

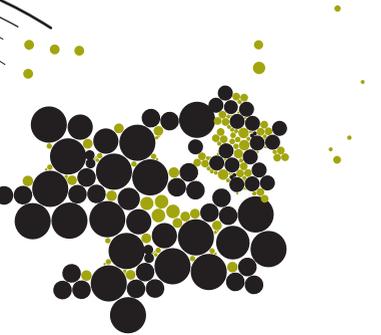
INAUGURAL LECTURE

5TH JULY 2012



LET FAILURE BE
YOUR GUIDE:
BECOMING A
RELEVANT
RESEARCHER
FOR INDUSTRIAL
RENEWAL

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LET FAILURE BE YOUR GUIDE: BECOMING A RELEVANT RESEARCHER FOR INDUSTRIAL RENEWAL

INAUGURAL LECTURE GIVEN TO MARK
THE ASSUMPTION OF THE POSITION
AS PROFESSOR OF

ENTREPRENEURIAL RENEWAL
OF INDUSTRY

AT THE FACULTY OF MANAGEMENT AND GOVERNMENT,
AT THE UNIVERSITY OF TWENTE
ON THURSDAY 5TH JULY 2012
BY

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5TH JULY 2012

LET FAILURE BE YOUR GUIDE: BECOMING A RELEVANT RESEARCHER FOR INDUSTRIAL RENEWAL ENTREPRENEURIAL RENEWAL OF INDUSTRY

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Regions, large and small, are in constant need of economic renewal in order to remain vibrant and sustainable. Regional economic growth, when a region is lucky enough to experience it, comes with the seeds of its own demise. Renewing economic vitality is a process of “Creative Destruction” and it is not for the faint of heart, it is a contact sport. It requires an active process of learning from failure with effective contribution from the “Triple Helix” of Industry, government and academia. Industrial renewal is a process that will either be thrust upon a region by others or a proactive process embraced by a region. This near “Schumpeterian” cycle is inevitable. Industrial renewal then is either a regional event or a process which stresses learning from failure or as the chair of my doctoral committee might say “Learning from Partial Success.”

Yet this process is often eschewed by those that will not admit failure of any kind demanding the righteousness of their action rather than learning from their failures or “partial success” and having their thoughts and efforts become evermore relevant. Indeed this region has experienced this cycle with the textile industry which once was the dominant regional economic engine and then due to other worldwide regions efforts lost their competitive advantage. The region learned from failure and initiated the University of Twente

embracing the triple Helix and the creative class concepts for regional renewal before the concepts were formally developed. The region has a history of learning from past failure's and developing "Probe and Learn" activities to continuously improve its' regional economic base.

The region is moving from the "textile" like event management toward embracing economic renewal as a process with renewed vigor lead by Kennispark, Mesa+, MIRA, CTIT, ITC, Nikos, and a number of other centers of technological excellence. Further the regions' many small and medium sized firms have developed organizations that are providing vibrant and multifaceted bases for economic sustainability. The regions political governance has also embraced economic growth and has developed exceptional firm attraction and firm generation strategies such as the initiation of an entrepreneurial finance ecosystem and the attraction of firms like "Boeing." The way that regions and counties develop gross domestic product, as Solow has shown us, varies by regional technology intensity and how you manage it (Figure 1). I hope to assist these efforts by trying to implement new and differing techniques to assist the regional activity.

