IT IS 2032.
WHERE IN THE WORLD IS
OKLAHOMA?

Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it's the only thing that ever has.
Margaret Mead

An Oklahoma Academy Town Hall
October 14-17, 2012
National Center for Employee Development, Norman

The Oklahoma Academy is a statewide nonprofit, nonpartisan, membership organization founded by Governor Henry Bellmon in 1967, and revitalized by him in 1985, to bring public attention to policy issues, provide objective, thorough research and act as a catalyst for positive change.

The Mission of the Oklahoma Academy is to identify issues facing Oklahoma, provide well-researched, objective information, foster nonpartisan collaboration, develop responsible recommendations, and encourage community and legislative action.

The Vision of the Oklahoma Academy is to empower Oklahomans to improve their quality of life through effective public policy development and implementation.

The Academy Process identifies areas of need and problems facing Oklahoma, conducts research on identified critical issues, and develops long range goals, consensus recommendations, and agendas for action. Through the Town Hall conference process, forums and summits, the Academy increases citizen awareness, encourages civic engagement and sets the stage for thoughtfully improving Oklahoma.

THE OKLAHOMA ACADEMY

Moving Ideas Into Action

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Foreword

THE POWER OF THREE

For many years, the Academy desired to better incorporate the perspectives of University students into our resource books. Our idea was to make this research effort a part of a university program in public policy. This year Aleisha Karjala of the University of Science and Arts of Oklahoma took up the challenge and provided the leadership. Mary Benner of Oklahoma City University and J. Markham Collins of the University of Tulsa followed suit. The result is this rich volume of their contributions. This is an example of "mission (eventually) accomplished!"

It is 2032. Where in the world is Oklahoma?

Of course we don't know right now - but we bet it will be at a place described by the effective collaboration of our private sector (business) and public sector (government) and academia (education) - or the lack thereof. This can be called The Power of Three as it describes modern economic interactions depicted in the graphic on this page. The Town Hall will ponder which gear represents which sector - and what the proper relative sizes of the gears should be.

Today as never before, our great civic debate is over the primacy of the public or private economies and how academia can/should best complement both. That will be a fundamental North Star principle guiding the discussion and findings of our Town Hall.

The one sure thing is that the student authors introduced in this book will be the mature adults (and taxpayers) guiding our state and country 20 years from now. So it seems we need to hear and consider what is on their minds.

Volume Two

October 14-17, 2012, Norman
An Oklahoma Academy Town Hall About The Future

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Introduction

Transformational Change in Higher Education

Leadership Team of the University of Central Oklahoma, Edmond

This essay was prepared by Dr. Don Betz, President, Dr. William Radke, Provost and Mr. Steve Kreidler, Vice President of the University of Central Oklahoma in Edmond.

Radio commentator Paul Harvey famously said "In times like these it is helpful to remember that there have always been times like these". And so it is for the world of educators. While the depth and breadth of change may vary, education has been ever evolving to meet the demands of the times. The question is not whether education will undergo transformation, but rather what is the transformation that this day and age requires?

Current public discourse on the need for transformation within the United State educational sector contains hot-button topics that include the appropriate role of distance delivery systems, improved performance outcomes, efficiency of the use of public funding for education, connections to immediate workforce pressures, and so much more. The following articles are intended to whet your appetite for a deeper understanding of the forces calling for improvement.

In your role as Oklahoma's intelligentsia this week, it is recommended that you look past anecdotal stories and opinions to understand the deeper issues. How does Oklahoma actually perform on national and international scales of performance and efficiency? Does your personal experience in grade school or college in the 1970's have any true relevance today? How do you know? Will you take the time to ask the hard questions that may challenge your own personal convictions?

For instance, some believe that charter schools have an important role to play in common education. But what do you really know about them? Can you gather data to discover performance differences between charters and public schools? If so, who provided this data, an organization that opposes charter schools or one that supports them? It is our absolute duty to seek evidence and unfettered knowledge upon which to formulate public policy recommendations.

Regardless of data, we are certain that the monolithic structure for education is extinct. We learn differently than we learned in the 70's, whether that was 1970 or 1770. And we will learn differently in 2070. And "we" are not homogenous in our ability or our desire to learn. There is room for multiple pedagogies and andragogies, modes of delivery, and cost structure within our learning communities. Educational reform should not be centered upon a simple solution for a complex problem, but multiple wise solutions for multiple challenges.

Educational reform should not be centered upon a simple solution for a complex problem, but multiple wise solutions for multiple challenges.

The future holds a place to accommodate those who learn well in groups and those who learn well in isolation. We will create ways to impact the distance learner in the important social and civic skills that businesses ask that we provide with our graduates. We will transform education to account for populations where 35% of school age children speak a language other than English at home.

Finally, we must dispell the notion that there is opposition to reform. No entity desires transformation more than those of us in the field of education. We all agree that change is needed, indeed it is always needed. How we reform must be studied from a perspective of desired outcomes, not from a position that decries that it is "broken".

Let us clearly define our desired outcomes relevant to our State's future in this global environment, and then we may all become cartographers together.

Section 1

Public Policy Thoughts

Students from the University of Science and Arts of Oklahoma, Chickasha

Our Students and Public Policy

Aleisha Karjala, PhD, University of Science and Arts of Oklahoma, Chickasha

As a professor at the University of Science and Arts of Oklahoma (USAO), I was introduced to the Oklahoma Academy and invited to participate in my first Academy Town Hall in 2010 (Municipal Governance).

As a political scientist, I loved the experience of real consensus decision making and attended again in 2011 (Developing the Oklahoma Economy). In my attendance at these Town Hall Meetings, I came to see that the Academy makes specific efforts to reach out to students and young people. When young people were present, their opinions were heavily solicited and taken seriously.

I am fortunate to interact with intelligent and articulate young people every day. As I began to prepare a course for the spring 2012 trimester about public policy, I thought I had a nice opportunity to introduce my students to the Academy and its involvement in policymaking at the state level.

An Academy Board member asked me if I would be interested in using my class to write some materials for the Resource Document that the Academy produces for these Town Hall gatherings. What a perfect way to combine my role as a professor with the Academy's interest in young people! How can a professor turn down a proposal like that?

Although the class took a national policy focus, I expanded it to include state policy making. I wanted the students to understand that there are other people and organizations involved in making policy at the state level beyond the elected officials and those who work in government. As such, I brought in speakers from the Oklahoma Council of Public Affairs, the Oklahoma Policy Institute, and the Oklahoma Academy. Thanks to Julie Knutson and Michael Lapolla! The students overwhelmingly enjoyed this.

My Public Policy class, utilizing their youthful and educated perspectives, wrote policy proposals for forward thinking projects and policies for the state of Oklahoma and for the Oklahoma Academy. Students were allowed to work in groups or as individuals; most worked in groups, typically pairs. These proposals were submitted to the Research Committee of the Academy who then chose the ones to be included in the Resource Document. Of the eight proposals, five were chosen and are here before you.

I am sincerely proud of what my students have put forward here, and I think it represents students thinking about the future and what is important to them and what they feel should be important to the state. I love that I was able to weave the academic setting of a classroom with a policy organization like the Oklahoma Academy, and I feel that both parties benefitted enormously.

If you are interested in what young citizens across Oklahoma think, I can help you with that!

Contributing USAO Student Authors

Christopher Wayne Collins is from Hugo and graduated from Fort Towson High School. He isa sophomore at USAO majoring in Political Science and taking a minor in Economics. He is active on campus in the USAO Student Government Association (Treasurer), on USAO President's Leadership Council (Leadership Conference Chair), and with Young Democrats (Local President, State Executive Vice-President), USAO

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Randie Lee graduated from Tuttle (OK) High School in 2010. She is a senior Political Science major at the University of Science and Arts of Oklahoma (USAO) and is working on a Spanish minor. She plans to graduate from USAO in April of 2013 and attend the University of Oklahoma College of Law.

Sarah Ann McManes was born and raised in Bridge Creek, Oklahoma. She is entering her sophomore year in college majoring in political science and minoring in English. Upon completion of her bachelor's degree she intends to attend law school and pursue Corporate Law.

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Braylen Rogers was born in Duncan and raised in rural Comanche, Oklahoma. He attended the Comanche Public School District and graduated in 2004, focusing on journalism and political policy. After high school, Braylen attended the University of Central Oklahoma where he sought a major in journalism and broadcasting. He transferred to the University of Science and Arts of Oklahoma where he met his wife, Kaycie. He briefly studied speech pathology before obtaining a degree in political science in the spring of 2012. He and Kaycie now live in rural Wichita Falls, Texas.

Zachary Quintero graduated from Yukon High School as an Oklahoma Academic Scholar and Athletic Letterman in May of 2011. He is a sophomore and Regents Baccalaureate Scholar at the University of Science and Arts of Oklahoma majoring in Economics. In addition to being named to the USAO Honor Roll while attending school there full time, he is also a full time Team Leader for the Target Corporation."

Matthew Watson was born and raised in Tuttle, Oklahoma and moved to Chickasha to attend the University of Science and Arts of Oklahoma. He will graduate from USAO in the Fall of 2012 with a Bachelor of Arts in Economics. During his time at USAO, Matthew has served USAO as the Dance and Homecoming Committee Chair for the Student Activities Board, a Senator for the Student Government Association, the President of Phi Lambda Chi National Fraternity, and has presented at numerous leadership and academic conferences. He was named Mr. USAO for the year of 2012, Senator of the Year, and received the George Austin Leadership Award.

Laura Bennett of Oklahoma City also contributed to these essays.

Biotech: Engineering the Natural Fit

Matthew Watson, Chickasha and Zachary Quintero, Yukon

Imagine an Oklahoma in 2032 that is known throughout the United States - and potentially throughout the world – as a hub of commerce, innovation, entrepreneurship, and creativity; an Oklahoma comparable to the Silicon Valley region of California.

Matthew Watson

Zachary Quintero

This Oklahoma would be renowned for its breakthroughs in the field of biotechnology, and the many subfields that it encompasses – bio-fuels, medical technology, engineering, and many other possibilities.

Our state is positioned in a very advantageous position for this to become a reality. Here we aim demonstrate with current resources and ambitious proposals how the Oklahoma of 2032 can be a competitive, successful, and emerging leader in the 21st century.

The plan to transform the state in to an innovative leader will begin with an emphasis on education. Starting with the K-12 public school system within the state, we can gear young students towards excellence in mathematics and science by using creative new teaching methods that are developing successful students across the nation. After this stage of education, we can emphasize programs that prepare students at the post-secondary level to create a highly skilled labor force capable of excelling in the biotechnology industry within Oklahoma.

The state must also realize the resources currently available to it provided by the small but growing biotechnology industry already in the state. Lastly, some proposals must be enacted at both the state and municipal levels to help foster the biotechnology industry, unleashing Oklahoma to become the home of the most competitive biotechnology-based economy in the United States. With the following research, we aim to show how this is a viable reality for our state.

Flipped Schooling

Flipped Schooling or "flipping the classroom" is a very novel idea in the field of education that changes the fundamental format and purpose of the classroom.

In programs that utilize this strategy, educational materials are lectured on and discovered outside of the classroom – this takes many forms such as online instruction that students may view from home, assigned readings to be done outside of the classroom, having students create materials such as blogs or videos that force them to discuss what they have learned, or 'mastery learning', in which students do not move on from a certain portion of material covered in class unless they test at a pre-determined percentage level.

Those students who do not pass the pre-determined percentage level (80%, for example) are then given corrective instruction until they reach that level. The students then take these reviewed materials and use class time within school hours to discuss the said materials, create breakout groups, or even have students teach their classmates over certain small sections of a certain chapter of a textbook or piece of information.

Notably, the focus of the majority of these courses is in mathematics and the sciences a flipped schooling techniques have been shown to be highly effective in those disciplines. Kenneth Pasch at

Penn State University has used the above methods, to find that his class average changed from a 60-70 percent pass rate of examinations to over 80 percent.[1]

A study conducted at the Colorado State University School of Education in which middle school students in mathematics courses underwent the flipped classroom-style strategy known as "mastery learning" demonstrated that students had better attitudes about the classes they attended, higher information retention, and increased self-efficacy within the classroom environment.[2]

These teaching methods, if encouraged within Oklahoma classrooms and supported by public school administrations, have a great potential to produce exceptional students of mathematics and science within the state. This is exceptionally important at a time in which U.S. students are at a significant disadvantage in the math and sciences, and furthermore, direct links have been established between math and science scores of students and economic success and output.[3]

This would lead to graduates of the public school system in Oklahoma to be more prepared to study the field of biotechnology, in addition to many different other fields that are in need across the nation.

The costs of implementing this method are low depending on the individual instructor's preferences – the costs might vary from a video recorder to record lectures, to simply the logistical cost of flipping your lecture times with student-led homework sessions - both very viable options for Oklahoma educators.

Post-secondary Training for Biotechnology

Once students of the K-12 educational system in the state graduate they will be able to take advantage of numerous opportunities within the biotechnology industry, regardless of their decision to pursue a bachelor's degree in higher education.

The numerous vocational education systems currently in the state would be able to provide skilled workers to make the biotechnology industry thrive in Oklahoma.

Graduates of these programs would be able to find positions within factories, laboratories and many other business environments to be found within the industry. Centers such as the Francis Tuttle Technology Center or the Canadian Valley Technology Center would need to make only incremental changes in their foundational structure to begin offering these types of training and educational programs within their facilities.

This would be attainable following a partnership with the Oklahoma Department of Career and Technology Education- an institution designed to help vocational schools in the state meet the requirements necessary to compete directly with their counterparts across the nation.[4]

Oklahoma's higher education environment currently has a structure in place to greatly support the overarching goal of a globally competitive biotechnology industry in Oklahoma by the year 2032.

While the University of Oklahoma[5] currently offers undergraduate and graduate programs such as biochemistry and engineering in biotechnology fields, Oklahoma State University uses it

agricultural expertise to offer undergraduate and graduate programs with an emphasis on plant biotechnology and bio-processing.[6]

The higher education community in the state is primed to supply the biotechnology industry here with graduates that are competent, skilled and will be able to directly compete with their counterparts from other states with programs aimed towards fostering growth in the biotechnology industry.

Lastly, programs could be established at 2-year degree programs offered at institutions such as Oklahoma City Community College that would aim to combine the benefits of both aforementioned degree programs into one expedient, efficient program. Managerial positions in addition to business leadership positions would be available to individuals who choose to pursue this educational program.[7]

This plan would be beneficial to all parties involved – colleges and vocational schools would create a thriving new course of study that they will benefit from by creating the most sought-after institutions in the nation to attend for training in a career in biotechnology.

Oklahoma's Biotechnology Advantage

When considering the prospect of Oklahoma's future with biotechnology, one only has to look at the present. The central Oklahoma region already has a competitive advantage over most markets with the necessary resources to establish and cultivate a biotechnology industry base.

The Presbyterian Health Foundation Research Park in Oklahoma City is the nucleus of growth within this industry. In a 2005 study commissioned by the Greater Oklahoma City Chamber of Commerce, the PHF center was noted as giving Oklahoma a distinct competitive advantage when compared to other places in the nation: "The proximity of PHF Park to the region's biomedical institutions and the availability of space for companies relocating or expanding in the Greater Oklahoma City region as well as for start-ups is an advantage that should be exploited."[8]

Combined with the research facilities at Oklahoma State University, the University of Oklahoma and the OU Health Sciences Center, there is ripe ground for introducing existing biotechnology companies as well as entrepreneurs to the area.

The PHF Park already boasts 36 companies in its residence, taking advantage of the advanced meeting and Class A wet laboratory facilities it has to offer.[9] It is essential to ensure that the city of Oklahoma City and the state are committed to fostering an environment where facilities such as this are allowed to expand to accommodate the growth of advanced industry in Oklahoma.

This study recognized other key areas where Oklahoma matched up to other competing locales on the national stage, besting areas such as Dallas, TX and Louisville, KY, but also lagging behind in a few fundamentals to St. Louis, MO and Birmingham, AL.

The cities of St. Louis and Louisville have a primary advantage in access to outside funding for their biotechnology projects. While Oklahoma has seen nearly a doubling of the National Institutes of Health grants for projects in recent years, it is far behind St. Louis' threefold increase from the NIH over the same time span.

The act of simply attracting more companies to the state would increase those numbers, indicating to others the priority Oklahoma places on biotechnology. This could produce a snowball effect of biotechnology startups and corporations recognizing the industry's importance here and thus moving and applying for the funding as well.

Funding Future Success in Biotechnology

The question then is how our state goes about attracting these types of companies to establish and grow here. Oklahoma must continue to cultivate a friendly business environment. Oklahoma's Economic Development Generating Excellence (EDGE) Policy Board is the centerpiece towards developing a future for biotechnology in Oklahoma.

In 2004, the Board was granted a $150 million self-sustaining endowment by the state to fund innovative projects by companies in Oklahoma. While it is possible for public universities to apply for this fund, as the years have progressed it has been awarded to primarily private corporations, including many located in the PHF Research Park.

While this has been a boon for the biotechnology in the state, it is not exclusive to their industry, therefore spreading the award money much thinner than necessary to produce the kind of economic boom possible for our state.

In 2009, only five projects out of the 62 that applied were able to be funded through EDGE, and funding for the fiscal year of 2011 was only $6.5 million.

