. Because such measures can not only reflect priorities but also set them, this paper evaluates the new initiatives in North Dakota with an independent set of metrics that assess university efforts to foster innovation. While the two sets of metrics are largely compatible, North Dakota University System does not evaluate qualitative goals throughout the university system. This paper argues that qualitative outputs from higher education are often under reported in assessments of economic and social benefits attributed to universities and colleges.

## **Introduction**

In “Universities, Innovation and the Competitiveness of Local Economies,” Richard K. Lester prefaces his analysis of specific case studies with a reflection on the effects of globalization. He points out that while national governments have not, as some alarmists predicted, lost their relevance, local institutions are much more vulnerable. “Local leadership has itself often been eroded as the traditional pillars of the local economy... have been acquired or displaced by large national or multinational organizations with no particular interest in or commitment to the community” (Lester, 2005, p.6). He feels that universities, because they are immobile, are appropriate replacements. But physical proximity does not necessarily breed interest or commitment. Only by clearly articulating goals for cooperation and innovation can universities really improve their region’s economic future.

North Dakota clearly illustrates the benefits of a strategic approach to university and college interaction with the economy. The state initially lacked such a plan; although there was general concern about North Dakota’s future, the North Dakota University System (NDUS) was not clearly perceived as a potential partner in shaping a positive economic future for the state. In 1999, however, a Higher Education Roundtable was formed in order to produce a new vision for NDUS. In keeping with Lester’s model, the Roundtable asserted that universities’ role in the economy should go beyond just producing educated future employees and productive citizens. Its members wanted the assets of the university system to be used to fuel innovation and change the course of the state’s future.

The Roundtable's final report, *A North Dakota University System for the 21<sup>st</sup> Century*, spells out a new social compact between the university system and all the other major institutional players in the state. It calls on NDUS, the State Board of Higher Education, the Executive Branch, the Legislature, the campuses, and the private sector to work together for the benefit of all North Dakotans. This conception of the role of higher education is a departure from the norm. Increasingly, higher education is thought to primarily benefit individual students—who will earn, on average, one million dollars more over their lifetime than they would have without a college degree. Therefore, it seems reasonable for students to go into debt in order to pay rising tuition bills; it's a good investment for them. To counter this view and get more public support, universities need to clearly articulate the public benefits they provide. In this paper, the public benefit specifically being examined is the fostering of innovation. Lester defines innovation as “the capabilities of local firms to take up new technological and market knowledge and to apply it effectively” (Lester, 2005, p.3).

Lester feels that the social compact between a university and the public must be very specific. He proposes a clearly delineated model with four different industrial transformation processes and four different channels of university engagement, and then synthesizes those types into a chart of “university roles in alternative regional innovation-led growth pathways” (Lester, 2005, p.28). The four industrial transformation processes are indigenous creation, transplantation, diversification into related industries, and upgrading an existing industry. The four channels of university engagement are education and training, adding to the stock of codified knowledge, increasing the local capacity for scientific and technological problem-solving, and providing space for open-ended

conversations about industry development pathways and new technological and market opportunities. (see Appendix A).

While this model may have gaps or flaws, it is a valuable tool for examining university efforts towards economic engagement. Case studies of schools who have successfully contributed to their regional economy often focus on the personalities of the individuals involved, or other very specific characteristics. Lester's typology gets beyond such factors and instead attempts to identify the underlying conditions and goals. Therefore, using his model as a reference point will make this examination of the NDUS reforms more generalizable and broadly relevant.

Lester's paper presents five conclusions, which will provide the structure for the comparison. His conclusions are as follows:

- **Direct contributions:** Universities have multiple ways to contribute to local innovation processes directly (not only provide information but attract it from elsewhere, adapt it, integrate separate areas, unlock and redirect knowledge)
- **Indirect contributions:** In most cases, the indirect support provided by universities for local innovation processes is likely to be more important than their direct contributions to local industry problem solving. The most important of these direct contributions is education. But a university can also play an important role as a public space for ongoing conversations. This public space can take many forms, including meetings, conferences, industrial liaison programs, standards forums, entrepreneur/investor forums, visiting committee discussions of departmental curricula, and so on.
- **University-specific strategies:** Universities should approach their role in local innovation processes strategically, discarding the one-size-fits-all approach to technology transfer in favor of a more comprehensive, more differentiated view of the university's role in local economic development.
- **Context-specific strategies:** The conditions, practices and attitudes that lead to a successful technology take-up and application in local industries depend on the specific characteristics of the industry and its development pathway.
- **Education and research excellence:** A strategic approach to the local economic development role is compatible with the pursuit of excellence in the university's traditional primary missions in education and research.

These conclusions roughly align with the "cornerstones" of the North Dakota

Roundtable. The four cornerstones of interest for this paper are:

- **Economic Development Connection** – Direct connections and contributions of the University System to the economic growth and social vitality of North Dakota.
- **Accessible System** – A University System that is proactively accessible to all areas of North Dakota and seeks students and customers from outside the state. It provides students, business, industry, communities, and citizens with access to educational programs, workforce training opportunities, and technology access and transfer – and does so with the same performance characteristics as described in the “Flexible and Responsive System” Cornerstone.
- **Flexible and Responsive System** – A University System environment which is responsive to the needs of its various clients and is flexible, empowering, competitive, entrepreneurial, and rewarding.
- **Education Excellence** – High quality education and skill development opportunities which prepare students to be personally and professionally successful, readily able to advance and change careers, be life-long learners, good citizens, leaders, and knowledgeable contributing members of an increasingly global and multi-cultural society.

While the two sets of ideas are generally compatible, each project touches on a few concepts that the other leaves out. The following section of this paper attempts to compare and integrate concepts from Lester’s and the NDUS model in an effort to generate a more nuanced model of higher education engagement in economic development.

## **Direct Contributions and Economic Development**

- ***Direct contributions:*** *Universities have multiple ways to contribute to local innovation processes directly (not only provide information but attract it from elsewhere, adapt it, integrate separate areas, unlock and redirect knowledge)*
- ***Economic Development Connection*** – *Direct connections and contributions of the University System to the economic growth and social vitality of North Dakota.*

Lester’s first point is that universities should not focus only on producing knowledge. While that knowledge can sometimes be turned into innovation through the technology transfer model seen with Stanford and Silicon Valley, Lester criticizes that “one-size-fits-all” approach. Wayne C. Johnson, in his paper for the fifth Glion

Colloquium, concurs, explaining that “The rise in entrepreneurial successes and the dot-com era create expectations of large paybacks from brilliant ‘new ideas.’ Much of the focus is drawn to what is possible, and little attention is given to the large number of company failures that don’t materialize success” (Johnson, 2006, p.213). He feels that the Bayh-Dole Act’s emphasis on retaining potentially profitable intellectual property rights has also contributed to this “get-rich” archetype.

Additional evidence that high-tech startups are overvalued comes from studies of U.S. productivity by Robert Solow and the McKinsey Global Institute. They found that from 1995 to 2000, six out of 59 industries accounted for all of the acceleration in productivity growth. The top three were wholesaling, retailing, and security and commodity broking. Their contribution was three times that of the next three industries (electronic and electric equipment, industrial machinery and equipment, and telecoms.) As Richard Mattoon observes, “the top three industries could be characterized more as technology users than technology producers... [Productivity gains were] driven by the application of information management technology and developments in supply chain and warehouse management” (Mattoon, 2006, p.4). From 2000 to 2003, productivity growth was distributed more evenly, but still concentrated primarily among technology users. The top sectors driving productivity growth were retailing, finance and insurance, computer and electronic products, wholesaling, administrative and support services, real estate, and miscellaneous professional and scientific services. These findings align with Lester’s assertion that firms’ ability to take up new technology is more important to economic growth than the development of new technology.

