

## Universities as an Engine of the Entrepreneurial Revolution<sup>1</sup>

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I would like to start my presentation to you with several assertions which will frame my comments. As assertions, of course, although there is some evidence for them, they can be challenged, and there should be no better environment for open discussion and debate about ideas than universities, and here we are graced with the presence of representatives of all of the universities of this great and challenged island.

### Not all entrepreneurship is created equal

1. Entrepreneurship is one of the primary, root causes of economic and social development. Entrepreneurship is one of the results of economic and social development, but it is also one of the root causes. Actually there is some evidence for this: job creation and economic growth are associated with the creation of certain kinds of entrepreneurial ventures, which I will discuss below.
2. The drive to entrepreneurship is a fundamental element of the human condition, and in that respect it is no different from art or dance or music or theater. This is an assertion based on my own personal experiences and observations in dozens of very diverse societies, including those which claim that they are nearly devoid of entrepreneurs. Like art, music and dance, entrepreneurship is ubiquitous, but it is sometimes overlooked because it manifests itself in different ways in different societies. Some of entrepreneurship's manifestations are pro-social, but some of them are anti-social. Examples abound: the informal economies in many or most societies are typically anti-social manifestations of entrepreneurship because they are outside of the formal tax collection system. Colombian Pablo Escobar found the outlet for amazing entrepreneurial drive by becoming the world's leading drug baron and the 7<sup>th</sup> wealthiest person on Forbes' list in the early 1990s.
3. There are many different definitions of entrepreneurship, and experts don't always agree, but also like art, to paraphrase the joke, we usually know it when we see it. I will use the term to refer to **high aspiration** business ventures in which there is one or more **identifiable group of founders** and owners, there is a drive to **continue to grow** and develop, and there is an **extreme sense of personal accountability for results**. If the enterprise succeeds, the owners succeed; if it fails, they fail. Parenthetically, I think that aspiration, growth, and extreme accountability are characteristics that are common to those broader definitions of entrepreneurship which include non-business endeavors or entrepreneurship within larger organizations.
4. All entrepreneurship has within it some element of contrarian thinking and action. It is the "job" of the entrepreneur to "sniff out" and realize opportunity that is overlooked or undervalued or even berated by others.

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<sup>1</sup> Based on a keynote address to the Universia National Conference held October 21, 2010 in San Juan Puerto Rico.

5. It may be clear by now, that there is a big difference between self-employment and entrepreneurship, though policy makers as well as academics often lump self-employment and ambitious high growth ventures together. But they are completely different in terms of the why (the entrepreneur's motives) and the what (the nature of the opportunity) and the how (the process of realizing the opportunity through action).
6. Whereas **all entrepreneurs are created equal, all entrepreneurship is not created equal**, either in terms of individual wealth creation, or in terms of benefit to society. Some expressions of entrepreneurship are more valuable than others, even though the discomfort many of us feel making this seemingly elitist distinction leads us astray in our understanding of entrepreneurship and how to foster it. To relate this to Puerto Rico, I believe we mistakenly use the same term to describe Francisco Rivera running a single Churris cart in Guayanabo making tripetas,<sup>2</sup> and to describe Edward Feliciano of KCS Cleaning and Staffing Solutions with his 500 cleaning people, and growing. Feliciano is an entrepreneur; you may or may not think that what he is doing is as interesting or "sexy" as Francisco Rivera with his street fame and long lines, but at the moment Rivera is self-employed and Feliciano is an entrepreneur. Rivera is satisfying the hunger of hundreds from the same stand everyday. Feliciano remains hungry, driven to grow. As my deceased friend entrepreneur Nahum Sharfman, founder of shopping.com which was sold to e-Bay for \$600 million, quipped to me, "as an academic you are judged by the best thing you did; as an entrepreneur, I am judged by the last thing I did." The drive to do more better faster is an intrinsic aspect of entrepreneurship. Whereas the self-employed aspire for their children to get "respectable" "safe" professional jobs, the entrepreneur dreads the same possibility.
7. Societies with more entrepreneurship are better places to live, at least in the medium and long run, **because of the entrepreneurship**. People are wealthier, governments are wealthier, ethics are stronger, transparency and governance are greater, and there is more employment, quality of life, and active citizenship. A fascinating Harvard School of Education study of entrepreneurship curricula in high schools showed that not only did students who took an entrepreneurship course increasing their post high school entrepreneurial activity, while in school they became better students in math and science, better leaders, and more involved in school activities. My observation is that entrepreneurs overall are highly motivated to give back to society when they succeed personally, and often turn their energy and expertise to tackle social problems.