This is far short of the $1 billion self-sustaining endowment envisioned by its board members. This size of an investment could produce $35 - 40 million in capital funding every year, creating a strong seed capital for the biotechnology industry in Oklahoma.

The boom created by this investment is necessarily not limited to the confines of this singular industry, which is why our investment in it is so vital to our state's future. Tom Walker of the non-profit "i2e," who oversees the fund, estimates that if all 62 applicants were funded in 2009 we could see the creation of 855 new jobs in the state, leading to a total income increase of $120 million.[10]

As this income is realized, it would increase spending on goods and services throughout the state economy, creating more jobs and increasing even more income along the way. By the year 2032, we would have benefitted from this annual, self-sustaining investment for nearly 20 years.

Becoming the Oklahoma of 2032

Oklahoma's current economic success is attributable largely to the success of the oil and gas industry throughout the 2000s. However, as the past has shown, when those sectors decline, Oklahoma's growth also declines.[11] The state's economy will certainly benefit by being more diversified while maintaining high-growth industries, and biotechnology is one ripe for new opportunity and continued growth.

Oklahoma wouldn't be starting from square one on this ambitious endeavor. With a small but solid base of biotechnology firms in a welcoming home for them, we already have some of the tools necessary to make it more than a possibility. However, if we don't invest in funding sources such as the EDGE program and expand upon our available space in the PHF Park, we will see this lucrative opportunity for Oklahoma's economy languish, lost among many other small, low-growth sectors.

The state government should be willing to brush aside the years of incremental change and realize the several hundred million dollars of private investment success of publicly-funded undertakings like the Metropolitan Area Projects in Oklahoma City.[12] With the same ambitious and transformative spirit, the state and city can do what is necessary to realize the extensive amount of private sector growth possible. Increasing the size of the self-sustaining EDGE endowment to the previously-envisioned $1 billion, implementing revolutionary types of instructional methods for the maths and sciences in state schools, and providing funding to build and expand upon facilities such as PHF Park will all ensure attraction of startup and existing biotechnology firms to the state.

Oklahoma's economy will experience a boom like none other before it; an economic revolution with its eyes set firmly on the cutting-edge of the nation's and world's future. The Oklahoma of 2032 will be a place where its rich cultural past combines with its high-tech present to create a place where people live, work, and thrive unrivaled by anywhere in the world.

Notes

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Critical Thinking

Randie Lee, Tuttle and Sarah McManes, Tuttle

Randie Lee

Sarah McManes

We know, that in the year 2032, in order to become optimally competitive as a state on a global level, a more innovative way of thinking will be essential. Such a way of thought has to be trained and molded. So why not start at the roots? When children enter school at the kindergarten level they are taught the fundamentals:

The Alphabet, shapes, how to read, and how to form letters. As a child progresses through elementary school these skills are sharpened and refined. By third grade, spelling tests and timed tables of multiplication are the challenges that are faced. Then attention shifts to accelerated reader programs in junior high and high school. These programs are designed to test the child's proficiency in mathematics and reading.

With our experience in Oklahoma's K-12 public school systems, it seems as though from start to finish students are taught to pass a test, be it the standardized tests in elementary school or junior high, to the end of instruction exams (EOIs) in high school, and on up to the ACT exam. Teachers in high schools exaggerate the importance of scoring well on these EOI exams, but it does little to nothing for the student.

They may gain some very technical knowledge, but these tests are more or less designed to measure how well the teacher is doing his/her job, and how well the information is regurgitated.

Should public education not be designed to mold the student to be successful in the future?

What we would like to see happen is; instead of teaching students in K-12 public school systems to pass a test, teach them to think critically and incorporate problem solving skills that cannot only be used in the classroom, but can also be utilized in their lives outside of school on a day to day basis.

These are elements pertinent to a true liberal arts education. Like the curriculum now, students are still subject to the core courses of mathematics, language arts, sciences, and social sciences, but in such a fashion that it becomes germane to everyday life.

This is our proposition: In order to instill a sort of knowledge into the youth of Oklahoma to prepare them for life outside of a school setting, we want to integrate the best elements of both a liberal arts education and the existing curriculum in the K-12 public school systems across Oklahoma. As a result, the education system in Oklahoma will yield more productive and well-rounded individuals that can easily and proficiently work with others.

K-12 school systems are about 90% regulated at this point relative to standard requirements, assessment, special services, calendars, accountability, and staff development. Federal and state policy has come under a great deal of scrutiny as it has developed expectations—rightly aimed at closing an achievement gap—that sometimes gives teachers and other administrators a message that they should not attend to arts and other content outside of the core. [1]

With the state of Oklahoma being a majority of conservatives, citizens do not like to hear the term "liberal" being forced upon them, it can be very unnerving, especially if it is in relation to our educational systems.

A liberal arts education incorporates elements of humanities, and social sciences into every aspect of an education. It provides students with flexibility, insight, and a wide array of skills necessary to succeed in their future.

We spoke with many high school teachers in the rural areas in the state of Oklahoma. Most of these teachers agreed that they wanted to teach students to think for themselves but, they did not feel that the current curriculum did a sufficient job in doing so. Denise Colvin, an English teacher at Tuttle High School said that to her a liberal arts education meant, "A variety of disciplines taught with an open-ended, questioned approach".

It was unanimously agreed among these teachers that incorporating more elements of the liberal arts would indeed, greatly benefit these students and better prepare them for their future outside the walls of an educational institution.

Edina Public School systems in Minnesota implemented a liberal arts curriculum, purposefully avoiding any 'test prep' sorts of materials or expectations.

Jenni Norlin-Weaver, Director of Edina Schools, says that she thinks this is because, "working with the requirements set is likely constraint enough".[2] This new curriculum took effect district wide in the year 2006, including: six elementary schools, two middle schools, and one high school. Their mission: "Creating responsible, lifelong learners with the knowledge and skills to thrive in our global society."[2] Since this curriculum has been implemented the Edina school district has obtained a drastic increase in their standardized test scores, ACT scores, and university admittance.

Edina accomplished this by setting a four year cycle for their curriculum. The first year is, Context and Reality; Evaluation; Determine Options; Choice Making; Design. Year two, Design; Implement; Refine. Year three is to Refine; Continuous Improvements. And in the fourth year, Prepare for Assessment; Internal Request for Proposal (RFP) is sent to research. Over a matter of four years the Edina school district made continuous observations, and created a curriculum that ideally fit the students and their goal as an institution.

After the beginnings of implementation, pieces of the curriculum were refined while others were removed all together in order to provide the best education possible while utilizing both the core curriculum of other districts and their newly designed liberal arts curriculum.

Prior to implementation of the Edina's new curriculum, as a district they maintained competitive scores on the Minnesota Comprehensive Assessments (MCAs). Beginning the following year (2007) the district average began to rise. By 2011, Edina's scores on the MCAs were well above the state average in the subjects of reading, science, and mathematics. They have also received an average of 26.2 on the ACT, as well as 15 National Merit Scholars in the year 2011.[3]

Tony Goldsby-Smith says, "Our educational systems focus on teaching students to control, predict, verify, guarantee, and to test data. It does not teach how to navigate 'what if' questions for unknown futures."[4] This is what we would like to instill in each and every student in the state of Oklahoma.

The liberal arts are typically associated with higher education but, not every student is given the opportunity to attend such institutions for higher learning. By implementing such a curriculum in the K-12 public school systems, Oklahoma has a chance to extend these ideas of constructive problem solving and innovative thinking into every individual that attends a public school in the state of Oklahoma.

Many prestigious individuals support the utilization of a liberal arts curriculum. Steve Jobs of Apple said "the reason Apple is capable of creating devices like the iPad, is because they have tried to stay on the intersection of technology and the liberal arts".

Bill Gates stated, "liberal arts education is well correlated to studies that actually produce jobs." In a debate over a liberal arts degree vs. a technical degree, Mark Bauerlein said, "I think it's a false divide. Every good liberal arts college has science and math majors. I think it's less an issue of majors, than it is students equipping themselves with the knowledge and skills that employers in the 21st century demand."[5]

A student coming out of school with a liberal arts education has extensive training not only in the technical field of their study, but also has the capacity to play with larger concepts and apply new ways of thinking to difficult problems that cannot be analyzed in a conventional way. Innovation, communication and presentation, are all reinforcing characteristics of those students. They are what drive many employers to hire students with a liberal arts education over a one with a more technical education.

A liberal arts education provides individuals with the abilities to speak more fluently, write more elegantly, and communicate more efficiently. Each of these skills goes hand-in-hand with the success of a state, or even a nation.

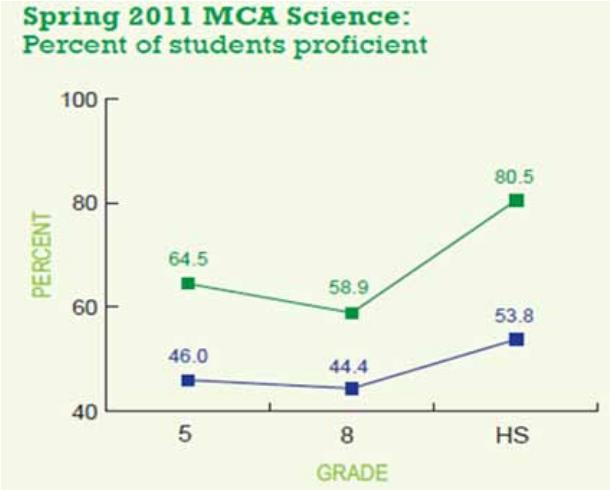
With more people in the state of Oklahoma capable of communicating on a higher level, businesses would be attracted to the state for their ability to analyze deeper, and strategize on a global level. Those students with a liberal-arts education often have the ability to dig a little deeper in customer relations. They can really get "under the skin" of a customer and truly comprehend a situation to provide what meets a customer's needs.

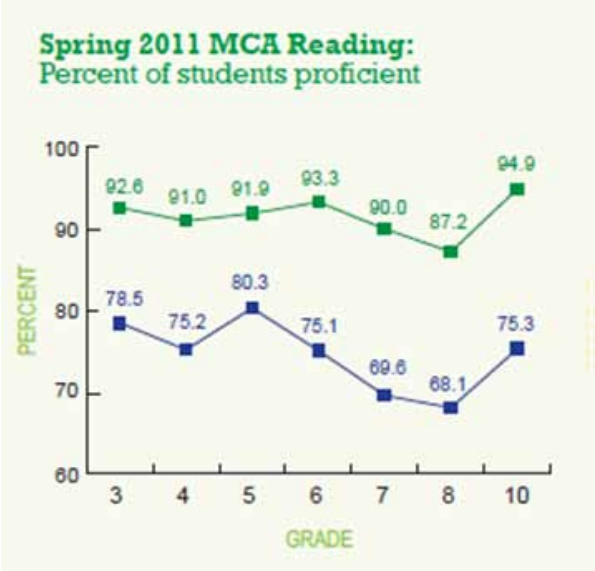
None of this can be accomplished without initial cost. In the fiscal year of 2011, Oklahoma allocated 34% of funding to the educational systems. This equaled about 10.4 billion dollars spread between 584 districts across the state.[6] This would mean, if divided evenly between the districts each school receives approximately 17.8 million dollars in one fiscal year. The majority of funding went into pre-primary school programs through secondary schools. Tertiary schools come in next, followed by educational institutions that could not be classified by level. The general costs of implementing a policy such as this would involve: the purchase of new text books, employment of more staff, and extensive training for teachers and administrators across the state.

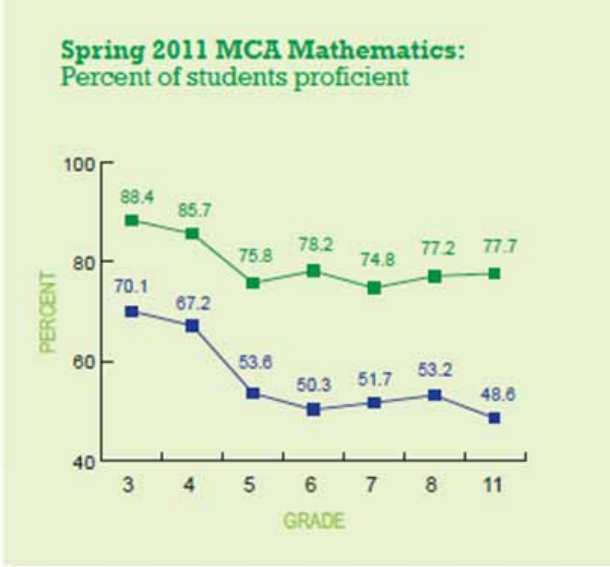
Being the students of a liberal arts institution ourselves, we are firm believers in the concept of a liberal arts education. As entry level college students we were among a vast majority that all feel the same way, high school did not prepare us for college. Elementary school might have prepared us for junior high, and junior high might have prepared us for high school…but that is all in the same 'ballpark' (especially when remaining in one district through your entire student career).

The curriculum utilized by institutions of the liberal arts is designed to prepare students for life after graduation. What we would like to see implemented in our K-12 public school systems include the important concrete concepts of mathematics, science, language arts, and social sciences required to pass standardized tests, but uses tangible examples that directly relates problems in the text to real life situations. In an environment where students feel that they can practice what they are being taught, students are

KEY: EDINA (GREEN) MINNESOTA (BLUE)







more likely to devote more time and energy to their education.

It can be argued by many experts whether a liberal arts education is beneficial to a student's success in the real world or not. But, the majority of these individuals agree that it is. The liberal arts education stands out for what it does. It enables students' minds to be enhanced and sharpened; not just taught in a cut and dry way. Students are required to think for themselves, dig deeper, and wrap their minds around larger concepts. They are given the chance to conjure up new ideas, and innovatively solve problems on a large scale. With the new demand for enhanced communication skills and analysis on a global level, we believe that utilizing a liberal arts education would give the state of Oklahoma an edge to be competitive with other states and even nations in the global market.

We want each individual in the state of Oklahoma to feel like their education was sufficient in preparing them for the next step of their life. This requires more than knowing how to solve the Pythagorean Theorem, and who Albert Einstein was. A technical knowledge may solve problems a problem with pen and paper, but how far will it go elsewhere? As time progresses, it is becoming more evident that the old way of thinking is becoming less relevant. It is time for a new way of thinking; it is time to become innovative and creative as a state.

END NOTES

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[2] *Jenni Norlin-Weaver, EdD Director, Teaching and Learning, Edina Public Schools.*

[3] *See: http://edina.k12.mn.us/news/newsletters.html*

[4] *Tony Goldsby-Smith, founder and CEO of Second Road, a business design and transformation firm headquartered in Sydney, Australia.*

[5] *Mark Bauerlein, Ph.D., English Department; Emory University, Georgia. See: http://www.thetakeaway.org/2011/mar/28/liberal-arts-or-technology-question/*

[6] *See: http://www.usgovernmentspending.com/year_spending_2011OKbc_13bc1n_20#usgs302*

Infrastructure? Bank On It!

Christopher Collins, Hugo and Amanda Robinson, Moore

Introduction

Recession, for states like Oklahoma where unemployment rates have remained relatively low, provides opportunity to consider our long-term economic future.

Christopher Collins

Amanda Robinson

How can we remain competitive when other states are investing more and growing faster? Perhaps more importantly, we must ask ourselves how to compete on a global scale in an increasingly "flattened" world. Unfortunately, simultaneously, we must innovate to take advantage of rapidly developing technologies and address serious strains population and economic growth have brought to our public infrastructure.

Investing in infrastructure is one proven way to spur economic growth. A study conducted through Williams College concluded that investments in infrastructure, up to a certain point of optimality, result in increased income per capita and therefore economic growth.[1] The simple facts are these: infrastructure investments are directly correlated to positive economic results, it can be assumed that businesses want to invest in states that invest in themselves, and finally, our state should maintain high quality public infrastructure simply for the sake of doing so, regardless of peripheral benefits.

Luckily, these potential investments *are* actually needed. One example is the fact that, according to the American Society of Civil Engineers, more than thirty percent (30%) of our state's roads and bridges are functionally obsolete or structurally deficient.[2] This is just one of many examples of failing or insufficient infrastructure around the state.

So - if infrastructure investments are needed and will generate growth, what can we, as a state, do to make them happen? The best solution is a State Infrastructure Bank (SIB) – which will provide much needed credit flow for municipalities – and, importantly, other community based groups or organizations – to make these investments. Currently, many states already operate SIBs, typically under the administration of Departments of Transportation. Additionally, a good deal of federal funding is available for these projects. The state of Oklahoma will greatly benefit from the establishment of an SIB.

Facts, Data and Information

Two examples of opportunities to invest are energy and transportation. Oklahoma's economy has historically been dominated by the energy industry. Even today, as the world turns its eyes to new energy sources, we stand to remain a leader in this field. Transportation, on the other hand, is the archetype of "infrastructure"; roads, bridges, and railroads are commonly associated with the term. Each of these categories, within the broad umbrella of infrastructure, holds great potential for our state. We can make needed investments while preparing ourselves for the future global economy. Additionally, it can be clearly shown through academic studies and economic indicators that such investments, and those in other categories, will spur growth.

Energy: Oklahoma Gas and Electric (named Utility of the Year by Electric Light & Power magazine in 2011) has a history of innovation. Today is no different. They are currently leading the way in the development of "Smart Grid" technology.[3] This essentially allows meters outside customer's homes to communicate with the grid – giving both the utility and customers the ability to view data regarding usage and demand. This technology streamlines the provision of electricity and reduces cost through savings passed on to consumers.