This data “suggests a model similar to that of the old agricultural extension system that linked research and best practices developed at land-grant universities to local farmers. Some attempts have been made to extend this model to manufacturing and services, and perhaps this might deserve more attention” (Mattoon, 2006, p.4). The legacy of the land-grant mission was in fact a guiding force for the North Dakota Roundtable. They expected NDUS to “become the prototype land-grant institution of the twenty-first century” (*A North Dakota University System for the 21<sup>st</sup> Century*, 2000, p.2). Larry Isaak, chancellor of NDUS from 1994 to 2003, believes that “the mention of the land grant system is a key statement in terms of direction for a diverse set of colleges” (L. Isaak, personal interview, August 8, 2006).

The report presents a vision of a twenty-first century land-grant institution that does not advocate knowledge production for its own sake, but emphasizes the importance of transmission and application. It calls for “strong partnerships created between the research function of the University System and the businesses, industries and professions of the state” (*A North Dakota University System for the 21<sup>st</sup> Century*, 2000, p.26). The Roundtable also felt that all colleges have a service obligation, with service defined as “proactively utilizing the knowledge of one’s discipline to solve state/community problems” (*A North Dakota University System for the 21<sup>st</sup> Century*, 2000, p.28). Based on these statements, the Roundtable was clearly looking beyond tech transfer to define higher education’s “Economic Development Connection.”

### **Indirect Contributions and an Accessible System**

- ***Indirect contributions:*** *In most cases, the indirect support provided by universities for local innovation processes is likely to be more important than their direct contributions to local industry problem solving. The most important of these direct contributions is education. But a university can also play an*

*important role as a public space for ongoing conversations. This public space can take many forms, including meetings, conferences, industrial liaison programs, standards forums, entrepreneur/investor forums, visiting committee discussions of departmental curricula, and so on.*

- ***Accessible System*** – *A University System that is proactively accessible to all areas of North Dakota and seeks students and customers from outside the state. It provides students, business, industry, communities, and citizens with access to educational programs, workforce training opportunities, and technology access and transfer – and does so with the same performance characteristics as described in the “Flexible and Responsive System” Cornerstone.*

Lester’s second conclusion positions universities as forums to bring together different groups in order to discuss the future. He argues that an “important indirect role is to serve as a public space for ongoing local conversations about the future direction of technologies and markets. The importance of the public space role of the university and its contribution to local innovation performance is often underestimated” (Lester, 2005, p.3). Sean Safford, in his working paper for the same Local Innovation Systems project, concurs. In a case study of Rochester and Akron, he seeks to explain why the two seemingly similar cities are now in very different economic situations. He finds that the University of Rochester focused on building relationships among otherwise unconnected local actors, while the University of Akron’s approach centered on generating new ideas and educated people. In his analysis, “Akron’s approach... failed to achieve its intended result. Industry, it turned out, already had ideas and the university was already doing a good job of producing highly capable engineers and scientists. What they lacked was the forum for interaction among companies which the university—as was the case in Rochester—were uniquely situated to provide” (Safford, 2004, p.33).

In the case of North Dakota, the Roundtable itself provides this forum for interaction. As Larry Isaak explains, two extremely important factors were “first of all,

the process of defining the vision, and second of all, having the all key players at the table” (L. Isaak, personal interview, August 8, 2006). Implicit in his emphasis on the process itself and on broad participation is a recognition of the value of the Roundtable as a forum. Eddie Dunn, current chancellor, identifies the creation of a place for ongoing conversations as “one of the strongest contributions of the Roundtable” (E. Dunn, personal interview, August 16, 2004). In particular, it drew in actors from the private sector. Dunn feels that they are not only active on the Roundtable but have in fact taken the lead, appearing before the State Board of Higher Education, the legislature, and the governor to discuss issues concerning higher education.

Key to the success of the Roundtable as a forum for public conversation is its ongoing nature. It was not a one-time event; it continues to meet at least annually. These meetings include not only Roundtable members but spectators who have come to listen. The governor and his chief of staff have also attended. As Isaak explains, “There are clear expectations for the different sectors, and the Roundtable meets at least annually so they can look each other in the face and say, ‘Have you got your responsibilities done’ or ‘Why didn’t you get yours done’” (L. Isaak, personal interview, August 8, 2006).

Individual campuses have, to some extent, begun facilitating similar interactions. At the outset of the Roundtable process, panels of Roundtable members went out to each campus to dialogue with faculty, staff, and community members. Valley City State University has created their own Roundtable, emulating the methods of the statewide effort. Even on campuses that haven’t taken that step, the presidents have taken responsibility for disseminating the Roundtable’s key concepts—including the importance of open dialogue about the future among diverse actors. Additionally, the

State Board of Higher Education holds each of its meetings at a different campus. Part of each meeting is devoted to the concerns of private sector representatives from that city to discuss their relationship with the local institution.

## **University-specific strategies**

- ***University-specific strategies:*** *Universities should approach their role in local innovation processes strategically, discarding the one-size-fits-all approach to technology transfer in favor of a more comprehensive, more differentiated view of the university's role in local economic development.*

Lester's third point is that institutions must consider their own strengths and weaknesses when making an economic engagement strategy. This was something that the Roundtable left up to the individual campuses. Each campus produces an annual strategic plan that is linked to the Roundtable cornerstones. In Isaak's opinion, this requirement "has been a very critical step, and has made the cornerstones come alive on each campus... The last thing the Roundtable wanted to do was create cookie-cutter institutions that are all the same" (L. Isaak, personal interview, August 8, 2006). The profiles of the eleven different campuses included at the beginning of the 5<sup>th</sup> Annual Accountability Measures Report make it clear that each does, in fact, have different strengths.

Distinct missions for each campus are very important to Lester. He argues that universities should not try to be all things to all people; confusion over mission can have negative results. While he acknowledges that universities are "notoriously fragmented and fractious organizations," he feels that

Precisely because of this, however, it is important for university administrators to be clear about the goals they are seeking... [and to] be clear about what they do

not seek to achieve... Failure to formulate and clearly articulate an institutional strategy for economic development risks underperformance in this domain, interference with other institutional goals, increased conflict within the university, and disappointed external constituencies... [as well as losses in the competition with other universities] for faculty, students, and research funds (Lester, 2005, p.28-9).

The concerns voiced in the above quote were, in fact, the impetus for the creation of the North Dakota University System. Isaak explains that “the Board recognized that ND higher education is compromised of very diverse campuses and there was a growing concern among policy makers about the need for a focused, coordinated, and collaborative higher education enterprise...The system was created to use the diverse collective capacity of the campuses to serve citizens” (Isaak, 2006, p.14).

In keeping with this initial purpose, the Board continues to coordinate the campuses’ missions to avoid inefficiency. The basic structure set up by the Roundtable makes the Board responsible for approving campus missions, strategic plans, and new programs, and the schools responsible for implementation. This is, however, a delicate balance. Its fragility was manifested recently in the resignation of Robert Potts, chancellor of NDUS. Potts asked for explicit authority and backing from the board to insist that all of the policies, procedures and directives of the board were implemented fully and uniformly throughout the University System. Potts said there were differences of philosophy with individual board members about how the University System should be managed and operated. Even though the SBHE reaffirmed its commitment to a unified system of higher education, Potts said he believed it would be in the best interest of the board to begin with a new chancellor. This experience confirms the importance of clearly defined roles and of improved coordination between campuses, concepts advocated by both Lester and the Roundtable.

