

***Moving From Entrepreneurship Utopianism to Entrepreneurship "Topianism:"
Improving the Climate for Entrepreneurship in Wisconsin***

by

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ABSTRACT

Moving From Entrepreneurship Utopianism to Entrepreneurship "Topianism:"¹ Improving the Climate for Entrepreneurship in Wisconsin

To improve and expand the economy of Wisconsin it is essential that the climate for entrepreneurship be improved and venture creation and financing made a priority by policy makers. It is important that we turn away from Entrepreneurship Utopianism and find real actions that will lead to a reinvigorated environment that favors the "New Economy."

Utopia describes an ideal, but imaginary socio-political place that is perfect in every aspect. While presenting an ideal abstraction, Utopia is a very impractical and unrealizable vision of what can occur in reality. If our universities and economic development agencies are to have a central role in the improvement of our economic well being, we must turn to Entrepreneurship "Topianism," to borrow a term from an experimental development in South America, and away from many of our current "Utopian" strategies. That is, we must turn to a place that is real, not imaginary, with practical and real strategies for changing the climate for entrepreneurship as this will lead to the achievement of our economic development objectives. This paper concentrates on the essential elements for a healthy entrepreneurial climate with suggested actions to improve our climate for economic development in Wisconsin.

The paper contends that with a proper vision, the elements of success can be brought into place for economic development on a scale and of a nature not seen before in almost any state, region or city. Actions are discussed that are necessary for a healthy entrepreneurship climate that will: (1) Develop a positive attitude among all for venture creation and development; (2) Bring the tremendous research capacity of University of Wisconsin-Madison to the task of technology and knowledge development and transfer of that technology to the private sector; (3) Develop early stage venture capital financing mechanisms to fuel new venture start-up and growth; and, (4) Encourage universities to develop new programs to train the high-tech talent needed by new economy ventures.

¹ The words "Utopianism to Topianism" are taken from an unpublished paper by Dr. Michael Schuler, Madison, Wisconsin.

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Those of use who think about and are engaged in venture creation and development whether as academicians, business leaders or government officials, are all guilty of pursuing Utopian visions that makes good rhetoric, but typically provide only an imaginary application to the reality of people's lives and future.

Nowhere is the practice of Utopianism more pronounced than in the field of entrepreneurship. In the past few years, politicians and business leaders in almost every corner of our state have advocated a move to encourage entrepreneurial venture start-up as a cure to existing or potential economic problem. If there is a below average state per capita income, entrepreneurs will single-handedly pull us out of our problems. If global competitive pressures and punitive tax policies make us less competitive, entrepreneurs will restore vigor to our economy. If we face structural unemployment and distorted income distribution because we have evolved an employment and wage system that favors traditional manufacturing, agriculture and tourism, new entrepreneurs will make this right -- without disrupting the entrenched interests that benefit from the status quo. This is Entrepreneurship Utopianism and it is imaginary, will never work and is contrary to the major lessons that have been learned about the reality of entrepreneurship and venture creation.

If our business leaders, academics and government policy makers are to have a central role in

the improvement of our climate for entrepreneurship, we must turn to Entrepreneurship "Topianism," to borrow a term from an experimental development in South America. This is taken from the Greek word for place (Topia), that is, a place that is real, not imaginary, with practical and real contributions to make to us all. My brief comments will concentrate on the four major elements that constitute the climate for entrepreneurship with suggested actions to improve the entrepreneurship climate in Wisconsin.

THE ENTREPRENEURSHIP CLIMATE

In its broadest understanding, the fostering of entrepreneurship must be thought of in terms of economic development policies and strategies. We need to ask ourselves why some states, regions or cities prosper, while others do not. We need to know why some are winners, while others are clear losers, and this analysis cannot be imaginary -- it must be based on what is actually taking place. Understanding why some states are winners provides insight into Entrepreneurship "Topia" and the ability to improve the climate for entrepreneurship in Wisconsin.

With a proper vision and bold leadership, the elements of entrepreneurship climate success can be brought into place for economic development on a scale and of a nature not seen before in almost any state, region or city. To do this, we will need to: (1) Develop a stronger positive attitude among all for venture creation and development; (2) Expand the tremendous research capacity of the University of Wisconsin-Madison (especially in the life sciences and information technology) to accelerate the development of technology and knowledge and the transfer of this new technology to the private sector; (3) Greatly expand early stage venture capital financing mechanisms to fuel new venture start-up and growth; and, (4) Fund new university and technical college programs designed to train the high-tech talent needed by the new growth ventures that will be developed.