Projects like this are happening all across the country and should be incentivized by government. An infrastructure bank could feasibly provide a line of credit to privately owned utilities to upgrade existing systems in favor of new "Smart Grids."

Oklahoma has a lot of catching up to do on this front. In 2011, the "State Energy Efficiency Scorecard," ranked the state forty-seventh for efficient provision of energy.[4] Unfortunately, this indicates a drop from forty-third the year before. Even more worrisome: out of 50 possible points on the scorecard, Oklahoma received only 6.5. The report also notes that, although utilities in our state have made improvements, there is still no statute mandating statewide building energy codes.

Even more promising is the development of alternative sources of energy, outside of the traditional oil and gas which have built a foundation for prosperity here. The Southern Power Pool, of which Oklahoma is a member, found in 2008 that the northwestern part of the state alone had the potential to produce more than 20,000 megawatts of electricity via wind turbines.[5]

In fact, when compared to Texas, our potential more than doubles theirs. The same report also indicated that approximately $3.4 billion dollars would be needed to properly upgrade the electric transmission grid to take this energy from the west to population centers, such as Oklahoma City, Lawton, and Tulsa.

This number was well publicized at the time of the report, with Corporation Commissioner Jim Roth writing at length about the subject for the Tulsa World. Despite this, significant investments are *still* needed – and an SIB will provide these projects with necessary capital.

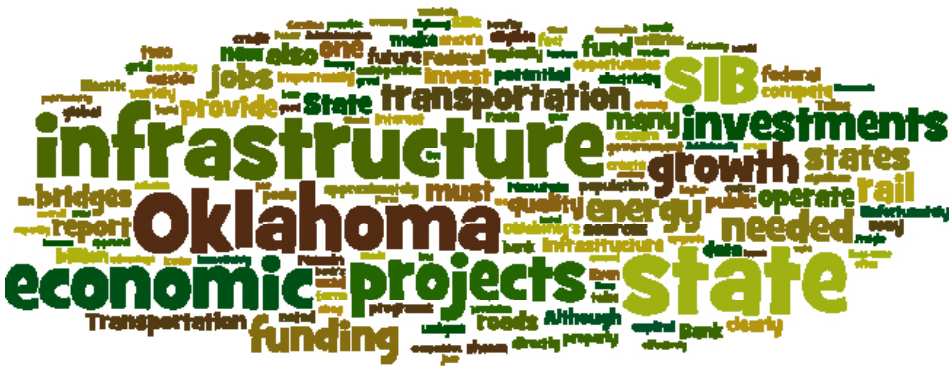
Transportation: As discussed above, Oklahoma's transportation infrastructure needs improvement. It generally receives poor scores from national rankings for all transportation categories. The state's population is also expected to grow to nearly 4 million residents by 2025, further straining these systems. According to a report from TRIP, transportation has become particularly dangerous in rural parts of the state. Traffic fatality rates here are more than three times higher than rates in urbanized areas. Furthermore, approximately $252 billion in goods are shipped in and out of the state each year, mostly via public roads.[8] Investments in our roads and bridges will create jobs directly – and put boots on the ground immediately.

Although fatalities remain a significant issue in rural areas, Oklahoma's urban centers are faced with increasing economic losses due to low quality roads, bridges, and traffic congestion. The TRIP report found that Oklahoma City drivers lose around $575 annually due to time and fuel wasted in traffic. In Tulsa, the number stands at $407. The report's clear conclusion was that investments should be made immediately. The organization noted Federal Highway Administration statistics showing that every $1 billion invested in infrastructure leads to the creation of approximately 27,800 jobs.

Perhaps even more importantly, some state leaders have noted that Oklahoma is in dire need of further railroad investment. In 2011, the Governor's Task Force on Economic Development and Job Creation issued a report, saying: "The Study Group believes that the importance of first class rail service has been overlooked and underappreciated as a driver of state economic health and growth."[9] They also noted that rail is increasingly used for the transportation of crude oil, along with other heavy products such as coal, rock, gravel, etc.

They go on to discuss the lack of an East-West rail line to compete with those in Kansas and Texas. Freight moving along these lines bypasses our state entirely. The Task Force Study Group proposed the creation of a "Rail Access" fund, to provide the means for new tracks to be laid, particularly East-West lines. Although this remains an excellent idea, an SIB could provide further opportunities for these projects to begin.

Oklahoma is already a rail state, but new tracks will provide an economic benefit, with tens of thousands of quality jobs coming from each billion



dollars spent.[10] Figure 2 compares the median household income for Oklahoma families to the average wage and benefits package provided to freight rail employees. Freight rail employees ($102,000) earn an estimated 2.4 times the Oklahoma median earnings ($42,979).

Economic Benefit: It has been clearly established that investments in these two particular industries, energy and transportation, will yield economic growth and quality jobs. And as mentioned in the introduction, data has shown that infrastructure overall can prove to be an economic boon. In fact, there appears to be a direct correlation between maintenance of infrastructure and economic growth. Although this seems straightforward, and might be "common sense," economic data backs up the argument and clearly defines the relationship.[11]

Policy Development: State Infrastructure Bank
Typically funding for infrastructure comes from a variety of sources. Roads and bridges are often financed by municipalities and State Departments of Transportation. Electric transmission grids are typically bankrolled by private utilities. Other funding for infrastructure comes from a variety of sources – private corporations, the federal government, public good organizations, etc. The difference between a State Infrastructure Bank (SIB) and these funding methods is the expectation of repayment.[12] Essentially; SIBs lend money to qualified borrowers for approved projects. This money is then typically repaid at an interest rate at or below the market rate. Currently, the federal government subsidizes these programs and there are even discussions in Congress of establishing a similar scheme on the national level.

According to the U.S. Department of Transportation's Federal Highway Administration, states must create their own individual SIBs through specific enabling legislation.[13] Federal legislation (Title 23) sets standards for which programs are eligible for SIB funding.

Unfortunately, this does limit the capability of a state level program to fund nontraditional developments, such as electricity grid upgrades.

One possible solution involves splitting the SIB resources into two pools – one of which funds transportation projects, or all of those eligible for federal monies, and the other which is set aside for alternative projects. Creating an SIB with two completely separate pools of capital is a unique idea – one which could pioneer the way for other states to effectively operate within this model.

Another common issue facing states is the perception that SIB loans should only be used to fill gaps in funding for individual projects. In South Carolina, considered by many to have the best example of an infrastructure bank, this is not the case. Oklahoma should ensure that projects can rely on capital from the SIB to be their *primary* funding source.[14]

Essentially, each pool of resources will operate as a "revolving fund" with repayments and interest used to support new projects and administrative costs (which would be limited to 2% of the bank's overall capacity). Initial capitalization will come from the Federal surface transportation fund, which provides specifically for road, transit, and rail programs. This allowance would be matched by state contributions and augmented by future state appropriations, if needed. To build lending capacity, it may also be necessary for the bank to engage in issuance of bonds, which has been

done to a great degree of success in other states, including Florida and South Carolina.

For the SIB to be truly effective, it must operate outside of the Department of Transportation, signaling clearly that other types of projects will be eligible for funding. The SIB could operate as an independent executive agency, led by a board of directors appointed by the Governor with Senate approval. This board would have final authority for approval of all projects – and would be entrusted to maintain the bank's credit rating and security.

Analysis and Summary

Oklahoma stands at a crossroads. If we make the difficult decisions needed now, we can ensure that our state is properly prepared for the global economic future. Too often, politicians and state leaders focus on the short term and what will win the next election.

The recent recession and economic crisis should serve as an opportunity for us to look further ahead. Our state needs a long term plan for growth. Although infrastructure is only one piece of this puzzle, it is an important one.

Our roads are buckling. Our bridges are crumbling. And our state's rail system doesn't allow us to effectively compete with our neighbors. Meanwhile, we are at the cusp of a renewable energy revolution – right here in Oklahoma. Clearly, action is needed. These projects will serve as a catalyst for growth, create jobs, and put shovels in the ground.

Above all, as shown above, we have a unique chance to look ahead and ensure that we can compete in 2032. People and corporations will invest in us if we act now and invest in ourselves. Improved infrastructure not only directly creates jobs but also leads to higher quality of life, investor interest, and, according to economic data, growth.

A State Infrastructure Bank will allow us to adress all of these issues – the problems we face and the opportunities that await us. We must act decisively and without reservation – but we must learn from the successes and failures of others and consider what has worked and what has not. Our SIB should be unique. It should operate independently and fund a wide variety of projects. It should be properly capitalized.

Finally, it should be structured intuitively (two pools of resources) to take advantage of all available funding. Oklahoma can set the standard and pave the way. If we do, just imagine where we might be in twenty years…How many projects funded? How many jobs created? How many glowing articles in newspapers nationwide about our success? We can improve our state. Together, we can build a competitive Oklahoma.

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Fueling Our Future

Braylen Rogers, Chickasha

The history of natural gas can be dated back to over 3,000 years in ancient Greece. A flame that came from the earth was discovered by a goat herdsman and was heralded as an act of the gods, to which a temple was erected at the site of the flame. It would be many years, over 2,000, until it would be truly understood as a source of energy that could be used for commercial and personal use[1].

Today, natural gas is used to create twenty-four percent of the country's energy[2]. Natural gas has been discovered in Wyoming, the Dakotas, Texas, Colorado, Arkansas, Louisiana, Ohio, Pennsylvania, West Virginia and of course right here in Oklahoma[3]. Natural gas has been proven to be a clean and efficient fuel and energy source. In an in-depth study by the Massachusetts Institute of Technology (MIT) the report said:

The low-carbon emissions and low capital cost of natural gas generation compared to other fossil fuel generation, combined with abundant gas supplies and current relatively low prices, make natural gas an attractive option in a carbon-constrained environment.[4]

This policy recommendation is intended to harness and use the great opportunity to be the leader in energy development through the use of natural gas and these technological advancements can be done right here in Oklahoma. With a policy that allows researchers to use Oklahoma as a friendly environment to work, this state could be the model that the rest of the country and the world follow in the search of better energy efficiency.

Therefore, Oklahoma's legislators should appeal to the Department of Energy to provide federal assistance in research and the development (R & D) of better and more affordable natural gas energy technologies. By correctively using subsidies in R & D in the gas industry, the American and worldwide public could experience drastic changes in the way energy is used.

The environment is also a key benefactor to this policy. A study by the Gas Technology Institute shows that increasing natural gas's role in the energy industry, by 2030, ninety-six metric tons of CO2 could be reduced, 200,000 GWh of electricity could be saved, and the consumers could save $213 billion dollars; taking charge in the technological development of natural gas could do all of this.

Twenty years from now Oklahoma could be a model state in the arena of energy efficiency.[5] Which in turn will be beneficial to the worldwide market in the field of energy solvency.

Some may question Oklahoma's ability to take the lead in such a lofty goal of the future of the energy

industry. However, Oklahoma has already held the responsibility as the largest oil producer in the world[6]. This attempt of being important in the future of energy technology is not a pipe dream; Oklahoma already has great investments and infrastructure in the natural gas industry already, and more could be done if properly motivated. This policy proposal could be that proper motivation.

A great concept Oklahoma could take part in is the advancement of natural gas technology is in what is called "full fuel cycle." From the same report by GTI, "Full fuel cycle (or source) energy efficiency accounts for the cumulative impact of extraction, processing, transportation, generation, transmission, and distribution losses on overall energy usage[7]." This is an easy way of seeing what exactly it takes to create energy (or fuel) and what the actual value of the energy is worth.

Different forms of energy have different energy values. Some energy sources have greater value. Putting it into perspective, every BTU or British Thermal Unit that comes from a coalmine, approximately 31% of the energy value reaches the consumer; whereas a natural gas well, the energy value is 91%. These numbers are followed up by the Institute saying:

[T]he direct use of natural gas by residential, commercial, and industrial users is far more energy efficient than the traditional use of coal or natural gas to produce electricity, which then must be delivered for use by homes, businesses, and industries.[8]

This is exactly what Oklahomans could be doing to make a better future: making natural gas more direct. This policy's intent is to get Oklahoma innovated in finding alternative uses for natural gas. One of these uses could be the increase use of natural gas to fuel personal vehicles. Instead of using alternatives, such as electricity and biofuels to power our engines, natural gas can take the roll of being environmentally sound, efficient and cheap.

The use of natural gas for transportation fuel makes up only 2%.[9] By promoting a policy that makes the price of converting vehicle engines to run on compressed natural gas, or CNG, more affordable, the strain on gasoline prices will go down, leaving more money in the consumer's pocket, and less greenhouse gasses being emitted. CNG-powered vehicles run very similar to their gasoline-powered counterparts. "CNG-powered vehicles use spark-ignition that basically the same as those used in gasoline powered."[10]

Therefore going from gasoline to CNG is not a drastic change, and almost any vehicle built within the last decade can be modified to run on CNG. CNG-powered vehicles are not limited to personal cars and trucks, but can also be used in short-range heavy-duty vehicles such as trash trucks, busses and delivery trucks.

The environmental impact from natural gas is also significantly lower than standard gasoline. MIT's study shows that "because of lower carbon/hydrogen ratio of methane relative to gasoline, the CO2 emissions from the combustion of natural gas are approximately 75% of those gas of gasoline."[11]

A 25% reduction in carbon dioxide is a significant difference. Though this may not bring smiles to all environmentalists, it is a step in the right direction to making our planet cleaner. There are disadvantages facing CNG vehicles today, but Oklahomans can step up and take on such challenges for the future of our state, nation and the whole world.

One of the first issues that need to be addressed is the fuel tank. CNG on vehicles is stored in high-pressure tanks, pressurized approximately 3,000 p.s.i.[12] That is a very high amount of pressure, but when equated to a gasoline fuel tank, it only provides a quarter of the amount of distance.

Therefore you would need a tank to be 75% larger to equal a full gasoline fuel tank. Oklahoma's natural gas technology researchers, with proper funding and assistance, could solve this problem.

Another problem is the availability of CNG-powered cars. Most people, who own or operate vehicles that run on CNG, had their vehicle modified by licensed mechanics. This is a good start, but a consumer may be more reluctant to spend thousands of dollars on modifying their vehicle to run on CNG, after already spending several thousands of dollars on just the car or truck.

Right now only Honda Motors produce vehicles that run on CNG, and the average cost to have your car or truck modified to run on CNG costs around $10,000. Reducing the cost will attract more and more consumers, and will reduce the payback of having their vehicles run on CNG.

As of now, consumers who drive the national average of 12,000 miles will see a very long payback time.[13] With a policy that loosens the EPA's tight restrictions, which is a reason for the high costs, on the procedure of adapting cars or trucks to run on CNG, and promoting more independent mechanics and auto garages to become licensed CNG technicians and garages, Oklahoma could be the model other states and countries look at for their future role in the CNG-powered automobile industry.

Natural gas's role does not stop at just moving vehicles and powering-up cities. It is also essential in the industrial sector of the world's economy.

Oklahoma has a proud history as a blue-collar state. Men and women, who are not afraid to get a little dirty or pour a little sweat, make up the backbone of our workforce. With the right technological advancements in natural gas, Oklahoma's industrial sector could become more cost, and energy efficient, which is something every town, state and country would like to become: more efficient. 32% of the total natural gas use is used in the industrial sector, with 85% that of it going into manufacturing.[14]

Natural gas is used in the manufacturing sectors of: food, paper, petroleum and coal products, chemicals, nonmetallic mineral products, primary metals and a miscellaneous sector featuring everything from beverages to furniture. How natural gas is used in the manufacturing industry lies primarily in the manufacturing plants' boiler systems.[15] Boilers provide processing heat, "which can generated by the combustion of solid, liquid, or gaseous fuel, and transferred either directly or indirectly to the material"[16] (DOE.)

One way Oklahoma can help the world's manufacturing industry is in the development of modernizing current natural gas boilers, and replacing coal-fired boilers with natural gas boilers. Modernization of boilers is important because the large majority of natural gas boilers that are decades old, and have energy efficiencies that are less than 75%.[17] With more time invested in creating and developing boilers to run more efficiently on natural gas, productivity, and profits could go up, while costs and downtime shrink.

The Department of Energy has already put new regulations on boilers to run at 75% to 82% efficiency, but Oklahoma could raise the bar and set our own standards in efficiency.[18] This idea of more efficient boiler systems will catch on and more and more companies and countries will follow suit. As a result of making super efficient boilers could become the norm.

As for coal-fired boilers, natural gas-powered boilers will become much more appealing because of the continuous environmental standards being placed on coal-fired boilers.[19] We have already established natural gas as a much cleaner burning source of energy compared to coal, and with more innovation being done to natural gas, coal will continue to be phased out. In replace of coal, natural gas is ready to take their role, which will lead to lower manufacturing costs which in-turn will lead to lower costs to the consumers.

All of these efficiency innovations end with consumers with more money in their pockets which is something that will bring smiles all around the world, even in 2032. Another role natural gas can take in the manufacturing sector that has great promise for the future, is in chemical feedstock.