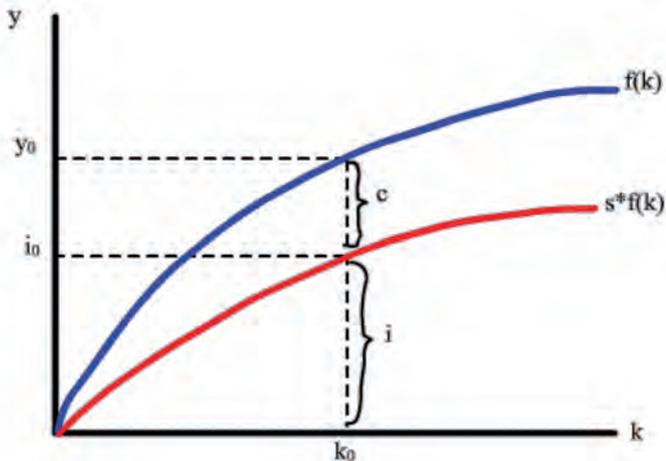


Figure 1: Solow Growth Model

I will stress the role of academia in this process. Particularly I will stress the academic research that investigates the role of technology innovation and entrepreneurship as a cornerstone of industrial renewal. This position should remind the region that economic sustainability and renewal is a process littered with far more failures than successes. It should stress the importance of failure, and a regional process that embraces "Learning from failure" (See figure 2 below). In a recent interview, Larry Page, the once and current CEO of Google stressed the importance of learning from failure, the ability to "Fail Fast" without stigma and to constantly improve your value propositions by becoming more relevant. Truly this is technology with a Human touch. He and every person and company that help to form an economic base must constantly improve and learn from failure in order to become more relevant. Some of the Twente regions successful entrepreneurs with assistance are leading in the regions current day process.

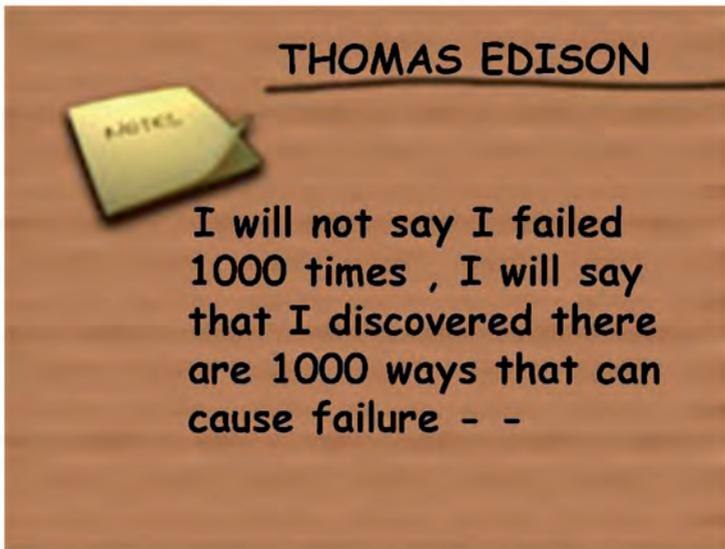


Figure 2: Learning from Failure

Today many emerging and established Twente regional entrepreneurs have gained great customer value, attracted funds or sold their enterprises. They did so by consciously or unconsciously using a learning through failure concept that one of my mentors, Dr. Bruce Kirchoff, identified as generating value from the “second first product” a company produced. Today Twente regional firms like; SmarTip, Solmates, Xsens, and C2V have changed the focus of their business value statement learning from the failure of their first value proposition but gaining real customer and financial value from their “Second First Product.” These are the entrepreneurial cornerstone of the regional economic renewal. Obviously the company’s first product was at best what Dr. Berg would call a “Partial Success.”

These Twente region firms are not alone in this process. Most fortune 500 firms did not make their mark with their first product. Firms like Intel switched from Memory to Microcontroller based products and in doing so remade themselves into one of the most successful enterprises in the world. In the Twente region, however, we also see the results of firms that refused to switch. Firms like Polaroid, with a plant in Enschede, developed a more riveted focus on their “Enterprise Product” - instant photography. In doing so Polaroid literally gave away the IP that today forms the basis for the flat screen technologies first used in first laptops and then other screens. Today new technology has rendered their “Instant Photography” enterprise product obsolete and Polaroid is now defunct. Polaroid had failed to “Learn from their Failure.” They did not use their technological competence to continually renew and redevelop itself through a series of “Second First Products.” Failure is inevitable in the entrepreneurial process but learning from failure and improving from it is essential. Many quote Thomas Edison’s idiom that successful innovation is “99% Perspiration and 1% Inspiration” but his wisdom is perhaps best captured for entrepreneurs with the following “Many of life’s failures are those people who did not realize how close they were to success when they gave up.” One of the efforts

of this chair will be to review failure and offer the firms a learning pathway for persistence as suggested by Edison (See figure 3 below).

