

CONSCIENCE AND COMMON SENSE



Far Reaching Changes in the Near Future

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Those who have decorated my life

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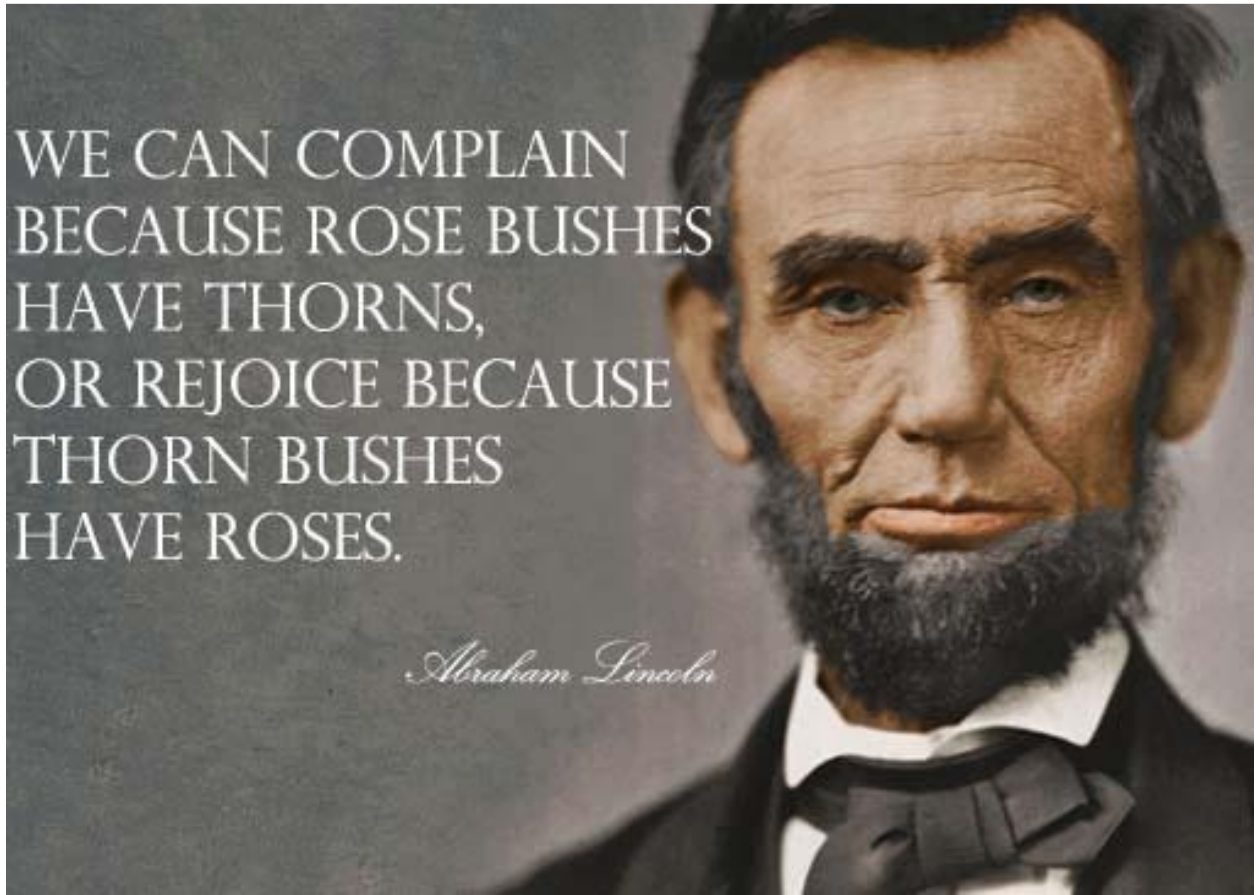
with their joyous presence, loving embrace and the beautiful sound of silence.

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WE CAN COMPLAIN
BECAUSE ROSE BUSHES
HAVE THORNS,
OR REJOICE BECAUSE
THORN BUSHES
HAVE ROSES.

Abraham Lincoln



INTRODUCTION *□ Facts about Fiction*

Does fate design our destiny? It is widely accepted that we may shape our destiny by the paths, actions and thoughts we choose to follow. If we choose to follow fiction, then, what is fiction today may be transformed to reality, tomorrow. Hence, fiction need not conform to facts. It is the other way around. By immersing fiction in our consciousness, we may trigger facts which may mimic fiction.

My intent is to contribute to this immersion concept. Therefore, should I write with a target audience in mind? I think I may have a target of one. One who will disrupt global geo-politics. Once I resolved this dilemma, I started writing this fiction. It was simply a matter of conjuring ideas based on my artificial intelligence and precipitating what remained in solution after my artificial intelligence collided with my natural stupidity.

Is this natural stupidity a vice or a virtue? My friend Martin Schwartz wrote an essay claiming the virtues of relative stupidity. Even if I can count on stupidity as my excuse and escape hatch, I still wonder, what if my plots are pedestrian, hackneyed, uncultivated or laissez-faire? Before publishing this work of fiction many who knew me may have only occasionally wondered if I were foolish but with this publication I will have removed all doubts.

My fiction, in part, was inspired by real people who seem to relinquish their dreams or lacked confidence to pursue their wishes or got depressed from carrying the weight of the cloud created by their own self-doubt. It seems to be the most common way visionaries give up their ideas because they think they do not have the power to transform their vision into reality. Because, I am not a visionary, I thought I should capture what may have been, however, fictional.

If my drivel fails to discourage you and if you persevere, then, you may find a few ideas and suggestions in these fictional essays to spark some non-fictional questions. A few

may seem impossible at present but not improbable in the future. It may resonate with the concept of an elevator to space suggested by the Russian engineer Yuri Artsutanov in the 1960s and immortalized by Arthur C. Clarke in his 1979 novel, *The Fountains of Paradise*. In 2006, Bradley Edwards and Robert Cassanova of NASA told CNN "It is a very credible idea. There is nothing wrong with the physics. With enough funding, it is possible to construct a space elevator in about 20 years."

Ideas in this book, which must be categorized as fiction, may trigger changes, if enabled or transformed to reality, in the near future.

I have attempted to catalyze convergence of vision, albeit limited by my own imagination. The purpose behind digressing from reality to write a fiction is a personal inability to present evidence based reality in a logical nexus with an adequate sense of the future. Because I am short on facts and neither well educated in the past nor the details of the present, I took refuge in fiction to satisfy my penchant to predict the progress one may anticipate in the future. I am so full of noise that even the exceptionally astute Nate Silver could not extract enough signals to construct my inner Nostradamus.

Thus, I have ventured solo to descend to fiction in order to spin my yarn about leaving behind a better society than the one in which we were born. I wish to sound erudite but I may have failed throughout my essays. It remains true that the progress of science, society and civilization may not be defined by or confined to developments in any one field.

Before we can hope to boil the ocean we must start, first, by gently warming it. My fictional thoughts or ideas in these essays are a fraction or sliver of the spectrum of factors that must co-evolve to shape the future. I have left all the room for real pioneers to contribute their imagination, inventions and innovation to enrich the collective global experience. I have touched on very few levers for socio-economic growth and principles of propriety aimed to inculcate an ethos imbued with a pervasive sense of dignity.

Despite my known shortcomings and a plethora of faults still unknown to me, I have tried to paint my fiction with a sense of positive pragmatism to create an economically

resplendent future through the management of an imperfect trinity of complementary services. Complementarity may be a tripod represented by education, health and energy. The trinity of these programs may be executed within a parallel framework of ethical transactions and empower economic freedom of women. The latter is paramount and quintessential as a measure to attempt to bridge the global equity gap. In 2013, the wealthiest 300 individuals in the world possessed financial assets equivalent to the wealth of 3 billion (3,000,000,000) of the poorest individuals who are not fictional, but live lives which are made of real flesh and blood but surreal in its fragility, mortality and morbidity.

In four chapters, I discuss [1] political fiction [2] business fiction [3] science fiction and [4] literary fiction. Taking fictional licenses without permission, I have strived to create a collage of the art of the possible. Two fictional dialogues about politics and enterprise weaves a fictional future of national leadership or government and fictional scenarios about emerging business. Topics include education, healthcare, the energy crisis and the social fabric of our evolving lifestyle technologies.

I have borrowed ideas, names and places. I use quotes, phrases and comments without acknowledgement. I justify my action using the rationale that if I copied from one source then it is plagiarism but since my mimicry includes a multitude of sources, I have elevated my plight and now I am free to call it *research*.

My choice of examples and individuals were guided by the need to generate some familiarity in order to illustrate the context. I hope the readers can Googlize the names and instances, stretch their vision and recognize the imagery just enough to re-imagine the possibilities or changes which we are likely to encounter on our journey to the future. These associations offer clues. I do not have any answers but more important, I do not know even a fraction of the right questions. The few solutions I have proposed may be incorrect or dead wrong. I cannot speak with "*dead certainties*" and the future does not entail us to be right, all the time. Therefore, I have dared to punctuate my mindless drivel with occasional dreary ideas, some old and a few new but their arrangement can use a feng shui expert. Perhaps we can try to verify them through implementation and admit errors, if

we cannot *measure* the impact of our work on the tangible standard of living, equity of access to global public goods and find remedies for remediable injustices.

My intent in chapter one was to bridge the probable with the possible, trigger a few new questions, re-view the big picture with different eyes, re-explore connections and re-connect the tapestry of civilization with our sense of propriety using dignity and equity as the social glue in this political fiction.

CONVERSATION between two US Presidents takes place on 20 January 2041, on the eve of the inauguration of the 50th President of the United States. The exchange highlights the catalysts for socio-economic entrepreneurship, promoting social businesses and policies, strengthening our moral fiber but without compromising our innocence or diminishing our vibrancy, zest and pursuit of happiness.

The technically minded business (chapter 2) fiction in *IMAGINATION* may generate revenue and job growth through ethical globalization.

Chapter 3 is an *APPLICATION* central to our debate on the environment based on global energy supply and demand. The proposal is nothing more than a third rate science fiction. It may fly in the face of conventional wisdom. It is not business as usual. Hence, the use of science fiction to explain what may be possible.

What we may think we have at hand to improve our environment is not an “one size fits all” solution but it could shine the light on billions in the world, despite its fictional status. I acknowledge the gaps in my knowledge and remain cognizant of the skepticism but few can disregard the rationale to create a fictional proof of concept. It is about the road not taken. The return on investment in *APPLICATION* may be limited. Investors may succumb to the fear of failure.

Fear of failure is a plague on the road to progress. It has driven our leaders to compromise and yield to pressures from special interest groups which are clearly not in

the interest of the society, in general. Media seeks to immortalize one who retrieves the engine of Apollo 11 from the depths of the ocean to serve as a museum attraction and a token of vanity. But, investment in *APPLICATION* may offer billions of people an affordable, simple and sustainable means to manufacture and consume energy. It may help us to improve our economy, the environment and may lift many boats, not just one iconic engine.

You do not have to be a pundit, politician or a professor to find holes in my unbridled optimism to make the world a better place. I may have erroneously aspired with my fictional ways to tune the engine rather than joining the club only to polish the chrome. Without the audacity of optimism we will descend into quagmire which will tighten its grip to asphyxiate hope. Fortunately, when I am in my fictional character (Pheidippides), the kernels of my soul seem to escape from the scalpels of fate. I have ignored the scars of pessimism, forged ahead through the ravages of time and circumvented the consternation from failures by placing them where they may belong. I don't know where that may be, yet.

Taken together, this collection of essays, in part, is wholesome fiction about the future in its fictional garb. I invite you to be a part this costume party on a fictional journey. Unleash your imagination to sense our collective tryst with destiny. Dream is an essential tool in this flight because nothing in this collection of essays are based on any tangible accomplishments on my part. It may be ascribed to a long chain of thought experiments and thinking. Anyone who reads but uses his own brain too little often falls into this trap, the lazy habit of merely thinking. I think (therefore) I have.

At the end, however, how could I leave you, the reader, jittery, jarred and jolted by the hair-raising tales I have been telling to the bald headed men? Therefore, in the concluding chapter, I reached back to find a joyful literary fiction to rejuvenate our senses. *REJUVENATION* is not my original work of literature, in keeping with the trend in this book which is devoid of any originality. But, so is pop culture. Did you know the well known song by The Supreme's *you can't hurry love* is similar to an earlier song *you can't hurry God*? My literary fiction is a classic instance of interpolation of a great story by an august author

and a noble man. I first read it during my childhood years. It is that *thinking*, again, with its infectious enthusiasm, eager to add layers, create alliterations and transcend one idea with another, add different contextual interpretations to serve different purposes and re-tell a story, embed a poem with thoughts that flow from a different genre, yet converge to find a way back into love.

Marathon by Design

Conversation

*with the 50th President of the
United States of America, 2041*

Part I

Political
Fiction

Conscience

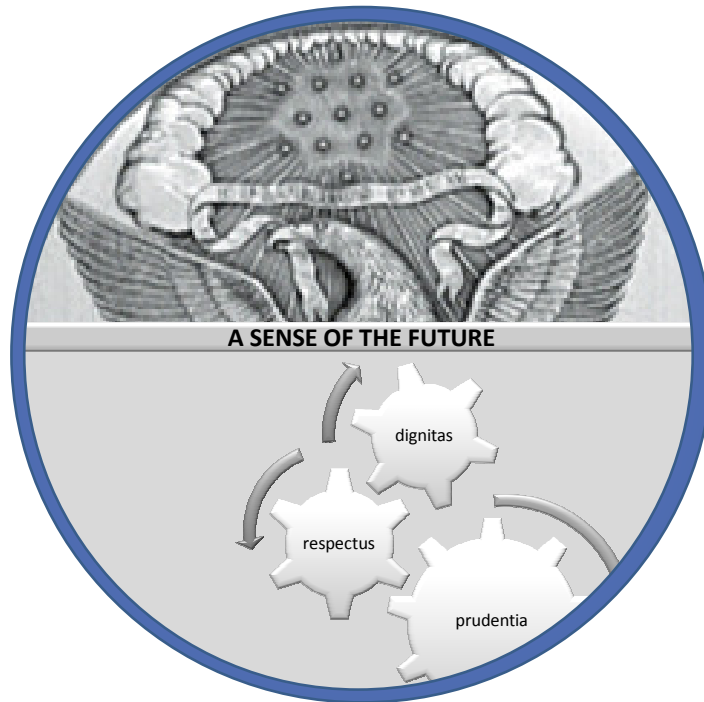
and

Common Sense

Part I : Conversation

Marathon by Design

Conversation with the
50th President of the United States of America





There are no short cuts in life. Only those who do not dread the fatiguing climb of its steep path may reach its luminous summit.