## Context-Specific Strategies and a Flexible and Responsive System

- **Context-specific strategies:** *The conditions, practices and attitudes that lead to a successful technology take-up and application in local industries depend on the specific characteristics of the industry and its development pathway.*
- **Flexible and Responsive System** – *A University System environment which is responsive to the needs of its various clients and is flexible, empowering, competitive, entrepreneurial, and rewarding.*

Lester's fourth conclusion, which is perhaps the most fully developed in his paper, is that university strategies must be tailored to the specific economic conditions of the region. This requires a clear understanding of the economic context. Members of the Roundtable tried to gain such an understanding by looking at "North Dakota realities." They "reviewed the global trends which are shaping the environment in which North Dakotans must increasingly live and compete [and] also reviewed trends specific to North Dakota" (*A North Dakota University System for the 21<sup>st</sup> Century*, 2000, p.2). However, this review focused mainly on the demographic characteristics of North Dakota's population. The following three points were the only pieces of information about the makeup of the economy:

- North Dakota views itself as having an economy based largely on agriculture and petroleum. The **direct** contribution of these industries is, in reality, less than all other sectors of the economy save construction. Agriculture is the only sector of the economy that became smaller between 1990 and 1997.
- More of North Dakota's employment is found in service industries than in the surrounding states. Similarly, a smaller proportion is employed in goods-producing industries (agriculture, manufacturing, and construction).
- North Dakota is ranked 45<sup>th</sup> of the 50 states on factors indicating ability to compete in the new, information-based economy.

This does not indicate a level of analysis necessary for Lester's model to be implemented.

To reiterate, he identifies four specific types of industry transformation: indigenous creation, transplantation, diversification into related industries, and upgrading an existing

industry. The Roundtable report tackles all four paths of transformation at once. It asserts that “a priority agenda item for North Dakota will be an economy which is growing more rapidly, more diversified, less geographically concentrated, more consciously focused on creation and growth of small business and entrepreneurship and reflective of an explicit attempt to grow the population” (*A North Dakota University System for the 21<sup>st</sup> Century*, 2000, p.6).

There is a general sense that universities should align their actions with the economy; the report says that universities should “actively pursue strategic alliances and partnerships with primary sector businesses and industries which have the strongest potential for expanding the economy of the region and the state” (*A North Dakota University System for the 21<sup>st</sup> Century*, 2000, p.17). However, it does not specify what those businesses and industries are. And in terms of what form the partnerships should take, the report suggests methods spanning each of Lester’s four types. However, based on the 5<sup>th</sup> Annual Accountability Measures Report, the emphasis seems to be on encouraging entrepreneurship, aligning curriculum with workforce needs, increasing the amount of research, and especially on providing employee training.

Choosing specific types may not, however, be appropriate at the system level. Isaak explains that the specific strategy depends on the campus and where it is located; he feels that individual campuses are in fact adhering to specific types. Campuses can submit applications to receive funding for “centers of excellence.” Each center is an “institution or foundation...working in partnership with the private sector and create high value private sector employment opportunities... The centers of excellence legislation allows for centers which have a private sector business or enterprise at the core and also

centers which are intended to serve an entire industry and/or a multitude of businesses” (Centers of Excellence Application, 2005, p.4). In developing their proposals for the centers, campuses ideally go through the process that Lester recommends of examining their local economy and choosing a specific path by which to engage with it.

Even if North Dakota’s efforts can’t be neatly classified as a particular type, that is not necessarily a failing. For North Dakota, it may be appropriate to combine multiple strategies and to blur the lines drawn by Lester. The value of his model is not necessarily that every situation will fit neatly into his flow chart (see Appendix A). Rather, the fundamental point is that context is important. As Mattoon explains, “a model based on local conditions and higher education’s response seems somewhat amorphous... However, it does make clear that higher education’s contributions to local economies work best when colleges and universities understand what they have to offer and what is happening to the local industrial structures of their economies” (Mattoon, 2006, p.4).

## **Education and Research Excellence**

- ***Education and research excellence:*** *A strategic approach to the local economic development role is compatible with the pursuit of excellence in the university’s traditional primary missions in education and research.*
- ***Education Excellence*** – *High quality education and skill development opportunities which prepare students to be personally and professionally successful, readily able to advance and change careers, be life-long learners, good citizens, leaders, and knowledgeable contributing members of an increasingly global and multi-cultural society.*

Lester and the Roundtable are in complete agreement that engagement is compatible with the other missions of universities and colleges. They see engagement as a pathway to prestige for the NDUS, and want to create “unique, high quality institutional strengths – capacities which serve to make the NDUS, as a system, a stronger enterprise

and one which is aligned with the needs of the State and its citizens” (*A North Dakota University System for the 21<sup>st</sup> Century*, 2000, p.65). However, the only way that engagement is truly going to be attractive for universities is if they are rewarded for it. Therefore, evaluations of the system must be properly structured. As Frost and Newby explain,

There are very present today concerns that HE leaders may converge in their strategies, particularly when there are both prestige and funding influences that make some strategic choices much more attractive than others. This particularly applies to the research mission, with the access it provides to international prestige, brand and peer networks, as well as to highly competitive and substantial funding. If institutional strategies converge, then nations as a whole may lose out on a sufficiently diverse range of HE offerings to meet public interest needs (Frost and Newby, 2006, p.34).

Some early evidence suggests that North Dakota has been able to improve its reputation in research. For example at North Dakota State University the number of doctoral programs has expanded from 15 to 40 (from 1999 to 2004) with the number of doctoral students rising from 150 to 500. Research expenditures have similarly risen from \$44 million to \$102 million and the school is attracting more students with enrollment rising from 9,700 to over 12,000. (Chapman, 2005)

## **Importance of Metrics**

Frost and Newby’s reference to “prestige and funding influences that make some strategic choices much more attractive than others” indicates the importance of metrics. This is something that Lester doesn’t focus on, although he mentions “external constituencies” and competition within higher education. On the whole, while he presents compelling reasons for universities to engage with the regional economy, they are very

theoretical. His report addresses both public and private universities, so he doesn't discuss accountability to taxpayers and the legislature. For North Dakota, however, transparency and accountability were central issues. Lester's observations can guide universities as they formulate plans, but they don't offer much guidance in terms of how to maintain momentum or evaluate results once the plans have been put into action. The North Dakota roundtable had a "Sustaining the Vision" task force that dealt with these concerns. Additionally, each task force produced a list of accountability measures, and annual reports have been issued following those measures.

In the second part of this paper, we compare those measures with our own proposed metrics. (see Appendix B). A clear danger with any proposed metrics is the fear that universities will "teach to the test" and strive to succeed only in the areas that are being evaluated. Assigning significance to certain characteristics can be a self-fulfilling prophecy; if something is chosen as a variable, it automatically becomes important—often at the expense of other characteristics. This is problematic because the things that are the most difficult to measure can also be the most important. For example, while Lester suggests that "in most cases, the indirect support provided by universities for local innovation processes is likely to be more important than their direct contributions to local industry problem solving," direct contributions are easier to measure than indirect support, making them more appealing as metrics (Lester, 2005, p.30).

Much of the criticism of the current evaluation process for higher education is directed at the *U.S. News & World Report* college guide. In the words of the *Washington Monthly* magazine, "rankings reflect priorities, and they also set them... In order to improve their rank in the *U.S. News guide*, schools often lose sight of the greater good

and focus on throwing a lot of money at the wrong things in the hopes of gaming the system. (Emory's pursuit of high-SAT students over poor students is an example.) By enshrining one set of priorities, such as those set by *U.S. News*, colleges neglect the ones we think are most important” (“The Washington Monthly’s Annual College Guide,” 2006). But *Washington Monthly* provided more than just criticism; they produced their own college guide, based on very different criteria. They looked at each school and evaluated “how well it performs as an engine of social mobility (ideally helping the poor to get rich rather than the very rich to get very, very rich), how well it does in fostering scientific and humanistic research, and how well it promotes an ethic of service to country.” They assert that if colleges responded by trying to boost their scores in these areas, “our country would grow more democratic, equitable, and prosperous.”