The benefit to economic development will be immediate if these steps are taken to improve the climate for entrepreneurship in Wisconsin. Consider the following evidence of the wisdom of investing in improving the climate for entrepreneurship that will lead to venture creation and

economic development:

1. Why Recognition of the Importance of Venture Creation and Development is Essential for Venture Creation and Development in the New Economy.

There was a relatively unknown but profound change in the structure of the American economy that started in the late 1970s that explains much of the recent strength in economic vitality and performance in the U.S. This period marks the point in time when new venture start-ups began to grow faster than the increase in GDP. The largest companies in the U.S., the FORTUNE 500, grew in sales, profits and employment in aggregate until the early 1980s, but they have declined ever since. Today, FORTUNE 500 firms provide only 5% of total employment and their contribution to the economy continues to decline over time. It is important to realize that only approximately 10,000 firms, out of about 16 million firms, have equity that is publicly traded. The real growth in the economy is outside of the large multinational firms even though these are most visible and heavily publicized.

With large firms becoming less important to economic growth, new venture creation and development becomes essential for continued prosperity and increases in GDP. However, only 3% to 4% of all companies grow very fast and these firms generate most new jobs. It is estimated that approximately 500,000 growing firms create about 80% of all new jobs and these are the firms that will be created with an improvement in the climate for entrepreneurship in Wisconsin.

The characteristics of the fast growing firms have changed dramatically over the past five years. Previously, growing firms were largely outside of the high-technology sectors, but almost all of them heavily used high technology. However, by the mid-1990s, the profile of growing firms had shifted to knowledge-based companies with many in high-technology fields. Of most significance, the number of these companies employing new science or technology increased markedly.

The winning economies in the future will be those that recognize the need for new knowledge-based venture creation and development. This will require a shared vision of the new economic

growth reality by policy makers, academics and labor leaders. It will only be through joint efforts that the new economy can be developed in Wisconsin.

2. Using the Resources of University of Wisconsin-Madison for Venture Creation and Development.

Almost every serious attempt to understand the venture creation process has found that it is essential for there to be a major research institution, linked to a first rate business school, that generates new science and technology for commercialization. In the U.S., top-level universities such as the University of Wisconsin-Madison conduct most primary research and the federal government funds much of the research. The University of Wisconsin ranks among the top universities nationally in the amount of federal research funding and this has resulted in a tremendous expansion of the opportunity for the commercialization of new science and technology for the economic development of Wisconsin.

The Bayh-Dole Act (P.L. 96-517 and amended by P.L. 98-620) allows universities to retain ownership of science and technology invented with federal funding and this has greatly expanded the potential role for the University of Wisconsin-Madison in generating new technology for commercialization. The success of this incentive is obvious when one realizes that fewer than 250 patents were issued to universities in the U.S. per year before Bayh-Dole, while almost 1,600 patents were issued to universities ten years later and over 80% of these stemmed from federally funded research. The performance since this time has been remarkable: In 1972, 30 patents were issued to universities; in 1986 the number was 619. In 1997, over 3,000 licenses were given to the private sector by universities and university hospitals; in 1991 the number was 1,128. In 1996 royalties to universities totaled \$492,000,000; in 1991 the total was \$168,000,000. And in 1997, 275 U.S. universities had technology transfer programs; in 1972 the number was 30. This provides strong evidence for the enhanced role for the University of Wisconsin-Madison as a center for the development of new science and technology for commercialization. But developing new science and technology is not enough, there must be involvement of the School of Business, University of Wisconsin-Madison in the

commercialization process if significantly more new successful ventures are to be launched with university-generated technology.

Madison can be used to illustrate the impact university-based technology transfer can have on the economy and this is only a small part of the potential role that can be played by this remarkable research institution. As you know, Madison is a small city of about 200,000 residents and yet 70 new technology-based companies have been formed in the city in the last five years due to technology transferred from the university. Since about 1960, 172 new ventures have been founded in Madison from university technology transfer, many with School of Business assistance, and this has directly improved the local economy. Most of these new ventures are in the biological sciences (57%), including medical diagnostics and therapeutics, drug development and agricultural crop improvements. Other technology transfer ventures from the university (43%) are in the physical sciences such as polymer processing, scientific instrumentation and computer software. Of significance, very few of the ventures started with university-developed technology have failed, the percentage is much lower than the U.S. average and this excellent success rate can be improved with even more School of Business guidance during the commercialization process.