Voice of America hosted a live unscripted interview “THE ASCENT OF REASON” featuring Madame President-Elect responding to questions from the 44th US President (HBO) on the eve of the 50th Presidential Inauguration, January 21, 2041. This transcript is pure fiction. It did not receive any approval or endorsement from any source or individual, in any form.

HBO Michelle and I have followed your events, your US Senate race from California, leading the UN through global crisis and the nobility of your Presidential campaign. We admire your convictions and honored to have been a part of the journey which has brought you to The White House, today.

MPE Thank you, Mr President. I respect this Office and I shall serve our Nation with dignity and dedication.

HBO Citizens who voted for you have no doubt that you shall serve the nation with dignity. Your stellar erudition and numerous accomplishments are almost all equally profound in scope. I have the difficult task to sequence a logical progression for this interview. Let me start with your emphasis on respect for women. You made the women’s point of view a key feature of your identity and repeatedly harped on “dignity” and “equity” as the driving mantra of your Presidential campaign. What is the key to your inner drive?

MPE I can summarize the essence of my drive with a quote which contains two sentences. Then, I can elaborate. In my opinion, the value of the quote may hold true after another thousand years.

HBO What is it?

MPE *The education of a boy changes the life of a man. The education of a girl may change the destiny of a nation.*

HBO I have heard the first sentence but not the second.

MPE The first sentence has been around but the second was added by someone I have known since I was 19 and one who helped me connect so many dots.

HBO Please enlighten me about the second sentence.

MPE Second is second only because there is a first. I have to discuss both because without the shadow how do we know there is light? As a man, or male, it is often instinctive and perhaps intrinsic to get things done. Hence, the boy. It is not a generalization that applies equally to one and all but, it may be an underlying trait which is not uncommon among males, generally speaking.

- HBO I agree. We want to get things done and move forward. What's the harm in that? Would you fault a man for pursuing goals, targets and objectives just because he is a male? Your life reflects a steely focus, too. Doesn't it?
- MPE Yes it does but forgive me, Mr President, the very nature of your first question insinuates a need to defend the male perspective. Of course, it is embedded and camouflaged but would you, could you, disagree with me?
- HBO Madame President, fueling controversial interpretation is a tool to extract the patterns in your mind, which the public has a right to know.
- MPE I welcome the public's interest in how I think. It is a rational prelude to how I might act. For the next few years my thoughts may influence the ethical tapestry of this nation and my actions may even touch the moral fabric of the world. Returning to the first sentence and your question, Mr President, the ethos of getting things done is and should be, cherished. There is nothing wrong in getting things done. If I didn't get things done, then I wouldn't be in this hot seat, today, being grilled by you.
- HBO I think the jury is still out on who is grilling who, Madame President.
- MPE Getting things done is a virtue and there is no fault in setting an agenda. The male versus the female perspective depends on the content of the agenda, the impact of the outcome on the network of stakeholders and the spokes of influence related to the agenda. There is a common saying *if you want to walk fast, walk alone, if you want to walk far, walk together*. The education of a boy changes the life of a man implies that the boy used the education for self-improvement, walked alone. It is a laudable outcome for the boy and he may transition to a tax paying citizen. He extracts the benefits of his education to afford a higher quality of material living compared to the boy(s) who may not have used or utilized their education, assuming equity of opportunities.
- HBO I cannot grasp what could be wrong with the process of getting things done.
- MPE There is the distinction between the male and female perspectives. You, in this case, as a male, may not question the process or the plight of the boy to get ahead. A woman may view the steps through the mirror of life. She may wish the boy considers the consequences of his actions, may wish to *walk far, together*. Did the boy's educational success leave behind abrasive or arrogant residues? Did he use chutzpah or was he assiduous and accommodating? In a dog-eat-dog-world such thoughtfulness is utopian. In a conventional male dominated world sensitivity is viewed as an euphemism for weakness. The

education of a boy will enable the boy to scale the ladder of personal success. For a woman, the path is not cut and dry. It is mired in shades, grades, layers.

HBO Isn't it the old "post-modernist" argument of male dominated society? If men cease to control or stop dominating then women shall rush to fill the void?

MPE Your statement masquerades the insecurity of males because men are terrified to be dominated by the 'weaker' sex.

HBO Did I say that?

MPE You didn't have to but would you disagree with the extrapolation? A man who has chains shall use the chain to control.

HBO I don't believe in chains, Madame President. Once upon a time I loved someone deeply but I never tied her down. I wanted her to be free. Haven't you heard this song? *If my love cannot bind your heart, there shall be no chains to tie your feet.*

MPE That is moving, Mr President. She must have loved you very deeply. But my analogy with chains is based on a different scenario. Let us take the example of a parrot in a cage. A man who has chains shall use the chain to control. Restraining the bird by force prevents the parrot from flying away but flames the bird's anger. A woman may approach the bird without a chain but induce the bird to stay by intoxicating the parrot's senses, say, with food, thus, restraining by allure. The bird is pacified, stays as a pet. Men may use force to restrain but women may use sensitivity to evoke warmth or even happiness.

HBO You believe this fable may placate our middle-eastern friends and foe to seek peace? The fanatics who plunder, loot and kill in the name of religion or religious calling are oblivious of philosophical nuances, dignity and any moral yardstick except their own convoluted rationale which justifies annihilation of those who may not conform to their version of God. These people use God as a tool to separate husbands from wives, boys from girls and society from civilization. They make their God justify injustice and jihad.

MPE I know you know that I know better. My God, your God, is about love. She is not an accomplice for hate. This is an illustration of the underlying divergent principles which may manifest as gender differentiated observations in the context of the education of a boy and how it may change the life of a man. But, only one man. By itself, the first sentence is harmless. It is the second sentence which ignites our conscience and sets the nation's soul on the razor's edge. *The education of a girl may change the destiny of a nation.*

- HBO Implying that a man is self-centered, views the world and the opposite sex through the lens of his personal creature comforts. But, women view their lives, their path and the world as interrelated dependencies, where fate, life and soul are blissfully intertwined with that karmic tryst with destiny.
- MPE Indeed, you have hit the nail on the head, Mr President. Women value *karma* or the web of actions which represent the network effect of the consequences of how they act. Men only act. They want to get things done. Exceptions exist only to strengthen the rule. The big picture, the tryst with destiny, shaking hands with fate, are supposed to be stuff of chic flicks or a “woman” thing.
- The education of a girl is a not a policy paper, it is a human pledge, albeit a harmless pledge but often astutely balanced on vision’s edge. The core of dignity must be replicated or reflected on the edge of our policies which interacts with the real world. Core values are not inhabitants of Ivory Castles or CPU towers but may reside in edge servers to readily interact with the event-facing sensory input, the diverse dimensions fed by the global masses.
- HBO Too many mixed metaphors. Let me see what I can extract from your edge vs core idea. You are of the opinion that education of a woman is not a stand-alone policy or a public school issue. It must be a core value or dignity, integrated and disseminated in a wide range of public facing activities, which you refer to as the edge, the periphery, a place which we can touch and feel.
- MPE Thank you, Mr President. Hope you appreciate that these two sentences will be valued, evaluated and analysed in a plethora of ways, shades and degrees depending on the level of education, wisdom and knowledge of individuals, not only their gender. The true worth lies in re-visiting, re-tooling and re-organizing the social parameters which may segue to gender equity in contrast to the “material” view of girls and women which appear to dominate our society, as captured in the documentary *Mrs Dignity*.
- HBO As the father of two teen-age daughters growing up in the “Me Me Me” social media bubble I have had similar thoughts. Sasha once showed me comments from a group of teen-age girls who wrote and produced a play *Facebook Me* in the New York Fringe Art Festival in 2011. One 15 year old girl confessed and I quote “*I’ve become very good at taking pictures of myself. I know what angle is best, I know how to part my lips. It’s like the number one thing on my mind is ‘I need to get home right now and take a new profile picture.’ All because I want someone to comment on how I look.*”

MPE My twitterion Rose uncovered a similar comment from a 14 year old girl who co-authored the play. It is really sad that the dignified version of appreciation of beauty has been demonized to the point where some of us begin to wonder whether *any* physical appreciation should be allowed if society cannot find the balance to constructively use genuine appreciation with dignity.

The 14 year old girl says: *I feel sad, depressed, jealous, or whatever when I don't get a lot of "Likes" on my photo or when someone gets way more Likes than me. Honestly, I'm not sure that parents realize how drastically it affects our self-image and confidence. If I see a picture of a really pretty girl, it's like 'Goodbye self-esteem.' It forces me to compete and do stuff that I don't want to do, so my confidence will get a boost.*

HBO The documentary captures that effectively, especially, when the school student comments on how it is all about the looks and the body rather than the mind, intellect or personality.

MPE If you combine the message from *Mrs Dignity* with Peggy Orenstein's observations in *Cinderella Ate My Daughter* you sense social cognitive dissonance or disequilibrium. We may find it hard to believe that our daughters will succumb to these teen-angst which masquerades as or are marketed as fun. But, is there a shortage of adults queuing up for child beauty pageants? Have we wiped off Jon Benet Ramsey from our memory? How do we teach what constitutes the social semantics of appreciation of beauty?

HBO Let me play the devil's advocate for a minute by giving voice to the segment of society who may view *Mrs Dignity* as "men bashing" and other similar clips in the documentary. The degree to which appreciation of beauty can be expressed as dignified admiration has baffled generations. It is a push-pull scenario with that line on the sand. It is certainly not a "now" issue. The documentary wants all of us to emphasize and abide by Anne Gregory's sentiment which William Butler Yeats captures in "For Anne Gregory"

*May love me for myself alone
And not my yellow hair*

But just a few lines later, W B Yeats reminds us about the human futility in trying to pursue such an inhuman endeavor and sums it up by writing

*That only God, my dear,
Could love you for yourself alone
And not your yellow hair.*

The fact is and always will be that there is a chasm between admiration and its index in the human mind. Except for a few individuals, most of us, that includes you Madame President, may respond to external features, beauty, appearance before we take the next second to gauge the morality, personality and a sense of the inner beauty. Even in the most respectful of situations we are likely to add an extra layer, albeit slim, to the external features. In my case, my appreciation for Attorney General Kamala Harris blew up in my face and categorized me with “labels” found in the documentary *Mrs Dignity*.

As the President of this diverse nation you can neither choose electorates nor can you expect to create mass media channels to catalyze brain washing to convert people to conform to your message, no matter how powerful. As the President, you may not remain oblivious of your critics or the public, no matter how harsh, unjustified or even putrid their opinions may be, in your opinion. They are your subjects, too. You must rise above the discussion and lead without leaning to the left or the right.

I had to release my birth certificate as a proof of my citizenship even after I was elected President. The vermin out there can be vile, vicious and vitriolic. You cannot be viewed as an activist just for one specific issue or cause, no matter how noble it may be. You are the President, first, activist, much later.

MPE

I do not have answers to the projected or forecasted quagmires that may surface as a result of my convictions, opinions or messages in *Mrs Dignity*. Your humiliation for appreciating AG Kamala Harris was a mis-perception by the media and typical media-catalyzed knee-jerk reaction. I don't subscribe to promoting “men bashing” but I do believe in helping men and the media change their view of women. I have known a man most of my life, who deeply respects women, revere their unique role in the progress of civilization and resonate with my perspective that segments of our society need to shed a few tawdry traits. This is a long haul effort, it is in the design of my marathon.

HBO

I believe you have read enough of Neruda and Emerson. These poets are about the art of appreciation of beauty in women. I celebrate the message from Yeats in *a thing of beauty is a joy for ever*. I must confess that beauty rises to meet my eye through the aura of personality, kindness and brilliance. The ideas that have lighted my way have been kindness, beauty and truth. I find meaning and yearning in eyes that shine with ideas, love and tenderness. A beautiful body may provide ephemeral pleasure for a few night times but a beautiful mind may be always first in love and last a several life times.



L'insoutenable légèreté du contenu éphémère

MPE I indulge in utopian views on equity issues. But, I may not be human and much less a leader if my imagination is out of focus or if I fail to visualize the *art of the possible*. My actions reflect that I am a pragmatist. The pulpit of one President may not suffice to usher in the metamorphosis of propriety necessary to uplift men's views about women. The higher plane resonates with *Ode to Beauty* by three poets, Mary Darby Robinson, Ralph Waldo Emerson and Pablo Neruda, over three centuries, from 1758 through 1973. This is one issue, along with other equally important women's issues.

HBO It will be inspiring if you trigger the renovation of the social moral compass.

MPE A woman's point of reflection often involves many layers. I may not be able to adequately change the expression but it does not mean that I shall abandon the moral imperative for inculcating a balanced sense of propriety. Measures I hope to foster may be measured, between the lines but the writing will be on the wall in classrooms, in community centers and in country clubs. I do not want to ban or stop someone saying "*oh you look pretty*" but the ethos of the statement should be constructive, dignified, non-comparative. In parallel, appreciation should include the mind. I know it is difficult and abstract but transformation is not only about the society of men but the society of mind.