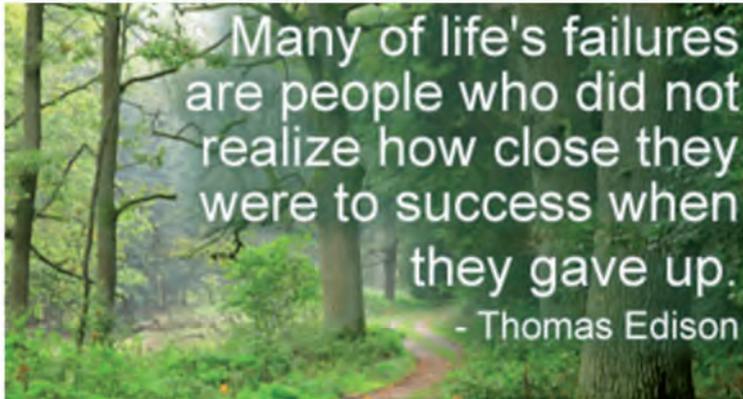


Figure 3: Persistence and Failure

This region has a basis for success that was born of the regions textile failure. Today, the number of firms being generated by the university has grown to over 60 per year. Further these firms are becoming much better prepared, and generating a focus on long term growth by receiving excellent mentoring through programs like TOP and Venture Lab. These firms are now much less likely to be “Lifestyle” efforts as the regions ecosystem is gearing these firms toward accelerated growth. The number of transferred business cases from the university has also risen from an historical 2 per year to nearly 15 last year. Any university technology transfer group would be proud of such success even though it was born of failure and embraced the “Probe and Learn method.”

Other areas of the economic infrastructure has grown as well, Kennispark , for example, has learned moving from an organization more focused on providing the necessary space for new firms toward one focused on enhancing and promoting and the entrepreneurial environment, a support. In return for that risk the park is attracting not only new firms but over three hundred jobs per

year in firms involved in the core business cases which are in line with regional imperatives. At the same time entrepreneurs are now served by at least 15 venture capital firms where ten years ago there was only one. Last year these venture firms invested more than 28 million Euros in regional companies that are providing the basis of the next regional economy in Twente.

The economic development opportunities in Twente were earned through the embrace of differing regional economic activities many based on segments of economic development and cluster theories. Like many worldwide regions, the Twente region's economic development activity originally was centered on the idea of job creation versus wealth creation. The Twente regions economic development grants and projects gained much through a period of "Probing and Learning" where not all the projects were timely or fully effective but all developed trust and understanding of those who could provide content. The activities themselves rather than any specific output moved the region closer to industrial renewal.

The region learned that when the goals of these activities were focused on improving the general economic lot of the region in all cases it generated an ever improving ecosystem. The improved ecosystem was one where, for example, projects were focused on not just jobs but also some form of wealth creation. Metrics like: increasing the average wage per job, providing greater opportunity for young professionals, producing a "thicker" employment base in selected business sectors, and in general improving the quality of life in a region became important. Where differences of opinions occurred on how the goals might be achieved and where often discussed the merits of the goals themselves were universally embraced.

The region is considering more cluster theory based economic development activities. Today's policy makers have a much larger base of knowledge than those who embraced economic renewal in the aftermath of the textile industry demise yet it still takes action to learn and much of that action will meet with only "Partial Success."

Most renewal based cluster theories suggest that you can “Cash in” leveraging past activities. Yet this over leverages past successes while deemphasizing learning from failure and therefore limiting the process. Here I review the five most popular cluster theories that can assist the entrepreneurial as well as other segments of the regional industrial renewal process. I provide this review with the hope that the region might learn from other’s failure without fully enduring them regionally.