The extent of potentially commercial technology from research universities has accelerated recently. A recent survey by the Association of University Technology Managers (AUTM) found that universities generated 4,808 new U.S. patent applications in 1998.

Because research universities have the ability to own technology generated through governmental funded research, most top universities have established offices of technology transfer to help commercialize new patents. Unfortunately, most of this activity has centered on licensing or selling patents to established large firms rather than an attempt to create a new venture around the technology. According to AUTM, in 1998, universities obtained 3,668 new licenses for patents but only contributed to the formation of 364 companies across the U.S. The selling or licensing of a technology is much easier than trying to establish a new venture and universities have found an easy source of royalty income through this process. For example,

Florida State University licensed the cancer-fighting drug Taxol to Bristol-Myers Squibb and this generated \$45 million in income for fiscal year 1998.

However, licensing university-developed technology can actually provide a disincentive for faculty and scientists to develop potentially commercial science and technology. Because the university office of technology transfer typically pays patent expense and owns the licensing rights to it, the amount of the royalty received by the faculty researcher is typically a small percentage of the total received. The university first covers the cost of the patenting and technology transfer operation and keeps a portion to pay for future research and commercialization. With little of the royalty going to the inventor, there is a small incentive to work on commercial application of many research projects.

An innovative way to handle this problem is to establish a comprehensive technology transfer process that allows faculty researchers to own equity in new ventures created around their technology in addition to the traditional percentage of licensing royalty income.

The University of Wisconsin-Madison is in the process of establishing a comprehensive technology transfer process, located within the School of Business and UIR, that is intended to provide incentives to faculty researchers to create potential commercial applications of their research. This approach has been used successfully on a limited basis for a number of years by the Weinert Center for Entrepreneurship of the School of Business, University of Wisconsin-Madison and this activity can be increased significantly with appropriate funding.

The new technology transfer process includes the following:

a. Review of University Research Projects

Staff will screen university research findings to identify potentially commercially viable science and technology. This screening process is essential if the new technology-based ventures are to be successful. For example, it is important to realize that a distinction must be made between *Invention* and *Innovation*. Too often we use these terms as if they are equivalents when they are distinctly different, and commercializing *Invention* is often a prescription for failure and a classic example of following a Utopian dream.

It must be realized that *Invention*, a new discovery, concept or device, is only the very beginning step in a long process to commercialization. While *Invention* is a necessary prerequisite for *Innovation*, it is not sufficient for commercialization to take place. If a university or business incubator attempts to commercialize *invention* without completing the *Innovation* process, more than 90% of the new ventures are likely to fail. However, if the *Innovation* process is followed, the failure rate is likely to be below 10%!

Innovation involves a complex series of actions that starts with the original technology idea and proceeds through a complex succession of milestones that include research objectives, prototype development, feasibility analysis, marketing plan development, business plan development, financing, operations development and implementation and finally market acceptance. This is a time-consuming and expensive process and only those most likely for success should be selected for continued consideration and next stage screening.

b. Preliminary Screening of Research Developed

When science or technology developed by faculty researchers is thought to be of potential for commercial transfer and venture creation, it will be referred for a two stage preliminary analysis. First of all, a team of three to five graduate students from the School of Business is formed to evaluate the potential market for the new science or technology. This is done by reviewing potential users, looking at competition, and determining the extent of competing technologies in the market, market introduction or research stage. In practice, while the science or technology under consideration is almost always impressive, approximately ninety percent of all new technology does not have a market, either due to limited demand or superior competitive products or services. It is important to note that in about five percent of the cases the original market application is found not to be viable, but an alternative market potential is found in this stage of review.

The initial screening for commercial feasibility is the most important step in the *Innovation*

process. A majority of all new *Inventions*, while representing good science or technology, are not commercially feasible. By identifying those *Inventions* that have the highest probability for success, scarce resources can be concentrated on the *Innovation* or commercialization opportunities that are likely to be viable.