One of the great benefits of natural gas is the raw material that can be made extracted from it. These raw materials, or feedstock, are used in domestic, commercial and industrial settings. Of the many chemicals derived from natural gas, ammonia and hydrogen are the biggest. Hydrogen, according to MIT, "is used extensively in the petroleum-refining industry to upgrade petroleum products."[20] Ammonia is primarily used for the production of fertilizer, and with natural gas being at the low costs they are at now, it could "make the operation of current domestic ammonia manufacturing capacity more competitive in the global market."[21]

Oklahoma is right now at a great advantage of using this opportunity to get ahead in a market that can benefit so many people. With greater access and supply of fertilizer, more people in the world will be going to bed with food in their bellies.

Oklahoma, and the rest of the U.S. with its massive amount of natural gas could help the world produce more food for more people. This is an economic and moral victory for everyone not just the United States. With proper use, the right technology applied, and companies willing to make the effort, natural gas can become the bright future in the energy, automotive, chemical, and agricultural worlds.

The efficiency of natural gas is what makes it so useful for the future, and not just for the United States, but the whole world. In thirty years, the world will need more efficient, clean burning fuel and energy source. Natural gas has already proven to be both, and it has yet to reach its potential. The future could benefit greatly from a policy backed by evidence, and the people. Oklahoma has the opportunity to take a great role in the evolution of the energy industry, all we have to do is get our leaders together and decide the best way to do it. Our part in the future with natural gas is right in front of us, and we can take it further than anyone would imagine.

MAP AT RIGHT
In 2009, the US used some 22 trillion cubic feet of NG (Tcf), moving ahead of Russia to again become the world's largest producer and consumer. In that year the greatest production came from five Southern and Western states.

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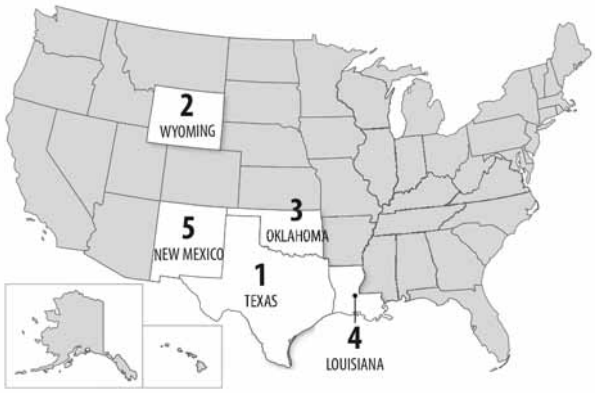


Data: Energy Information Administration

Building Better Cities in Oklahoma

April Lawrence, Oklahoma City and Laura Bennett, Oklahoma City

Combating the issue of sprawl has long been the focus of urban development in Oklahoma and other "car dependent" states in the region.

April Lawrence

Marked by rampant, unplanned growth, urban sprawl creates a number of problems that impede the economic development of the state, causing health and environmental issues that lessen the quality of life in the cities and surrounding areas and forcing a labor drain in the marketplace as skilled workers choose to take jobs elsewhere.

Oklahoma is one of the worst offenders when it comes to sprawl, with Oklahoma City encompassing over 621 square miles and coming in as one of the top five largest cities in the country in terms of geographic area despite its relatively small population of 540,321 ("About Oklahoma City"). Smart Growth policies could potentially alleviate some of Oklahoma's developmental concerns, and in doing so create a number of economic benefits that the state lacks under its current suburban system.

The Problem with Sprawl

Some of the most apparent impacts of urban sprawl remain urban decay, economic stagnation, and a general decrease in quality of life. A study of Ohio metro areas revealed that investment in cities where urban sprawl was present experienced a decrease in investment, with only one job created in cities for every ten created in suburbs (United States. Dept. of State 6).

Oklahoma City and Tulsa have both experienced a decrease in job creation in city centers, with 19.1% and 26.7% of all jobs being located in each respective city center (Winslow). Furthermore, the focus of resources outwards leads to neglect and deterioration of inner city industrial sites, eventually forming "brownfields," unproductive areas that breed crime and impede economic growth within the cities. Oklahoma City has already begun to address the issue of brownfields with its own program, having received a number of grants for the redevelopment and restoration of some buildings since 2005; although a number of projects that have come to fruition have proved successful (over 374,000 jobs have been created in relation to the program), the program has been denied grants in recent years, limiting whatever good may be done through the program.

As people move out of the cities, goods and services move with them, leaving behind the poor and elderly and limiting mobility, access to local amenities, and economic opportunities – the result of which is a poverty rate double that of the suburbs.

Environmental Issues

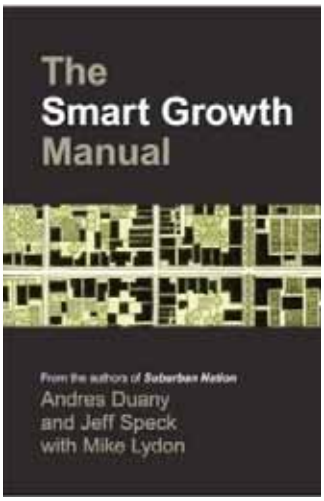
As the steady stream of outward population flow continues to increase, automobiles are needed to travel the longer distances between residential areas and commercial ones, which mean an increase in the facets that go along with it such as a reduction of air quality in both the cities and suburban neighborhoods. According to a Position Paper written a few years ago by the Sierra Club, Oklahoma Chapter, at least 50% of all U.S. air pollution is produced by motor vehicles. In 1997 Oklahoma County almost passed the federally allotted levels of ozone and carbon monoxide (Sierra Club, Oklahoma Chapter section III). While Oklahoma has improved on the levels of toxins present in the atmosphere, it's not just the air we breathe that is affected.

Outward expansion leads to a need for more roads which will have to be funded some way by the Oklahoma State government; however, the building of new roads would possibly take funding away from the repairing of our already existing and

deteriorating roads. "You take a look at the worn-out road surfaces. We're having trouble keeping up with the roads we have, let alone building new ones that are demanded" (Adcock). New road construction also means that more rural land areas will have to be cleared thus destroying animal habitats and increasing soil erosion (Sierra Club, Oklahoma Chapter section III). Destruction of the natural landscape and continued pollution of Oklahoma's atmosphere are just some of the actions associated with unrestricted urban sprawl, but they are just part of one of the more crucial components. Sprawl also has an apparent effect on the population's health.

Societal Impact

Most Oklahoma residents have chosen to move from the compacted metropolitan areas of the state into lower density suburban ones for many reasons, an important one being better quality of life; however, this migration may be decreasing their life longevity (The Buckeye Institute [5]). Because of the increasing reliance on their automobiles to get them to and from their most routine and basic places, people are spending more and more of their time living sedentary lives.



There are some estimates that the level of vehicle miles traveled outpaces population growth per year by about three times (United States. Dept. of State 6). The reliance on automobiles for any type of transportation decreases an individual's level of physical activity, increasing the risk for a stroke, cardiovascular disease, and other ailments (Frumkin 205). Although there is no direct linkage between sprawl and an inactive lifestyle causing chronic illness, it is likely to put people at a higher risk for obesity and, as a result, related illnesses.

The immediate impact of increased rates of obesity is a less productive and more expensive workforce, as studies have shown that obese employees miss more work than their healthier counterparts and require more medical expenditures (Barkin, Heerman, Warren, and Renhoff 241).

Smart Growth Policy

Smart Growth policies – a catch-all term for "…policy framework that promotes an urban development pattern characterized by high population density, walkable and bikeable neighborhoods, preserved green spaces, mixed-use development (i.e., development projects that include both residential and commercial uses), available mass transit, and limited road construction" (Resnik 1853) - remain the most popular method for dealing with sprawl.

A number of sprawling cities have implemented "Smart Growth" policies in order to stem the flow of residents from cities, offering incentives to live and build within the city center. Omaha, Nebraska is one such city – its policies include heavy zoning regulations and, perhaps more importantly, subsidies and development fees to encourage private development in specific areas, high-density development, and compact housing construction.

The city also offers grants for "…neighborhood conservation, improvement plans, and historic preservation" as well as "….various incentives for redevelopment of existing areas…" (Blair 156). The sheer amount of focused policies aimed at limiting outward growth has put Omaha at the head of the pack in terms of confronting sprawl, with USA Today giving it the lowest sprawl score among four selected cities.

Oklahoma has already begun to address the issue of sprawl with its own planning program: planOKC, an Oklahoma City development plan, is the most visible – with nine lenses through which the program aims to design a comprehensive plan, planOKC is an ambitious attempt to create a more livable city; however, planOKC provides little more than the framework for which a single city may only design without supplying any real methods for building a better city. Therefore, if the state were to truly fight sprawl, its best option

would be to adopt Smart Growth policies similar to those in Omaha: namely, incentivizing mixed land use, high-density housing, and limited outward growth.

Incentivizing Mixed Development

Mixed development is characterized by good affordable public transportation, higher-density developments, and pedestrian-friendly centers; Oklahoma's land use patterns remain separated, but a number of possible solutions exist to counteract them.

One of the most effective methods for incentivizing mixed land use seems to be generous tax cuts for contractors who build in accordance with smart-growth designs.

The state of Oregon has used such tax cuts to great success, offering local communities the opportunity to "…"freeze" assessed values on rehabilitated historic buildings, thereby reducing property taxes on them" ("Incentives for Mixed-Use Development" 2).

Other possible incentives include assisting developers in the permit process by developing "one-step" information centers and mandating development codes that provide developers with flexibility and encourage mixed development ("Incentives for Mixed-Use Development" 4).

Much of downtown Oklahoma City housing is geared more towards young single individuals and couples with no children more than families as is apparent with the new condo, studio and townhouse developments.

Because it is difficult for families who may show interest in moving back into the city areas to find family housing, the likelihood of them moving back is slim.

By incentivizing mixed land use and development in the Oklahoma City and Tulsa downtown areas more families will be encouraged to move back into these areas because builders and contractors will not only be focusing on building commercial lots, but also family friendly housing and areas that include playground equipment and parks.

High- Density Housing

The prospect of living in the city has dwindled since more and more of the population, specifically families, is migrating from compacted urban areas into low density suburbs (The Buckeye Institute [5]). For many families the idea of raising children in the inner city means no backyard, heavy traffic, and poor school systems.

In comparison, low-density suburbs provide people with greater land value, larger yards, and close proximity to many family-friendly activities and facilities - all of which carry far greater appeal (O'Toole 20). "A home's lot size has been shown to have a significant impact on property values. In general, homes located adjacent to trails, parks, and even golf courses sell more quickly, are assessed

at higher values, and are more likely to increase in value than homes not near open spaces" (The Buckeye Institute 5).

The result has been increased growth in suburbs, with city growth falling steadily; in order to combat this trend, the state must provide more incentives for families to choose to live in the city – building more family-friendly spaces (such as parks) and implementing programs such as New Jersey's "Live Where You Work" program, which offers individuals who work in a city the opportunity to buy homes within that city at low-interest mortgage rates for 30 to 40-year mortgages (Ianieri).

Outward Growth

In 2009, the City of Cape Town revised its Development Edges Policy; in doing this, they set up what they called the "Urban Edge line," a strict geographic definition of city boundaries, limiting low-density migration and helping to preserve historical land and the natural environment (Pollack).

Additionally, the Urban Edge Line assists in helping allocate the city's resources and amenities to the poor that are left in the poverty stricken areas of the inner city by consolidating infrastructure and service delivery.

Cape Town is not the only place to apply the urban edge line: London, England and Portland, Oregon have both implemented "green belt" policies, placing similar limits on outward growth to help keep their cities compact and preserve the outer environment (Pollack).

The strict defining of city limits creates a tangible and certain result in that it does keep a city from growing out; were Oklahoma to adopt a similar policy, its largest cities (such as Tulsa and Oklahoma City) would be forced to focus growth within the urban centers, encouraging urban revitalization projects to use existing spaces.

A State Leading by Example

The state of Oregon is marked as a leader in smart growth efforts; in a report for the Thoreau Institute, Randal O'Toole noted that "[In Oregon], state and local officials, along with the Portland MPO, regulate everything from the number and location of parking spaces that retailers can provide their customers to the number of people who can attend church services on Sundays" (21).

Oregon's planning system is based on the urban growth boundaries mentioned above that were enacted late in the 1970s; these boundaries were drawn around every town and city in the state to try and contain growth within a certain space, and the majority of the land outside of these boundaries is only to be built on by citizens if they owned "at least 160 acres that they actually farm, and the land generated $40,000 to $80,000 per year in agriculture revenues in two of the last three years" (O'Toole 21).

Around the Portland area during the late 1980s, rapid growth began to worry Portlanders who were in fear of running out of land. In an effort to try and fix this, the new director of the state Department of Land Conservation and Development, Richard Benner, issued requirements for all major cities in the state to reduce and reallocate the land.

Reduction went along the lines of promoting mixed development, cutting back on parking, encouraging more pedestrian friendly shopping areas, increasing densities, and endorsing transit transportation instead of highways (O'Toole 22). Oregon's plan has been one of the most ambitious in the nation, and it has earned it a reputation for being "green."

In Conclusion

Oklahoma only stands to benefit from consolidating its growth, with smart growth policies reducing the cost of infrastructure for municipalities, reducing costs for transportation and housing, increasing "foot traffic" for small businesses, and creating jobs in inner-cities (Economic Prosperity, Smart Growth America). The economic benefits of any of the plans mentioned above will help make Oklahoma a more prosperous state, generating income and encouraging more fiscally responsible growth, all of which will go towards making us a more competitive state in the world market.

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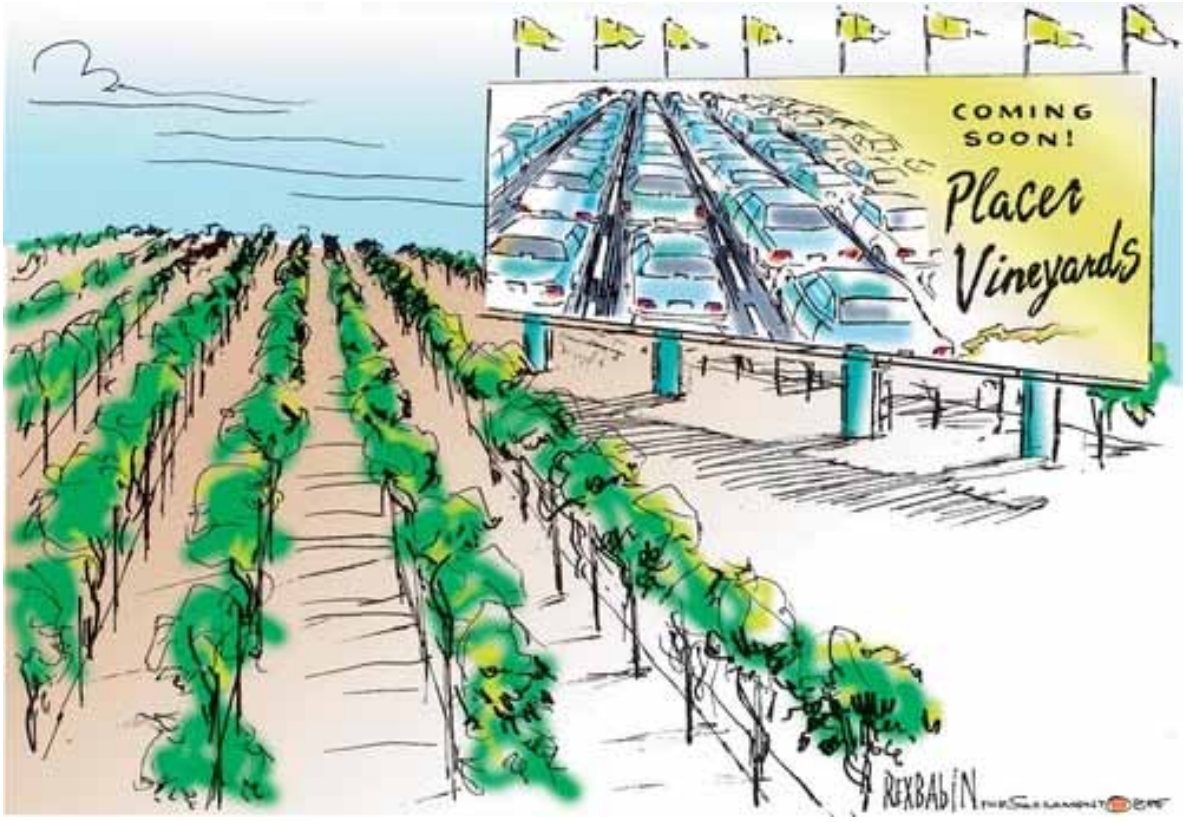

Section 2

Studying and Living Abroad

Students from Oklahoma City University

Culture Shock in Qatar

Madison Alexander, Moore

Madison Alexander is a Gilman Scholarship recipient and an Honors student at Oklahoma City University where she is studying political science and mass communications. Following her semester in Qatar, where she studied Arabic, she spent the summer studying Spanish in Salamanca, Spain.

Studying abroad was never just an option; as in international affairs major, I considered it a necessity. How could I be successful in foreign affairs when the furthest I had been from home was the Canadian side of Niagara Falls? Studying international affairs requires an international experience longer than a spring break trip to Europe or Mexico.

After my freshman year, I researched study abroad programs in the Middle East and North Africa. I chose this region for two reasons. First, my mother grew up in Saudi Arabia, so I already had a connection to and an interest in the region. Second, the Arab Spring was at its height in the summer of 2011. Both Ben Ali and Mubarak had been overthrown. By the end of August, Qaddafi would be exiled. I wanted to witness firsthand the aftermath of the Arab Spring and what changes would arise.