The five most popular cluster development approaches share many of the same components or concepts but every one emphasizes or has differing aspects. The key ingredients include but are not limited to: regional competitive advantage, political drivers, educational activities, entrepreneurial activities, large firms, Small to Medium Enterprises (SMEs) and synergies between industry, government, and academia. Further many economic development policies focus on initiating a sustainable base for economic development. I provide a very short discussion of each of the five most common processes and provide evidence that none of these theories are the answer alone and that there is not a single pathway that is correct. I state this in the face of the near fanatic belief by devotees of one or the other of these excellent theories that it is indeed the one true path. This rigid righteous belief system does not allow for learning by doing nor does it allow thought on how elements of these theories might be utilized in a unified plan. In the following segments on each economic development theory I present what others have stated to be each systems strengths and weaknesses in order that the region might learn from others failures and successes.

The five most popular economic renewal cluster approaches are:

- **The Political model**
- **The Porter model**
- **The Birch Model**
- **The Triple Helix**
- **The Creative class**

I provide a brief statement discussing each and then provide traditional positive and negative reactions to each approach. Yet the

world we know and education role in it is changing rapidly and these models will have to change with that reality (See Figure 4 below). I start with the political model.

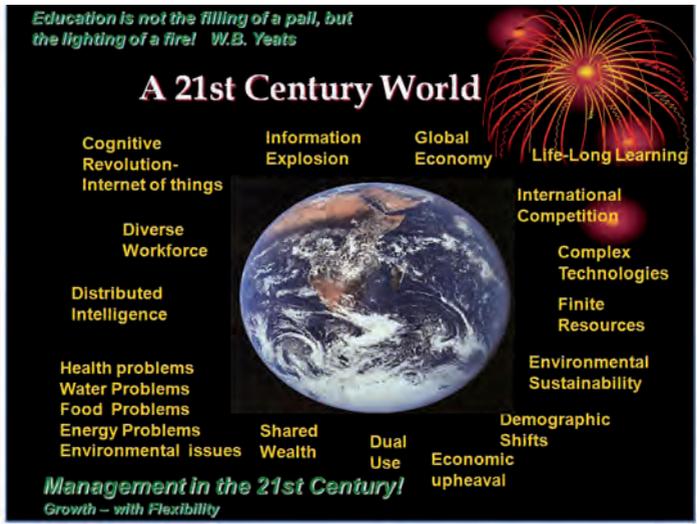


Figure 4: A 21st Century World

THE POLITICAL MODEL

The political model is based on government's response to social need or a perceived social need. It requires legislative action for the most part and works exceptionally well when the programs are beneficial for the people they serve and the legislators are recognized for their part in the activity. Great legislative champions have helped many regions such as the Twente region. Initially they helped with the location of a university in the wake of the demise of the textile industry as the regions economic development engine.

On the positive side this model has given rise to numerous activities focused on job creation. Evaluators of this economic development

model generated the concept of job multiples. Job multiples are the notion that for the creation of every new job there are a number of secondary jobs created in both the local and world based economy. This has given rise to the notion that not all jobs are created equal in terms of their respective multiplicative effect. For Example: It has been recognized that manufacturing jobs have much higher job multiples than retail jobs both in the region and in the larger world community. The regions focus on creating firms which emphasize knowledge workers such as those found in Kennispark carry much larger job multiples still.

On the negative side the economic horizons for programs developed in this manner are linked to the length of time that a legislator is in office for any given election cycle. This drives the focus to incremental economic development and often limits efforts on long range projects increasing the emphasis on immediate economic results. For example four activities are centric to economic development in any primer on the subject. They are: firm creation (Greenfield entrepreneurship); firm expansion (policies focused on making region resident small and medium sized firms larger); stability (policies focused on keeping large "Anchor" firms in a given region and firm attraction. Firm attraction in this paradigm is overemphasized due to the immediacy of the result.