*The Washington Monthly College Rankings* have a rather lofty goal. However, the concept behind them can be applied on a much smaller scale. Because “rankings reflect priorities, and they also set them,” it is worthwhile to compare every set of metrics with an alternative array. This doesn’t necessarily represent an attack on the original metrics, as it did with the *Washington Monthly*. The North Dakota Roundtable’s accountability measure are much more nuanced than the *U.S. News & World Report* college guide; however, it would be helpful to evaluate the new initiatives in North Dakota with an independent set of metrics that assess university efforts to foster innovation. These metrics are presented in Appendix B.

On the whole, the two sets of accountability measures are very compatible, both in terms of the specific metrics and the overarching goals. The vision behind the accountability measures is that “the North Dakota University System is the vital link to a

brighter future” (*A North Dakota University System for the 21<sup>st</sup> Century*, 2000, p.4). The idea that higher education can improve a region’s future underlies my metrics as well. Colleges and universities should demonstrate commitment to their region by replacing the traditional sources of local leadership and innovation that have been dismantled by globalization. Along these lines, the North Dakota accountability demand what others have called a “third stream intensive” university system—that is, a system that views economic engagement as a mission on par with education and research (Frost and Newby, 2006). This expectation can even be seen in small details of the report. For example, in the breakdown of university expenses, “core services” are defined as “instruction, research, and public service.”

However, the specific method of engagement is also important. The chart in Appendix C breaks down the overarching goals mentioned above into concepts, and then proposes corresponding concrete metrics. It is at this point that some differences between the two sets of measures emerge. As Frost and Newby explain,

“Much of the early policy interest in the U.K. in third stream, following U.S. examples in the 1960s and 1970s, addressed ‘technology transfer’ with the focus on science and engineering... But even in the early days, there were always some broader, more organic strands within the development of policy in the U.K., linking it to interactive, communicative and flow models, greater disciplinary ranges and to more wide-ranging conceptions of public benefit than wealth creation” (Frost and Newby, 2006, p.32).

Their criticism of the tech transfer method echoes many of Lester’s points. As already established, NDUS looked beyond that “one size fits all” model. However, that does not necessarily mean they developed sufficient “broader, more organic” efforts. Many of the more qualitative measures presented in the attached chart are not touched on by the NDUS accountability measures. This gap is most evident in three specific areas—quality of life, creativity, and global and civic awareness.

## Quality of Life

*“The university improves the quality of life of the community and engages the public imagination.”*

Universities frequently cite their impact on quality of life, but rarely have a concrete measure of that impact. Without such a metric, it is hard to evaluate their efforts. The roundtable report explains that “in return for these new-found freedoms, the NDUS has to be able to demonstrate the System is... enhancing the quality of life of North Dakotans” (*A North Dakota University System for the 21<sup>st</sup> Century*, 2000, p.3). However, no mechanism is provided for NDUS to do so. This dilemma is not unique to North Dakota. Every keynote presentation for Lester’s Local Innovation Systems Project conference highlighted quality of life and related concepts such as creating a “funky college town” or an “attractive living environment.” They recognize that such factors are important in attracting companies to the area, as well as important in their own right. None, however, provide more details. Some suggestions for possible metrics, such as spending on theater performances and athletics, or the proportion of the campus that is open to the public, can be found in the attached chart.

Many of these measures can, in fact, be found in the strategic action plans of the individual campuses. The University of North Dakota, for example, lists as one of its goals that “The University is recognized throughout North Dakota and the region as a primary source of public cultural and arts programming and enrichment” (“University of North Dakota Strategic Plan,” 2003). They propose the following indicators of success:

- Positive trend in number of endowed lectureships and attendance.
- Positive trend in listeners of Northern Lights Public Radio.
- Positive trend in listeners of Prairie Public Radio.
- Positive trend in viewers of Channel 3 TV.
- Positive trend in locally-originated programs on Channel 3.

- Positive trend in richness of programs at the Chester Fritz Auditorium and other UND facilities.
- Positive trend in number and quality of visiting artists.
- Positive trend in number and quality of exhibits at the North Dakota Museum of Art.
- Positive trend in number and quality of music and art programs (on campus, summer camps, outreach, others) for elementary and secondary school students
- Positive trend in tours by UND choirs, theater and other arts groups.
- Positive trend in numbers of Burtness Theatre patrons.

If the Roundtable had provided more specific direction in terms of quality of life, as they did with other concepts such as economic development and education excellence, perhaps more schools would have such measures.

Larry Isaak argues that in North Dakota, it is easier to recognize campuses' impact on what he terms "quality of place." Because none of the schools are in large cities, they are effective "the only game in town," making their contributions easily recognizable. He could name many examples of such contributions off the top of his head—athletic facilities that are open to the community, a large theater, and increasing participation in Division I sports. However, no matter how obvious they are within the small towns and cities, quantifying these contributions in a methodical way could still increase public support for universities. As Isaak himself mused, "quality of place is a very grey area. It's hard to explain to [the average person], and that's who you have to explain it to in order to get civic support" (L. Isaak, personal interview, August 8, 2006). Concrete metrics with guidance from the Roundtable could be a part of this explanation.

## **Creativity**

*"The university prizes creativity"*

In terms of creativity, flexibility for "decision makers (deans and higher levels)" is emphasized in the North Dakota report, so perhaps that is implicitly expected to

“trickle down.” However, no measure of perceived flexibility was included in the 5<sup>th</sup> annual report, although there was an employee satisfaction survey that indirectly touched on it. Creativity’s importance was highlighted by Richard Florida’s 2002 book *The Rise of the Creative Class*, which linked cities’ economic growth with the creativity and tolerance of their population. Winckler and Fieder, in their paper for the fifth Glion Colloquium, concurred, asserting that for engineering, “the most important point may also be the most incomprehensible: creativity. We must try to attract the most creative and unconventional thinkers into our research systems” (Winckler and Fieder, 2006, p.239). While they call creativity “incomprehensible,” the attached chart does suggest some metrics to get at it.

Some key players in North Dakota do recognize the importance of creativity. In fact, Richard Florida spoke at a State Chamber of Commerce meeting in the state in 2001. Many schools address different aspects of creativity in their strategic plans and alignment reports. For example, North Dakota State University stresses experiential learning, while Bismarck State College labels “Embracing Diversity” as one of its “Strategic Directions.” University of North Dakota seeks to “provide credit-bearing, senior-level opportunities for students to engage in extended research, creative, or scholarly projects (for example, senior theses);” such projects are opportunities for a great deal of creativity (“University of North Dakota Strategic Plan,” 2003). But again, guidance from the Roundtable could increase the number and quality of such efforts throughout the system.

One of the most important aspects of creativity is interdisciplinarity. As Andersson wrote, also for the Glion Colloquium, “It is also becoming increasingly clear

that many future research problems are so complex that they cannot be solved in one institute of even in one single country. Progress to solve research questions and pave the way for new innovations will require a critical mass of competences and resources” (Andersson, 2006, p.83). Once again, individual campuses have recognized the value of interdisciplinarity, but it is important for the entire system to do so as well. NDSU’s strategic plan, for example, seeks to “increase the creation of multi-investigator and interdisciplinary research centers at NDSU.” Interdisciplinary efforts could span not only different departments but different institutions, especially if coordinated at the system level. The varied strengths of the schools within NDUS make such collaborations attractive. Frost and Newby assert that “probably the greatest challenge to the future is achieving, in any national system, the right balance between differentiation to achieve diversity, and connection and collaboration to achieve innovation in ‘novel’ (interdisciplinary) ways” (Frost and Newby, 2006, p.34).