HBO Society of mind, in my mind, includes the minds of men *and* women.

MPE Precisely, Mr President. Society of mind is all inclusive. I may not sufficiently change the minds of men in adequate numbers to shift up the moral average. But, using my life and several others as leverage, I expect to have a better insight at empowering girls and women. We want the teens that Sasha and Rose mention to resist the mental incarceration by the vain yardstick of "looks" or "lips" planted in the global conscience by the social media, mostly through the mayhem modeled by men, media and marketing. I want to find new ways, every day, to make girls and women recognize, understand and assimilate that self-esteem, self-confidence and self-worth are manifestations of our own being which may be enhanced through education, selflessness and love. The "like" button has no role in a personal profile and is the lowest index of compliment that society should learn how to deplore and abhor.

HBO You harbor great disdain for the "like" button?

MPE I dislike its inappropriate inference, implications and influence in certain contexts. It is a cheap commercial conduit created to coerce competition.

HBO If I understand correctly, it appears that you are likely to promote a pervasive diffusion of the ethos embedded in the two sentences. However, you may not disagree with the view that instilling a sense of propriety in men about their materialistic views on women may be a difficult task. Therefore, you are more inclined to educate, inspire and drive women to rise above the materialistic and/or physical expectations driven by the ubiquitous social lasciviousness distributed by traditional and emerging social media.

MPE Sometimes mixed metaphors are a girl's best friend. Think about the Hubble telescope which had a lens with a focusing error due to a curvature issue during construction. NASA had no mechanism to fix the curvature of that huge mirror onboard the Hubble which was orbiting in space. This is the "men" part. In an ingenious move, scientists and engineers at NASA introduced a change in the software that re-aligned other mirrors, which had precision curvatures, to induce an error in the reverse direction. The two negatives, apparently, compensated for the error in curvature in the mirror that could not be changed. This is the "women" part. I shall not spare any opportunity or effort to help our daughters remove the shackles imposed by the ubiquitous social lasciviousness.

HBO When and where and how and from whom did you find your identity, your drive, your vision and your fearless leadership traits?

MPE My life is a marathon by design, Mr President. As an athlete in high school, I was familiar with the sprint but when I was 19, I recognized that I should design my own trajectory for the marathon of my life. I wanted to build my own life rather than live in one thought of by others. I desired to create a new future for me and find a way to be a catalyst for the progress of civilization.

HBO Did it just happen? Is success a key to your happiness?

MPE It is the reverse. Happiness is the key to my success. It is a reminder from *karma yoga* in The Bhagavad Gita. I love what I do. The process was arduous. Nothing of any value can be achieved without sacrifice, heartache and hard work. I was guided to focus, create steps, re-plan to adapt, adjust, accelerate when feasible. I kept one eye on The Presidency but made certain that vanity was banished from my fibers. I worked with love in my heart and happiness in my soul through the educational process, the practice and my profession.

HBO Is there any one person who helped you or gave you a hand?

MPE My Uncle. At 19, I undertook a major transition and my Uncle offered me a helping hand. That event set me on my journey to define my future which has brought me to The White House via the great State of California.

HBO As a teenager, as a young woman, did you feel empowered by this transition?

MPE Very much so. I wanted to bring my newly found self-discovery to the global platform, immediately. But I was advised to abide by the rungs of schooling and educational ladder in order to gain knowledge and have something of worth to write home about. I am thankful that I followed the advice to build my foundation and find good earth below my feet before I took the quantum leap. It is easy to be persuaded to be an activist for a cause but compassion without knowledge is ineffective and knowledge without compassion is inhuman. I had to find my humility first in order to better serve humanity.

HBO Was it your conviction to empower girls and women by creating the world's one and unique girl's club, *Salon Hypatia*?

MPE Yes, Mr President. My Uncle's generosity enabled me to access stellar education. I took things slow, one day at a time. I was fortunate to create a foundation in mathematics. I learned early that numerical precision is the very soul of science. I combined neural sciences with computer science and use computational neuroscience to enhance my medical practice. The confluence of these divergent facts, figures and frameworks trained my senses to imagine, developed my mental acuity, offered me the power of forward thinking, the luxury of insight and the freedom to think different. I didn't want to restrain myself to medicine. I didn't want to think, pontificate and blog. I wanted to "get things done" and transform my vision into reality about a better world beyond the horizon. Neurology is not the solution. I wanted more. I wanted less fortunate people to access global public goods, to lift the quality of their living and dignity of their lives. I wanted to help lift many boats. Neurology was only one answer, one tool in my tool kit.

HBO Your idea to increase global access to public goods through *Salon Hypatia* represents an innovative, thrilling and visionary socio-economic and geopolitical convergence. I am sorry that your book ***YOU DO NOT HAVE TO AGREE*** failed to attract the attention. I think it was ahead of its time. The public failed to relate to the convergence you envisioned in pursuit of an ethically balanced future based on equity and dignity.

- MPE Indeed this confluence shaped itself as *Salon Hypatia*. Over several years, through the actions of *Salon Hypatia*, we have continuously sought for tools to boost global public goods. It is no secret that my success through creating, using and implementing the agenda of *Salon Hypatia* is an inspiration that fueled my aspiration to claim a seat in the US Senate and then run for the Office of the President of the United States. I want to lead because I want to use the political framework to improve the quality of life. I believe that politics can be used as an instrument of goodwill. In matters of style, I am willing to flow with the current but I must stand as a rock in matters of principle. I know this may sound too simple or over simplified to many but I am all for the triumph of naiveté. In my unbridled optimistic view of life, I shall choose to assume the risk and rush in where angels may fear to tread.
- HBO We marvel at your plight and the outcome of your foresight. Please elaborate on your thinking which shaped your agenda over the decades.
- MPE My political aspirations were born at the same time as my educational zeal. Science and society played an equally crucial role in shaping my thoughts and my desire to serve. My exposure to neurological problems and poverty in India were elements which ignited in me the penchant to be a neurologist and find a political platform to positively affect the lives of people. At home in San Francisco, the *Care Not Cash* program resonated with the work I did in India. I had access to political wisdom as well as entrepreneurial minds. My circle of peers also has many notable names. After completing my fellowship in neurosurgery, I decided that the time was ripe to defy conformity, deny conventional wisdom, randomize measured actions and add volatility to metered philanthropy. In India, I had picked up the seeds of social business planted by Muhammad Yunus. I recognized the power of micro-finance. I wanted to find a noble platform for action and the recognition as a result of such action. I was seeking a template to enable me to deliver global public goods and in my mind that required me to be a part of the political system.
- HBO Before you explain the steps leading to your political action, the US Senate, could you please list a few of the ideas that were percolating in your mind?
- MPE I was thinking about education, healthcare and energy as tools for economic development, social cohesion and lifestyle improvements. My long lost ebook *An eBoolean in the Googlean Universe* is about lifestyle technologies for the wired and wireless but it failed to stir any imagination. But, my prediction about iSkin as a device agnostic computational interface is now a reality.

- HBO You sought very unconventional ways to create political milestones.
- MPE Yes, I did. My first and fortuitous action was to call a few people that I wanted to engage in my effort. I had met Kate Middleton and I called her. She hails from a grim mining family in Durham, in northern UK. She is still tethered to reality and married a man whose mother was the first member of any royal family to pick up and hold a leprosy-infected child in Mother Teresa's home.
- HBO That was a quantum leap – to call a future Queen and enlist her loyalty.
- MPE Quantum leaps are the only way to cross a chasm. It is necessary to break the mold. I did not want to push the envelope of staged progress in calculated increments aimed at optimizing my chances of appearing on CNN or BBC. After I hung up with Kate, I called Chelsea Clinton and then Jenna Bush. We decided to meet face to face in a week in Squaw Valley Inn in Lake Tahoe. Then the events accelerated. My doppelganger Eva Gephardt has a friend from Massachusetts who went to Belmont High School with Masako Owada and then they both went to Radcliffe College. Eva helped me connect with Princess Masako and it was quite impressive, she was ready to break rules and hop on a plane to participate. Next, I called Máxima Zorreguieta aka Princess Máxima of Netherlands who is of Argentine origin. Crown Princess Victoria of Sweden was the following call.
- HBO It is amazing what Skype did for you!
- MPE These royals are mostly imprisoned in their gilded cages and rarely allowed to exercise reason and rationale. They have the intellect, desire, recognition and the power to make a difference but few can dare to think different.
- HBO Like you said, *we will go far, together*. It is different. Why did you think different?
- MPE Why not? I am in the State which the Duke and Duchess of Cambridge chose to visit. We have something to offer. They have something to offer us. Yet no one is willing to shatter the protocol and grab the bull by the horn to create or initiate something new or different and possible. It is like a light shining in obscurity. I did not have any more patience for protocol. I wanted to grasp the opportunity and transform it into an instrument which I could use to help people. I dislike small talk. Talk loses its value rapidly unless action follows.

- HBO Please tell me what happened following the calls to the royals.
- MPE What happened the following week was a nightmare for the police, secret service and other agencies but it was a magnificent gathering of two dozen royals from all parts of the world in PlumpJack Squaw Valley Inn in Lake Tahoe. It was kept out of the public eye. Chelsea, Jenna and Eva worked round the clock to set up the event because I was still breast-feeding Rose. On the first day of our three-day event at the Inn, the Duchess of Cambridge and Princess Zeina Shaban of Jordan co-chaired the discussions. The second day Crown Princess Victoria of Sweden and Queen Sofia of Spain shared the lead with me. Action items were summed up and our “next steps” were scripted on the concluding day with assistance from Princess Masako of Japan and Princess Máxima of Netherlands. At the very last hour, Prince William, who was there as a guest, asked me what was the name of the group. I didn’t think of a name but Eva Gephardt chirped in “*this could be Hypatia’s salon.*” Everybody cheered and applauded. We dropped the apostrophe and reversed the sequence. We inaugurated the one and only ***Salon Hypatia.***
- HBO Indeed you were all Hypatia of some form in that room at that meeting. What binds such a powerful group of young minds?
- MPE Respect. Simplicity. We all agreed to focus on the broad aspects of education, health and energy. *Salon Hypatia* calls for execution of non-profit or not-for-profit or fixed-profit or for-profit projects. We agreed to help each other and work as a team, when feasible. We pledged to keep *Salon Hypatia* shielded from public exposure while we worked on our first projects and decided to “talk” only when we were ready to inaugurate the first project. That came almost two years later. It takes time to build. You remember the frenzy surrounding our US events which lasted for one week. *Salon Hypatia* members toured with the event. In our inaugural week we refurbished three schools (David Starr Jordan High School in Los Angeles, East St Louis Senior High School and Raoul Wallenberg High School in San Francisco) and opened the doors to three hospitals in California, Mississippi and Texas. That week, behind closed doors, *Salon Hypatia* members gathered to initiate product development for micro-scale renewable energy manufacturing. When I was 19, my first job in California was with my Uncle’s energy company. I knew energy was the most critical currency for global development and freedom.
- HBO I remember the frenzy with two dozen royals going from one event to another with the world’s press in queue. You became a household name. You

drilled it in for the next six days round the clock on every channel. The media claimed it has seen the future, that is, the future Madame President. You flew up to the ranks of nobility, leader and visionary, instantaneously and unequivocally. Your leadership made it possible for people to find a bit of stable earth below their feet. The same week one columnist opined that Sheryl Sandberg may be the future President of US. I just rolled my eyes!

MPE Sheryl Sandberg is a force for good. But, that week and its successful positivism was the elixir to my soul which ignited my zeal to help make the world an even better place. The outpouring of support offered meaning to substantiate the allegorical implications of *Salon Hypatia*. We all pushed to advance the events we were planning for projects nearing inauguration in UK, Albania, Senegal, Somalia, Pakistan, Thailand, Chile, Spain and India.

HBO The projects are too numerous. What you have pioneered worldwide will be the story for a few dozen books, Harvard and Stanford case studies, but let us focus on the first inaugural week in the US. I want you to share the ideas and policies that triggered those projects as well as their long term sustainability.

MPE Undertaking projects can only be a reality if the money is in the bank or we have a lock on a trustworthy commitment. We agreed that everything cannot be based on philanthropy. We must induce economic growth in the areas we serve and the services we offer may evolve to become for-profit operations, if the community can sustain the projects. Because the royals are sensitive about how they spend their money, we couldn't ask, for example, our British members to contribute for US projects. Any member can fund projects in their countries but may only *invest* in for-profit endeavors anywhere. They can choose to donate to projects in impoverished nations or in countries in need but without representation in *Salon Hypatia*.

For the US, I wanted to proceed in parallel with education, health and energy. Education cannot be a flash in the pan, which is, however, easy to accomplish if the target is the news cycle. Secondary education cannot be grant based stop-n-go efforts which philanthropic organizations appear to pursue. I wanted to take a "venture capital" approach where the VC firm is embedded in the start-up. I wanted to be invested in the secondary school's progress rather than throw money at the same old formula and then expect miracles or statistically manipulate the data to crow about a 0.1% increase.

Teachers are key and the quality of their experience is pivotal for the success of the children. When one assesses a teacher one should not ask what did she teach me, but did she teach me how to learn? Hence, we focus exclusively on quality of learning. Schools we adopt or lease from districts must undergo major changes. That part of our agreement is non-negotiable. We try to limit redundancies but “cartels” are broken up and administration is minimized. Without any exception all staff including administrative staff and office assistants are required to be certified in middle school mathematics if they are paid by the school. Janitors and custodial staff were exempt if they were contractors but the same rules apply if they are paid from school operations.

HBO Middle school math certification even for office assistants was a widely reported news and was a true disruptive innovation in public school systems.

