



THE UNIVERSITY OF THE WEST INDIES

ST. AUGUSTINE, TRINIDAD & TOBAGO, WEST INDIES

OFFICE OF THE CAMPUS PRINCIPAL

Pro Vice-Chancellor & Campus Principal (Designate), Professor Brian Copeland

Feature Address delivered by the Campus Principal (Designate)

Association of Professional Engineers of Trinidad and Tobago (APETT)

Technical Conference 2016

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Salutations

- Thank you Conference Chair and APETT Vice-President, Eng. Dr. Chris Maharaj
- Ambassador of Chile to Trinidad and Tobago, His Excellency Fernando Schmidt
- Ambassador of Japan to Trinidad and Tobago, His Excellency Mitsuhiko Okada
- APETT President and Conference Advisor, Eng. Fazir Khan
- Other members on the Executive Council of APETT
- Conference Presenters and Participants
- Specially Invited Guests
- Distinguished Ladies and Gentlemen

Introductory Remarks

- Good morning!
- It is with great pleasure that I accepted the invitation to deliver the keynote address at this year's APETT Technical Conference. This is quite a privilege and honour for me, not only as the Pro Vice-Chancellor and Campus Principal - designate of The UWI St. Augustine Campus, but also as the former Dean of the Faculty of Engineering. Indeed, the Faculty of Engineering and APETT have shared a mutually beneficial relationship for very many years, both aggressively exploring multi-various ways to propel the development of our Caribbean societies.
- Permit me also to say how truly pleased I am with the theme of this year's conference, ***“Innovative Engineering Solutions for the Caribbean”***.
- However, I will stick a pin here just to play with some semantics. I noticed that the conference website defined innovation as “the act or process of introducing new ideas, devices or methods”. This is not the definition with which I am familiar and with which I have worked for more than 30 years. In the area of economic innovation which is primarily what I will speak of today, I prefer the definition from the online Business Dictionary that defines innovation as “The

process of translating an idea or invention into a good or service that creates value or for which customers will pay.” It goes on to elaborate that “To be called an innovation, an idea must be replicable at an economical cost and must satisfy a specific need. Innovation involves deliberate application of information, imagination and initiative in deriving greater or different values from resources, and includes all processes by which new ideas are generated and converted into **useful products**. In business, innovation often results when ideas are applied by the company in order to further satisfy the needs and expectations of the customers (incremental innovation).”

- In recent years, I came to realize that in addition to the economic dimension, there are two other key dimensions of innovation, i.e., social and ecological. Together these three dimensions, not mutually exclusive, comprise what some authors refer to the three pillars of the much touted sustainable development. As I do in this talk and as you will do in this conference, we all too often focus on the economic even when it is clear to see that this singular focus is to our detriment. But that discussion is for another day.
- In short, innovation is about novel ideas with proven **initial** impact. One often also hears of a “successful innovation” which, in my mind, is one that has gone on to be widely accepted way beyond the initial application. The Percussive Harmonic Instrument (PHI), a keyboard synthesiser in the physical form of a

traditional tenor steelpan, is unsurprisingly my best example of an innovation. I am one of its four co-inventors. We sold (sort of) just three before legal actions forced us into a temporary stasis. The internet is a prime example of a successful innovation and, in fact is listed as the number 1 innovation over the past 30 years by Forbes Magazine. It is also a prime example of a disruptive innovation – one that fundamentally changes the way in which we do things.

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The Caribbean - In Need of Innovative Solutions

- I served two terms as Dean of Engineering, from 2007 to 2015 and previously from 1998 I served three terms as Head of the Department of Electrical and Computer Engineering. Over this period, I worked closely with many stakeholders in an effort to effect a cultural change in the way we pursue our research - moving from the traditional singularly focused publish or perish paradigm to one where our academic pursuits target a broader spectrum of R&D activities that includes, *inter alia*, innovation-based entrepreneurship and, more generally explores innovative solutions to the myriad of challenges faced by the Caribbean people.