### **Increasing entrepreneurship in a society is a complex problem**

My assertions are based on extensive experience as a social scientist, entrepreneur, venture capitalist, angel investor, consultant and educator. I feel proud of my extensive experience, I have been blessed with many opportunities to do and see and experience and be involved in many things in my life. I have studied entrepreneurship in 3 dozen countries and cities around the world. But it is precisely because of this experience that I will state unequivocally, **there are no recipes or pat answers when it comes to applying social science to practical problems** such as increasing entrepreneurship in a society. The same ingredients that create a great meal one day in one kitchen, fail later in another.

Let me take a brief detour to discuss what complex social problems, such as increasing the level of entrepreneurship in a society, are. A "complex" problem is one where the definition of the phenomenon itself may be ambiguous or multidimensional, and even if we can define and measure it, the number of

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<sup>2</sup> A popular fast food in Puerto Rico.

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causal variables is so high, the correlations among them are so weak, the direction of causality is bi-directional, the variables interact with each other in combinations (called interactions), and the time lag between cause and effect is so great, that in essence the problem is “indeterminate.” If you think I may be exaggerating, just look to the recent world economic crisis and economists’ role in using social science in resolving it. Thousands of the world’s most brilliant economists have turned their energies and brain power and disciplinary expertise to retuning the economy to “normal.” Two years later, the problem is not yet resolved, and if the initial indications of improvement proved to be sustained, it is nevertheless likely that we will never know for sure why.

We have to admit to ourselves that **solving complex social problems is still more art than science**. In fact, using the term “problem solving” itself may be unrealistically deterministic. Capping the broken BP oil well in the Gulf of Mexico was extremely complex, but it was deterministic—assuming the fix holds, we will know why. But it was child’s play compared to resolving the world economic crisis; it is also child’s play compared to significantly increasing the levels of entrepreneurship in a city or country.

The gap between our attempts to a complex problem and actually seeing it solved has another aspect to it: **it is possible to resolve a problem without ever understanding it**. Think of that possibility – no matter what my diagnosis or analysis or understanding is, in certain cases my ability to cause change may actually outstrip my ability to explain how I have done it. In fact complete understanding of a complex social problem’s causes is not even a prerequisite for resolving it.

As odd as that sounds at first, when we think about it, we can easily think of everyday examples of our ability to act effectively independently of our understanding of how we are able to do so. We can throw baseballs without an understanding of physics, and make yoghurt without an understanding of biochemistry, and make babies, sometimes with great skill, without understanding reproductive physiology. In fact, I suspect that ignorance of reproductive biology may in fact lead to having more babies, not fewer. But, joking aside, at least in these cases, it is possible ultimately to identify the causal variables.

### **“Empirical treatment” in the absence of a diagnosis**

In medicine there is actually a term for solving a problem without understanding it—**empirical treatment**. It will be easiest to illustrate empirical treatment with a small personal example. A few months ago I went to my doctor in Boston with a stinging sensation on my skin. It took two weeks of tests to diagnose exactly and precisely and with a high degree of certainty, what my problem was **not**. That was easy. After two weeks we knew exactly what I did not have.

Well, what do you do when all you know is that a problem is NOT something? Do you give up? No, you experiment. So we began experimenting with treatments, a little anti-histamine, some analgesics, different clothing, change of diet etc.. One day, in the midst of all of these experiments, the stinging began to subside, to the utter relief of my body and soul. But my mind was not relieved. Did we cure my problem? Well, yes, at least it went away. Did we diagnose or understand it? No, not at all. We were left with a cure without a diagnosis; or at least, a resolution without an understanding.