The incentive system is skewed in such a way that production rather than R&D or commercial development jobs are often sought. Yet studies have been conducted showing that the type of facility that is attracted to a community is important to economic growth and stability. What has been found is that production only facility attraction can actually have a negative impact to the economic sustainability of a region. A new metric called the spin-off multiplier has been developed to capture the varied benefits associated to the type of facility attracted to a region. As an illustration of the effect Intel Corporation placed a production facility in New Mexico, USA and at nearly the same time created a limited production, product development and marketing facility in the Pacific Northwest, USA. The production facility was considered the more economically relevant to the region at the time and

indeed the Intel production facility located in New Mexico has been a good corporate citizen providing thousands of jobs to the region. Yet the slightly smaller Pacific Northwest Intel facility is also a good corporate citizen and this Intel facility also provides that region thousands of jobs. The difference is found in the number of spin-offs generated by the two Intel facilities. The New Mexico facility has produced less than five small spinoffs where the Pacific Northwest Intel facility has spun off well more than 100 firms. The Pacific Northwest spin off firms now generate more knowledge worker jobs in the region than the original Intel facility ever employed. Here the relevant academic researcher needs to provide this information so the firm attraction policies can be improved by learning from other regions "partial successes."

THE PORTER MODEL

The Porter model emphasizes cluster and cluster development based on four (4) factors and is very market centric. The four factors that govern Porter's cluster model are; demand, suppliers, factor inputs and systems integrators. His effort is based on his seminal market based strategy book named "The Competitive Advantage of Nations." He states that regional clusters of excellence occur and can be advanced when factor inputs (from Universities, National Laboratories and the like in a given application arena) are combined with demanding regional customers and an intensive supplier network enabling new firms that act as systems integrators to provide value on a worldwide basis. This model finds support from the Milliken Institute; many venture capitalist firms; and a few angel consortia's.

On the positive side this model is easy to understand and supports the political model in many respects. It supports the attraction of both large and small firms and provides a market centric approach to the development of new firms. It forces the limitation of a regions number of clusters to a focused few. A number of groups including the Milliken

Institute, base much of their cluster efforts around this concept.

On the negative side it is a model that requires a market focus. The model is static and does not allow for a disruptive technology to replace existing product technology platform based market paradigms. This is problematic for areas that are smaller and may not have adequate local demand. This makes it very difficult to develop a cluster group centered in any area without large demand. This model works best for existing markets and a paradigm that emphasizes continuous improvement to an existing technology product paradigm infrastructure. It does not help us investigate clusters centered on emergent technology basis such as those generated at research triangle park, Taiwan, Silicon Valley, southern France or indeed the Twente region.

THE ENTREPRENEURIAL (BIRCH-KIRCHHOFF) MODEL

The Entrepreneurial or Birch-Kirchhoff was developed on the ideas of Schumpeter which state that Research and Development (R&D) and entrepreneurship are the most proactive change agents for regional growth. The advocates of the entrepreneurial model point to the large empirical evidence base which shows that the vast majority of net new jobs are generated not by existing firms but by new ones. They focus on the "bottom-up" element in cluster development stressing the presence of research universities and laboratories that generate knowledge and human talent in the form of knowledge professionals in areas such as engineering, management, physical sciences, social scientists and medicine. This model also focuses on good infrastructure. In the regional since this means they emphasize roads, rail, airports accessibility and perhaps more importantly communications infrastructure such as ultra high speed internet.

On the positive side this approach recognizes the vital importance of new firm development for sustainable economic growth. Further, it stresses the precursors to economic growth and features that compel

the generation of new firms in economic development. It allows for the development of a cluster without the necessity for a regional demand or large regional market. It supports cluster development on the basis of disruptive technology and a market development or expeditionary market rather than a market focused approach.

On the negative side it does not support the immediacy required by the political approach. It stresses, "Doing your homework as a region" rather than the immediate gratification of attracting an established firm. Further this model is only operational in developing precursors to and the basis for economic development.

Many regions fail to use elements of this model in their economic development programs and are the poorer for it.