- I am sure you will agree that the following form a subset of the key challenges: the need to diversify our economies; the need to enhance the competitiveness of our businesses; the need to significantly reduce crime and poverty; the need to alleviate traffic congestion; the need to treat with flooding through effective drainage and water management systems; the need to develop innovative housing solutions; the need to enhance food security and nutrition security and the need for breakthroughs in science, medicine and technology that will enable our people to have access to better health care etc. These are just a few examples of the many challenges we face. However, **I wish to emphasize that several of these challenges can be alleviated through innovative solutions that include inputs from engineering and science.**

[The Role of UWI and R&D in Finding Solutions](#)

- It has taken quite a long time for our Caribbean nations to accept the fact that these challenges need to be more aggressively addressed through a focused and purposeful partnership of Governments, learning institutions (Universities), commerce and industry. In fact, this concept has not really been fully accepted. The reason for this unfortunate state of affairs lies partly in the our traditional dependence on our colonial “masters” for solutions as we operated in the so-called “plantation economy”, the aforementioned singular focus of university

academics on journal and conference publications, as well as the corresponding lack of systems and procedures that would motivate, protect, reward and effect creative solutions.

- Conferences such as this are an indication that the cultural malaise that propagated the dependence syndrome and the publish-or-perish paradigm is waning. It may be that this has been spurred by the recent economic shocks that have, for example, resulted in negative returns on savings while significantly reducing job potentials for graduates. If this is indeed our scenario, and I feel that it is, this is a sad indictment on the Caribbean people for responding with long proposed strategies ONLY when our backs are against the wall! Wasn't it it was 18th Century writer Samuel Johnson who once said that "The thought of being hung in a fortnight concentrates the mind wonderfully"?
- However, what is still missing is a National Innovation System (NIS) that comprises systems and procedures that motivate, protect, creative ideas and reward and effect the resulting innovative solutions. This NIS should be comprised of the requisite legal, financial, R&D institutions and SMEs, suitably orchestrated to enable the transition of a novel idea to a beneficial or profitable conclusion. Although I applaud the work of institutions such as CARIRI in the attempt to fill this gap, not enough has been done in this regard.

- There is one more missing component – a critical mass of innovation-hungry individuals. These form the fuel for the NIS engine of wealth creation AND form the core of a new Caribbean culture that fully embraces innovation.
- There are many who have argued that countries such as ours should not waste time and money on innovative pursuits which are, by nature risky investments.

However, I would like to point out the following

1. There are different levels and different types of innovations. At the lowest level, we usually think of improvements to products or processes, including marketing and sales strategies. Some of this actually occurs even now in our current industries.
2. At the highest level of innovation where one may be nurturing a gem of a novel idea to first impact, risk levels are indeed high. Typically, 1 in 20 innovations make the grade. However, returns are also potentially more than rewarding once the portfolio of investment is handled well.
3. (Probably the most important point) The building of the creative capacity of our peoples consequent to the development of an innovative culture is simply beyond financial measure. This speaks to the need for a level of disruptive innovation in our entire education system.

4. Every individual with a successful innovation potentially represents **at least one** individual off the job market, more when one factors in the support network required to deploy and grow the innovation
 5. Innovations with global implications are foreign exchange earners.
- Let me pause a bit here to add that in the more developed countries that we so often seek to emulate, industrial support for University research, development and innovation is a deeply embedded culture. Industries benefit from different levels of technology, whether internally generated or derived from university R&D, that would lead to the innovations required to make their products more competitive. The people involved in that process of continuous advancement develop by virtue of that involvement, **as do the societies in which they live! This is the kind of culture that we need to adopt in the Caribbean – one that would significantly contribute to an increased level of sustainable economic development.**
 - It is within this context that I also say that engaging our local and regional capability in meeting the technological challenges should be a priority for all businesses operating in Trinidad and Tobago and the wider Caribbean region as we explore innovative solutions. Our businesses must be encouraged to utilize and explore readily available expertise, some of which would admittedly be untried. This approach ladies and gentlemen, would also save ‘precious’

foreign dollars and, equally important, leads to the further development of our local and regional expertise. This approach is not new; it has been successfully utilized before, and it is one that sets up a self-sustaining cycle of development and deployment that, in turn, pushes the economy forward.