This personal anecdote illustrates two important lessons:

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1. The doctor of course has the benefit of deep and broad understanding of biology and physiology, as well as of professional medical practice. And because of the physician's extensive experience base and theoretical knowledge and training, **the patient is completely dependent on the doctor.**

But that is only part of the story. The doctor cannot work alone. Experimenting with different treatments is up to the patient. Paying attention to the symptoms, their ebb and flow, is up to the patient. Observing the impact of different conditions, timings, settings, moods, foods, frequencies, intensities—are all controlled by the patient. Looking for connections among subjective variables such as relief, anxiety, comfort, pain—are all controlled by the patient. In other words, **the doctor is completely dependent on the patient.**

So even in medical problems, where there is complexity and uncertainty the doctor and the patient are partners, a unit if you will. I believe that in working on social change, such as increasing the level of entrepreneurship, the distinction between expert and the society she or he is trying to change is a false distinction. How much more complex are indeterminate social systems compared to relatively determinate physiological systems? **The problem presenter and the problem solver, as it were, must be a unit.**

2. A second lesson is that in complex social problems, such as increasing the level of entrepreneurship, the distinction between diagnosis and treatment, between thought and action, is an arbitrary and even detrimental distinction. The diagnostic process is *ipso facto* a part of the treatment, and the treatment is, *ipso facto*, part of the diagnosis. Like patient and doctor, treatment and diagnosis are also a unit, as it were. Acting is an essential aspect of understanding. Each is a necessary condition of the other. But each is also an insufficient condition for addressing the problem. I will leave it as homework whether you think universities are dealing with this distinction effectively, but most would agree with me that the separation of thought and action are deeply ingrained in the fabric of higher education. I believe that this separation limits our abilities as educators of professionals to contribute to practice.

### **The importance of history**

So far, my analysis of these “messy” problems has benevolently assumed that powers of observation are intact, that data are data, and that facts are facts. By way of analogy, I have so far assumed that when I take my temperature and record my food consumption, that I am doing so accurately. My own observation of policy makers in the field of entrepreneurship is that this is that they don't use or even recognize the facts at hand even when they are accessible.

To illustrate from my field, most accounts of how entrepreneurship in Silicon Valley developed are so incomplete as to be questionably useful, and perhaps even misleading, for other societies trying also to foster entrepreneurship. Despite the fact that most observers start the story of Silicon Valley with Hewlett Packard, Stanford's Terman, Shockley Semiconductor, and post World War II defense investment. However, recent historical research traces the history back to the Federal Telegraph Company in the late 1800s. By the way, decades later, when Terman, the famous Stanford dean and provost often credited (apparently simplistically) with starting Silicon Valley, retired and consulted to numerous states to emulate the success, none of his efforts were successful.

Similarly in Israel, most observers of Israel's entrepreneurial revolution start the story in the 1990s with the huge influx of Russian immigrants and the launching of a government venture capital fund. Few accounts recognize the critical impacts of the French weapon embargo in 1967 which accelerated the

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investment in native military R&D, the NASDAQ listing of Elscint in 1972, and the meteoric success of Effy Arazi's Scitex in the early 1980s. By 1982 both Elscint and Scitex and a handful of other ventures had made equity investors a lot of money and inspired a generation of young entrepreneurs. Add to that the government's sudden cancelation in 1987 of the Lavi fighter project after \$6 billion of investment and the layoff of thousands of the best engineers into the market. In fact, in 1989 I gave an address at the European Venture Capital Association annual conference in Berlin on the history of high tech entrepreneurship in Israel when over a dozen Israeli technology ventures had already been successfully listed on NASDAQ.

### **How can we create more entrepreneurship?**

So given that our goal is creating more entrepreneurship in a society, measurably more, with the positive outcomes of jobs and taxes and wealth and citizenship, and given that this must certainly be among the more complex social problems around, how can we proceed?

It is not just Puerto Rico that is interested in the answer to this question. In the recent weeks our project, the Babson Entrepreneurship Ecosystem Project which we established at Babson in 2009, has received inquiries from Ireland, South Africa, Panama, Chile, Colombia, UAE, Afghanistan, Mozambique, Saudi Arabia, Indonesia, and Spain.

What are the most important things a society's leaders should do? Here are just a few of the more important do's and don'ts that I have accrued in my work around the world.

Step #1. Stop emulating Silicon Valley. There are almost 80 Silicon monikers out there, but it is futile to emulate a region in part because the status quo bears little resemblance to the process of how it got there, and in part because the circumstances are so highly idiosyncratic. Silicon Valley could not even become itself today if it tried.

Step #2. Focus on your own assets, problems, and opportunities. I usually recommend to countries to focus more narrowly on a specific geography. For some reason, people like to see the nation as the unit of analysis, and national policies are certainly relevant, but if you look around the world, you see that entrepreneurship tends to be highly concentrated around what I call "watering holes," where entrepreneurs of all kinds gather to get the resources they need to survive and grow.