## **Global and Civic Awareness**

*“The university is engaged with the community, in order to foster global awareness—the ability to adapt to new modes of learning, collaboration and expression—and civic awareness on both the individual and institutional levels.”*

Global and civic awareness are captured to some extent in the National Survey of Student Engagement. Its five major benchmarks are level of academic challenge, active and collaborative learning, student/faculty interaction, enriching education experiences, and a supportive campus environment. They are included in the accountability measures, but their explicit purpose is only to gauge student satisfaction. Other possible implications are not explored. To do so would be valuable, because specific facets of student engagement have been identified as important by a variety of analysts.

Globalization requires thoughtful, interdependent and globally identified citizens. New technologies are changing modes of learning, collaboration and expression. And widespread social and political unrest compels educational institutions to think more concertedly about their role in promoting individual and civic development. (Duderstadt, 2005, p. 29).

“Change is on the agenda (whether we like it or not) and the introduction of engagement as a purposeful strategy is a necessary response to a complex and globalized world where we must aspire to being both local and global citizens, and prepare our students to be both local and global citizens as well,” Gourley and Brennan concur (Gourley and Brennan, 2006, p.44). With respect to engineering specifically, Johnson and Jones criticize rigid curriculums that prevent study abroad, arguing that “the globalization of business requires university graduates with an international perspective and with at least some international experience” (Johnson and Jones, 2006, p.246).

The number of students who study abroad would be a simple metric for global awareness, and would give schools motivation to make curriculums more flexible, which would encourage creativity even in those who don't go abroad. Students who don't go abroad would also get “spillover benefits” upon the return of their classmates, who can now offer a new perspective. A model could be the University of North Dakota's Office of International Programs, whose website explains that it “strives to build bridges between cultures and countries. In doing so we serve the entire university in promoting and supporting international education. Our services support the UND international population, promote global cultural awareness, and provide resources and support for UND students studying abroad.”

In summary, while they are being discussed on the campus level, it is important for the NDUS as a whole to address these qualitative concepts. As Frost and Newby assert in the passage quoted above, the key is to find a balance. Each school should have

a different mission, but those missions are most effective if coordinated and evaluated at a system level. A case in point is the section with “highlights of 2005 campus activities” at the end of the 5<sup>th</sup> Annual Accountability Measure Report. It is organized by campus rather than by cornerstone, and lists achievements that aren’t captured by the accountability measures. It is important to recognize that those measures “may not provide a full sense of the dramatic changes occurring on the campuses.” However, many of the efforts mentioned in the “highlights” section could be evaluated through formal metrics. That would ensure more continuity and accountability.

## **Conclusion**

Overall, the NDUS Roundtable Report is an extremely impressive document. However, the real success of the Roundtable lies in what has happened since that report was published. Lester’s fundamental argument is that plans for university engagement must be strategic and take into account the strengths and weaknesses of both the regional economy and of the individual institutions themselves. In the case of the North Dakota, much of this specificity comes with implementation. Every request that a campus makes for a new program has to be aligned with the cornerstones of the original report, and each campus publishes an annual alignment plan relating back to those same cornerstones. Dunn explains that when carrying out a state-wide initiative, these alignment plans are very necessary. In his words, “The Roundtable recognized that unless there was a direct connection and alignment of the vision of the Roundtable and the actions at the college and university level (where the ‘rubber meets the road’) the Roundtable report would just be a beautiful document which would make great reading but would never be actualized.

The campus alignment plans serve as an effective vehicle for assuring the vision becomes a reality” (E. Dunn, personal interview, August 16, 2006). The annual Accountability Measure Reports are also critical to guiding implementation. They serve as “a vehicle through which the system demonstrates its commitment to enhancing the economic and social vitality of North Dakota” (“Creating a University System for the 21<sup>st</sup> Century: 5<sup>th</sup> Annual Accountability Measures Report,” 2005, p.i). While Lester’s model provides guidance for the planning process, he doesn’t examine accountability or implementation. His model does not address the issue of multiple stakeholders who must be satisfied.

In terms of replicating the North Dakota Roundtable or generalizing the process, Larry Isaak feels that its success wasn’t due simply to luck or to a combination of factors that is unique to North Dakota. He identifies five key factors.

- The Roundtable members took an entire day at the beginning of the process to examine what the future of North Dakota was predicted to look like. It was critical that the Roundtable members “looked forward, rather than delving right into how to *fix* higher education”. The charge to the Roundtable clearly spelled out that it is supposed to examine how universities can meet North Dakota’s needs for the 21<sup>st</sup> century—it’s not a backward look, “dragging up everything that had been done *wrong* or needed to be *fixed*.”
- The strategic plans of the campuses are now tied to the cornerstones
- The chancellor talked to editorial boards all over the state in order to obtain media support.
- Private sector business leadership was critical to putting in place public policies that allowed colleges and universities to take risks, to be entrepreneurial, and to link themselves with the business community. The Roundtable recommended that the legislature change certain laws to provide more flexibility; and when they took this to the legislature, they thought “oh, we’ll be lucky if we get half of these.” But *every* law was changed; it was incredible. The private sector involvement was key—testifying in front of committees, for example.
- There were two students on the Roundtable, and they were given an opportunity on the first day to voice what they needed, wanted and expected from higher education. These students made very profound contributions to the work of the Roundtable.

In terms of things he would have done differently, Isaak believes that the main weakness of the Roundtable was external communication of its visions and expectations, while Dunn views maintaining momentum as the central challenge.

- There should have been more communication on a regular basis with *all* legislative leaders. The 20 of them on the roundtable were very active, but not all legislative leaders were on it—also, leaders change. There is still some skepticism; the legislature continues to only enact these law changes on a 2-year basis, which doesn't send a good message about the ability to take risks. "There is no magical formula, it's just going out and talking to them. Communication needs to be constant and consistent."
- Another challenge is to keep the Roundtable visionary and forward-looking, rather than just sustaining its old efforts. This is necessary to keep high-powered actors coming back, particularly those from the private sector. They will only participate if they feel they are either getting value or contributing value; otherwise, "you'll have empty chairs." To help address this issue, the private sector members of the Roundtable meet before each meeting of the Roundtable as a whole.

As Geri H. Malandra from the University of Texas System explained to the National Commission on the Future of Higher Education, "we are at a pivotal moment in higher education. We can take the responsibility and initiative to explain our costs, our students' outcomes, and our institutions' impact" (Malandra, 2005, p.7). The Commission's final report echoes this call for accountability and transparency. "It calls for public universities to measure learning with standardized tests, federal monitoring of college quality" in what the New York Times terms "a broad shake-up of American higher education" (Leonhardt, 2006). While the Commission's report has been very controversial, the use of metrics is not necessarily an attack on higher education. It can, instead, be viewed as an opportunity. As Malandra explained, "accountability... can ultimately help measure, communicate, and improve the benefits of the investment we all make in higher education" (Malandra, 2005, p.7). Specifically, we can improve the economic benefits of university efforts to fuel innovation. In that way, universities can

truly become anchors for the regional economy, with engagement as a core mission alongside teaching and research.