My mother insisted that I study in a country with a reasonably stable government. I looked into universities in Jordan, Egypt, Oman, and Morocco, but the costs were overwhelming. Finally, I found a reasonably priced program in Qatar that offered courses in my major, so I applied. That was the best decision I have ever made.

From the moment I stepped off the plane in Doha, Qatar was nothing short of incredible. No amount of reading or research could have prepared me for my semester there or the culture shock that would accompany it. Every day brought new adventures and experiences. Part of the study abroad experience is being pushed out of one's comfort zone by not knowing what to expect from minute to minute.

Besides most of the population having a basic understanding of English and driving on the same side of the road, there are few similarities between life in the United States and life in Qatar. Only 20 percent of the population is Qatari, with the rest being a mix of other Arabs, Persians, Indians, and Pakistanis.

At school, I was often the only woman in class without an *abaya* or hijab. During May and June, cold water does not exist. My sink only had hot water and scalding water. Bargaining with taxi drivers and shop owners at the *souq* (market) took practice.

My courses - *Women in Islam*, *The Arab-Israeli Conflict*, and *Islamic Political Thought* - took on a completely different tone in Qatar than they would have in Oklahoma City. Not only were my classes separated by gender, but the layout of the Qatar University campus completely separates the males and females.

The barrier between the two campuses is nicknamed The Berlin Wall. Women are expected to cover their knees, shoulders, and chests

in public. Wearing pants in 119 degree weather is not the most pleasant experience. Men are expected to wear long shorts and shirts that cover the shoulders.

In public, men and women greet each other with a handshake, if there is even physical contact at all. It was the small things that made me aware of the culture shock I was experiencing. I would not trade any bad experience for a good one because those bad experiences helped me learn about the culture and about myself.

One of the most important parts of studying abroad is getting to know one's host country and adapting to its customs. Even if those customs are awkward or seem ridiculous, it is important to understand that guests need to respect and abide by the local traditions and customs. Studying abroad is about opening up to new ideas and new ways of living. Studying abroad is not about being a tourist; it's about integrating oneself into another culture to better understand the people and their lives.

The most defining moment of this cultural integration for me was when I saw a woman in a strapless shirt and miniskirt at the traditional *souq*, and I thought to myself, "Wow, I can't believe she would wear that in public!" Instead of being a tourist, I was the one critiquing the tourists. That is what studying abroad is about - learning to adapt to life in a different country.

Studying abroad has helped me realize that there are so many places I want to see, people I want to meet, and experiences I need to have. Academics are obviously important, but my experience abroad was about so much more than going to class.

The friendships I made in Qatar will last a lifetime. I met some amazing people who gave me an entirely different perspective on issues that barely crossed my mind. Qatar has an incredibly diverse population, which gave me opportunities to meet people from across the world. From Bosnia to Chile to Libya, the people I met told stories about life in their countries that I will never forget.

I have a deeper appreciation for how comfortable my life in the United States is, where my biggest problem might be not having enough gas money, while the people I met lived through wars and revolutions. They witnessed their families being torn apart and their countries being destroyed. To listen to them speak of these tragic events makes me realize how privileged I am.

My semester in Doha not only gave me a deeper understanding of the culture there, but also provided me with a greater appreciation for my life at home.

Studying abroad in a Muslim majority country has given me a better understanding of the religion and of how ignorant some Oklahomans can be about Islam. If every person who has made a bigoted remark about Islam, Muslims, or the Middle East could have the experience that I had in Qatar, I could almost guarantee that no one would be so intolerant of those who practice a different religion.

In my *Islamic Political Thought* class, I found so many similarities between Islam and Christianity that it often felt like one of my high school religion classes. Education is not only beneficial to the student, but to the rest of the population. Studying abroad helps break stereotypes and misconceptions about other religions and races. It is an eye-opening experience that teaches patience, tolerance, and open-mindedness.

Merging Head & Heart in China

Eveline Gnabasik, Bellvue, NE

Eveline Gnabasik earned her bachelor's degree from Hillsdale College in Michigan. Through receipt of a Hatton W. Sumners scholarship she attended and graduated from Oklahoma City University School of Law in 2012. In 2010, she studied Chinese/American comparative law at Nankai University School of Law in China. During the summer of 2011 she served as an ambassador to visiting Chinese law students at OCU Law. This fall she began an M.Sc. in Chinese Studies at the University of Glasgow in Scotland on a University Trust International Leadership Scholarship. In fall 2013, she will resume her legal studies in international law and globalization at the University of Aberdeen in Scotland.

My reasons for studying abroad were two-fold. First, it sounded like a fun way to spend the summer; and second, I could learn first-hand about Chinese law and history while earning credit toward my Oklahoma City University law degree. I spent July 2010 at Nankai University School of Law in Tianjin, China. China stood above the rest as a study abroad option because it was so different. As a law student, I endeavored to study the legal system of another country and compare it to our own. I knew that I could not find a more diametrically opposed legal scheme. China's civil law system (a system based upon written codes) stands in sharp contrast to the common law system (a system where law evolves based upon previously decided cases) operating both in Oklahoma and at the federal level.

Prior to my departure, I researched and read a great deal about Chinese culture and history. Books like *Lonely Planet China* by Caroline Liou and *China Guide: Be a Traveler – Not a Tourist* by Ruth Lor Malloy dominated my summer reading. Through these readings I picked up on Chinese social customs (e.g. giving another your business cards with two hands and a slight bow, while receiving a business card with two hands and reading both sides), dining etiquette (Never cross your chopsticks at the top!), and basic phrases in Mandarin (*ni hao* means hello, *zaijian* means goodbye). In short, I filled my head with factual information about Chinese history, the workings of a civil law system, and Chinese culture. I thought I possessed a significant knowledge of the country.

I'm almost embarrassed to admit that my expectation prior to arriving in China was to find a country very similar to the United States. Despite reading the pre-trip orientation packet (which specifically warned against expecting a miniature America) and the aforementioned books, I expected my day-to-day life to be altogether similar to that to which I was already accustomed. In retrospect, I lacked the context to even understand the cultural differences between the two nations. However, it was in discovering this context that I began to internally understand and appreciate Chinese culture and unearthed the importance and value of study abroad.

As previously stated, my expectations of China and the reality of China could not have been more opposite. It was obvious that the Chinese live a different lifestyle, based on a different culture, from Americans. These cultural differences stem from starkly different beliefs about the role and importance of society as a whole. For example, Americans, and most of the West, place great importance on the individual and structure their society in a way that attempts to maximize the possibility of success for the individual. The

Eveline is on left in blue Hillsdale shirt

Chinese place the greatest emphasis on the collective. The well-being of society rules the legislative decision-making process. This emphasis on the collective permeates even the simplest tasks of life. As a result, simple things like dining at a restaurant turned out to be a cultural experience. The Chinese eat meals "family style." In the United States individuals order separate meals at dinner, whereas in China dishes are ordered for the entire table and passed around.

Fortunately, my foray into the Chinese culture did not end upon my return to the United States. The following summer, I had the opportunity to serve as an ambassador to the Chinese law students studying at OCU School of Law. Through discussions and observations of their behavior, I cemented much of what I had observed in China. The Chinese students preferred exploring in groups, rather than wandering off on their own. They formed close friendships, including bonds with their classmates that seemed to be more like those of siblings than friends. They thought about, and observed their new surroundings, in terms of what can be done to benefit China, rather than what can be used to benefit themselves individually.

It's first-hand observations like these that make study abroad unique. While in China, I cultivated friendships that lent themselves to a feeling of belonging to a more global community, rather than just a national identity. Through these conversations cross-cultural dialogue takes place and true understanding and respect of another culture develops. This dialogue not only develops one's resevoir of knowledge about a country, but it thrust you into a relationship with the people of that country. The conversation opens into an awareness of the feelings of the people and leads to a discovery of the heart of the nation.

A prime example of the development of this respect revealed itself while I wrestled with China's history with Communism. From my perspective it was hard to understand why a people would embrace, and even revere, a system that produces seemingly poor economic results. Through several conversations with my newfound Chinese friends and classmates, I began to understand the depth of China's tumultuous history in the late nineteenth and early twentieth century.

The invasion of foreign powers, the Opium War with the British, and the eventual invasion by the Japanese led to a deeply wounded Chinese ego and sense of national pride. Mao Zedong's emergence on the national scene through his Long March was a literal "rallying of the troops." The arrival of Communism and the structure and perceived security of a strong central government allowed for a resurrgance of national pride that had been missing for so long. I discovered that in many ways Mao Zedong's rise to power was less about the merits or demerits of a political system and more about the restoration of the Chinese national ethos.

As an American, I believe the study and understanding of Chinese society has never been more important. The relationship between the two countries is inextricably intertwined and often challenging. I sincerely believe education of the head leads to understanding of the heart, which ultimately leads to peace. Kofi Anan, the former secretary to the United Nations, summarized the importance of study abroad perfectly when he said, "People of different religions and cultures live side by side in almost every part of the world, and most of us have overlapping identities which unite us with very different groups.

We can love what we are, without hating what – and who – we are not. We can thrive in our own tradition, even as we learn from others, and come to respect their teachings."

Vivir y Aprender en Argentina

Shamari Reid, Oklahoma City

Shamari Reid graduated from Oklahoma City University in 2012 with a double major in Education and Spanish. He received a Gilman Scholarship to study in Argentina and a Fulbright Fellowship to teach in Uruguay. This fall he is teaching Spanish at Mount Saint Mary's High School in OKC

Living and Learning in Argentina

Before studying in Argentina, I never concerned myself with the treatment of foreigners in the United States. I never wondered if they were enjoying my country. They were just simply here. I have to admit that while the majority of the time I was very kind and welcoming, there were also times when I was not. To me they were just like anyone else, any other American and should be treated as such...and then I became a foreigner in a foreign land.

For the first time ever I had to trust in and depend on complete strangers in order to survive. I had to take risks using a language that wasn't my native one and hope that I would be understood in the way I intended. Everything was like walking on eggshells. I second guessed every word and every gesture in hopes that I wouldn't offend or be misconstrued.

On many occasions during my three months in Argentina, I could not stop thinking of the many people living in my country who took a risk to approach a stranger, perhaps just saying "hi" or asking for help, and how they are turned away. How as a whole U.S. citizens some times don't exert any effort to communicate with others, particularly others who don't speak English. We say we don't understand and move on. Where would I be if the Argentines acted the same way?

This question arose the moment I landed in Buenos Aires. My plane arrived late due to inclement weather so I missed the bus that was to take me and a number of other U.S. students to Rosario, the city I was to study in that is located 175 miles from Buenos Aires.

After being frozen in culture shock for about ten minutes, I was able to bring together every piece of Spanish I had learned to make a reservation for the next bus, due to depart two hours later. As I waited for the next bus an older man approached me and said "welcome." I said "thank you." Then I realized that the man had spoken English.

It turned out that he was bilingual and would be the reason I reached the correct location and didn't end up in some city in the north of Argentina populated by gauchos.

After talking with my new amigo for two hours in Buenos Aires, then during the course of a five-hour bus ride on less than smooth highways, I finally arrived at the house of my host mother.

As I unloaded my suitcase from the van, I said goodbye to the bilingual man, Juan, and thanked him for his help. He replied, "No need to thank me. I will help anyone in need--black, white, yellow, or red--because we all, at the end of the day, are human."

After my first week passed and I attended language classes, tasted mate (a typical Argentine drink that is kind of like tea and shared among friends at a park or in a cafe), milanesas (an Argentine dish that tastes and looks like chicken fried steak but can be made of beef, pork, or fish), took many taxi rides, attended a game of fútbol, and had asado (Argentine barbecue),

I realized that everyone in Argentina seemed to share Juan's belief.

The people of this country were nice to me everywhere I went. Argentines are patient, respectful, and other things I was told they would not be. I guess it is true what they say, sometimes you must try things for yourself and not always rely solely on the accounts of others.

Anyone who knows me can probably attest to the fact that I do not like to touch people at all. Hugs bother me, and I rarely like giving handshakes. These dislikes do not stem from disgust with people or security reasons, but it just makes me feel awkward when I have to be affectionate. That is, until I went to Argentina, which was a whole new world to me because they are a very affectionate people, and everyone is greeted with a kiss, often two—one on each cheek. Somehow in Argentina, this show of affection never made me feel awkward. It was as if it was something I became immediately accustomed to. Every time anyone greeted me in this way I felt like the exchange of kisses was genuine.

After experiencing these greetings over an extended period of time, I started to feel special and loved. Then I thought about all the times I denied my friends a hug or some other form of affection and how unwanted they must have felt or how cold I must have appeared. Now I will hug and kiss anyone who is comfortable with such affection. I express my love always, because you never know which hug or kiss will be the last!

My study abroad program in Argentina enabled me to remove the word foreigner from my vocabulary The term citizen still exists in my vocabulary, but I have altered it a bit, not to be a citizen of a certain country but a citizen of the world. I realize that at the end of the day everyone just wants to live without struggle, and sometimes in order for that to be achieved, one must travel, experience other things, or move to other places.

It is during such travels that we can gain an understanding for the struggles of others that are far greater than many of us will ever encounter in the U.S. It is through these experiences that we may gain an understanding for why "foreigners" work so hard to come to the United States.

Through travel, the important things in life become clear. After seeing the world through the eyes of others, some things just don't seem so important anymore. Imagine how the world would be if all like-minded people stayed together in the same regions.

Diversity wouldn't exist. Differences wouldn't exist, and advancements wouldn't be made. We must travel. There is a big world out there, and the more of it we see, the better off we'll be.

I didn't expect my study abroad experience to change my life or my perspectives about the world. I went to Argentina because I was a Spanish Education double major who intended to teach Spanish in an Oklahoma City high school. I went to Argentina to achieve fluency in Spanish. While my goal of fluency was achieved, my study abroad experience profoundly affected my teaching by making it authentic. Before studying abroad, I was preparing to teach a language and a culture that I had only interacted with through textbooks and through the accounts of others.

My lesson plans weren't personal. They were pure recitation of things that I've read. Now I have my own experiences in a Spanish speaking country and have photos and, most importantly, connections with the people of Argentina. I believe that the material I use in my classroom can now be contextualized and made real to my students. I can share actual accounts of instances in which certain things came up.

My teaching will also be profoundly affected by my experiences of studying with Argentine professors. I often feel that at least in language classrooms we don't demand enough from our students in the U.S. As a country, we don't place enough value on producing bilingual children. However in Argentina the teachers didn't give me the option of not reaching my potential.

They demanded not just that I understand the vocabulary, but that I pronounce each word like a native speaker. It was the next level of the "no opt out" strategy that we strive to employ here. My study abroad experience in Argentina recently opened another door for me. I was selected by the U.S. Fulbright Commission and the equivalent organization in the South American country of Uruguay to serve as a Fulbright English Teaching Assistant in that country for most of 2013. While there I will have the opportunity to further my studies in a Uruguayan university.

I know that this experience will further enrich my life, but moreover it will provide me with greater knowledge and more diverse tools to use in my Oklahoma high school classroom when I return to this state.

In addition to my goal of producing bilingual students, I plan to teach my students to be proud Oklahomans and proud Americans, but also to be proud—and informed—citizens of the world. I will teach them that Oklahoma is a great state, but I will encourage them to experience new places and different cultures and bring those experiences back to Oklahoma to share with others.

Finally, I will teach them that Argentines, Uruguayans, Canadians, Mexicans, Chileans—people inhabiting every country in North and South America—are proud Americans.

Section 3

Global Thoughts

Students from the University of Tulsa

Global CyberSpace in 2032

Taber Hunt, Fort Smith, AR

Taber Hunt is a senior Presidential Scholar at the University of Tulsa, where he is pursuing a BSBA in Economics. He is an active member of University Ambassadors, the Collins College Dean's Advisory Board, and the Pi Kappa Alpha Fraternity and was selected as a student participant in the 2011 Academy Town Hall. A native of Fort Smith, Arkansas, Taber has completed internships at the Williams Companies, Inc. and the Tulsa Police Department and recently participated in the Tulsa Undergraduate Research Challenge, where he researched a variety of cyber security-related topics. Taber has gained international perspective during study abroad experiences in Spain and Chile, and he plans to pursue further international travel in academic, professional, and leisure capacities.

Think about the year 1992. That year played host to the opening of China's first McDonald's in Beijing, the founding of the European Union, the most successful third-party presidential campaign in nearly a century, the signing of NAFTA, the ratification of the 27th Amendment, and $1.05-per-gallon gas.

Today, two decades later, one may purchase a Big Mac at any of 850 Chinese McDonald's stores, the European Union tiptoes between solvency and collapse, American political polarization is considered to be at an all-time high, the negative effects of increased globalization have come into sharp focus, Congressional approval (or lack thereof) fuels fringe notions of cutting legislative salaries altogether, and I just spent $36.84 to fill my twelve-gallon tank. Much has changed.

Now let's think about the last twenty years, but narrow in on the field of consumer technology. In 1992, the total of all data crisscrossing the Internet was 48 terabytes [1] (Today YouTube streams that much data in about 20 seconds). 3.5-inch floppy disks were the main vehicle for data storage, with a capacity of about one million times less than that of modern consumer hard drives. Motorola broke ground with its Bag Phone 20 years ago, when 1.5 megapixel digital camera cost $11,000 [2]. Apple's latest model, the .37-inch thick iPhone 4S, provides 8 megapixels for just $650.