- .. and do we have the fuel to build an innovative culture? Every year, students enrolled in the University of the West Indies Faculty of Engineering undergraduate programmes engage in 150 final year projects, maybe more..... In addition, when one considers similar activities in the Faculty of Science and Technology and the Faculty of Food and Agriculture, this speaks to the potential of this University alone in driving an entrepreneurship based on technological innovation. I imagine that the output at UTT, though smaller, is also not insignificant.
- Let me also say that whereas in the past, students would see their projects as just a requirement for completing their respective degrees, I have seen an increasing number of students looking beyond graduation, and exploring the possibility of making their ideas a commercial reality. This speaks volumes to a small but significant change in the culture required to fuel the wealth generation engine – the innovation-hungry individual of which I spoke.

Multi-disciplinary Research, Development & Innovation – An Imperative

- In addition to what I have discussed, I would like to caution my fellow engineers against thinking that innovation is strictly in the domain of science and engineering. Nothing could be further from the truth as the following example shows.
- Again I put forward the example of the PHI for which there is still strong interest in the product, even after a forced 4 year hiatus. This is largely because of the input of people like Leslie-Anne Noel of the Department of Creative and Festival Arts (of the Faculty of Humanities and Education), who used her ergonomic furniture design and artistic skills in conceptualizing the instrument chassis – widely acclaimed as a stupendous work of art. In addition, persons such as Anushka Mahabir, Rehanna Mohammed and Allende Lee Lung who are all UWI graduates and who did the marketing plan for the product that culminated in its appearance in Nicki Minaj’s “Pound the Alarm” video that has now accumulated over 175 million views on YouTube.
- This mention of the PHI is perhaps a good place to wrap up this feature address because it brings me back to where I began – looking at our capacity or lack thereof in the innovation process. The PHI experience epitomizes the general demise of the state of innovation-based entrepreneurship in Trinidad and Tobago. I cannot say that the same holds true throughout the Caribbean. Here is

an innovation, first conceptualized in the 1980s, completely overhauled in 2000, funded by a Government grant of TTD12M in 2005, patent and trademark granted in 2009 and beyond in 7 or so jurisdictions, widely marketed to loud acclaim, business plan developed, prototypes developed and evolved, created novel activities in local electronic design and fabrication, created by its very action a libel set of innovation-hungry youth but stalled by what I will politely describe as a rather unfortunate and unwarranted legal action just at the point of product launch but which has stalled product launch by more than 4 years. That matter has now settled by mediation with UWI having IP ownership. No progress has been made since mediation in 2014. No-one has ever bothered to enquire about the lessons learnt. Thankfully, one of the development engineers has gone on to utilize the knowledge gained on the project to create a business that has attracted worldwide attention from international music producers. People of Trinidad and Tobago and the islands of the Caribbean, we have to do better than this.

Concluding Remarks

In conclusion, today, I wish to encourage all Engineers to be open to pursuing multi-disciplinary research to derive solutions to the challenges of our Caribbean society. It also through cooperation and collaboration that we will be able to make

good on the concept of innovation-based entrepreneurship; a philosophy which The UWI has fully embraced under its new Vice-Chancellor Sir Hilary Beckles, and a concept which I support and which, I am happy to say, has been identified as a prime mandate for my tenure in office as Pro Vice-Chancellor and Campus Principal of The UWI St. Augustine Campus. Indeed, it is my intention that the UWI will play a significant role in developing the innovative space in the Caribbean, with the hallmark initiative being its transformation into an entrepreneurial university that targets the creation, in conjunction with industry leaders, of a new technology startup every one to two years.

- Ladies and gentlemen, I thank you!