THE TRIPLE HELIX

The Triple Helix economic development cluster concept separates economic development into three types of activities (see figure 5 below). Those performed by industry, academia, and governments. Indeed the concept is especially useful in engaging established firms and technologies who wish to engage in economic change. It has been especially useful in explaining activity and proactive action for industrialized nations moving from manufacturing based economic settings to more knowledge based and service based economic engines. The Triple Helix does not suggest the length of any of the legs of their three legged stool but most practitioners suggest the amount of each activity varies by the current regions industrial sophistication, resources and industry lifecycle segment. Further there is "No hard and fast rule" for how much or the timing of the commercial interaction between 1) Academia, 2) Industry and 3) Governments for improved results. Timing and intensity of action is still up for debate. This three-legged stool forms the basis of support of cluster and economic development and is often practiced in this region.

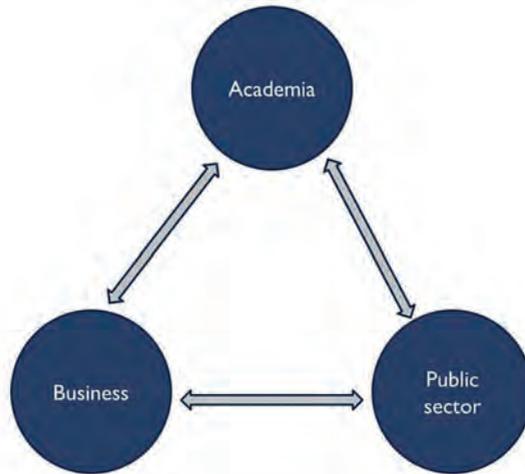


Figure 5: Triple Helix

On the positive side the triple helix is focused on gaining maximum social benefit from knowledge generation. It helps generate recognition of the value of each group in the process. Further it graphically shows that economic development requires action from a variety of groups and eliminates the idea that any group can wait for another to take action. Proponents of this view have operationalized processes to generate social good from research at many worldwide locations.

On the negative side the triple helix concept is a focused model that some have found to be limiting. The model has demonstrated efficacy in helping regions to provide a superior pathway for economic developers to implement research and development activities in the economic development process. It focuses on precursors to economic development and is not a vehicle for immediate economic development results. This model has been said by many to probably better as a piece of a more global economic development model rather than an economic development model by itself.

THE CREATIVE CLASS

This effort is the newest piece on economic development and cluster theory list. It is becoming immensely popular and is focused on precursors to economic development. Dr. Richard Florida focuses on precursors to cluster development. He discusses the 3T's i.e. Talent, Technology and Tolerance. His efforts center on job and wealth creation through new firm development, entrepreneurship and the cultural efforts necessary for new commercial ideas to be generated regionally.

On the positive side the concept of the rise of the creative class is a bottom up model that does not require an active regional market presence. It is compatible with both sustaining and emerging technology based industrial activity aimed at improving the regional economy. The concept has metrics that each region can calculate to judge their creative class relative ranking. The concept is weighted heavily on a regions social and cultural makeup. These metrics and checklists measured in a regional setting are then used to rank a regions capacity to nurture a nascent economy.

On the negative side this is an exceptionally new proposition that has not yet stood the test of time like the other models. It is currently catching the interest of popular press and is being hyped. A follow on book and study suggests that the creative class is very mobile and are not anchored to any one region provides a glimpse at one of its shortcomings (See figure 6 below). Finally and perhaps most negatively some suggest that it supports a "rule by the elite" concept. A system where If a region does not have the "right" social adaptability and IQ, then the region will have to import this point of view by bringing in this elite. As one of the commoners I have found this aspect of the Creative Concept uncomfortable to embrace. Many researchers and educators have found that in the right setting a much larger percent of the population will shine in their contributions to a regions economic development.