Other major industries have experienced big changes, too. The banking industry has been revolutionized by the emergence of Internet banking and the global spread of credit and debit card use. More and more health providers are adopting electronic health records in an attempt to increase efficiency and communication. The use of RFID tags has transformed supply chains and logistics for airlines, retailers, and many more.

Print publications of all kinds are experiencing significant losses to their online counterparts. Jobs in construction, manufacturing, agriculture and numerous others have been outsourced or made obsolete altogether by the proliferation of networked robotic systems. The list could go on and on, but the point is this: computers and the Internet have changed and are still changing the world at breakneck speed. With all of the groundbreaking, state-of-the-art, life-changing opportunities networked computers afford us, there come too an equal number of new, unaccounted-for threats that we must take into consideration on personal, industrial, and governmental levels.

The future of Oklahoma and our nation as a whole depends in large part on our ability to change and adapt to the constant march of technology

in order to secure the information and systems that enable our very way of life. According to the United States Census, in 2009 nearly 70% of Americans three years and older were Internet users. The 2007 Survey of Consumer Finances reported that 80 percent of US households used direct deposit systems, 71 percent used debit cards, and 53 percent employed computer banking. These numbers have since grown. We and our bank accounts are more wired, more connected via electronics to each other than ever before.

The opportunities to be victimized electronically increase almost literally day to day. Just in the year 2012, we have seen the emergence and/or advancement of a number of cyber theft techniques employed to target individuals. Many people don't realize that their mobile phones (or any electronic device connected to the Internet) are at virtually constant risk of infiltration, and are usually much more vulnerable than their desktop computers.

Traditional phishing attacks are still surprisingly successful. Fake antivirus software is continually being updated and reintroduced to unsuspecting customers. The search engine results for popular keywords, like "London Olympics," "Election 2012," and "Mayan Calendar" are chock-full of phony, infectious links. Etcetera, etcetera. Without a maintained understanding of the technology we use on a daily basis and an ever-updating knowledge of the threats evident therein, each one of us risks setting ourselves up to be victimized.

In addition to the myriad personal implications of poor information security, cyber theft and attack poses an enormous threat to American businesses. In what General Keith Alexander, director of the National Security Agency, deems "the greatest transfer of wealth in history," American firms of all shapes and sizes in the past few months and years have been under siege by Chinese hackers, oftentimes indirectly sponsored by the state, as they blatantly steal confidential data and intellectual property.

The result – massive losses in research and development gains and the employment provided thereby. Exact figures on the monetary and employment losses sustained due to this onslaught are difficult to come by, but all are in agreement that the sum is gargantuan.

One non-disclosed company had every last file of a 10-year, $1 billion research project copied by Chinese hackers in the span of one night.[3] Even companies that one would imagine to possess the staunchest defenses available, like Lockheed-Martin, Booz Allen Hamilton, Google, Sony, Citibank, even the Nasdaq, have been infiltrated. And those are just among the ones who have admitted to being victimized. Richard Clarke, one of the country's foremost experts on cyber security, has stated that every major American company has been infiltrated to some degree. Oklahoma's biggest employers, including Walmart, AT&T, American Airlines, and our numerous energy and financial institutions are no exception.

There exist two big sources to the continuation of the hacking. First is a lack of awareness. According to information security giant Mandiant in Congressional testimony, 94 percent of their clients who had been successfully attacked were unaware of it. [3] Second is communication.In certain cases, government agencies like the Pentagon are aware of impending attacks, but can only warn the involved firms rather than directly intervene, as no government entity currently possesses explicit authority to do so. Therefore, under current circumstances it is imperative that private companies have the capability to both spot and disrupt cyber espionage on their own.

The second enabler of this theft's continuation is the lack of a comprehensive agreement between the federal government and private industry on how best to coordinate a response to these foreign cyber attacks. Much discussion has been had on how best to balance company and individual privacy with government intelligence and mandated security

standards with industry autonomy. Alas, the best legislative attempt so far was filibustered in the Senate in late July. With Congress going into its month-long August recess without coming to an agreement on proposed cyber security legislation, no such comprehensive plan is likely to be passed until after November's elections.

No matter what technical and legislative measures are put in place to secure our vital data, however, there will always be one major liability: us. For every sophisticated, high-tech, covert cyber weapon out there, there exist a multitude of ways in which a company's or facility's own employees can unwittingly wreak havoc on their own systems. As long as there remains a human element in the operation of our computer networks, other humans will take advantage. (And let's hope that's the case for at least the next 20 years. Does the term "Skynet" ring a bell?)

According to Byron Paschal, Information Security Architect for Fort Smith-based Arkansas Best Freight, Inc. and a 20-year veteran of the information security industry, these human element problems start with poor employee awareness and training. Even with the very best technical security solutions, such as firewalls and virus protection, employees are still capable of inadvertently compromising confidential data.

Paschal points out that the easiest way for a cyber attacker to gain entry to a company's sensitive information is not to pick the figurative locks, but rather to trick a key holder into opening them for him. This can be done in a number of creative and ever-evolving ways, but one particular technique serves as a good example. So called "spear phishing" is a variation of the classic phishing technique of soliciting sensitive information by posing as a legitimate source, such as a bank or government agency asking for identity verification of some sort. Spear phishers target individuals who they deem particularly susceptible to attack or who possess access to particularly valuable information.

For example, several recent cases have been reported of company executives receiving false email reports from phony Better Business Bureau-type entities regarding a negative consumer report filed on said company. In order to gain access to the details of the complaint, the executive must provide certain sensitive information, such as a password or account number, as verification. In this

way hackers and agents of industrial espionage are able to wreak havoc on organizations with minimal effort or front-end work. The future of theft lies in cyberspace, and our companies are the primary targets.

Equally, if not more, important to note are the national security implications of cyber threats. Entire books have been written and entire military operations tasked on cyber security, but one facet is of particular note to you and me. In a July Wall Street Journal op-ed, President Obama stressed the importance of securing our nation's critical infrastructure – transportation, energy, electricity, water, chemicals, banking, etc. – against cyber attack. All of these mentioned infrastructure systems are managed in large part, if not in their entirety, by private industry. They are unique from most private firms in that the functioning of these critical industries has direct national security implications.

Just imagine the consequences if one or multiple of these networks were to malfunction or cease functioning altogether as the result of a cyber assault. The outcomes have the potential to be truly catastrophic. Imagine the repercussions for Oklahoma of an attack on our country's commodity pipelines. On a map of such pipelines, our state outline is barely visible, as the pipelines blanket our state from corner to corner. Some sort of cooperation between these industries and the federal government in coordinating the roles of each in protecting our critical infrastructure is imperative.

Communication and information sharing is a good start, but modern cyber security standards must also be put in place. As the President points out, "Nuclear power plants must have fences and defenses to thwart a terrorist attack. Water treatment plants must test their water regularly for contaminants. Airplanes must have secure cockpit doors." In addition to these physical defenses, we must also recognize the need to protect ourselves from armchair terrorists who never even have to step foot on American soil to strike us. The capabilities of a cyber-competent nation state, of which there are many, are exponentially greater, still.

As we reminisce on the years since 1992 and look forward to those until 2032, it goes without saying that the changes in our world have been and will be big; enormous, in fact. Any forty-year-old can attest to the fact that his or her lifetime has witnessed revolutionary changes in the way our world works and the framework within which we perceive it.

Even this twenty-two-year-old recognizes the acceleration of paradigmatic transformations put into play by the advent of the Information Age about twenty years ago. To pretend these changes won't continue at an exponential pace is foolhardy and to fail to keep up, irresponsible. If we do plan to actually reach a state of "2032: Prosperity Unleashed" for Oklahoma, we must first do our homework, avail the power of knowledge, and put into place the framework of security so that we may unleash that prosperity without fear.

Endnotes

1. *Minnesota Internet Traffic Studies*
2. *http://www.luminous-landscape.com/reviews/cameras/1ds/1Ds-Pricing.shtml*
3. *http://www.nytimes.com/2012/04/03/opinion/how-china-steals-our-secrets.html?_r=1*

Messages from Vienna

Robyn Undieme, Albuquerque, NM

Editor Comment

When we learned about Robyn's August trip to meet with International MBA students, we recruited her to write this essay about what she saw and heard - and how it should give us ideas about our own future in 2032.

Meet Robyn Undieme

Robyn is a M.A., M.B.A. Candidate and Graduate Assistant at the Department of International Business & Entrepreneurship Institute. She will complete her studies at the University of Tulsa in December 2012. She holds a B.A. in Psychology from The University of New Mexico and an M.A. in Marriage & Family Therapy from Oral Roberts University.

Robyn's academic career includes her contribution in TU's Economic Benchmark Study (summarized later in this volume), a comparison between Tulsa and twelve other midwest cities. She was on the TU team that won 2nd place in this year's Governor's Cup Competition. She recently completed an internship for Tulsa's Mayor, Dewey Bartlett, Jr., and is looking forward to beginning her life in the role of a full time entrepreneur upon her graduation in December.

An Opportunity in Vienna

Few individuals are given the opportunity to visit a single country while simultaneously living alongside and attending class with over twenty different represented nationalities and cultures.

This was a unique opportunity that I wasn't about to waste as I traveled to Vienna in August (2012) to study international business in a three-week graduate program. I was no longer restricted to just reading about the differences in culture, politics, and economics. Now I could experience life through my international classmate's eyes.

My goal in sharing this information with the members of the OK Academy Town Hall participants is that Oklahoma will come to see and adopt a higher standard of education. Oklahoma can and should be leading this cause so that we can begin to produce a higher skilled labor force and economy for our state. In the end, this is about producing long-term results and making a bigger global impact.

International MBA Students

Throughout the course of the three weeks I made an effort to sit down with MBA students from countries that included Denmark, the Netherlands, Bulgaria, Nigeria, the UK, China, India, Russia, Canada, France, and Turkey. What I learned was eye opening as I began to pick up on a theme from my conversations.

International Value of Education

Developing an educated population is a resource highly valued in many of the countries listed above. It would appear that those who are educated have an expectation placed on them to be innovators and help their country make a mark on the world, while those who work for the government are not required or expected to pursue a college education.

I find this ironic since many of the students I met with are from socialist or communist countries in which an extremely large percentage of the population is employed by the government and their government is really the one driving its economy forward. Therefore, I was left with the impression that many of these countries are in all actuality working against themselves.

That all being said, however, I was still left with a great deal of respect for the rigorous educational standards that are set forth by these countries.

A Message from China and Turkey
My new Chinese friends informed me that in order for them to attend college and to earn a Bachelor's degree, they had to compete against 500,000 other students with only 20,000 spots available. This resulted in them taking classes such as Physics and Chemistry that they had no interest in, but would give them an edge over those who took lighter courses.

Turkey also has an extremely competitive selection process in which students are required to select a major on their college application as well as to identify their three top college choices and the government decides which school the student will attend, if they are so lucky to be one of the few chosen out of the thousands of applicants. With limited resources and high competition, the strategy here is to raise the standard of educational value in order to produce a highly skilled and talented work force but at the cost of a large portion of the population unable to gain access to higher education.

A Message from Denmark and Bulgaria
To the other extreme, Denmark seeks to make education available to everyone and so it taxes its citizens a 52% tax rate to help cover those educational costs as well as pay for a student's cost of living expense.

Similarly, Bulgaria who has been trying to recover economically from a former socialist government and previous Turkish rule sees an educated population as a lifeline and thus produces a very high college graduate population, but restricts students from changing their major once declared. Hence, these countries represent those who support the idea of expanding education to as many people as possible by making it more affordable, but one can clearly see it comes at a high price.

A Message from Nigeria
America really does hold some advantages. As my Nigerian friend discussed with me, Americans have the ability to obtain financing to buy a car, a home, or an education. It wasn't as simple for him as he explained that he had to work 60 hour weeks for over two years as well as sell his vehicle in order to pay for his education before even applying to graduate school.

He said, "I've sacrificed and have put it all on the line. If my MBA doesn't produce the results I'm hoping for in finding a secure and better job, then it will all have been for nothing. I can't afford for my time and effort before and during graduate school to have been for nothing."

I argued with him that there is also the opposite argument that easy financing leads to excessive debt as most Americans are living beyond our means and is projected to lead to a future debt crisis in the near future; similar to what happened with the housing bubble. He still asserted that Americans have the advantage over Nigerians to gain access to greater opportunities and from his perspective the world envies America.

An Immigration Message
In fact, many of these students expressed a desire and willingness to geographically relocate themselves somewhere else in the world just to ensure employment and security though this too has proved to be challenging as many of them desire to move to the U.S. but find it extremely difficult to find an employer who is willing to pay for their green card residency fees which can amount up to $20,000.

Despite their challenge to move to the U.S., this trend of seeking employment outside of one's own home country leads me to believe that the world will begin to see a gradual melting pot effect take place on a global level and not just here in the U.S. as its culture is often described.

My Thoughts From Vienna
So what then did I take from these cross-cultural discussions? With all this said, American students have the freedom to choose their own major, to choose their school, and most can find the financing to do so. Is college ridiculously over priced? Yes, but it's out there and it can be accessed more easily than other countries. What Americans should be focusing on is placing a higher value on not just the

college education standard, but on the preparatory education that leads to a college degree. America needs a cultural shift in perspective.

Failure IS An Option: One way to do this is to not be afraid to fail someone. My Finance Professor in Vienna told our class that in his degree program in Germany, 70% of the students do not pass and therefore fail to obtain a Bachelor's degree. This is indeed extreme, but at least you know that someone who states they are a college graduate has something special to offer an employer.

America has unfortunately developed a reputation with many of the students I spoke with of having a poor education system and as the world continues to merge into a melting pot of sorts, it will be crucial for us to be able to compete in this arena.

Value Metrics: Second, America needs to find alternative ways to measure the effectiveness of our educational system outside of relying solely on standardized tests. I was interested to learn that most of the students in the Vienna program did not take written tests at their home universities. Instead, they were given oral examinations that sometimes lasted as long as two hours.

In fact, many of the students were given a month off from class to prepare for their final examinations and when I asked if they felt taking a month off was necessary to study and pass the exam, they all vehemently replied yes. This of course, is at the college level, but I think this concept lends itself to the essence of my point, which is to think outside of the box so as to avoid the trap of teaching students to pass a test rather than to retain something of value and to think critically.

America is certainly blessed with significant opportunities that I had taken for granted until visiting with these inspiring classmates of mine. But as was a major element and goal of the program I attended in Vienna, I was able to step outside of my own American ethnocentricity and see areas where America could improve.

My Message From Vienna

The debate on education within America has been a persistent one for a long time and one that interests me a great deal.

Dumbing Down: My experiences as an adjunct instructor at a community college has led me to reach the realization that a rather large portion of American students in college are not yet prepared for what should be a higher degree of rigorous study.

Instead, what I have found is a dumbing down of our educational standards because we as a culture become too overly focused on increasing the percentage of the population of college graduates.

We have forgotten that becoming a college graduate should mean that a person holds something of significant value that will contribute to producing a stronger society. A piece of paper that can be easily attainable by anyone holds little value in the end.

Bachelors Irrelevancy?: Conversations also led me to identify another trend that even I have noticed here in the U.S. in that the Bachelors degree is becoming more irrelevant as employers are now seeking Masters level applicants.

Despite having a high college graduate population or the brightest and best emerging from these schools, the opportunities available for employment post-graduation seem to be lacking significantly in many of these countries; the U.S. included as of the past few years.

My Summary Thoughts

I was offered a great opportunity in Vienna and I learned that many international students envy what we take for granted. I learned that we can and should do a lot better with all the resources that we direct toward common and higher education.

And I learned that the most obvious approaches may be in front of us - but it will take some courage for our system leaders to step up.

The Education Model of Finland

Gracie Weiderhaft, Rogers, AR

Gracie Weiderhaft is a junior at the University of Tulsa, where she is studying German and Education at the University's School of Urban Education. She will spend the next academic year studying in Freiburg, Germany at the School of Pedagogy. Upon graduation, she plans to acquire a graduate degree in either Education or Linguistics.

As we look to Oklahoma's future, schools naturally come to mind. After all, today's students will be the ones in control 20 years from now. In an increasingly globalized world, education is more important now than ever. Children in Oklahoma are no longer just competing locally; they are entering into a global talent pool.

For Oklahoma to play a prominent role in international business and technology, we have to have talent to match international demands. Our engineers must be just as good as Japan's. We need economists and business leaders who can measure up to those in China or Germany. Yet, Oklahoma is currently not utilizing the potential of all of its students.

Huge portions of our school population at are "falling through the cracks". Every two years, the National Center for Education Statistics releases "The Nation's Report Card". The report covers the results of National Assessment of Educational Progress, an extensive, nationwide test covering various subject areas. Their collection of statistics on reading and math performance for 4th and 8th grade students is extensive, and readily available at online. The 2011 "Report Card" revealed that Oklahoma students were scoring below the national average in both reading and math, and failing to make statistically significant improvements.

What is more interesting is which groups were on par and which were struggling. In each category, White and Asian students performed at around the national average and Black, Hispanic, and Native American students were well below (The Nation's Report Card). These "achievement gaps" are well documented phenomena across the U.S.