MPE If everybody is empowered by an academic ability then imagine the sum total of the penchant to move education forward from every nook and cranny of the system. If you are not proficient in middle school math then you have no business to be in an educational infrastructure where the mission is to guide children to aspire. How can you inspire a child if you are afraid of math?

HBO It is a remarkable token of courage to take on the political cronies of the system and usher such a smashing paradigm shift. What else did you do?

MPE We reviewed and re-assigned tasks based on the quality of the incumbent. We choose an experienced teacher to be the Principal of the school on an annual rotation if the existing Principal was an administrative paper-pusher. We made sure that each subject matter teacher has an actual college-earned degree in the subject or related field from an institution of higher learning. Those teachers and administrators who are not qualified by our standards are sent back (with half pay) to the university to obtain a subject matter degree and get acquainted with scholastic erudition. College fees are paid for two years for professional development. To provide enough teachers, we hire subject matter experts with a MA/MS (arts and humanities) and PhD (science and mathematics). We pay a basic annual starting salary of \$50,000 if they hold a MA/MS and \$75,000 if they have a PhD. We pay additional perks depending on the need or situation. If we can get an accomplished individual to dedicate her/his time in the classroom with students, then we can begin to expect better performance. The dedicated individual must not constantly worry about making ends meet. She/he must have enough time to think, prepare and must make enough money as a secondary school teacher to feel

comfortable, take care of her/his family. The system must look after the holistic wellness of the teacher both inside and outside the classroom.

HBO A quick calculation tells me that a school with 3,000 children may need 200 teachers and 100 support staff including aides to offer the type of attention you wish to provide. If your average annual salary is \$75,000 then you need \$22.5 million in salary. If you add 20% for operational expenses you are looking at a total of \$27 million per year for a high school where teachers love to teach and they can't wait to go back the next day. California spends about \$10,000 per pupil so you may even make a slim profit of \$3 million pa.

MPE Profit is the key driver for many private charter schools except they pay teachers even less in some cases and trim services to increase profits. If you re-visit the standard numbers then a school with 3,000 pupils may get away with 200 staff members at a mere \$50,000 (average annual salary). Total expenses may not exceed \$15 million per year including operational costs (allow for wasteful contracts, administrative largesse). The State receives an invoice for \$30 million for services to 3,000 students. We are looking at 100% profit in the education business compared to a paltry 40% profit for defense contractor Rockwell or 6% profit for Albertsons grocery chains.

HBO What are you charging the State of California?

MPE The per pupil rate from the State is just under \$10,000 and it is dictated by the budget. After recovering the capital expenses we use the excess earnings and donations to create an endowment. The endowment varies by potential enrollment. A school of 3,000 may grow its endowment to \$300 million to be free from the vagaries of state funding, with a 10% return on investment to provide for an annual budget of \$30 million to serve 3,000 pupils. If the State no longer needs to support this school, it can use the funds elsewhere.

HBO Critics will argue this is not a general principle of operation for K-12 education. You cannot expect all schools to be financially self-sufficient.

MPE All schools everywhere may not be able to create an endowment or may not need one. Rarely one shoe fits all but it is true that my shoe size 11 fits quite a few people. Creating an endowment to operate a school or securing teacher's salary to ensure quality of the faculty is not an all or none phenomenon. It can operate in various degrees or steps in conjunction with traditional

approaches. I recognize that the design to create endowed public schools may not be a general recipe but it does not diminish its select applicability.

HBO Aren't you fostering a form of exclusion because certain communities will be excluded from the potential of creating a school endowment because they may not have a leader, the network or the resources?

MPE It is not exclusion by choice but by circumstance. Our humane and rational conscience wishes all things were equal but equity chooses to function over a broad spectrum. Hence, the "breadth" places elements in a manner where some elements are poles apart simply because the spectrum is broad. This is one reason why grant based systems often have limited impact because the grants are often based on some formula or doctrine of the granting body. The outcome of a grant based approach stutters because continuity is the key. Grants are designed to implement changes yet funding is limited to a short period. Often funds may run out before the changes can mature to provide the return which can be measured. We need metrics to determine merit.

HBO Did you broach this topic with the foundations which disburses grants?

MPE A few foundations expressed their reservations on the issue of trust. Did they trust the grant recipient to execute as best as possible? If they made a long term commitment and the recipient undertook irresponsible activities then the funds were at risk. To reduce the risk of exposure they limit grant amount and period. Of course, there are exceptions and exceptional cases.

HBO Were you able to secure long term funding from foundations or individuals?

MPE *Salon Hypatia* was successful in gaining the trust of the foundations and individual donors. It helped us to create the endowments for the schools and fund part of the operating cost for the hospitals we inaugurated in 2013.

HBO Let us discuss Jordan High School in Los Angeles, East St Louis Senior High School and Raoul Wallenberg High School in San Francisco. I understand the first two are in low income regions but Wallenberg does not fit your model.

MPE Mr President, when you talk about model and "fit" then one must assume you have a set plan or doctrine. The Powell Doctrine is one such instance. I recall your handling of the civil war in Libya in 2011. Deposing Gadhafi was not based on a US model because we acted under the NATO umbrella with

France in the lead. I think promoting the edict of democracy was the principle but your execution reflected less of an indoctrinated approach while favoring a flexible “what works” role to push democratic realism.

HBO Digging our heels in any doctrine was counter-productive in a volatile world where the diversity of challenges can’t be fully addressed by any one model.

MPE I followed your vision and extracted the wisdom from the change you had quietly ushered. You spoke about US involvement in Libya only a couple times during 2011 while the strife lasted about six months. Your unspoken words chaperoned the *model du jour* modus operandi. In my approach to the three schools, which were quite different, I adopted your framework, looked at each school as a school in that community rather than the cookie-cutter approach practiced by the educrats exhorting the values of school reform doctrines littered with delusional buzz words to pad their marketing wallets.

HBO Did you acquire immunity from the proselytizing by schools of education?

MPE There are some good ideas that originate from education schools and their research. Scholars like Jean Piaget and Seymour Papert are widely revered. But the refried and repackaged education school output is inflated jargon, hyperbole and labored attempt at job security. It has little to do with the pursuit of excellence or scholastic goals necessary for skilled workforce development, economic growth and innovation. All students may not be scientists or engineers but that must not allow us to homogenize educational standards or dilute classroom delivery to the lowest common denominator. We are cognizant of the challenges of skills training while we pontificate to uphold high expectations and lofty aspirations for all students.

HBO Share with us some of the specifics. I remember one incident where the unions and administration were miffed when you hired several foreign mathematics teachers.

MPE Let me re-visit your question about “fit” and “model” with respect to Jordan High School in Los Angeles, East St Louis Senior HS and Wallenberg High School in San Francisco. *Salon Hypatia* chose Jordan to honor Glenn Seaborg who graduated from Jordan HS in 1929. He served ten US Presidents. East St Louis may have been immortalized by Jonathan Kozol in *Savage Inequalities*. My friend Robert Curl was singing the praises of this book, too.

Wallenberg HS was selected by Crown Princess Victoria of Sweden, co-founder of *Salon Hypatia*. She wanted to honor Raoul Oscar Wallenberg's successful efforts to rescue thousands of Jews in Nazi-occupied Hungary during the Holocaust. Crown Princess Victoria of Sweden contacted Peter Wallenberg, the former Chairman of the Wallenberg family's business (Investor AB) and current patriarch of the Wallenberg family. Peter and the Wallenberg family agreed to serve as the sole contributor to the endowment at Wallenberg HS. They promised to help the school with resources to attain global excellence. It is a rare gift. The school has been transformed to a Mecca for brilliance. But, we did not exclude the children around Vega Street and the district just north of the pan handle in San Francisco. The innovation labs in science and engineering can compete with any lab at UCSF or Harvard or MIT. The curriculum offers lab classes as well as standard classes. The model draws from the Thomas Jefferson High School for Science and Technology in Alexandria, Virginia as well as Stuyvesant HS and Bronx Science. Wallenberg HS now includes Wallenberg Academy which is a combined Montessori type K-5 elementary school and STEM focused 6-8 middle school, aimed to develop the supply chain of talent for the Wallenberg HS and beyond.

The extraordinary success of Wallenberg HS students and graduates are partly due to proper use of the resources made available by Crown Princess Victoria of Sweden and Peter Wallenberg, Senior. Peter Wallenberg Jr serves as the Honorary Chair of the Wallenberg HS. But neither Peter Wallenberg Jr nor the Wallenberg family has claimed any recognition for their enormous financial contribution or the success of the school. The Wallenberg family motto is *esse non videri* (to be, not to be seen). Going back to the question of "fit" and "model", you can see why neither applies, in this particular case.

HBO

I understand that students from 9th grade can choose a research option in science. It is extraordinary that not only they can choose research but the school has faculty members with PhD, labs and university alliances to assist the student to execute that research plan. Implementing this system for a majority of the 3300 students in the high school is mind boggling. It reminds me of my visit to Thomas Jefferson High School for Science and Technology in Alexandria, Virginia, shortly after the 10th anniversary of 9/11 in 2011. During my visit to TJHSST, I signed the America Invents Act – Patent Reform Act of 2011. But you may remember the event far better if I remind you that our helpful critics renamed it the Death of American Innovation Act.

MPE I thought it was apt to choose a research driven high school visit as a backdrop to sign the American Innovation Act. But to get to that level where teen-age students are actually capable of engaging in some form of true research, the foundation must be laid far in advance. From the moment a five year old enters the Wallenberg Academy, the school attempts to inculcate analytical reasoning and critical thinking in every aspect of their learning in a manner which is age appropriate. By the time the student is in 8th grade, she or he is well capable of defining a question and proceed to answer it, that is, in a way, engaging in true research, not “*re-search*” by Google or surveys.

The school has produced musicians who are mathematicians as well as artists who are majoring in chemistry and economics in college. Wallenberg HS has student exchange programs with its sister schools in Sweden, South Africa, India, Brazil, China and Japan. The sister schools are almost equally brilliant and funded at the behest of the Wallenberg Family.

HBO You have followed quite a different path for Jordan HS and East St Louis HS.

MPE The question of imposing the “model” of Wallenberg HS makes little sense in the challenging environment of Jordan HS or the socio-economic milieu of East St Louis. Both schools have Academies which are elementary and middle school combinations. We focus on the developmental aspect of the student. High school is the finishing school but not the defining stage. Hence, we must begin early, middle school is the defining stage. That may be the shared principle we could label as our ‘doctrine’ which may be applicable for all three schools. In addition, I also believe that the object of teaching a child is to enable her/him to develop learning skills which may help her/him get along without a teacher. That is all we can say about fitting to a model.

Jordan HS is a college prep school with extensive tutorial opportunities to get the children from these neighborhoods truly prepared for the UC system. The first year of UC curriculum is integrated in the 12th grade in order to provide Jordan HS students with an edge when they start in any UC or Cal State (CSU). East St Louis HS emphasizes rigor and scholarship but in addition we offer extensive hands-on training such as the Cisco Networking Academy (CAN) and the Sensor Networking Academy Program (SNAP) plus courses in automotive and aeronautic disciplines in addition to biotechnology and environmental analysis (chemistry) labs. Summer jobs or internships in junior and senior year are organized by the business alliance arm of the school which is run by the local chamber of commerce but supervised on

behalf of the Foundation by a three member panel of my good friends Carly Fiorina, Meg Whitman and Bill Rutter.

HBO Wallenberg HS will produce the future Marie Curie and Andy Fire while Jordan HS graduates may be managers. East St Louis graduates may be the skills-ready workforce for science, technology and engineering jobs.

MPE That is not an unfair take-away but I do wrestle with the perception. The education school pundits are critical of this divide. I do not understand how and why their version of “differentiated education” remains kosher yet our differentiation evokes consternation. We have differentiated based on innovation options, college prep or skilled workforce development. For political correctness, should we dispense with pragmatism and expect all students to become Linda B. Buck or Pearl S. Buck?

HBO You cannot please all constituents no matter how balanced your approach may be. I learned that lesson the hard way and you will, too. Pummeled by vicious partisanship, I acquiesced to compromise, negotiate and yield on key tax issues the year before my re-election. I should not have, in hindsight. I should have been a leader and fought with genuine conviction for the welfare of 97% of our citizens who make under \$200,000 pa. Instead, I offered band-aid tax reform in order to placate the opposition to remain viable for another term in the White House.

I was running to be re-elected President in 2013 rather than being a President in 2011. I regret my actions and my greed but the sheer ignorance of the opposition to the American Jobs Bill and its demise in the US Senate on 11 October 2011 may come back to haunt the nation.

MPE If you didn't have the greed then you would have lost the re-election. Greed is an uncomfortable truth and it is all too clear that the world may have enough resources for human need but not for human greed. Yet without your greed, without your ambition, without you at the helm the 97% of Americans would have even less of a voice after the Jobs Bill was killed by the Senate. Your greed was a gift and a necessary oxymoron. I am glad you had the courage to use greed and I am humbled that you have the magnanimity to acknowledge.

HBO Let us re-visit Jordan HS and the mess with LAUSD teacher's union when you hired foreign teachers without credentials. Your action was based on 2009 STAR scores from Jordan HS (California Standardized Testing & Reporting).