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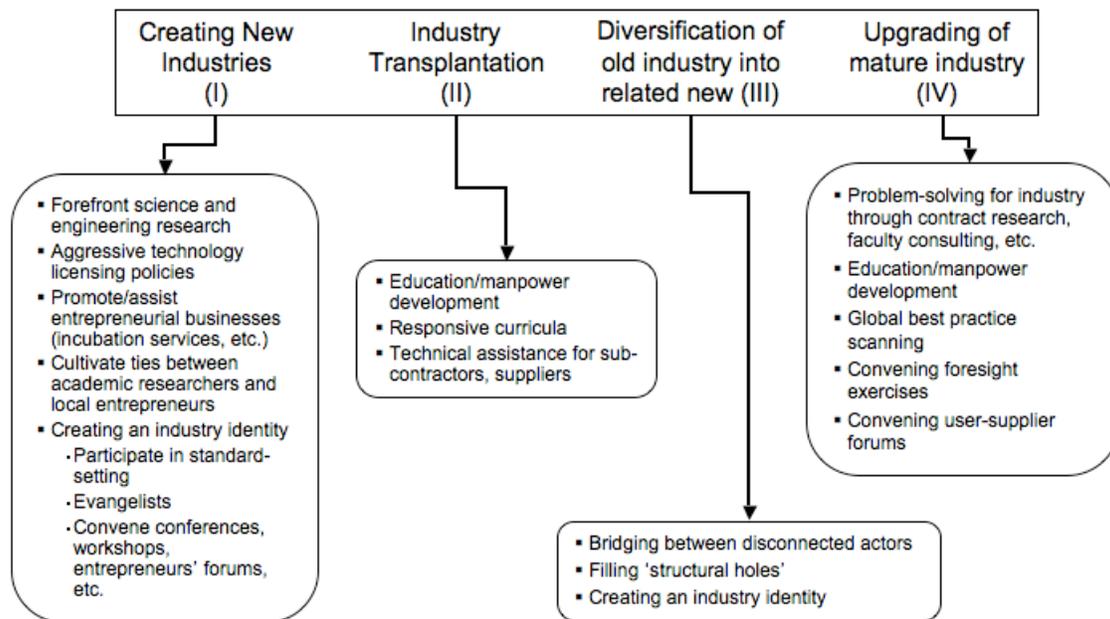
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## Appendix A

### University roles in alternative regional innovation-led growth pathways



## Appendices B "Metric Chart,"

**Cornerstone 1: Economic Development Connection – Direct connections and contributions of the University System to the economic growth and social vitality of North Dakota.**

<p>The university attracts resources to the area</p>	<ul style="list-style-type: none"> <li>• Federal research dollars</li> <li>• Major companies (who are looking for human capital, not favorable tax policies, according to Bill Gates)</li> <li>• <b>International and out-of-state students</b></li> <li>• <b>Alumni networks</b></li> <li>• Graduates who remain in the area</li> <li>• Former industry leaders and other leaders in their fields</li> </ul>	<p><i>Vision plan for Michigan<sup>1</sup></i></p>
<p>The university improves the quality of life of the community and engages the public imagination</p>	<ul style="list-style-type: none"> <li>• Transparency</li> <li>• Spending on theater, athletics, etc.</li> <li>• Proportion of the campus-- for example, the theater, athletic facilities, and library-- available to the public</li> <li>• <b>Community service programs for students and faculty, as well as larger-scale projects such as Yale's masters' in urban education program</b></li> <li>• Local hiring in order to improve the vibrancy of the surrounding community, as with University of Pennsylvania's construction projects</li> <li>• <b>Efforts to build the capacity of local businesses by establishing mentoring relationships with relevant university departments, offering consulting from business school or alumni networks, and gradually increasing transaction volumes as they focus on buying locally</b></li> </ul>	<p><i>The task force that produced "A Strategy for Higher Education in Kansas City" focused on Richard Florida's "creativity index," and pointed out that "A first-class research university can bring the urban core energy and life." They felt that UMKC is strongest in the arts not only academically but also in terms of collaboration with the city, which they feel is not a coincidence. They point out that "universities such as Yale, UCLA, USC, and Indiana have demonstrated that excellence in the arts can be a foundation for building academic excellence<sup>2</sup>." Howard University built a dorm with a computer lab specifically for use by community members<sup>3</sup>.</i></p>
<p>The university offers opportunities for continuous, life-long, education – not only “just-in-case” but also “just-in-time” and “just-for-you”</p>	<ul style="list-style-type: none"> <li>• Life-long education</li> <li>• <b>Significant input from industry representatives on curriculum and programming</b></li> <li>• <b>Acceptance of transfer, Advanced Placement and/or International Baccalaureate credits</b></li> <li>• Research on labor supply and demand, as well as workforce development best practices</li> <li>• <b>Alumni networks</b></li> <li>• <b>Non-traditional students, coursework offered on evenings and weekends, and part-time programs</b></li> </ul>	<p><i>Vision plan for Michigan<sup>4</sup> and UIC's Manufacturing Technology Bridge Program<sup>5</sup></i></p>

<sup>1</sup> Duderstadt, 2005

<sup>2</sup> Greater Kansas City Community Foundation, 2005

<sup>3</sup> Initiative for a Competitive Inner City and CEOs for Cities, 2002

<sup>4</sup> Duderstadt, 2005

<sup>5</sup> Initiative for a Competitive Inner City and CEOs for Cities, 2002

Concepts	Proposed Metrics	Example
<p>The university pursues a path of innovation, not commoditization</p> <p>The university not only generates knowledge on its own but also develops, transmits, and implements knowledge developed by others</p>	<ul style="list-style-type: none"> <li>• Type of research being done</li> <li>• An intermediary office, institution, clearinghouse or forum</li> <li>• <b>Research inserted into, and a forum provided for, debates over policies such as K-12 reform</b></li> </ul>	<p><i>Vision plan for Michigan<sup>6</sup></i></p> <p><i>Lester's typology<sup>7</sup>, as well as the plans for the ICRCs<sup>8</sup>; Yale transformed its Office of Research Cooperation from a mere patent-and-licensing operation to a one-stop business resource to bring together "science, money, and management". As for entering the arena of political debate, Gourley and Brennan feel that "It must be clear that better research should inform public policy debates at local, municipal, national and even international level... Universities that give their academics the freedom and encouragement to make public the issues and make public the intellectual debate that should inform the politicians play a valuable role -- if they care sufficiently and take their role of intellectual leadership seriously<sup>10</sup>." The University of California at San Diego has an entrepreneurship program called UCSD-CONNECT, of which a subgroup is breaking off to serve as an independent lobbyist for the San Diego technology community on issues such as K-12 education, stem cell research, and so on<sup>11</sup>.</i></p>

<sup>6</sup> Duderstadt, 2005

<sup>7</sup> Lester, 2005

<sup>8</sup> Office of Economic Development, UNC-Chapel Hill, 2000

<sup>9</sup> Initiative for a Competitive Inner City and CEOs for Cities, 2002

<sup>10</sup> Gourley and Brennan, 2006, p. 50

<sup>11</sup> Fox, 2006, p 197.

<p>The university has high-level and sustained interactions with industry</p>	<ul style="list-style-type: none"> <li>• Faculty with industry experience and/or current participation in their field (with such work valued as highly as research)</li> <li>• Guest lecturers from industry, especially from businesses participating in joint projects with the school</li> <li>• Faculty serving on boards or as advisors of outside organizations</li> <li>• Contracts with firms for R&amp;D</li> <li>• Significant input from industry representatives on curriculum and programming</li> <li>• Cooperative education programs for students</li> <li>• Advisory programs for local businesses not only through the business or urban planning schools but in all areas</li> <li>• Alumni networks</li> <li>• Trust and respect of business community, as demonstrated by surveys and evaluations of group projects.</li> <li>• Collaboration during the early stages of projects, because “Collaborative exchanges, predominantly used throughout the fourth innovation wave, are early stage processes that occur at the onset of thought and idea development. While they are the least tangible and least concrete (as they are not yet embodied into a technology), they are also the most malleable, can be aimed at a variety of problems, and are the most easily evolvable. The ideas that are exchanged in collaborative environments usually occur far upstream from technology development, and produce the largest gain and the best match to being applied to many different problems of interest, simultaneously, by multiple independent communities”<sup>12</sup>.</li> </ul>	<p>Plans for Industry Cluster Resource Centers in Northeastern North Carolina<sup>13</sup>; also, Virginia Commonwealth University President Eugene Trani served as the chair of the Richmond Regional Chamber of Commerce. In terms of the advisory programs, Enterprise Development, Inc. at Case Western Reserve is a compelling model. Additionally, the Florida Community College at Jacksonville has employer-led, industry-specific councils who meet at least twice a year to review FCCJ’s curriculum, assist in the development of student internships, identify equipment needs and donate equipment, and connect students with jobs<sup>14</sup>. As for trust, Jones explained at the fifth Glion Colloquium that ““Over recent years, technology and dramatically changed how industrial corporations parent with one another. Yet, there had been little change in the relations between universities and industry... Corporations focus to a greater extent on exercising their competencies and they rely on partner organizations for support. A hallmark of such corporate relations is a much higher level of trust... Trust has always been a necessary element of university-industry partnerships, but it has not always been sufficiently present<sup>15</sup>.”</p>
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<sup>12</sup> Johnson, 2006, p. 109  
<sup>13</sup> Office of Economic Development, UNC-Chapel Hill, 2000  
<sup>14</sup> Initiative for a Competitive Inner City and CEOs for Cities, 2002  
<sup>15</sup> Jones, 2006, p. 87-8