At the University of Tulsa's School of Urban Education, the faculty is dedicated to providing students with an understanding of the social issues that affect schools today. As a student in the Teacher Education Program, I have been exposed to discussion surrounding achievement gaps. This issue is the particularly distressing. On the practical side, when our pedagogy is not culturally responsive, we limit our talent pool. Many minority students with amazing promise struggle because our schools do not know how to provide the support they need academically and often give up on them.

These are students who are capable of doing a lot of good for their communities. They could be the innovators we need to help Oklahoma make a big impact internationally. Instead, when they do not receive the resources they need, they may become burdens to society. There is strong evidence that more undereducated citizens result in higher rates of crime and poverty (Levin, 13-15). The investment we put into providing these groups with additional support will pay off in the long run, saving tax dollars and ultimately stimulating Oklahoma's economy (Levin, 1).

Though the economic aspect of the problem is important, I believe that the social side is more poignant. Achievement gaps are a symbol of social injustices in Oklahoma. We are doing a great disservice to minority students. As long as these groups are undereducated, they take on a caste-like identity (Perry, 59). These groups cannot empower themselves, and break away from their

historical disadvantages without proper education. When we fail to set minority students on a path to higher learning, we deprive them of an opportunity for success. We should focus our attention on eliminating our achievement gaps not only because of the potential economic gains, but also because we owe it to the kids who are being left behind.

Once we accept that closing the achievement gaps in Oklahoma should be a priority, we are left with the question of how to go about it. I suggest that we look to other countries where these gaps do not exist. In 2011, Columbia University professor LynNell Hancock wrote an article for Smithsonian Magazine entitled "Why are Finland's Schools Successful?"

That certainly is a good question. Finland has consistently ranked near the top of over 50 countries that participate in the Programme for International Student Assessment's standardized testing of 15-year-old students. The U.S. is typically in the middle of the pack (Hancock). More importantly, Hancock found Finland's schools to be mostly free of achievement gaps.

Though Finland is not as racially diverse as the U.S., even their immigrant populations perform at the same level as native Finns. According to the Organization for Economic Co-operation and Development, the differences between the strongest students and the weakest are the smallest in Finland (Hancock).

So what is Finland doing that we aren't? Funnily enough, they are using methods that American scholars who have studied achievement gaps have been urging us to use for years. Hancock describes the sense of community among students and teachers she witnessed in Finland. She offers anecdotes of strong teacher collaboration.

If educators in Finland have a struggling student, they will work together to ensure the student's success. According to Charles M. Payne, author of So Much Reform, So Little Change: The Persistence of Failure in Urban School, this kind of collaboration is what we need in America's struggling schools (Payne, 94). All too often American classrooms become autonomous, with members of different departments rarely interacting.

Finnish teachers, however, do not hesitate to call on colleagues when a student needs additional help. It is common for special educators, social workers, psychologists or other experts to work with Finnish students who are having trouble in class. Hancock notes that "Nearly 30 percent of Finland's children receive some kind of special help during the first nine years of school." The idea that no child is incapable of learning is part of the national mindset. This is not the case in the U.S.

We have a wide-spread notion of Black intellectual inferiority (Perry, 5). Though most of us do not consciously believe that Black students are incapable of achieving highly, the continual branding of the Black communities as poor, uneducated and unmotivated affects the way Black students perform. Poor, minority students know that society expects them to be dumb, so they give up on trying to be smart (Payne, 102). We need to change the way we think of traditionally under-performing groups. We have to provide a counter-narrative that normalizes high achievement for these groups (Perry, 51).

In Finland, students are not given the opportunity to fail. This is largely because of the ability of teachers to recognize and respond to the needs of their students. The structure of Finnish schools encourages teachers to form strong bonds with their students. Hancock found that teachers in the schools she visited would teach the same group of children year after year.

One Finnish educator was confused by the American obsession with test scores, noting, "We know much more about the children than these test do." Oklahoma does not need a bunch recent college graduates with high ideals and only a summer's worth of teacher training to come into its classrooms only to leave two years later. We need teachers who are there for the students year after year and know how to respond to their needs (Payne, 95).

It is time for a change of focus in Oklahoma education. We have to stop worrying about dragging the lowest performers up to the minimum acceptable level, and start figuring out what we can do to help them achieve highly (Perry, 99). We have to think of the whole student and her needs, not just her test scores.

When it comes to forming new policies, we can start by researching education practices in Finland and other such nations and adapting their methods for our local schools. These changes will not be easily made but the payoff will be well worth it.

Finland's education reforms actually came about as part of an economic recovery plan in 1968. The government understood that education was their best chance for mending the economy. A director general in Finland's Ministry of Education and Culture told Hancock, "If we want to be competitive, we need to educate everybody. It all came out of a need to survive."

Oklahoma has that same need now. It is time for us to start education everybody.

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Scotland and Energy and Us

Joey Moppert, St. Louis, MO and Robert Gordon University, Aberdeen Scotland

Joey Moppert will be completing his bachelor's degree from the University of Tulsa this year. He will be graduating with a B.S.B.A in Energy Management with a double minor in Geosciences and Finance. This past Spring, Joey traveled to Aberdeen, Scotland to study Law & Management at The Robert Gordon University. During his time abroad he also had the opportunity to work for a non-profit organization called The Industry Technology Facilitator (ITF). After returning to the United States, Joey spent his third consecutive summer interning for ConocoPhillips. Joey has received a Permian Basin Landman's Association Scholarship, Oklahoma Energy Resources Board Scholarship, and the ConocoPhillips SPIRIT Scholarship.

My study abroad experience was a challenging one. It wasn't challenging because of the language or the cultural barriers; it was challenging because not only was I taking classes at a different university, but I was also working at the same time for an oil & gas technology company called the Industry Technology Facilitator (ITF) in Aberdeen, Scotland. ITF is a "not for profit" organization owned by 29 major global operators and service companies.

Their key objectives are to identify technology needs, foster innovation and facilitate the development and implementation of new technologies. To date, ITF has been responsible for launching more than 180 new collaborative and revolutionary joint industry projects, with a portfolio of approximately 37 ongoing projects linked to £16 ($25) million direct member investments.

With this year's Oklahoma Academy theme focusing on identifying and securing Oklahoma's place in the global energy community during the next 20 years, it seems fitting to point out the lessons I learned abroad about global energy technology and the profound impact it can have on an economy, especially here in Oklahoma.

I think the impact energy technology has had in the United States is obvious. Oklahoma is already being revitalized thanks to technology developments such as the advancement in hydraulic fracturing and horizontal drilling. One of the key takeaways from ITF I had was learning about the new technologies they are working on around the globe and realizing that new energy technology is the key to the future of oil and gas development.

Oklahoma as a state benefits greatly from increased activity in the energy sector. As companies like ITF focus on facilitating revolutionary joint industry projects, we in Oklahoma can help with this new age in technology development and benefit from it at the same time.

With universities endowed with top-of-the-line energy programs, like The University of Tulsa, The University of Oklahoma, and Oklahoma State University, we can use these institutions to help with these technology developments and in turn provide the industry with new ways of bringing life into old wells which, as we all know, Oklahoma has many of. The University of Tulsa is already a partner with ITF and has done technology research for them in the past.

The key to the future of Oklahoma's success in the global economy is to make it the center of energy expertise and energy technology development. Oklahoma used to be the center of oil and gas activity with Tulsa previously being the energy capital of the world.

Many major oil companies have offices inside of Oklahoma and some with Research & Development facilities in the state as well. The universities are already contributing to the global energy industry in many ways. ITF is also doing its part to bring to light the many challenges that face energy companies around the world.

Some of these examples are included with their 2012 Technology challenges such as Unconventional Reservoir Characterization, Heavy Oil, Water Management, & Downhole Pressure and Temperature Monitoring. Oklahoma can benefit from Energy Technology on both sides.

The front side of technology development will be focusing on local universities researching new technologies. The back side of this development will have these energy companies implementing those technologies in the state while breathing new life into an oil and gas rich state. Oklahoma can become the center for technological expertise in oil and gas for the world.

Technological development will always be critically important to the industry. People from around the world will flock to Oklahoma to seek out the expertise it has available in its major cities and at its universities.

Spending time in a foreign country and in Aberdeen, a city that is known as the energy capital of Europe, has given me the opportunity to truly learn and see the energy challenges around the world and realize that there is an opportunity here for Oklahoma to take advantage of the need for technology development in the energy industry and truly prosper as a state.

I hope the state will take what I have observed abroad into consideration when trying to establish their identity in the coming years. Oklahoma will always have a strong tie to the energy sector. The question is:

Will we take its rich history and make it even richer in the future?

We should.

Alternative Energy in 2032

Andrew Lowe, Wichita, KS

As populations around the world grow and third-world economies begin to expand, the availability of energy and its responsible use is beginning to gain more attention in the government and society as a whole. In developing countries, access to energy can be rare, but that is changing.

In America, access to cheap energy is rarely a problem, but as access to oil, our main source of energy, becomes more difficult, more problems will arise. Not only are disasters such as the BP oil spill more likely, but exploration for and procurement of fossil fuels will ultimately require more energy input than energy yielded.

It is for this reason that this issue needs to be included in policy discussions in Oklahoma. Virtually every aspect of the American life will be affected by policies on this subject. Everything, including the food we eat, the products we buy, and the cars we drive, requires energy and Oklahoma has the chance to begin moving towards a more sustainable and intelligent attitude towards energy.

Some of the best markets to encourage implementation of sustainable, cost effective energy are in developing countries that currently do not use a great amount of energy. At the University of Tulsa there is an organization called Sustainable Energy for Needy Emerging Areas (SENEA). This group focuses its resources on research and implementation of projects that improve the lives of people in developing countries by providing them with sustainable forms of energy. For example, one project in development is a washing machine that is powered by a bicycle drivetrain.

In May of 2012 a group of members traveled to Cambodia to evaluate the needs of a local orphanage and to see how the projects and this bicycle laundry machine specifically could benefit them. Cambodia, in the context of this discussion, is a developing country with increasing energy requirements. Technologies like this allow the people of Cambodia to have first-world privileges without the access to electricity and have the potential to reduce electricity use in places like America without affecting the lifestyle. That is an important goal for America and other first-world countries moving forward: to reduce energy use by encouraging development of more efficient and innovative technologies. The auto industry is a great example of this goal being successful. With raising oil prices and an increasing load of economic and environmental problems, the auto industry was forced to refocus on building efficient and clean machines in order to stay competitive.

This shift in philosophy was spurred on by growing consumer interest in the technology, but also by government incentives to buy fuel-efficient cars and mandates to improve mileage and emissions. A government-born impetus to improve efficiency can work in many other industries as well, such as providing incentives to businesses to cut energy costs. One of the biggest industries to be looked at with an eye towards sustainability, however, needs to be agriculture.

Efficiency and sustainability in the agriculture markets worldwide are integral to any move towards more sustainable growth and energy use. Food, in essence, is a way of converting energy sources such as the sun and oil into a form that can power the human body and the human body requires a lot of energy. Unfortunately, a lot of energy is wasted by the current system in multiple ways. The shipment and processing of food, for instance, requires trucks to move foods around to multiple locations before it finally ends up on the table.

Additionally, modern farming practices bring up other sustainability issues such as soil erosion and water usage. While there are many areas to improve in the agriculture sector, increasing small farm and local production, which has actually been pretty successful in Oklahoma, would go a long way towards improving some of these main issues.

Further advancements could be made in areas such as urban farming and educational programs. In other areas of sustainable agriculture, Oklahoma is not doing as well. America is one of the greatest consumers of meat products in the world and other countries are increasing their meat consumption as western diets become more popular. Meat production is fundamentally inefficient because of the energy input required to raise not only an animal, but also an animal's food and its current rate of consumption is unsustainable.

Meat consumption certainly does not need to cease, but putting a larger emphasis on plant based diets would go a long way towards helping reduce the energy requirements in the agriculture industry. This energy reduction in America and abroad is a necessity, but it is only the first step.

Oklahoma is far behind in the area of alternative energy relative to the rest of America and the globe. Although oil and gas is a major source of revenue and jobs in Oklahoma investing in new technologies is still a necessity to stay competitive in future energy markets.

Especially with the ozone issues of late and an inevitable non-attainment rating by the EPA, new, cleaner energy is important to reduce pollution and reduce reliance on non-sustainable energy sources. Technologies such as solar and wind power have been proven to be cost effective, and are still improving.

In the near future, issues with energy will begin to increase in America and abroad. In order to combat these issues proactively, it will be necessary to focus on high efficiency technologies and lifestyles and to begin moving towards sustainable forms of energy.

The agriculture industry in particular, a major part of the Oklahoma economy, has much room to improve.

The people of Oklahoma now have a chance to implement some of these practical solutions to global energy problems, and certainly in this case, the sooner the better.

Personalized Medicine in 2032

Caleb Lareau, Enid

Caleb is a sophomore double major in Biochemistry and Mathematics at the University of Tulsa. Caleb has joined the research teams headed by Courtney Montgomery, PhD at Oklahoma Medical Research Foundation and Brett McKinney, PhD at the University of Tulsa. While working in these labs, Caleb has spent the last year-and-a-half developing tools and analyzing data to better understand the genetics of complex inflammatory diseases. After graduating from Tulsa, Caleb plans to pursue his doctoral degree to continue contributing to the understanding of genetic diseases.

Why We Should Care

The word "cancer" certainly gives each and every one of us an uneasy feeling. Almost every Oklahoman has had someone close to them—a co-worker, friend, family member, or spouse—suffer immensely from this disease. Fortunately, cancer is no longer the death sentence that it was 20 years ago. New research has shown that the overall cancer death rate fell over 30% from 1991 to 2004, providing hope to the millions affected by this disease. Furthermore, novel radiation techniques and chemotherapies are being developed regularly, suggesting this disease will soon be completely treatable. While there is a justified cause for optimism, we will never conquer this disease or others like it until more substantial efforts are made to understand the genetic basis of complex diseases.

Globally, the percentage of people diagnosed with cancer is smaller than those in the United States or even Oklahoma. Sadly, this statistic is partly an artifact of people in developing countries perishing from causes like infection, hunger, and impure water well before cancer can manifest. As new technologies create cost-effective solutions to these problems, cancer rates will begin to rise in places like Africa, South America, and South Asia. Thus, over the next 20 years, this disease will become even more impactful on a global scale while it continues to threaten millions of Americans. So as we look toward 2032, what can we do to fight this and other diseases and set a standard for developing countries to follow?

The clear-cut answer in my mind is the development of personalized medicine. For decades, scientists have dreamed of an era where patients would receive specialized care based on that patient's unique DNA sequence. While subtle changes in our DNA are responsible for attributes like our hair color, height, and skin tone, it also dictates the development of diseases, metabolism of drugs, and risk of adverse side effects.

Though millions of dollars have already been committed toward understanding the genetics of this disease, cancer's highly epistatic nature coupled with its strong linkage to environmental factors has created a tremendously laborious task for researchers. Additionally, relatively small numbers of patients with genetic sequencing data substantially handicaps statistically driven experiments. To usher in a new era of medical treatments against cancer and other deadly complex diseases, I purpose a plan that acts in two steps.

First, Oklahoma should begin pooling resources to improve the quality of patient care immediately. This entails that genome sequencing should soon become a standard component of treating patients with severe complex genetic diseases. Though we only beginning to understand the secrets of the human genome, our existing knowledge is potent enough to warrant inclusion in the clinic. Hundreds of variants have been identified that directly influence an individual's risk of toxicity, adverse side effects, and poor efficacy for a particular drug.

This information would be immediately beneficial to physicians preparing to prescribe a patient chemotherapy. Since this would be a continuous process, new data could be collected routinely and added to a centralized database, giving physicians even more clinically actionable information, thereby creating a formidable positive-feedback loop. This process of prescribing unique drug regiments for a patient based on his or her genome would begin to solidify the era of personalized medicine.

Throughout this period of personalized care, the amount of individuals in a genomic database would increase considerably. The sample size would then rapidly approach an ideal number of patients in a database for statistical analyses to uncover the genetic basis of complex diseases. As a result, the second step in this plan could come into fruition: predictive modeling.

Once scientists better understand the genetic basis of diseases, medicine, as we know it, will undergo an enormous transition. Instead of treating symptoms as they manifest, doctors will be working to prevent the onset of a disease. Cancer would no longer be a malady that would tear apart families but a risk that can be neutralized. Disease would no longer be fought with expensive drugs and painful operations but with subtle habits to minimize risk of future development.

So why Oklahoma; why now? Oklahoma houses one of the lowest-cost next-gen sequencers in the world at Oklahoma Medical Research Foundation. While the sequencing facilities would certainly have to expand to implement this proposition, our state has demonstrated a cost-effective model exists to sequence DNA. Further, Oklahoma has extremely high potential to build and maintain the computational logistics required to analyze this data effectively due to low costs and high availability of resources. Not only would beginning clinical sequencing immediately benefit the lives of thousands of Americans, but it would also allow America to maintain its role as a global leader in healthcare.

While the true potential of genomic or personalized medicine is still many years away, the short-term benefits alone warrant more aggressively funded research in this area. In the long-term, this research could shift the focus of medicine from treatment to prevention. As complex genetic diseases are expected to become more prevalent globally, this research provides America an opportunity to cement its position as a global leader in health.