Step #3. Get all the leaders involved. Government is essential but only one of the drivers. Whereas the process may start with an enlightened and ambitious elected official, it may also start with a foundation or a civic minded entrepreneur or multinational or family business. But very early on in the process, a small coalition of like-minded leaders representing a few different sectors is absolutely essential because different aspects of the environment, the entrepreneurship ecosystem, need to be bolstered in parallel.

Step #4. Look for the entrepreneurs. They are always there, but maybe you have to look under the surface. Many societies norms discourage entrepreneurs from exposing themselves, sometimes to avoid being the target of envy or competition, sometimes to avoid scrutiny. But most entrepreneurs are willing to come out of the shadows and serve as role models for others. And some need additional support to succeed in order to create the inspiring stories.

So use the entrepreneurs in two ways: wrap them in support and put them on booster rockets. Help

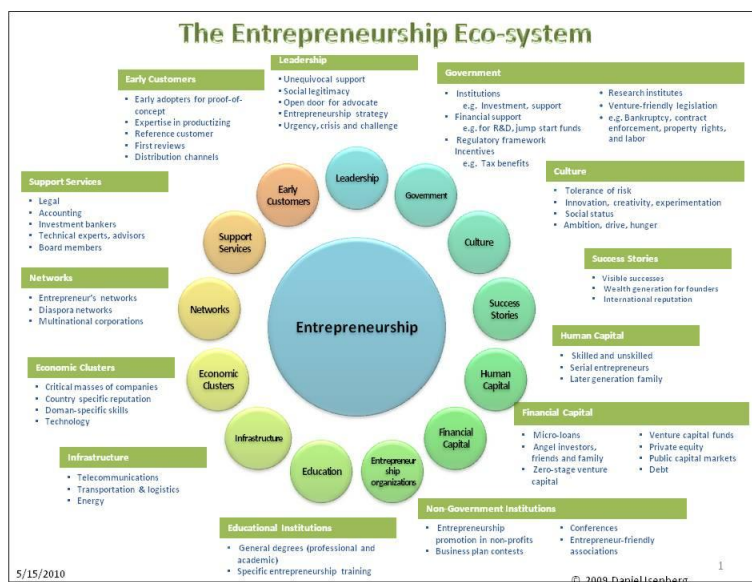
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them be as successful as possible. Run defense for them in the government bureaucracy. Make contacts for them with big customers. Help them approach sources of capital.

In parallel, use the more successful of them to inspire the next generation. One of the big problems I see repeated in many societies is that the examples of entrepreneurship that are held up are inaccessible. Everywhere in the world people want to be Steve Jobs; paradoxically, I believe that actually is a deterrent to people making the entrepreneurial choice because Jobs as an example is inaccessible. When I show them examples of normal people succeeding, the sense of relief and excitement is tangible.

Step #5. Set targets. I have been developing a rule of thumb that is certainly imprecise but also certainly helpful: when a specific, geographically concentrated region generates annually, on a sustainable basis, one high potential venture that has passed the market test for every 100,000 inhabitants, a virtuous cycle kicks in, largely because of the numerous positive “spillover” effects of successful entrepreneurship.

Step #6. Run experiments within a holistic framework. With the leadership coalition, a specific region, a cadre of high potential entrepreneurs, and specific targets, as well as professional guidance, it is time to launch numerous of what I call “entrepreneurship experiments.” These need not nor should not be random experiments. We know the various elements of an environment that are relevant to and



conducive to entrepreneurship [see figure]. We also know a lot about how to impact each one of these elements individually. What is important is that a program to impact one element must take the other elements into consideration. For example, we know a lot about educating entrepreneurs. But it could lead to a perverse outcome to educate, for example, without impacting the culture or the availability of capital because highly trained and motivated people without opportunity leave to seek it elsewhere. By experiments I mean short cycle interventions, such as

trying to propel four promising ventures forward in just a few weeks with concentrated mentoring, or working with the media to celebrate the positive successes and create a more conducive climate.

Step #7. Learn, scale, repeat. This is very specific. What works in Caguas, doesn't work in Mayaguez, and what works in Mayaguez does not work in Coamo, and none of these programs works in Santo Domingo. One size does not fit all. The principle of specificity seems self-evident, so it is surprising that so many societies fail to look within themselves for answers. This lack of universality is both liberating from the stress and impracticality of misplaced ambition, but it is also anxiety provoking due to the uncertainty of having to grow your own very specific solutions.