Conversation

Algebra I	Grade 9 th	Grade 10 th	Grade 11 th	EOC
Students Tested	336	73	18	427
% of Enrollment	84.0 %	17.8 %	5.9 %	
Students with Scores	336	71	18	425
Mean Scale Score	270.0	251.5	261.0	266.5
% Advanced	0 %	0 %	0 %	0 %
% Proficient	4 %	1 %	0 %	3 %
% Basic	12 %	4 %	6 %	10 %
% Below Basic	49 %	34 %	61 %	47 %
% Far Below Basic	35 %	61 %	33 %	40 %
	84%	95%	94%	87%
Geometry	http://star.cde.ca.gov/star2009/			
Students Tested	43	222	67	332
% of Enrollment	10.8 %	54.1 %	21.8 %	
Students with Scores	43	220	67	330
Mean Scale Score	261.4	250.7	243.7	250.7
% Advanced	0 %	0 %	0 %	0 %
% Proficient	0 %	0 %	0 %	0 %
% Basic	14 %	5 %	0 %	5 %
% Below Basic	60 %	46 %	51 %	49 %
% Far Below Basic	26 %	48 %	49 %	45 %
	86%	94%	100%	95%
Algebra II				
Students Tested		87	163	250
% of Enrollment		21.2 %	53.1 %	
Students with Scores		87	163	250
Mean Scale Score		270.5	241.4	252.0
% Advanced		0 %	0 %	0 %
% Proficient		3 %	0 %	1 %
% Basic		23 %	6 %	12 %
% Below Basic		33 %	22 %	26 %
% Far Below Basic		40 %	72 %	61 %
		73%	94%	87%

MPE

The media and the public choose to remember the hype but the facts are to the contrary. Student performance on ACT, SAT and AP tests justified our actions. The mess was a political stunt by our critics because we had control over teacher recruitment and valued content knowledge of teachers far more than the education school parchment. The 2009 report was LAUSD in action.

HBO Why do we praise the education establishment for this rampant innumeracy? This is the same school that produced Seaborg. Where did we go wrong?

MPE We went wrong when we let process dictate education rather than dissemination of scholarship, content and rigor. Who inspired Glenn Seaborg? Dwight Logan Reid, his chemistry teacher in Jordan High School. We invented testing and forgot about teaching. Arthur Costa at CSU may have captured the salient factor at the root of our failure when he stated “what was educationally significant and hard to measure was replaced by what is educationally insignificant and easy to measure.”

HBO Hence, we measure how well we taught what isn’t worth learning.

MPE Teaching students to learn how to learn is a very difficult parameter to measure. It is the most fundamental element in education but to bean counters it is elusive to count. What the education schools offer has little to do with learning how to learn, think and imagine. We have allowed education to be a business and treat students as clients. We catalyzed dissent when Glenn Seaborg wanted to improve the curriculum. We have installed every legal mechanism to keep dedicated individuals out of the system and patronize “education” degrees in lieu of subject matter depth. We have created a haven for paper-pushers, nay-sayers and box-checkers. In other words, we have embraced stupidity, institutionalized mediocrity and galvanized anarchy to prevent the pursuit of academic rigor, excellence and aspirations. Is it any wonder why American students were the laughing stock at TIMSS and why we are at the nadir of the global achievement gap?

HBO You are blaming the bureaucracy enforced by the schools of education through the credentialing programs. But don’t we need a standard for teacher certification?

MPE Of course we do. This is why we have degrees called BS, MS or PhD. Why don’t we aim for the best? Instead of the bottom 10% of our higher education graduates, let us proactively select the top 10% of our MS or PhD recipients to teach in public schools. They *have* a certification. It is their university degree in a subject(s) from an accredited institution of higher learning.

HBO All PhD’s are not capable of teaching or classroom management in schools. In addition, hiring Einstein in the classroom does not guarantee students will appreciate physics.

MPE There is a self-selection process. Those with a higher degree will know if they can or cannot teach. Most PhD's will have gained some teaching experience as a part of their degree. It is not the same in the K-12 environment but if they have the drive, enthusiasm and knowledge then why not invite them to help our children learn? Instead, the system empowers educrats and paper-pushers in human resources to create barriers for content qualified individuals or makes their life miserable if they manage to get in the system as teachers. The tools of the trade as pertains to classroom teaching and discipline management can be learned or acquired by team teaching with a qualified master teacher or on-the-job training. But, to maintain job security, the bureaucrats in collusion with schools of education have created a labyrinth of vacant draconian measures which lack vision, are void of substance and represent a plague of mindless drivel. Professional development to improve content knowledge of teachers is now an excuse to have an off-site party for the administrators and garbage assignments for teachers. The venom from education schools has effectively poisoned and prevented the entry of erudition in public education This vicious cycle is evident from the 2009 STAR data on math from Jordan HS in LAUSD.

HBO Don't you think low salaries may be an equally important factor which bars content qualified individuals and PhD's from seeking public school jobs? Why would a PhD in science or mathematics choose \$40,000 teacher salary?

MPE It is one reason why the endowment model may survive in the long run when teachers with a MS or PhD in a specific subject matter will start at \$75,000 or even \$100,000 per year irrespective of the ebb and flow of state tax receipts or property taxes. We must have teachers who can help students assimilate content which prepares their foundation. We need to drive imagination, help generate inventions and pave the road to entrepreneurial innovation. Hence, *qualified* must mean ***content qualified***.

HBO AFL-CIO unions denounced your actions to hire teachers from Mexico. You were determined to stop peddling mediocrity in an age of diminished expectations and ignored molly-cuddlers crying for dilute, warm and fuzzy.

MPE What we did in LAUSD was in response to constant criticism that Hispanic children were failing behind in mathematics because of language barriers due to English speaking mathematics teachers. Of course, this was a political mud-slinging match but I decided to focus on the children and numeracy. We liaised with Universidad Nacional Autónoma de México or UNAM (National

Autonomous University of Mexico) to recruit native Spanish language teachers who had a MS or PhD in mathematics and were capable of passing TOEFL. We hired them as visiting teachers for one year and then offered them contracts depending on mutual match, preference and performance.

HBO I recall the improvement in mathematics scores after the 3-year study which was in the headlines for more than a week. But, this course of action proves the point that critics were making: native Spanish speaking students in Jordan HS did learn better when taught by native Spanish speaking teachers.

MPE Please tell me Mr President that you are pulling my leg! The spin doctors may want you to believe that but we both know the truth. The English speaking math teachers did not have a degree in mathematics. Less than a fifth of the math teachers in our schools have an earned college degree in mathematics. These teachers in Jordan HS had a certification in mathematics *education* which you can manage to obtain if you buy a test booklet with sample questions. These teachers can explain the content in one or two ways because that is all they could memorize. There is a grave void of aptitude, knowledge, a lack of depth in their understanding of the content and near-complete inability to contextualize the applications while on their feet in order to make mathematics relevant to the students and their environment.

HBO LAUSD retaliated by publishing the end of course (EOC) evaluation data which showed “proficiency” in mathematics.

MPE EOC questions were created by internal teachers. The extent of collusion in these evaluations are the reason why the former “star” Superintendent of Atlanta faced charges of cheating on internal evaluations to pump up the “achievement” claims for the Atlanta school district. A teacher from Florida told me how they were allowed by the school district to go and “look over” the EOC for their classes at the administration building before the EOC tests.

HBO Atlanta was a sad and shameful story. Therefore, according to your explanation, the reason for the dramatic improvement in math scores on standardized tests were due to the content knowledge of the teachers you hired from UNAM rather than their natural language proficiency in Spanish.

MPE That is the truth and that is why I shall champion content over process. But, there is wisdom in process, too, which must be applied, when necessary. But, for teacher recruitment purposes, the role of process is negligible. Teachers

should be accepted based on their subject matter degree. The changes in Jordan HS were content driven. We have replicated the content driven approach and performance is improving, albeit at a sluggish pace.

HBO Madame President, it may not be difficult to execute these changes in controlled experiments under the glare of the spotlight. I acknowledge that you have proved the principle, that, content is the primary catalyst to enhance student performance. But, transforming the principle into policy which can be legislated and disseminated is an entirely different kettle of fish. As a private individual you could experiment at will but at the helm of the nation the task gets tougher because your pilot project will be subjected to various acid tests. In essence, policy level success depends on scalability, adaptability and credibility. The latter, in this case, depends on whether the improvements in mathematics you have demonstrated can be replicated in other districts following policy guidelines or recipes. If your policies cannot create a recipe for success then Jordan HS and other related projects, to our mutual chagrin, will be nothing more than a light shining under a bushel. We have had several instances of small successes which have proven to be far more elusive on a larger scale.

MPE I am aware that these islands of success may be obliterated or drowned by the ocean of national resistance to legislating meritocratic policy frameworks for public education. I also know that legislative success in creating a policy to recruit teachers with MS and PhD degrees is like a maxim of conduct, of no value unless put into practice or like seeds, sterile, unless planted and cultivated. Let me cite two countries which may illustrate the chasm between principles that we set on a pedestal and the practice of principles in daily life. It may be jarring to observe that in the 1950's Ghana and South Korea shared similar GDP but today South Korea boasts a per capita income of US\$40,000 while Ghana is still struggling and far from reaching US\$4,000 per annum. The polarization illustrated by these numbers is also reflected if you compare the national test scores of school students in science and mathematics.

HBO The correlation between education and economic growth needs no emphasis and remains elusive, as pointed out by William Easterly in his analysis. What is your plan to economically sustain the policy which will enable and enforce the content readiness qualification that you may use as a yardstick to recruit teachers for public schools? You have pinned our economic success on teachers, alone. I personally believe that is trigger but I am in the minority.

MPE The answer to your question, Mr President, is The National Endowment for Teachers or TNET. I pronounce it *tenet*. I have to find funding mechanism for the policy to keep it viable over the long term rather than leave the policy at the mercy of the Ways and Means Committee. The seeds of TNET are not uncommon. Endowments already support excellence in a variety of public and private schools.

TNET will be a national education service. I am proposing that we separate teacher salary from school operations. If public school teachers are assured a healthy salary immune from economic vicissitudes then we can guarantee content qualification and expect that these teachers shall drive the learning, provide the aspiration, ignite the imagination and spark the ambition necessary for the pursuit of excellence in public education. If we partly remove the burden of teacher salaries from school district budgets then operations, facilities and services may improve to better serve the highly qualified teachers in our schools. I am inclined to assume, based on our earlier success, content rich teachers are inspired in their personal plight. In their capable hands our children will be better educated, better equipped and better prepared to remain competitive, innovative and entrepreneurial in the global economy. Our students and citizens will be better prepared to face the challenges of change and we all know that the one thing which is permanent is change. You may call it a cliché but you cannot ignore the fact.

HBO Investment in public education is lofty, noble, and quintessentially Presidential. It can re-distribute the wealth of nations. But the brutal question remains, is it feasible? Can you fund TNET to the extent that it will have a measurable impact which we can be observed through the lens of student performance? To keep it simple, let me use a lower average starting salary recommendation of \$65,000 pa per teacher. For four million teachers, we need \$260 billion for salaries. At an annual return of 10% you need \$1.3 trillion at TNET to provide schools with 50% teacher salary supplement.

MPE I am thinking \$1 trillion for TNET. It is feasible. McKinsey estimates global wealth at \$200 trillion and more than a quarter is in the USA. The strength of charity in this nation is unparalleled. Individuals are eager and willing to help when they find elements in a plan which they can believe.

HBO Are you expecting Messrs Gates and Buffet along with their friends to turn over their assets to TNET because you wish to execute a noble solution for long term growth?

- MPE TNET cannot be built by a few even if they are the chosen few. TNET is for the people and must be created by the people. But, we will ask for help.
- HBO Joseph Stiglitz has pointed out that the top 1% of US citizens own 40% of our national wealth and they take home almost 25% of our national income.
- MPE The household worth of the remaining 99% Americans is approximately 8% of the global wealth or \$16 trillion. My target for TNET is \$1 trillion. TNET guarantees that we will have 4 million highly qualified content rich teachers in US public schools. Imagine the impact of good education on research, inventions and innovation to spur entrepreneurship and economic bonanza, locally and globally. We must think ahead, we must think big and we must think something different than stop-gap measures or chronic band-aid solutions. Education is the quintessential Holy Grail to economic nirvana.
- HBO I applaud your vision but you must spell out a plan if you wish to gain public support to help create TNET. With your persuasive powers you may secure a commitment from the top 1% US households to donate 10% of their wealth (total \$11 trillion) for a total of \$1.1 trillion for TNET. If you succeed in this \$1.1 trillion fund raising then you may find the support you need from The Congress to legislate TNET related policies. Do you have a plan B if the magnanimity of the top 1% falls short?
- MPE I do intend to beg from the top 1% of our citizens in order to provide for our teachers but I also wish to engage our entire nation in a manner that can make TNET a national pride. I am going to go door to door, to request help. The power of the people must not be underestimated. I refuse to believe that hard-working people all over this Nation will be persuaded by tricks, flashy advertisements and peddling to either their vanity or self-centered interests. I have faith in the fabric of this Nation and the fiber of its morality to set aside personal interests, rise above their solipsistic bliss and have the courage to embrace the sacrifices necessary to secure our future, our children and the economic health of the world around us. TNET will serve as a global model.
- HBO If I read correctly between the spoken words, I sense you may introduce another surcharge in the form of a teacher or education tax on the 99% of Americans who are already encumbered with 95% of the national debt.
- MPE I pray that Americans may view this surcharge with vision and indulgence. The construct of the tax may be limited to the 4 years of my term at the helm.

HBO Have you already decided that you are not going to run for re-election in 2044? Are you publicly making a statement to be an one-term President?

MPE I have not decided, Mr President. It is to be decided by the will of the electorate. As you correctly point out, I will be asking for even more sacrifices from the 99% Americans who are finding it difficult to make ends meet. I cannot negotiate a half baked policy with a partially endowed TNET. I may not appease opposition parties, acquiesce to pork barrels and yield to lobbyists from special interest groups.

I will stake my Presidency to create TNET and push the legislation through Congress to enact the policies which will guide the content qualification for our public school teachers in order to strengthen the future of our children and grow our economy in a manner which will keep America and Americans competitive, for the long term.

HBO You will sacrifice your opportunity to run for a second term?