If the science or technology is found to have a potential market, a second team of graduate students from the life and physical sciences and engineering assess the technical feasibility of the new idea. In addition, outside experts, on a contract basis, may be used to help assess particularly complex and platform technologies being investigated. This team looks at the ability to place the technology in production and estimates cost of production and compares this with competitive alternatives. Of the ten percent of technologies passed on to the technical assessment phase of the process, about twenty percent of these are too difficult or costly to produce. The initial screening for technical feasibility is the second most important step in the *Innovation* process. Many new *Inventions*, while representing good science or technology, are not technically feasible, they cannot be realistically brought into production. By identifying those *Inventions* that have the highest probability for success, scarce resources can be concentrated on the *Innovation* or commercialization opportunities that are likely to be viable.

c. Comprehensive Commercialization Plan Development

If the new science or technology is thought to have both market and technical feasibility, a team of graduate students from business, engineering and the sciences prepares a supervised Commercialization Plan. This plan includes an in-depth market analysis as well as a detailed production plan. Outside professional experts may be used as consultants for this part of the project. By the end of the process, of the eight percent of the new technologies entering the Commercialization Plan stage, three will not be feasible for either market or technical reasons. If

the technology or science is found to be commercially viable after the plan is prepared, WARF will be asked to file necessary patents to protect the idea and commercialization actions are taken.

d. Commercialization of the Technology

Based on the conclusions of the Commercialization Plan, the new technology will be either sold, licensed or a new entity formed to bring it to market. Every effort should be made to license or sell the technology to an existing or new firm in Wisconsin where the economic impact of the new technology will have the greatest impact on the state's economy. If the decision is made to form a new venture around the new technology, the preparation of a comprehensive Business Plan for the launching of the business will be completed. The plan is prepared by a team of graduates from the School of Business under the appropriate supervision and direction. The plan includes the development of a proposed management team and a financing plan that includes the type, timing, amounts and sources of funding needed for the new venture. The Weinert Center for Entrepreneurship of the School of Business provides assistance in implementing plans and placing financing for new ventures. Approximately two out of one hundred new technology ideas are expected to reach the stage of new venture formation.

The technology commercialization process described is designed to concentrate economic development resources on those new technologies that have the highest potential for success. By screening new technologies carefully, scarce resources (always an issue with technology transfer) can be concentrated on those that are most likely to have a positive impact on the economy. However, the resources needed for this commercialization must be greatly expanded if the University of Wisconsin-Madison is to realize the potential for commercializing research technology.

With demonstrated success, university research centers are also attracting funding from industry for the development of new technology. This additional source of support will increase the impact and role of universities in the development of new technology.

3. The Importance of Providing Early Stage Financing for Technology-Based New Ventures

In terms of technology transfer funding, most discussions involve the process of moving new ideas from inventors to the private sector. While funding at this level is important, the largest unmet need is for early stage funding for new knowledge based ventures and the lack of early stage funding is a particular weakness of Wisconsin. The October 30, 2000 issue of *Red Herring* reports that Wisconsin has one of the worst early stage venture capital investment records in the country. For the first half of this year, only \$5.79 million in venture capital was invested in Wisconsin and this compares with \$459 million invested in Minnesota, \$143.65 million in Michigan, \$1,639.81 in Illinois, and \$34.24 million invested in Iowa. Bold and innovative actions are needed to increase the early stage venture capital funds for Wisconsin if our state's climate for entrepreneurship is to be improved in a meaningful way. It is important to remember that new ventures provide the potential for inventors to share in the equity of the firm in addition to a percentage of the license royalty and early stage venture capital is required for these firms to be developed. Without new firm formation, researcher will not have as strong an incentive to develop potentially commercial technology.

The following general points reinforce the importance of providing venture capital financing to new technology ventures.

- a. Firms receiving venture capital have employment growth rate higher than those without this support.
- b. Firms with venture capital create relatively more high-paying jobs as a percent of total jobs when compared to other firms.
- c. Firms financed with venture capital create more new technology than other firms.

- c. Firms financed with venture capital are predominantly found in "new economy" industries.
- e. Firms financed with venture capital have a higher export percent of sales than other firms.

Without early stage technology based venture financing, it will be impossible to have a healthy climate for entrepreneurship.

4. The Need for New Technically Trained Employees

As the climate for entrepreneurship improves in Wisconsin, new ventures will proliferate and the need for highly trained specialized employees, including managers, will become an important part of the success formula, perhaps as much as venture financing. The "new economy" is based on knowledge and workers with the required skills and knowledge will travel to new technology-based firms. As you know, Wisconsin has a shortage of technology employees and the required skills and training are becoming increasingly sophisticated. In the past many of the skilled workers required by business were trained in the technical colleges. While this source of training will continue to be important, universities will be called on for the high level training needed for many employees in the new economy.