**Cornerstone 2: Education Excellence** – High quality education and skill development opportunities which prepare students to be personally and professionally successful, readily able to advance and change careers, be life-long learners, good citizens, leaders, and knowledgeable contributing members of an increasingly global and multi-cultural society.

The university collaborates with other institutions, creating a seamless education system

- Alignment with K-12 system, community colleges, and other colleges and universities in the area, including public/private partnerships
- **Acceptance of transfer, Advanced Placement and/or International Baccalaureate credit**
- Transition programs for transfers and new students/incorporation of non-traditional students
- Elimination of redundant programs
- Opportunities for students and faculty to take/ teach classes at other institutions
- **Research inserted into, and a forum provided for, debates over policies such as K-12 reform**
- **Support for universities elsewhere in the world**
- “Both world-class research universities and a strong spread of regional institutions,” because Harryson and Lorange assert that “proximity matters when it comes to business collaboration<sup>16</sup>.” They found that business scanning for university partners is primarily based on personal contacts between companies and university employees. They also argue only frequent face-to-face communication can foster the level of trust necessary for successful university-industry collaboration.

*Vision plan for Michigan<sup>17</sup>, as well as the "College Now" program of CUNY, which provides direct assessment and academic immersion programs for students starting in 9th grade; also, 15% of New York's high schools are located on CUNY campuses. Yale offers a free masters' program in urban education studies to students who commit to teach for at least three years in New Haven's public schools, thereby improving the school system<sup>18</sup>. Internationally, an example is the European Higher Education area. "To guarantee the necessary trust between institutions to make sure they will accept credits in another institution, particularly in another country, the quality of institutions and its audit, as well as the recognition of degrees, have moved to the centre of preoccupations in European countries<sup>19</sup>." In terms of support for universities around the globe, the Open University in the U.K. has a variety of relationships with institutions abroad<sup>20</sup>.*

The university not only produces graduates but directs those graduates into productive activities, and provide them with value-added education

- Employment profile of graduates
- Value-added measures such as the Collegiate Learning Assessment

*Dowrick's criticism of international growth models that failed to take these factors into account<sup>21</sup>*

<sup>16</sup> Harryson and Lorange, 2006, p. 164

<sup>17</sup> Duderstadt, 2005

<sup>18</sup> Greater Kansas City Community Foundation, 2005

<sup>19</sup> Weber, 2006, 10

<sup>20</sup> Gourley and Brennan, 2006

<sup>21</sup> Dowrick, 2003

The university is engaged with the community, in order to foster global awareness – the ability to adapt to new modes of learning, collaboration and expression – and civic awareness on both the individual and institutional levels<sup>22</sup>.

- **Speakers brought to campus**
- Easily available information on current events
- Classes that encourage civic awareness or have a service-learning component
- **National Survey of Student Engagement results**
- **Community service programs for students and faculty, as well as larger-scale projects such as Yale's masters' in urban education program**
- Efforts to catalyze development around campuses, either by building campus facilities or by offering housing incentives to faculty and staff
- **Support for universities elsewhere in the world**
- **Research inserted into, and a forum provided for, debates over policies such as K-12 reform**
- **Ability of students in all departments to study abroad**

*Vision plan for Michigan<sup>23</sup>, as well as the Kellogg Foundation's recent report asserting that "engaged institutions will produce graduates who will be ready to move along a path of self-directed learning and growth... They will be the product of 'interactive universities' which have developed partnerships with civic, business and political leaders to build better communities.<sup>24</sup>" UMKC established a Center for the City in 2001 to coordinate faculty and student participation in community projects<sup>25</sup>. In terms of support for universities around the globe, the Open University in the U.K. has a variety of relationships with institutions abroad<sup>26</sup>. In terms of study abroad, Johnson and Jones argue that, with reference specifically to engineers, "The globalization of business requires university graduations with an international perspective and with at least some international experience"<sup>27</sup>.*

The university stays abreast of advances not only in fields of research but in the field of teaching itself

- **Faculty with industry experience and/or current participation in their field (with such work rewarded equitably compared to research)**
- **Use of innovative teaching techniques**

*Plans for ICRCs<sup>28</sup>, vision plan for Michigan<sup>29</sup>*

The university offers opportunities for continuous, life-long, education – not only “just-in-case” but also “just-in-time” and “just-for-you”

- Significant input from industry representatives on curriculum and programming
- **Acceptance of transfer, Advanced Placement and/or International Baccalaureate credits**
- Research on labor supply and demand, as well as workforce development best practices
- **Alumni networks**
- **Non-traditional students, coursework offered on evenings and weekends, and part-time programs**

*Vision plan for Michigan<sup>30</sup> and UIC's Manufacturing Technology Bridge Program<sup>31</sup>*

<sup>22</sup> “Clearly, the implications of a global, knowledge-driven economy for discovery-based learning and knowledge institutions are particularly profound. The relationship between societal change and the institutional and pedagogical footing of research universities is clear. The knowledge economy is demanding new types of learners and creators. Globalization requires thoughtful, interdependent and globally identified citizens. New technologies are changing modes of learning, collaboration and expression. And widespread social and political unrest compels educational institutions to think more concertedly about their role in promoting individual and civic development. Institutional and pedagogical innovations are needed to confront these dynamics and insure that the canonical activities of universities— research, teaching and engagement— remain rich, relevant and accessible” (Duderstadt, 2005, p. 29).

<sup>23</sup> Duderstadt, 2005

<sup>24</sup> Greater Kansas City Community Foundation, 2005

<sup>25</sup> Greater Kansas City Community Foundation, 2005

<sup>26</sup> Gourley and Brennan, 2006

<sup>27</sup> Johnson and Jones, 2006, p.246

<sup>28</sup> Office of Economic Development, UNC-Chapel Hill, 2000

<sup>29</sup> Duderstadt, 2005

**Cornerstone 3: Flexible and Responsive System – A University System environment which is responsive to the needs of its various clients and is flexible, empowering, competitive, entrepreneurial, and rewarding.**

The university approaches their interaction with the regional economy in a strategic manner that considers the strengths and weaknesses of both the economy and of their own institution

- **Clearly defined mission available to external constituencies**
- Strategies for economic engagement should answer the following questions, posed by the Kansas City task force on higher education<sup>32</sup>:
  - 1) What level of quality and scope of activity should be the goal?
  - 2) What is the right balance of basic and applied research?
  - 3) What institutions should carry the strategy and what should be their relationship?
  - 4) How should the strategy be phased?
  - 5) What sort of institutional, scientific and civic leadership will be required for success, and where will it come from?
  - 6) What investment of money is required, when, and from what sources?
- “Engagement implies strenuous, thoughtful, argumentative interaction with the non-university world in at least four spheres: setting universities’ aims, purposes and priorities; relating teaching and learning to the wider world; and back-and-forth dialogue between researchers and practitioners; and taking on wider responsibilities as neighbours and citizens<sup>33</sup>.”