MPE Mr President, I did my “running” for The White House. I am the President. I will stop running and start being a President. If I cannot pursue my ideals in order to secure the future of our children and prioritize their pursuit of happiness then I have not earned the dignity of this august Office. What I can do here in one hour is far more than a billion people can do in a billion hours. With this great responsibility comes a great opportunity. If I cannot use my Presidency to lift this nation out of potential economic danger then I have failed to be the President I expect of myself. Teacher qualification and education are not as sexy as the conquest of the Moon or the Manhattan Project but education is the sole purveyor of civilization. My task is to restore civilization and prevent its decay. Teachers are the architects and education is the preventive maintenance necessary to stem the decay of civilization.

HBO Albert Schweitzer may not have imagined that he may be used to illustrate a vision so profound, in a manner so eloquent, by an individual with such magnanimity, who happens to be the people’s choice for the 50th President of the United States of America. It is literally a literary hair-raising confluence, but, let us get back to the tax you may impose to create TNET.

MPE You may call it consumption tax but transaction tax is more accurate.

HBO You want to hark back to John Coase as a rationale for your strategy?

MPE Coasian principles related to transaction cost economics may offer us a platform for transaction dependent micro-surcharges which, in aggregate, may help us to help education and TNET. PayPal racked up \$4 billion in payments in 2011. In 2006, there were >90 billion independent instances of non-cash transactions and soon after such instances exceeded 100 billion.

Assume 80% of these transactions (80 billion) are between \$10-\$100 and 20% are above \$100. The proposed transaction tax is a \$1 or \$10 surcharge on transactions under \$100 or above \$100, respectively. During the 4 year duration of this surcharge we may collect \$280 billion pa or \$1.12 trillion.

TNET will be secure with \$1.12 trillion. Interest from investment will provide a significant part of the salaries for four million teachers. TNET may better educate our children by offering salary supplements for content qualified teachers. TNET may continue to grow in its endowment to offer full salary and benefits. We may no longer have to accept the shoddy and the second grade masquerading as good enough. We will be able to afford the best, the good and enough of the “good” teachers in classrooms to empower our children, provide reasons to aspire and find a *reason to believe*.

HBO Let me point out the unfairness of your surcharge scheme. For example, Jane Doe is struggling to balance her weekly grocery bill at Safeway when her \$15 grocery purchase is hit with an extra \$1 for TNET. Just before a yacht ride, near the San Diego marina, in Andronico’s, we have Elon Musk and John Walton in queue to pay for a NY strip steak for John’s dog and he gets hit with \$1 on top his \$21 purchase of dog food. Is it fair to ask the same from Jane Doe (net worth negative \$93 due to bounced check and bank fees) versus John Walton, 1 of 6 Waltons who have more personal wealth (\$93 billion) than the bottom 30% of all Americans? You surcharge just won the National Opprobrium Award by unanimous vote.

MPE Absolute equity is as oxymoronic as pragmatic utopia. I do not claim to have all the answers. But I assure you that OMB and CBO will model the dynamics of the surcharge and we may find a balanced approach which may even exclude essential items or global public goods. It may reduce the impact on Jane Doe if she uses a non-cash transaction for essential items. I know we may only approach partial fairness but what is the alternative?

The modus operandi of the proposed transaction tax is borrowed from the well established practice of value added tax (VAT) levied on most goods and

services in many countries in the EU. On my watch the US may have to be added to the list of countries which uses VAT, albeit for only the duration of my term. It may be jeered by the voters today but it shall aid the economic growth of our nation, tomorrow.

This is why, I am not going to be “running” to re-shape my agenda to retain this Office for another four years. I will try to do the best job I can during the four years I have been given by the people. I will work for the people and pursue the big ideas that shall make us stronger but the dividends may not be redeemed in the next quarter. My efforts will extend to improve the plight of future generations. The Presidency is not about appeasing the pollsters or focus groups or the electorate. It is an opportunity to converge imagination and vision with knowledge and prudence to lead the nation to luminous heights of humanity, with dignity. Those who may not dread the fatiguing climb of its steep path may reach the summit. The White House is a rose garden on a bed of thorns. I have no fear of fear nor do I fear failure.

HBO The fear of impasse and failure made me negotiate, time and again. I squandered away the tax of millionaires and compromised with the opposition. I stopped short of almost all the major changes I wanted to promote. But, in hindsight, Madame President, I will advise you to charge forward with your convictions. If I could turn back the time, I would follow in the steps of Gandhi and go on a hunger strike in the Capitol Rotunda in order to decrease the tax burden on our citizens. I should have done that. I didn't.

MPE It is a fact that Gandhi's hunger strike and civil disobedience finally drove the British out of India. But, it was possible for Gandhi to obtain independence through non-violence because the British had the dignity to accept the moral principle of the man they called the “half-naked fakir” and in the end they had the courage to accept the things that they could no longer control. Gandhi succeeded because his adversaries, overall, treated his actions with dignity even though some British groups were bloody ruthless in their actions.

Were your adversaries an enlightened bunch? Should we hold off creating TNET because we are experiencing hardships? No. Life is not about waiting for the storm to pass. It is about learning to dance in the rain. 100 billion instances per year is equivalent to one transaction per day per person (US population of 300 million). If we apply the 80/20 rule then an individual may contribute \$292 @ \$1 per day plus \$730 @ \$10 per day for 73 days or about \$1000+ per year for four years. The real number may be \$2000 / individual

tax payer because only half of the US files an IRS tax return (~140 million). Hence, there are barriers. But, are they insurmountable? I wouldn't know unless I tried. Would I?

I will have to knock on many doors including the Walton's. I have requested Sheila Bair to strategize and plan national implementation. We will explore progressive or stair stepped tools and solicit donations to reduce the \$2000+ temporary tax burden on Jane Doe. But, we must fund TNET to secure the foundation for future. We will fail to improve the quality of life if we cannot resist our proclivity for policies which may be penny wise but pound foolish.

HBO But the future is not what it used to be. Salman Khan and Sebastian Thrun may persuade students to think that the teacher is an App which they may download for 99 cents on their iPod or iPad from Apple's iCloud or on KindleFire from Amazon's cloud EC2. If the future teacher is an app then TNET is an expensive public works *faux pas* or Keynesian tragedy. If the teacher can be an app, why do we need 4 million real teachers?

MPE The jury is still out on whether TNET can be defined by Hayek vs Keynes or Robert Frank's *Darwin Economy*. But, it is possible that the number of teachers will shrink if the Feynman Lectures can be made comprehensible to middle school students by Brian Greene of Columbia University. Cloning and distributing good teaching through the medium of information technology will usher major changes. Brian Greene is a brilliant teacher and he made String Theory accessible to Jane and Sue. The internet and its accessibility will, therefore, catalyze changes in learning. MOOCs are a welcome change because it enables the masses to get educated. With some effort the standards of such education can be made rigorous, for example, if one version could adhere to the content guidelines from MIT OpenCourseWare. If my children can sit at home with a laptop and get educated enough to create the next innovation then I have made a colossal mistake by creating TNET.

I believe that the value of "My Teacher is an App" is as a supplementary tool for those who want to proceed at a brisk pace in school by skipping grades and taking some of the low level classes ahead of schedule through virtual school sites. These programs can be adapted for at risk children or to reduce drop-out by enabling students to graduate through non-school alternative programs operated in community settings. If these apps and programs can be disseminated on low cost devices such as a Simputer or some form of OLPC equivalent then it may enable the billions in rural India, China, Indonesia and

Africa to break the cruel barriers imposed by illiteracy. That will be an awe-inspiring and stunning accomplishment which may be possible through the medium of the internet with apps simulating to be teachers or even in its basic form simply by disseminating structured lessons and knowledge base. The teacher-student entente has developed over thousands of years. It has been recorded since the 3rd century BC at the Great Library of Alexandria, in Nalanda University since 6th century AD and still continues in our modern institutions which started more than a thousand years ago, in 1088 at the University of Bologna and 1096 at Oxford University. I am afraid I am not in fear of any app that may vanquish the need for teachers and TNET. If Stanley Kubrick were to reappear in a 2nd life and create *3001: A Learning Odyssey* then we could catch a glimpse of the future impact of such an app. Until then, we need teachers and America needs TNET for public pre-college education.

It goes without saying that functions supported by TNET will change over time to provide for the best education for our children. The tenets of TNET shall recognize that change is permanent. It will reflect the provisions for an evolving role of the funds when the need for salary supplement may decrease due to reduced number of teachers or factors which may change our socio-academic milieu or the economy. I would like to pave the way for TNET to grow to \$4 trillion. A return of 10% pa may provide for \$100,000 per teacher for 4 million teachers including sabbaticals for truly academic professional development, vacation, benefits and enough cash for classroom supplies.

HBO TNET will test your vision and its success will be a triumph of your tenacity. Your focus on education may win the hearts and minds of common people. You may find yourself in the history books not only as the first female President of the US but also as the first President to hold office for three consecutive terms. Your admirable zeal to create an agency which will remain agnostic to economic turbulence may be the first step toward creating the Federal Education Reserve for pre-college education. The case for post-secondary near-adult education (BS, MS) is a different kettle of fish.

The consistency of education services and the academic opportunity to excel in a chosen field encompasses almost a quarter century of one's life, for those who are inclined to walk the extra mile. Enabling students to pursue that trajectory is a financial challenge. The return on investment from elementary and secondary education is diminished if capable candidates opt out of the system due to economic factors. The Federal Education Reserve may reduce brain diversion and catalyze an educated palate or even entrepreneurship.

MPE

The requirement to invest two decades in an individual to help them realize their economic potential is the strongest rationale to isolate academic investments for our children from the political musical chair necessary to ensure that the democratic machinery is operational and functional.

Your idea of a potential Federal Education Reserve (FER) to oversee education and research funding is music to my ears. TNET is a step which may evolve as a rung on the ladder to reach FER. However, the duration of the investment and the demographics it may support will evolve as we brainstorm anticipated workforce changes. We have to discuss as a nation whether the 20 year investment target is applicable or even necessary for all students. These debates may reveal that 80% of the 55 million children in our schools may be workforce ready with 2 years of post-secondary training which may include in-classroom time and virtual classes plus an additional 2 years in vocational course or internship or apprenticeship for skills training. It will be hard to find one solution for all and we may not want such a shrink wrapped solution, anyway. The important question is the eligibility for jobs versus the academic path or skills training option.

Demand for mid-level routine operations will decrease with increasing penetration of mobile services, intelligent decision systems and robotics. There will be “machines” to execute non-exception management tasks which were the domain of mid-level humans for the latter half of the 20th century. Combinatorial applications of software and hardware cannot clean the toilet bowl or make your half-smoke when you are eating at Ben’s Chili Bowl or pour PlumpJack Merlot if I am dining at Atelier Crenn on Fillmore Street. The folks we need for these jobs may not need a 20 year investment in formal education. On the other hand we may want CEOs, doctors and lawyers to be actual humans. We may not wish to find a software-hardware substitute for Elizabeth Blackburn or Maria Zuber or Larry Jameson or Alan Dershowitz.

The transformation in the “middle” is underway and is subject to various factors, some of which may not be an all-or-none situation. But, it may create a polarization of the skills needed to do the human-mediated tasks on the two opposite poles of the spectrum. The poles are separated by a deep chasm which will slowly but surely re-shape global workforce and the type of education or training required to fulfill these roles. The days for data entry clerks, travel agents, bank tellers, shopping assistants and operational supervisors are numbered. These jobs may have moved for good, once they are gone. They may be replaced gradually by automation and intelligent

services. Other jobs, such as interpretation of radiographic data may be outsourced, mid-level diagnostic radiology may become a remote operation.

In the cockpit of the future Boeing 898 there will be one dog and one pilot. The role of the pilot will be to feed the dog and the role of the dog will be to prevent the pilot from the temptation to touch the plane's remote controls.

HBO Excellent analogy but what if certain countries require a pilot in the cockpit when flying over their airspace?

MPE You envision room for conflict between the federal operating tenets of TNET and the autonomy of states to run their own public education system.

HBO Yes, Madame President. Your centralized vision is in contrast to the decentralized public education system which has taken hold in the US. The granularity of control is exerted through state specific certifications, professional evaluation, curriculum development and administrative bureaucracies. The obscene wastage of resources due to state-by-state development of K-12 standards (rather than singing from the same hymn book) is supposed to assert their independence. In that environment the supplement from TNET may be used ineffectively or deliberately misused.