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Step #8. Over-celebrate the successes; even the small ones. The stimulating impact of local successes cannot be overestimated. Make sure the media, public officials, and other business leaders pick up these successes and recognize them publicly. I am not sure why this is less common than one would expect; perhaps it has to do with the inherent difficulty of assessing whether a small venture has been successful or not, or the need to apply a different yard stick than with an established enterprise. This is really a big deficiency in many societies: they hide their success and celebrate their failures.

Step #9. Avoid certain, classic mistakes. One is the knee jerk over reliance on top-down “cluster strategies.” The evidence that they are popular is matched only by the lack of evidence for their success. What *is* clear from the research is that successful entrepreneurship creates clusters. It is far from clear that clusters can be initiated by government initiative or top-down analysis. The notion that government venture capital is a panacea is also misplaced: all the evidence suggests that to be effective, government venture capital should be of limited duration and one of a range of interventions. Again, perverse consequences abound: capital without deal flow creates losses which drive capital away.

### **What universities can do**

So that brings us to the universities. I promised you in the title that I would discuss universities as one of the engines of the entrepreneurship ecosystem. I have to confess that I have over promised. The problem is that you all know what to do, many are doing it, and I am impressed that around the world there is a significant increase in the support for entrepreneurship education over the past several years. Entrepreneurship courses and related activities are increasingly perceived as legitimate, and students expect them. So I have been wracking my brain over the last few days to say something beyond the obvious.

What do I mean by “obvious?” I mean that universities are critical for giving people the fundamental education to enable basic human development, that education is critical in the advancement of society. I mean that university students are often more innovative and intelligent, that they have more motivation and intelligence and knowledge and that those qualities feed the process of entrepreneurship.

By “obvious,” I mean that we all know that students can achieve so much more than “mature” adults because students have not yet been taught that certain problems are too difficult to solve, or certain opportunities too remote to actualize, so they attack them and sometimes solve them. They don’t suffer as much from what I call WIS syndrome, the belief that an idea is “worthless, impossible, or stupid.”

By “obvious,” I mean that universities have technology and science that are patentable and universities are the centers of generation of knowledge, and often that knowledge can create opportunities and form the basis for new entrepreneurial ventures. That is not to say that the near-ubiquitous technology transfer offices in universities have proven to be profitable or effective. They are not a panacea, and to make them generate income requires real expertise, the understanding of entrepreneurship, and facilitative policies. Many entrepreneurs have found their interactions with technology transfer offices to be retardant rather than conducive of business, a dynamic that I have unfortunately witnessed myself first hand.

By “obvious” I mean that universities can and should (and in fact do) teach students the discipline of entrepreneurship, including classes on entrepreneurial finance and entrepreneurial marketing and international entrepreneurship and business planning. It is important for students to acquire everything

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from fundamental financial literacy to sophisticated understanding of how entrepreneurial finance and marketing, for example, are different from their “non-entrepreneurial” counterparts.

By “obvious” I mean that many professors can, or at least should, be involved in ventures as technical advisors, board members, consultants, partial owners, and licensors of technology. In some cultures this is an accepted, even lauded activity, and it is not unusual for faculty to take a leave of absence for even a few years to launch a company based on their science. A supportive administration is essential for this process to be smooth. But in many societies this is explicitly and implicitly discouraged.

By “obvious” I mean that universities are frequently called upon to help with problems of the communities in which they exist, problems of health or unemployment or job creation and increasing the level of entrepreneurship can certainly be one of those areas.

By “obvious” I mean that universities are excellent settings for the exchange of research and practice about how to enhance entrepreneurship ecosystems. In October I will participate in a city-wide workshop convened by the University of Los Andes in Bogota to present their study of Bogota’s entrepreneurship ecosystem to a group of 100 stakeholders in the city.

### **In conclusion**

In fact none of the above activities is really obvious, and higher education is of course a critical, even uniquely impactful, element of the entrepreneurship ecosystem. It is difficult to imagine sustainable high aspiration entrepreneurship in any society without strong educational institutions that include an explicit entrepreneurship policy and the programs to implement it. Some observers have gone so far as to include higher education, with industry and government, as one of the three core elements of the ecosystem. A 2009 study by Professor Ed Roberts at MIT argues that MI- originated ventures produce economic value equivalent to the world’s 11<sup>th</sup> largest economy. That finding, admittedly a statistical outlier, should inspire all of us to make our universities into hotbeds of entrepreneurship by implementing some of the “obvious” recommendations I have just listed.