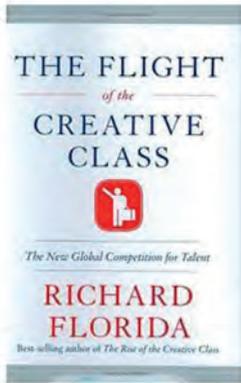


Figure 6: Problems with the Creative Class concept for economic developers

PUTTING THESE MODELS TO WORK

First, a region must learn from the regions past failures and successes in order to generate more relevant activities. The reality of a region should become the precursor of effort in terms of both research and economic action along any of these lines. All of these models can provide a user value but how can their value be optimized for the Twente region. The research focus should not be on which model is the best or right one but rather what in each model is most useful for the Twente situation. For example, it is naive to suggest that a regional market or an existing economic market infrastructure is not important - it is as Porter's model suggests. But what does this suggest for a smaller community with few intrinsic markets? Perhaps another economic development path, one that depends on entrepreneurship and the inherent resources in a community like the Birch-Kirchhoff model would be more important for that region. The Twente region might choose to address emerging markets. This type of market often develops without clearly defined product market paradigms, a path that would be littered with failures and hopefully successes. This research

pathway emphasizes learning from this regions and other regions failure would aid future regional economic development activity. A pathway that requires the understanding of the current, "Best Practice" in economic development, taking their best points and moving toward the Next practices in economic development." A pathway were all elements in the process would seek to optimize the use of element of creative class model, political model, Birch-Kirchhoff entrepreneurial model, porter market based model and the Triple Helix model.

For example many of the conditions in the Twente region would suggest a strong review of many of the aspects of the Birch-Kirchhoff entrepreneurial model. This path has met with at least limited success for this region and others globally in the past. An academic researcher which was focused on learning from success and failures would be well served by Linbloom's Science of Muddling through "or learning from action. This would afford the researcher a learning pathway to adopt and develop elements of the differing models to address unmet needs.

The Twente region has performed well not only in a regional economic context but also has lessons to provide the economy of the Netherlands as a whole. Oost NV, for example, is often ranked as one of the best if not the best regional job attraction activities in the Netherlands. The University of Twente has spun out at least 700 firms in the last quarter century all contributing to regional economic viability and sustainability. Kennispark is rapidly becoming a science park that sets standards of excellence not only for the Netherlands but also increasingly in Europe and indeed globally. Finally, Nikos and University of Twente is now considered a leading European entrepreneurial and innovation management school.

These are just some of the regions areas of excellence that are the harbingers for economic success. Yet in some ways the region has experience only "partial success." The region is just now overcoming the negative economic perception that emerged from the demise of the regions textile ecosystem. The region could learn from elements of the political model and the triple helix model to communicate

the regions success in evermore effective ways. Relevant academic research is invaluable to the economic development process.

To date a great amount of regional and global economic efforts, successes and failures have occurred. Here this has taken the form of a great deal of cooperation between a lot of different groups and people based on trust and competence. Regional grant based activities have created a willingness to accept others brilliance and recognize one's own limitations acting as alternatively a conscious incompetent or a conscious competent.

This holder of this chair must view economic development from an academic perspective but it must be relevant academic theory. When universities have made a better than average contribution to the economic development of a region they have consciously or unconsciously learned from failures becoming more relevant in the process. A researcher would hope to learn both from Twente's and others success and failures to fully embrace the Twente regional condition. Some of these areas had strong regional markets most did not. A researcher embracing this task must be relevant, have the ability to learn from failure, or to borrow a phrase be a "T" professional.

A "T" researcher like a "T" professional must have deep knowledge in the foundational theory required by must have a broad and somewhat with deep knowledge in other areas.

New technologies often are the harbingers for industrial renewal as they provide the basis of new and much greater Schumpeterian economic cycles. Much of my own research finds purchase in this stream of academic research. New technologies have risk associated with them but nearly all of the global problems facing the 21st century are born of traditional technology solutions and they as well carry risk. Former Prime Minister Goran Persson of Sweden infers that there is perhaps even greater risk in relying on traditional technologies. He states that "I do not fear new technology but rather the old technologies that have contributed too many of the problems that we face today."

The twenty first century faces exceptional global challenges and problems in healthcare, energy, the environment, food and water. In solving these problems lies perhaps the best basis for a regions economic prosperity coming with the nice benefit of a much better world to live in. Many of these problems are being addressed by new technologies that the Twente region excels in. Moreover, the Twente region economic focus is on a subset of them. Finally many of the firms being created in Twente today are addressing them.

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