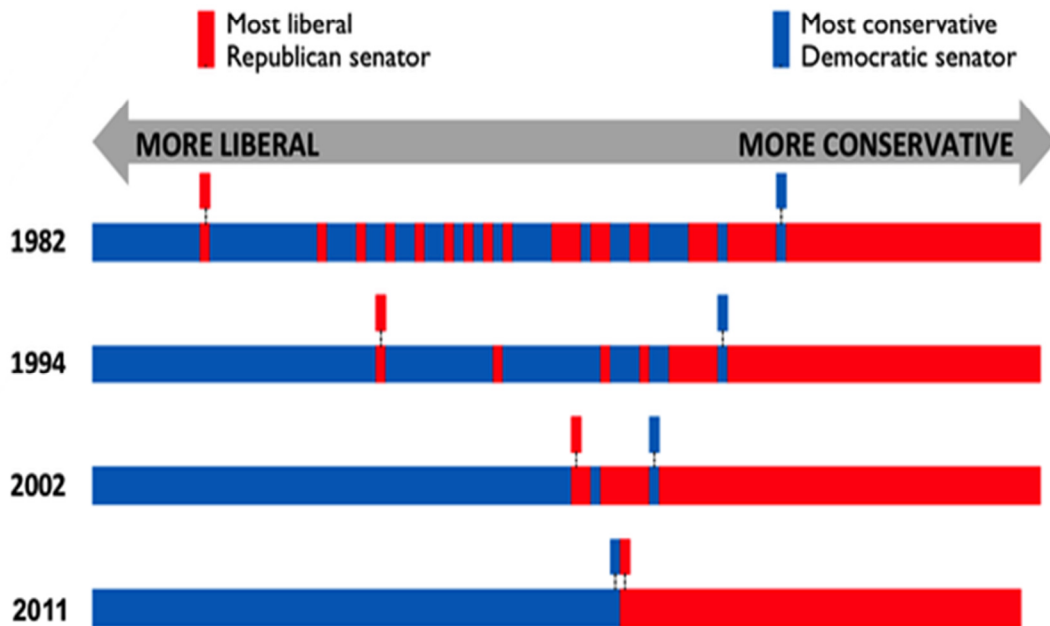
MPE Unfortunately we will have to create a set of operating tenets for TNET fund distribution. Unless those mandates are satisfied, the states may not be eligible for TNET funding. It may be necessary to revisit centralized versus decentralized operations when it is a matter of curriculum and standards. A teacher with a PhD in Chemistry in a high school classroom does not need line item standards. The teacher needs a framework. The sum of squares of the adjacent sides is equal to the square of the hypotenuse. Neither the US nor any other super power can change Pythagoras' Theorem. How and when it is taught cannot be pin-pointed by any state dogma. A framework should suffice to outline age appropriate goals and allow content rich teachers sufficient liberties to lead a path of their choice toward attaining that goal. It may seem that I am planning to reinvent the wheel but I am not. I will also look closely at your "Race to the Top" program and the requirements the states had to meet. Neither TNET nor any state or local government can micro-manage the daily minutiae in classrooms. Attempts to manage teachers spawns bureaucracies as a means for job preservation for administrators and their political cartel of cronies.

- HBO Please do not under-estimate or over-simplify the quagmire of public education or the black magic power of these political cartel of cronies.
- MPE I admit it is and will continue to be a challenge of mythical proportions. I'll seek guidance and wisdom at every step but it may be difficult to stop me.
- HBO Let me change gears and discuss the other two issues, healthcare and energy, which galvanized the nation when you first ran for the US Senate from California. We were flabbergasted when you opened the teaching hospital near Kabul in the Tangi Valley, Maidan Wardak Province of Afghanistan. You stunned the world with the outcome. You catalyzed the impossible. Your efforts lead to a slow but gradual elimination of sectarian violence in that dangerous area of the world. What drove you to undertake such an ultra-risky endeavor? How did you foresee success? How did you find partners? Above all, what is behind the healthcare success in the hospitals you started in Oakland (California), El Paso (Texas), Buffalo (New York) and Tupelo (Mississippi)? You may have chosen these cities to increase your national visibility but none can dispute the good you have done in these places with an abundance of patients from very low income households.
- MPE Thank you for your kind words, Mr President. You have asked quite a few questions and I will try to answer them as best as I can. The trinity of issues that constitutes the thrust of my platform is health, education and energy. But they all are balanced on the head of a pivotal guiding light, the mantra of dignity. Compassion as an element of human dignity underlies our rationale for the initial medical outreach in Tangi Valley. Similar teaching hospitals are now in the Helmand Province in Afghanistan as well as Karachi in Pakistan, Mogadishu in Somalia, Huancavalica in Peru and Juba in Sudan.
- For our discussion, we need to separate the health related humanitarian and foreign relations/peace projects abroad versus the healthcare operation in various parts of the US. I will answer your last question, first. In 2010, The Commonwealth Fund compared us with our friends and US ranked last in quality of healthcare and first in per capita expenditure. In 2020, per capita healthcare expenditure is projected around \$15,000 which approaches \$5 trillion or 20% of GDP.
- We cannot let that happen and must change course. It will annihilate our economy. About 40 million Americans (based on tax returns) earn less than \$15,000 (adjusted gross income).

Your efforts, Mr President and that of President Clinton have been analyzed in details by Paul Starr and Paul Krugman. To prevent screening individuals with prior condition (by insurance companies) you inserted the mandate for every citizen to possess healthcare insurance. This individual mandate was too tempting for Justices Roberts, Thomas, Scalia, Alito and Kennedy to give up but Obamacare prevailed. I did not have a voice at that time and incessant paper plans only collects dust. Therefore, we discussed the issues central to healthcare and decided to demonstrate our healthcare approach.

The healthcare industry in the US was driven by profit, which is a rational practice unless it foments human suffering. Business was the driving force as early as 1945 when President Harry Truman proposed a universal health insurance program to be run at the federal level but the AMA killed the plan. Prior to your Affordable Care Act, you probably know it better than anybody else how the US Congress was held hostage by the powerful healthcare lobby. Representative John Boehner (R-OH) and other House Republicans bullied the Chamber of Commerce to withdraw its support for President Clinton's healthcare plan and forced them to join the opposition. The diminishing ideological overlap over time leading to partisanship is a terrible waste.

National Journal Vote Ratings in the Senate 1982 – 2011



According to AHA (aha.org) about 10% of the population may be receiving some form of healthcare at any time. The per capita expense is an average (\$7,290 in 2007) but in reality we spend far more per patient. According to AHRQ, the top 1% consumed more than 20% of the expenses while the top 5% of the population accounted for 50% of healthcare funds in 2008 & 2009.

Healthcare businesses and their insurance allies continue their collusion to viciously oppose universal health care in order to improve their profitability and shareholder value at the detriment of human values. Each operational echelon is an independent profit center, not a service for healthcare or humanity. The industry uses a host of vendors who must also profit from every sale at every stage of this colossal process.

I found it irrational, based on my business background, to approach healthcare in a piecemeal fashion. The essence of healthcare is a convergence of diverse services which must act in a continuum to restore health of patients or provide primary or preventative care. If there are 100 patients in a hospital in need of an injection around 6pm, we cannot round them up in stalls and press a button for a robotic arm in every stall to inject the patient. We are not milking cows. Healthcare service cannot extrapolate the business principles of efficiency, load balancing, operations management, supply chain optimization and risk pooling to drive down total cost of ownership, decrease cost of goods sold, compress time to market and perform regression analysis to find the best fit. It is a blasphemy to treat all of healthcare as a business. The business principle which applies to healthcare was used by Henry Ford when manufacturing Model T. It is virtual integration. For healthcare, we may refer to it as virtually integrated healthcare services or VIHS.

It is well nigh impossible for every echelon and vendor in the healthcare system to be an independent profit center because the cumulative result is an abnormally inflated cost of healthcare. The solution, according to VIHS, is to operate a system where almost all the components are produced in-house and cost of services have boundaries. I refer you to *Paradigms Driven by Paradoxes*. We have tried to reduce the profit-taking component from every step. We may generate even more savings from VIHS with economies of scale.

VIHS operation has acquired medical supplies and equipment companies which supplies bandages, syringes, x-ray equipment, hospital beds. We have negotiated and partnered with companies producing equipments (MRI, CT, PET), monitoring systems and surgical tools. We use generic drugs and limit

the amount of designer pharmaceuticals. Our doctors, nurses, technicians and administrators are paid for decent living without extravagance. In an end-to-end effort we are attempting to integrate the entire value chain but it is incomplete because we cannot integrate breakthroughs or innovations that may happen elsewhere. If profit taking must happen, we have negotiated limits. We try, every day, to practice healthcare as a noble humanitarian service in the true spirit of the Hippocratic Oath.

HBO In the four US operations your cost of service is similar to average per capita expenditure. If the capital expenses are amortized over the lifecycle of the operation and outlier pharmaceutical costs for isolated cases are eliminated then your average cost per patient is less than half the per capita amount.

MPE One reason why I mentioned that we can further reduce our cost with economies of scale. In a virtually integrated scenario the cost of sourcing decreases per unit when the volume of unit increases. It may cost \$5 to produce our own syringe for the few hospitals we have at present but that cost will diminish to 50 cents if we increase the volume of syringes produced due to increase in demand from our end-to-end integrated system. It is true that capital expenses will be required upfront in order to mobilize virtual integration and implement VIHS.

HBO In essence, you are replicating the British NHS but with a mix of virtually integrated manufacturing to control cost. Critics will point out that the government is getting into the business of manufacturing.

MPE We must have a sustainable and feasible healthcare system. If the free market cannot restrain their zeal for unethical profit then the People must step forward. Millions are losing their health and fortune while a few people are allowed to reap unchained profits and make a killing from manufacturing health related products.

HBO To transform your small scale demonstration of the success of VIHS to face the complexity and reality at the national level in the form of a national health service you will have to face an uphill and ugly fight with deep pockets in the healthcare industry. You will be pulling out the rug of profit from under their feet if you push for equity and improve the quality of healthcare in the US at a cost which may not bankrupt our treasury. Your current operation is local. The people you are treating in your four US hospitals cannot move to another city and access the same care because you have only

four locations. To increase your footprint you need a national model and national payment system with a far greater human capital investment. Your task is not only to foresee but to enable your vision by setting it to practice.

MPE Progressive health tax is one option. Health tax entitles access to VIHS facilities. It will cover all individuals including the military from the cradle to the grave. The bureaucracies of Veterans Administration, Medicare, Medicaid may be eliminated. But, I may not to repeat your well-intentioned mistake and mandate the health tax. It is easy to predict that 97% of Americans who reported less than \$200,000 as their adjusted gross income (AGI, 2009) are likely to sign-up to pay the health tax for lifelong VIHS services. We will crunch the numbers to determine the stair-stepped health tax rate.

HBO Those who make above \$1 million can certainly opt out of national health plan and buy private insurance for treatment in private hospitals. Your plan enables healthcare industry to exist for the well-to-do, too. Please give me an idea of your health tax design.

MPE The industry may prefer to opt out of the business for the poor. Individuals who may choose private health coverage also owns half of the national wealth. The national health tax scheme will attempt to adjust for number of children and dependents. Health tax starts at AGI above \$30,000 pa. Above that level but under \$100,000 the household may pay 10% for every \$1,000 in AGI with a cap at 20% for health tax.

HBO If we use per capita income of \$31,000 for Mississippi then your proposed health tax rate of 10% equals \$3,100 per annum. A person making \$200,000 pays 20% or \$40,000 in health tax. On top of this another 10-20% more for other federal, state and local taxes.

MPE Critics will complain that the fortunate are bailing out the financially less fortunate. We will seek parity and equity but I will not try to please every group. My aim is to uphold health as a human right for our citizens at an affordable cost. VIHS may not provide drugs which may cost \$70,000 per patient per month unless the value or quality of life improvement outweighs the cost. We expect to collect more than \$1 trillion in health tax. Expenditure must be controlled in order to maintain it under \$4,000 per capita, just like our friends in Canada, UK, Netherlands, Germany and Australia.

Cosmetic lipo-suction may not be available but prevention of obesity will be a priority for primary care. Remote monitoring for signs of diabetes and diabetics will be a part of predictive healthcare technologies, such as pay-per-pee. VIHS may monitor patients at homes/offices to reduce emergencies or the need to be hospitalized or post-op re-admissions because reduction in hospital bed occupancy dramatically reduces healthcare cost.

HBO We have had all these healthcare information technologies and intelligent predictive software systems but mass implementation remained ineffective due to security issues and fear of health insurance exclusion arising from diagnosis of potential problems. We have attempted to eliminate the pre-existing condition clause to help alleviate some of the problems.

MPE We cannot stand with our feet on two boats at the same time. Security of biomedical information cannot be compromised under any circumstances but the fear of occasional lapse should not debilitate progress in the same manner that automobiles and death due to auto accidents are facts of life.

In the VIHS model there is less fear because the national health plan is independent of private insurance. Hence, exclusion is not an option. In prior cases, the client had to buy private insurance even if it was through a group. If health is a human right then we must agree to treat it as a human right and not as a business where the only goal is profit and more profit. The nature of profit from healthcare must be ethical and pre-fixed. But, it may not be zero.

HBO Your critics will be vociferous in their opposition and point out that your insistence on ethical profitability will stifle innovation. Inventors or innovators may not be financially rewarded at the expected levels if their inventions must conform to an altruistic fixed-profit modus operandi. There will be less incentive to pursue ground breaking ideas or less corporate investment to undertake research which may have high risk of failure. If VIHS restricts the use of high cost drugs, the pharmaceutical industry lobby will suffocate your efforts. If you restrict the salary of doctors, the AMA will poison your proposal. How do you expect to survive the next 4 years in office with such self-annihilating proposals?

MPE We started the framework of VIHS hospitals even before I ran for the Senate from California. Through the years we have demonstrated that VIHS is an affordable square peg in a round hole for most of our citizens if deployed as a national health plan. There isn't any perfect solution for all Americans but

VIHS is likely to be a working solution for 97% of our population. It offers peace of mind for anything related to health, in general. The trajectory of healthcare cost is unsustainable and we must deal with the hemorrhaging system to prevent its eventual demise.

Lack of bipartisanship and special interest financing has derailed us from achieving national health coverage because our leaders had to balance principles versus re-election. I have suggested to you Mr President that I am the President of the United States with a mission, to take this nation to a place of dignified prosperity based on the trinity of education, health and energy. Unless I am impeached, I have 4 years and the ears of the nation. I will fight the fight to do what is right. I must dare to move forward with the proposal and admit errors but get back on the correct path to help people.