While the dream of a cancer-free society may not be possible, I appeal to Oklahomans to begin aggressively pursing the most formidable option that we have to mitigate the demoralizing effects of cancer and other deadly diseases on our population.

Oklahoma Lessons for 2032

Chris Byrd, Tulsa

This and following pages summarize "Economic Benchmarks: Tulsa's Competitive Challenge Regional Competitor Analysis", produced by the University of Tulsa 2012.

A University of Tulsa Collins College of Business research team conducted a thorough examination of a variety of economic, workforce, demographic, and quality of life statistical measures for metropolitan areas in Oklahoma and surrounding states. The team made several significant findings in these areas that help identify Tulsa and Oklahoma City's strengths and weaknesses relative to our regional competitors. Some general trends emerge that may help inform future policy decisions to strengthen Oklahoma's position in the future global market.

The study found mixed trends over the past five years in Oklahoma's workforce. While Oklahoma's unemployment rate has fallen to around 6%, the number of total jobs as a percent of population continues to decrease since 2008.

The number of professional jobs (management, finance, legal, and medical) in Tulsa and Oklahoma City has increased significantly in number and share of total jobs in the last five years. This increase has been driven most strongly by a 40% increase in healthcare jobs over the past decade.

However, our proportion of engineers, artists, scientists, architects, etc., labeled "Creative Jobs" has fallen. These jobs often fuel innovation and new development. In the last five years Oklahoma City and Tulsa both lost approximately 4,000 (20%) of these jobs. This is a discouraging trend that Oklahoma needs to see reverse in order to fuel growth through innovation.

Educational attainment in both Oklahoma cities ranks below average, with just 25% of Tulsa's adult residents holding a bachelor's degree and 28% of Oklahoma City's adult population. Worse yet, the earnings for Oklahoma workers are most competitive for individuals with no more than a high school diploma, and both OKC and Tulsa rank at the bottom for earnings of those with a bachelors or graduate degree.

In the area of quality of life, we found that Oklahomans continue to have a very low cost of living, even within our own region. That low cost of living has historically been offset by below-average wages paid out to Oklahoman workers. Wages have risen though in the past two years, and new 2011 wage estimates show OKC and Tulsa average annual wages increasing by 19% and 17%, respectively, since 2006. Hopefully this trend will improve Oklahoma's competitiveness in attracting and retaining skilled, highly educated individuals.

The most clear action steps for Oklahoma in response to this data are to place concerted effort into improving the education of our residents. Strong schools will produce these individuals, and Oklahoma must have strong communities and quality jobs to keep them here. Oklahoma will not be a competitive player in the global marketplace without a quality workforce. Oklahoma also needs infusions of capital and profits from outside its borders to ensure prosperity and growth for the future. These capital inflows come from leveraging our competitive advantages and leading industries.

Oklahoma's historically leading industry has been the oil and gas industry. In the past five years, most new Oklahoma patents have come from this industry, and the number of jobs related to oil and gas extraction has increased by 80% since 2004.

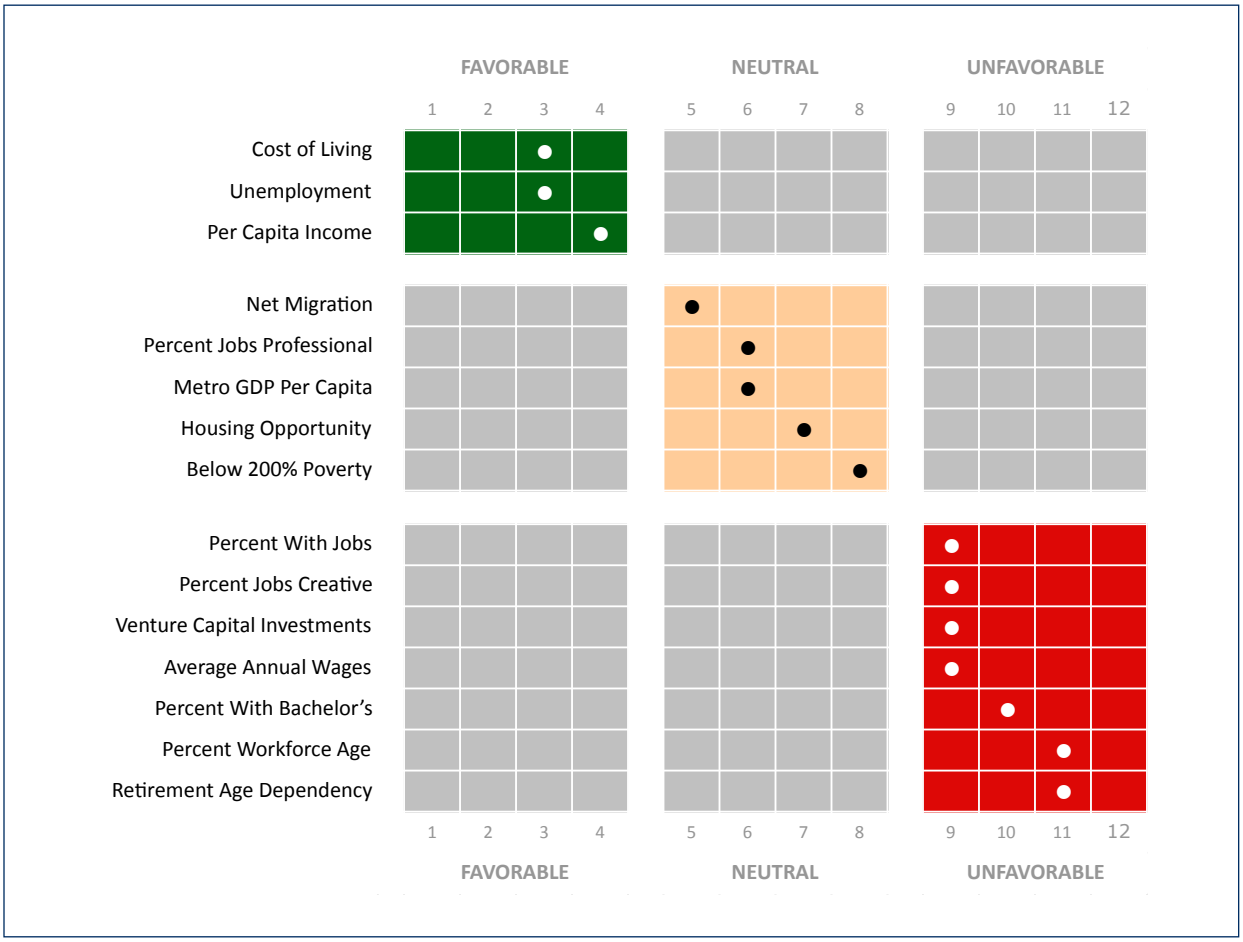
A strong workforce and focus on innovation in our strongest industries can secure a more prosperous future for Oklahoma.

Scorecard of Economic Benchmarks for Tulsa

Robyn Undieme, Albuquerque, NM

Research Group Comments

This University of Tulsa report focuses upon Tulsa's regional competitiveness of Tulsa compared to the other 11 cities in this region. That has little value per our global competitivemess theme, yet we think the self-assessment is very important. This Town Hall research shows that our national competitiveness will be driven by cities - and mid-size cities are more than likely to do the driving. To the extent that Tulsa (and Oklahoma City) are competitive regionally, they will be competitive globally. The metrics are important as we discuss our capabilities as a state.

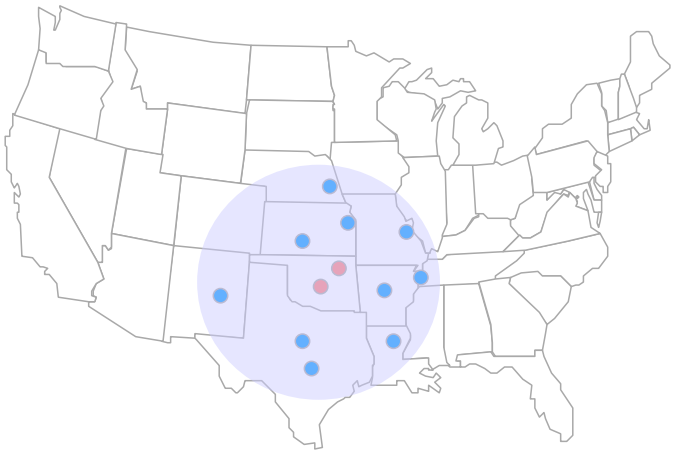


Benchmark Scoreboard

The Benchmark Scoreboard is divided into three sections to show where Tulsa stands among the 12 cities for the major areas considered in this study. These sections (Favorable, Neutral, and Unfavorable) reflect the judgments of the research team. The display allows one to consider Tulsa's ranking on any variable that falls outside the neutral area as strongly favorable or strongly unfavorable. Tulsa's low cost of living is clearly reflected on the Scoreboard along with the other strongly favorable variables: unemployment and per capita income. Strongly unfavorable variables relate to work force variables, employment compensation, human capital, and start-up resources. Out of the 15 variables considered in the body of the report, Tulsa ranks strongly unfavorable on seven.

Regional Economic Benchmarks

Robyn Undieme, Albuquerque, NM and Chris Byrd, Tulsa



REGIONAL CITIES

Austin, Albuquerque, Fort Worth, Kansas City, Little Rock, Memphis, Oklahoma City, Omaha, Shreveport, St. Louis, Tulsa, and Wichita
(The diameter of regional circle is ~1,000 miles; all regional cities are within ~500 miles of Tulsa and Oklahoma City)

DEMOGRAPHIC	TULSA	OKC	REGION
Population (millions)	0.94M	1.25M	*1.31M
Population Growth	5.4%	7.2%	6.2%
Percent Population 20-64	59.2%	60.1%	60.2%
Seniors/Working Age	22.2%	19.8%	19.1%
Percent of Population Retired	15.4%	18.0%	16.6%
Net Migration	7,652	11,192	8,146
Eligible Public Health Coverage	28.8%	28.1%	27.8%
Population/Medical Professional	40.6	35.1	37.6
Earned College Degree	25.0%	27.1%	27.6%

WORKFORCE	TULSA	OKC	REGION
Jobs to Population	43.1%	42.4%	45.9%
Professional Job toTotal Jobs	16.5%	18.4%	15.8%
Creative Jobs to Total Jobs	5.1%	5.8%	6.3%
Total Jobs Growth	-5.4%	-2.8%	-3.8%
Prof Jobs/Total Jobs Growth	6.0%	5.2%	6.5%
Creative Jobs/Total Jobs Growth	-17.8%	-12.9%	1.7%
Unemployment (thru Dec 11)	6.9%	5.7%	7.4%

ECONOMIC	TULSA	OKC	REGION
Cost of Living Index	89.2%	90.6%	92.2%
Affordable Housing Index	72,7%	72.7%	70.3%
Earnings No High School	$18,925	$17,649	$18,278
Earnings High School Diploma	$23,847	$25,221	$26,121
Earnings Bachelors Degree	$41,941	$41,762	$45,658
Earnings Professional Degree	$51,795	$55,503	$58,387
Average Retirement Income	$17,299	$22,066	$21,858
Average Annual Wages	$39,908	$41,257	$42,233
Per Capita Income	$40,793	$39,136	$39,390
Per Capita Metro GDP	$47,812	$42,834	$48,622
Average Retirement Inc Growth	3.5%	21.4%	14.8%
Average Annual Wages Growth	10.8%	14.5%	5.9%
Per Capita Income Growth	5.9%	6.9%	7.0%
Per Capita Metro GDP Growth	3.4%	-2.6%	4.4%
Under 200% Poverty All Ages	34.4%	34.8%	32.4%
Under 100% Poverty Age 0-17	22.7%	23.8%	21.9%
Under 100% Poverty Age 18-64	14.0%	14.4%	13.8%
Under 100% Poverty Age 65+	8.3%	7.4%	8.0%
Under 100% Poverty All Ages	15.5%	16.0%	15.3%

** Indicates an average of 1.3 million population of the 12 cities within the region.*
All single year data is for 2010. All growth percentages are for 2006 - 2010 unless otherwise noted.

Tulsa Economic Benchmarks

J. Markham Collins, PhD, Principal Investigator, University of Tulsa

Economic Quality of Life: Tulsa offers an economic environment with a low cost of living, affordable housing, and a population that economically is average among the competitor set based on its proximity to 200% of the poverty level.

Work Force/Education: A smaller percentage of the population has a job in Tulsa compared with the competitor set as a whole, but the unemployment rate tends to be lower as well. Based on attainment of bachelor's degrees, Tulsa's labor force is less educated than average among the regional competitors. Professional and managerial jobs are relatively plentiful, but creative jobs make up a small percentage of total jobs and that number has declined at an alarming rate, down 18% over the past five years.

Demographics: The Tulsa metropolitan area has seen steady and significant population growth. However, the composition of that population raises concern. For Tulsa, the percentage of the population in the working-age sector, 20 to 64, is lower than all but one of the competitor cities, Wichita. In addition, the ratio of people over 65 to the 20-64 age group is among the highest. With an aging population, the low working-age percentage will only grow smaller.

Local Economy: Overall earning and spending power is low to average. The Metropolitan GDP per capita is average and total income (consisting of income from all sources, including wages, rents and interest, profits, and government transfers) per capita is strong, yet per capita wages and wages as a percentage of GDP are low. Low wages might be a strength in attracting mobile companies to the area, but also could be a weakness in supporting local merchants. Venture capital investments have been low; Tulsa's record of such investments is well below most of its competitors, especially over the past three years.

Tax Burdens and Business Incentives: The overall tax burden for Oklahoma and for Tulsa falls close to the middle for the regional competitors. Considering business incentives, all of those cited among the competitor cities are available in Tulsa, with the exception of green energy tax credits.

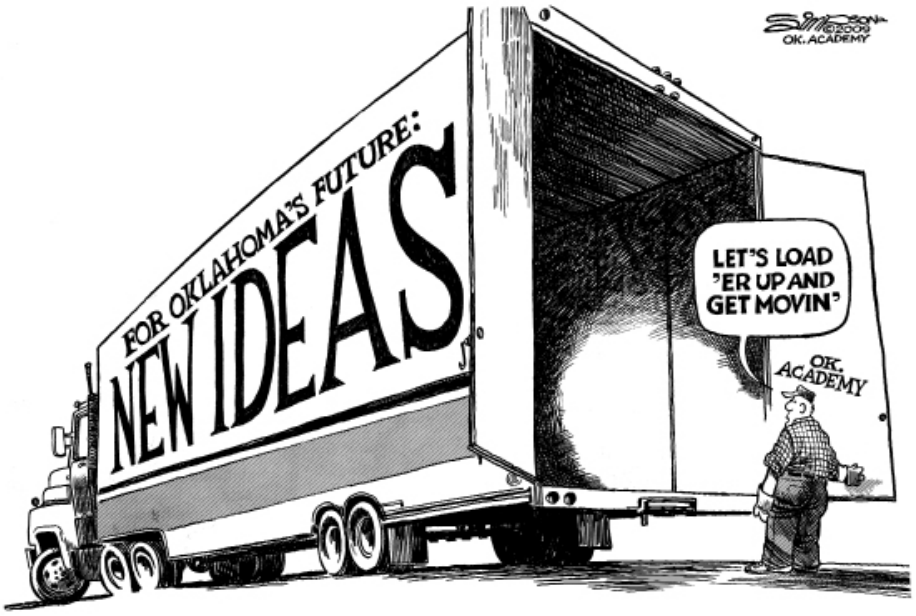
Overall: Tulsa is about average when compared to these benchmarks and set of competitors.

ACADEMY TOWN HALLS

2012 - It Is 2032: Where in the World is Oklahoma?
2011 - Developing the Oklahoma Economy
2010 - Municipal Governments in Oklahoma
2010 - Water Planning for Oklahoma
2009 - Getting Ready for Work: Education Systems and Future Workforce
2008 - Oklahoma's Criminal Justice System: Can We be Just as Tough but Twice as Smart
2007 - Building Alliances: Tribal Governments, State & Local Governments and Private Sectors
2006 - Strategies for Oklahoma's Future
2005 - Drugs: Legal, Illegal...Otherwise
2004 - Oklahoma's Environment: Pursuing a Responsible Balance
2003 - Oklahoma Resources: Energy & Water
2002 - The State of Oklahoma Health
2001 - Competing in an Innovative World

ACADEMY CONFERENCES

2000 - The Oklahoma Constitution: Back to the Future
1999 - Technology and Oklahoma's Future: Lighting the Fuse
1998 - Technology Applications: Accelerating Toward Prosperity
1997 - Education and Training: The Key to a Richer Oklahoma
1996 - Crime: Building Safer Communities
1995 - Restructuring State, County and Local Government
1994 - Entrepreneurial and Small Business Development: Future Economic Growth
1993 - Today's Budget Decisions, Tomorrow's Priorities
1992 - Oklahoma: Mind Your Own Politics: What Should Oklahoma's Policies Be?
1990 - Oklahoma's Future: Choice or Chance?
1989 - Oklahoma's Future: Developing our Human Potential
1988 - Elementary and Secondary Education: Will Oklahoma Pass or Fail
1987 - The Future of Oklahoma
1986 - Strategy for Economic Expansion in Oklahoma
1985 - Economic Development in Oklahoma



Moving Ideas Into Action

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