*Lester’s typology of economic stages and pathways for university responses<sup>34</sup>, as well as the Kansas City task force’s assertion that “of all factors of production, human capital is most susceptible to intelligent planning<sup>35</sup>.” In terms of considering the strengths of each institution, Frost and Newby wrote for the fifth Gilon Colloquium that “there are very present today concerns that HE leaders may converge in their strategies, particularly when there are both prestige and funding influences that make some strategic choices much more attractive than others....If institutional strategies converge, then nations as a whole may lose out on a sufficiently diverse range of HE offerings to meet public interest needs.... Probably the greatest challenge to the future is achieving, in any national system, the right balance between differentiation to achieve diversity, and connection and collaboration to achieve innovation in “novel” (interdisciplinary) ways<sup>36</sup>.”*

<sup>30</sup> Duderstadt, 2005

<sup>31</sup> Initiative for a Competitive Inner City and CEOs for Cities, 2002

<sup>32</sup> Greater Kansas City Community Foundation, 2005

<sup>33</sup> Association of Commonwealth Universities, “Engagement as a Core Value for Universities, 2001, p. 1

<sup>34</sup> Lester, 2005

<sup>35</sup> Greater Kansas City Community Foundation, 2005

<sup>36</sup> Frost and Newby, 2006, p. 34

The university responds to industry needs and employer expectations

- Critical writing skills of graduates
- Employer satisfaction (as determined by a survey)
- **Significant input from industry representatives on curriculum and programming**
- **Efforts to build the capacity of local businesses by establishing mentoring relationships with relevant university departments, offering consulting from business school or alumni networks, and gradually increasing transaction volumes as they focus on buying locally**
- **Trust and respect of business community, as demonstrated by surveys and evaluations of group projects.**
- Concrete outcomes for collaborative projects, rather than lengthy negotiations over intellectual property that treat it as a tangible object, "just in case"<sup>37</sup>. Projects should be of genuine interest to both parties, with defined responsibilities and assigned accountable people in both organizations<sup>38</sup>.

*University of Pennsylvania's Small Business Development Center*<sup>39</sup>. As for trust, Jones explained at the fifth Glion Colloquium that "Over recent years, technology and dramatically changed how industrial corporations parent with one another. Yet, there had been little change in the relations between universities and industry... Corporations focus to a greater extent on exercising their competencies and they rely on partner organizations for support. A hallmark of such corporate relations is a much higher level of trust... Trust has always been a necessary element of university-industry partnerships, but it has not always been sufficiently present"<sup>40</sup>.

The university prizes creativity

- **Acceptance of transfer, Advanced Placement and/or International Baccalaureate credits**
- Ability to design an independent major
- Interdisciplinary opportunities for faculty as well
- Independent study or culminating senior experience opportunities
- Entrepreneurship courses and programs
- **Implementation of innovative new teaching methods**
- **Ability of students in all departments to study abroad**

*In 2004, half of UMKC's doctorates were in "Multi/Interdisciplinary Studies."*<sup>41</sup> In terms of faculty, UW-Madison's "cluster hiring initiative" acknowledges that "some areas of great potential span a number of departments as well as schools and colleges" and therefore strives "to enable the campus to devote a critical mass of faculty to an area of knowledge that would not be addressed through existing departmental structures"<sup>42</sup>. As Gourelly and Brennan wrote for the fifth Glion Colloquium, "Any focus on community problems an, indeed, many of the big problems of the world today rapidly makes clear that people working from the perspective and knowledge of one discipline will not reach solutions. The problems of the real world are rarely so kind as to divide themselves into disciplines"<sup>43</sup>.

<sup>37</sup> Johnson, 2006

<sup>38</sup> Connelly, 2006

<sup>39</sup> Initiative for a Competitive Inner City and CEOs for Cities, 2002

<sup>40</sup> Jones, 2006, p. 87-8

<sup>41</sup> Greater Kansas City Community Foundation, 2005

<sup>42</sup> University of Wisconsin-Madison, Office of the Provost

<sup>43</sup> Gourelly and Brennan, 2006, 49

The university clearly defines its mission to avoid “mission creep” and to let external constituencies know exactly what to expect

- Clearly defined mission available to external constituencies
- A strategic approach to interaction with the regional economy that considers the strengths and weaknesses of both the economy and of their own institution
- Efforts to develop the system in ways that do not threaten the flagship school but that still provide adequate resources to the other valuable institutions, who may in fact be more engaged with the regional economy

Lester<sup>44</sup>, vision plan for Michigan<sup>45</sup>, and quote from Graham and Diamond in the Kansas City task force report asserting that "the evolution of public research universities in American has been a slow, Darwinian process in which the dominant flagship campuses developed formidable defenses. Most challengers spent most of their energy on the struggle for survival<sup>46</sup>."

<sup>44</sup> Lester, 2005

<sup>45</sup> Duderstadt, 2005

<sup>46</sup> Greater Kansas City Community Foundation, 2005

**Cornerstone 4: Accessible System** – A University System that is proactively accessible to all areas of North Dakota and seeks students and customers from outside the state. It provides students, business, industry, communities, and citizens with access to educational programs, workforce training opportunities, and technology access and transfer – and does so with the same performance characteristics as described in the “Flexible and Responsive System” Cornerstone.

<p>The university provides an open, neutral environment to discuss the future of the region, and brings together diverse perspectives to do so</p>	<ul style="list-style-type: none"> <li>• Conferences, forums and debates hosted on campus</li> <li>• <b>Speakers brought to campus</b></li> <li>• Emphasis on meeting space, staff, and programming rather than just on working space and equipment</li> </ul>	<p><i>Lester's model<sup>47</sup>, as well as the vision plan for Michigan<sup>48</sup></i></p>
<p>The university strives for diversity</p>	<ul style="list-style-type: none"> <li>• Racial and socio-economic diversity</li> <li>• Preparation of typically underrepresented groups for white-collar careers</li> <li>• <b>Out-of-state and international students</b></li> <li>• <b>Incorporation of non-traditional students</b></li> </ul>	
<p>The university helps students be informed consumers of the education they are being provided, and then is driven by their demand</p>	<ul style="list-style-type: none"> <li>• Transparency</li> <li>• Easily available value-added measures</li> <li>• Easily available figures on cost and tuition for families with children of any age, not just seniors in high school</li> <li>• <b>Clearly defined mission available to external constituencies</b></li> </ul>	<p><i>Value-added measures include the National Survey of Student Involvement and the Collegiate Learning Assessment</i></p>
<p>The university offers opportunities for continuous, life-long, education – not only “just-in-case” but also “just-in-time” and “just-for-you”</p>	<ul style="list-style-type: none"> <li>• Life-long education</li> <li>• Significant input from industry representatives on curriculum and programming</li> <li>• <b>Acceptance of transfer, Advanced Placement and/or International Baccalaureate credits</b></li> <li>• Research on labor supply and demand, as well as workforce development best practices</li> <li>• <b>Alumni networks</b></li> <li>• <b>Non-traditional students, coursework offered on evenings and weekends, and part-time programs</b></li> </ul>	<p><i>Vision plan for Michigan<sup>49</sup> and UIC's Manufacturing Technology Bridge Program<sup>50</sup></i></p>

<sup>47</sup> Lester, 2005

<sup>48</sup> Duderstadt, 2005

<sup>49</sup> Duderstadt, 2005

<sup>50</sup> Initiative for a Competitive Inner City and CEOs for Cities, 2002

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