If Wisconsin is to have a sound climate for entrepreneurship, additional funding for our universities will need to develop and offer courses designed to prepare workers required for new and expanding knowledge-based businesses. The new programs will be concentrated in the life sciences, information technology, engineering, entrepreneurship and management. It will no longer be enough for Wisconsin workers to have a high school education, they will need a university or technical institution degree. Bluntly stated, workers must be educated because they will no longer be able to earn from their "body," but must earn from their "head" instead. Universities, especially the University of Wisconsin System, are the only institutions with sufficient resources to adequately train the large number of workers needed for the new economy.

RECOMMENDED ACTIONS

As previously stated, with a proper vision, the elements for a sound climate for

entrepreneurship can be brought into to place and this will allow for venture creation and development on a scale not known before. To do this, Wisconsin will need to:

- (1) Develop a positive attitude among all for venture creation and development.

Action: Reorganize the Wisconsin State Department of Commerce to create a division designed to focus and coordinate resources, programs and services to foster knowledge-based business creation and development.

Action: Provide new state funding to allow the Small Business Development Center (SBDC) program of the University of Wisconsin to hold annual regional and one statewide conference on Growing Technology-Based Business. The intent of these conferences would be to solicit information from knowledge-based business owners to develop policies and legislation needed to support new economy business creation and development. The SBDC would prepare a report of the findings of the conferences and present this to the Governor and Senate and Assembly.

Action: Provide state funding to the WIN Foundation to identify and award outstanding knowledge-based firms and entrepreneurs. The funding would allow for case materials to be developed and media materials on the award winners to provide examples and role models for potential entrepreneurs. The Governor would present the awards at a banquet held at the end of each year.

- (2) Bring the tremendous research capacity of universities and research institutions to the task of technology and knowledge development and transfer to the private sector through management school assistance.

Action: State funding for a minimum of five new professional positions that will help facilitate the commercialization of technology working with faculty in the life sciences, information technology, engineering, and entrepreneurship.

Action: State funding for the University of Wisconsin Research Park to provide state-of-the-art research and testing facilities and equipment that will be made available to both faculty researchers and the private sector.

Action: Provide a mechanism and incentives for faculty researchers to work contractually with knowledge-based firms without losing faculty status or benefits.

Action: Develop mechanisms and incentives for research faculty and business faculty to move between the university and industry with: (a) No loss of faculty rights, seniority and tenure; (b) The ability of research and business faculty to buy out part or all of their university duties for technology commercialization and venture creation; (c) The ability to own equity in new ventures developed with faculty research; (d) and, Incentives for research faculty to stay in the laboratory by linking them with new venture managers to commercialize new inventions.

Action: Provide project assistant funding for six UW-Madison entrepreneurship students who will be available to screen new technologies for market feasibility.

- (3) Develop early stage venture capital financing mechanisms to fuel new venture start-up and growth.

Action: Enact legislation allowing state employees to voluntarily allocate 5% of their existing SWIB retirement account, and 10% of all future retirement payments, to an early stage venture capital fund restricted to investment in Wisconsin knowledge-based ventures. It is essential that this fund be managed by private venture capital managers with no interference from state officials if the appropriate investments are to be made. Given the magnitude of the shortage of early stage venture funding in Wisconsin, this is the only action that is likely to provide needed early stage equity capital that is necessary for a viable entrepreneurship climate.

Action: Funding for the statewide Small Business Development Center to build networks of potential venture investors, including venture capital funds and individual investors, and to organize venture forums around the state where equity capital and entrepreneurs can meet.

Action: Provide adequate funding for the Wisconsin Venture Fair that allows for a minimum of two sessions each year.

- (4) Universities to develop new programs to train the high-tech talent needed by the new growth ventures developed.

Action: Provide GPR funding to the graduate campuses of the University of Wisconsin System to train the high technology talent new economy ventures require. New programs at the graduate level in the life sciences, engineering, and information technology will be needed if Wisconsin is to have a good climate for entrepreneurship.

Action: Provide GPR funding for the expansion of the UW-Madison School of Business entrepreneurship program to make certain that the managers needed to initiate or assist with the creation, management and financing of new ventures are available in Wisconsin.

Only if we let go of our Utopian imagination will we reach a new and improved climate for entrepreneurship in Wisconsin. This paper presents actions for discussion that will lead to an improved climate for entrepreneurship and the action plan suggested is based on reality and the best possible "Topia."

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