2009 Returns	Adjusted Gross Income	Assume AGI	Health 10%	Health 20%	Other FSL Taxes 15%+	Health Tax in US\$
140,494,127	All returns					
2,511,925	No adjusted gross income					
10,447,635	\$1 < \$5,000					
12,220,335	\$5,000 < \$10,000					
12,444,512	\$10,000 < \$15,000					
11,400,228	\$15,000 < \$20,000					
10,033,887	\$20,000 < \$25,000					
8,662,392	\$25,000 < \$30,000					
14,371,647	\$30,000 < \$40,000	\$35,000	\$3,500			50,300,764,500
10,796,412	\$40,000 < \$50,000	\$45,000	\$4,500			48,583,854,000
18,694,893	\$50,000 < \$75,000	\$57,500	\$5,750			107,495,634,750
11,463,725	\$75,000 < \$100,000	\$87,500	\$8,750			100,307,593,750
13,522,048	\$100,000 < \$200,000	\$150,000		\$30,000		405,661,440,000
3,195,039	\$200,000 < \$500,000	\$350,000		\$70,000		228,652,730,000
492,568	\$500,000 < \$1,000,000	\$750,000		\$150,000		73,885,200,000
108,096	\$1,000,000 < \$1,500,000	\$1,250,000		\$250,000		27,024,000,000
44,273	\$1,500,000 < \$2,000,000	\$1,750,000		\$350,000		15,495,550,000
61,918	\$2,000,000 < \$5,000,000	\$3,500,000		\$700,000		43,342,600,000
14,322	\$5,000,000 < \$10,000,000	\$7,500,000		\$1,500,000		21,483,000,000
8,274	\$10,000,000 or more	\$20,000,000		\$4,000,000		33,096,000,000

Based on 2009 returns,, the yield from a 10-20% health tax structure is projected in excess of \$1 trillion. It provides for national healthcare plan if costs are under \$4,000 per capita. Earnings below \$30,000 (AGI) are not taxed. All other taxes are additional.

\$1,155,328,367,000

\$3,851.10 per capita

- HBO What if you lose The White House in the process?
- MPE The allure of The White House pales by comparison to the blessing from the single mother whose son can receive the treatment for leukemia and she may not be broke or homeless for the rest of her life. Dignity is my inner driver. If the occupant of The White House cannot fight to provide dignity then the occupancy of the The Oval Office is without a purpose, in my opinion. This is what I have communicated to the people. The people have chosen to give me an opportunity to pursue purpose with dignity. I have chosen to pursue this Office without the shackles of greed for a 2nd term in power. I aim to speak and listen to the people. I will introduce near-real time direct communication with citizens as a means to hold referendums. My good friends at Akamai can implement software as a service (SaaS) tools for mobile eVote using new internet protocols (IPv6) which enables unique identification of voters and fraud-free voter input. I can feel the pulse of the nation using mobile eVote.
- HBO Your lack of fear will sow seeds of fear in those who may resist you. It is true the trajectory of healthcare spending must be controlled to save our nation.
- MPE I want to do the best job to lift as many boats as possible. Healthcare excesses are a major concern. But, to know what is right and not to do it for political gain is the worst form of cowardice. If I take the easy path it will lead to the hard life for the next generation. I will take the hard path which may lead to a better life for our children. The health tax must pay for a national health plan. Affordable healthcare must cost < \$4,000 pp. Healthcare expenses cannot siphon away national economic gains and the expense cannot be a burden on businesses to make us less competitive. The long term solution may include creating a national endowment for healthcare as a national security measure.
- HBO Now I better understand VIHS as a demonstration model for the national health plan in the US but why did you create the teaching hospitals abroad?
- MPE Teaching hospitals abroad are based on a different humanitarian paradigm. You already noted that these hospitals had a favorable impact on reducing sectarian violence. If you probe further you will uncover that these hospitals also reduced the number of kidnappings and beheadings of US citizens.
- Tangi Valley and Helmand Province in Afghanistan was a source of military casualties and IED threat to allies in the peace keeping mission. Abduction of US personnel from Karachi, Pakistan and Mogadishu, Somalia were common.

It is painful for me to observe that we, as a Nation, are viewed with such disdain by the very people we have helped to earn their democracy. It is not in my nature simply to pontificate and create policies. I like to find solutions and then demonstrate a solution which may positively influence the negative situation. The hospitals in the most dangerous places in the world were inspired by a little known fact which transpired more than half a century ago. These events surrounding Mother Teresa took place in the 1950's in Calcutta.

In 1947, after establishing Missionaries of Charity in Calcutta, the first "home" established by Mother Teresa was for the dying people in the streets of Calcutta. In 1952 she set up this home in the vicinity of a sacred Hindu Temple. Her Christian missionary effort soon became the target of religious violence. She was stoned by the priests in the Hindu Temple of Goddess Kali. She continued her work amidst the violence and one day picked up a dying man, who happened to be a priest from the Temple. The man was abandoned by other priests because he had tuberculosis (TB). Mother Teresa nursed the priest back to health and the priest returned to the Temple. The priests in the Temple were planning to burn down the home for the dying. They chose the priest who was healed by Mother Teresa to go inside the home and commit the arson. The priest not only saved Mother Teresa and the home from arson, he informed the local people and brought an end to the ill-treatment the community showered on Mother Teresa. The home still stands today, it is called "Nirmal Kunj" or peaceful home. It cares for the dying and destitute to draw their last breath in peace, with dignity.

HBO I didn't know this story. It is now clear to me why you did, what you did, where you did it and why you were confident of the outcome.

MPE Our mission to create teaching hospitals draws from the vision based on the lesson from Mother Teresa's beginnings. The teaching hospitals are an investment. I am fortunate to have good friends who were instrumental in securing the financial endowment we needed for a long-term plan. We were fortunate to partner with UCSF, Lucile Packard Children's Hospital, Kaiser, Massachusetts General Hospital, University of Pennsylvania Health System, Médecins Sans Frontières, Bernard Lown's ProCor and Prince's Trust in UK.

We think that the world class doctors and nurses who deliver healthcare services at these hospitals serves as ambassadors for our nation and the West, in general. If you or your daughter or son was saved by an American doctor or surgeon, it is unlikely that you will assist in arson or assassination

or destroy American property or abduction of American personnel. Mother Teresa showed us the way and I implemented her lesson. It is that simple. Our hospitals also teach medicine and nursing in order to create local cadre of healthcare professionals.

We use the “my teacher is an app” system to deliver basic education in collaboration with The Khan Academy and run the equivalent of a K-12 system in collaboration with virtual schools under the University of Cambridge Local Online Examinations Syndicate facilitated by The Duke and Duchess of Cambridge. We are using Bernard Lown’s Satelife expertise at ProCor to create outreach and transmit medical data for analysis on bMDs (bio-medical decision systems) mobile platform which we created in collaboration with GE, Philips, Siemens, Toshiba and Hitachi. We are using remote monitoring tools for pre-natal care and monitoring the health of expectant mothers in far flung rural areas using wireless sensor networks uploading data through satellites in the geo-synchronous orbit. Doctors and nurses are pouring out of the woodwork to teach and serve in these teaching hospitals. We are indebted to NATO for security. In the past five years we have had only two skirmishes. The message of health and hope is reaching the hearts and minds of our adversaries. Personal vendetta between “us and them” is declining. It took time and money to get here. There is so much more that still remains to be done to chip away at the darkness, desolation and despair in order to build hope, sustain lives and create economic growth.

HBO It is a stunning development. You have demonstrated what healthcare can do for people mired in extreme poverty and surrounded by violence. A purpose which is positive and can be pro-actively implemented appears to be more effective than aid, diplomacy or negotiation. We have been looking at wrong places to build bridges.

MPE We have an embarrassment of riches in education and healthcare which we can share. We can use knowledge to grow our economy by creating eBooleans, the educated consumers. But you cannot start if creating a profitable business is the only goal. Hence, I wanted to experiment with adopting an altruistic academic platform to help improve the quality of life. In the next step we can help catalyze social entrepreneurship and then help to grow social businesses in quest of economic growth which may not be elusive if based on the foundation we have helped to create.

Vision takes time to unfold, it is a slow process but it is grounded, stable and a steady long-term approach to grow markets for our products and services by first helping to induce peace and then build the economy in places ravaged by disharmony. This is in the interest of our national security, economic future and to create markets for our goods and services.

HBO Security leads into foreign relations and you have an exceptional track record in this area through the infrastructure of *Salon Hypatia* and its activities.

MPE I have been fortunate. I am keen to pursue these tasks because I know I can draw support from people in US and abroad, if my intentions are dignified.

HBO How will you deal with nations which may not reflect your idea of human rights?

MPE It will be a learning process. Even though I prefer to abide by my standards, I know that I must listen to the will of the electorate. It is for this reason my real time communication channel with the people will be an important tool for me to act as their President. This is not an absolute statement. There will be instances when I will draw the line, decide what I think is the best and schedule the discussion, later.

HBO Reforming the unfair portrayal of women was your goal which started with *Mrs Dignity*. As the President you will have to deal with countries where women are second class citizens or forced to undergo FGM or they do not have equal rights or banned from driving cars. Will you visit these countries and engage in dialogue or close our embassies? What if they slam you about our ERA debacle since 1923?

MPE A century later ERA needs a review and perhaps re-ignition. However, a State visit to a country which is explicitly hostile to women requires reflection. I have a problem when a country we call "friend" beheads women for alleged infidelity but on the other hand encourages men to 'own' multiple partners. I find it infuriating when we fail to speak out when we see military police kicking and beating unarmed women. I will be tough in dealing with these issues. I may offer them a period to arrive at an acceptable standard of access to justice, equity and dignity.

I don't think you can forget the fate of Fakhra Yunus, who suffered years of abuse in the hands of her husband and then the husband poured acid over

her face when she was sleeping. Her husband Bilal Khar was a Member of the Parliament and the son of Mustafa Khar, the Governor of Punjab. Pakistan's Foreign Minister Hina Rabbani Khar is a cousin of the Governor. Bilal Khar was not prosecuted and insists he is not guilty. Have we done anything to bring justice to Fakhra or condemn the vicious collusion? Everything that is faced will not change, but nothing will change unless it is faced. We did not face this issue as a human rights issue in manner we should have, as a nation.



Fakhra Yunus



Fakhra Yunus prior to her suicide on March 17, 2012

HBO If you think these nations will reform laws governing equal rights for women, you may find that your term is over yet they may not live up to your request.

MPE If they continue their oppression of women we may take measures. It is difficult to predict what we can do because a part of the culture believes that Westerners criticize what they do not understand. Guardianship of women is a foreign concept to you and me but polls suggest that women do approve of male guardians in certain Islamic nations. Who am I to deprive them of their right to choose their guardian?

In 2007, in the name of namus or honor killing, a young woman was murdered by her father for chatting with a man on Facebook in an Islamic nation. A similar event was reported by the press in Rajasthan, India. I would love to rush in and help foster justice for these remediable injustices, to quote from *An Idea of Justice* by Amartya Sen. But, I must act as the President of the people. I cannot push my own agenda. I must listen to the people and allow the global social entropy to find or re-establish its equilibrium. I can speak out, I can raise awareness and I can engage the world to open their eyes to these injustices but I, alone, cannot do the job.

HBO You may be heading toward a show-down in the Mid-East with these ideas.

MPE That may be the conventional wisdom. Between the Bush and the Obama administrations we have spent nearly \$5 trillion for oil wars in the mid-east according to one report from Brown University. Just a fifth of that could have endowed TNET. But where are we with respect to the oil and future of energy? At \$50 per barrel of crude oil we could have bought 100 billion barrels of oil. The reserve in Iraq is estimated to be just above 100 billion barrels. Saudi Arabian reserves are estimated at less than 300 billion barrels. US interest in the oil reserves resulted in hemorrhaging \$5 trillion and thousands of lives. Oil-dependent foreign relations and upholding human rights in oil producing nations were treated as separate issues.

When sweat shops were uncovered in Thailand or Philippines we took up arms against Nike or Reebok but when an oil producing nation flogs a woman we choose not to interfere with their sovereignty. Did we express our disdain when orthodox Jews spat on a school girl in Israel because of the type of clothes she was wearing? What did we do when Nina Siahkali Moradi, a graduate student of architecture who received 10,000 votes in city council elections in Qazvin (100 miles northwest of Tehran, Iran) was disqualified from serving on the city council because she was too pretty?

HBO Taken together, you are accusing the US of human rights hypocrisy?

MPE I am not accusing the US. I am accusing the leadership in Washington DC of inaction and selective myopia when determining or reacting to what constitutes violation of human rights. I don't want to maintain the *status quo*.

HBO You risk our energy security. Or, does this segue to your energy policy?

MPE Oil wars have inextricably linked human rights with energy. If we wish to believe in equal rights for women and human rights then we cannot dignify our interaction with nations that do not recognize these fundamental edicts. Holding our head high about human rights, hence, is also an issue of energy independence. To be accurate, it is about cessation of liquid or gaseous fossil fuel imports. US must stop importing petroleum from the mid-east and find alternative affordable energy for domestic consumption and global markets.

HBO Fossil fuel independence was one of your key issues during the Senate race. You proposed micro-manufacturing carbon-neutral renewable bio-butanol.

MPE It was more than a campaign driver, Mr President. It is a part of who I am with respect to bio-inspired liquid fuel solutions. Soon after my move to San Francisco, I wanted to delve into the details of photosynthesis because plants can accomplish what humans cannot. Plants can capture and transform solar energy into chemical bond enthalpy which we can then use as our primary source. The physical chemistry and biology of photosynthesis is at the heart of this endeavor. I was fortunate to find Professor Kris Niyogi at UC Berkeley who was kind enough to pay attention to my enthusiasm and enabled me to join his ongoing research in photosynthesis which holds the potential to transform the energy debate, engineer plants which are adaptable to different environments and help increase global food production.

Based on these knowledge pillars that I started building when I was 19, we were able to foresee the need to invest in creating new devices suitable for manufacturing liquid fuel in the form of renewable photosynthetic butanol. Our production volume is still small but it helps billions. Example is not the main thing in influencing others, it is the only thing. We had the vision, the art of seeing things invisible. Small volume of butanol helps many families now while industrial scientists continue to improve efficiency and yield.

HBO You created a stir that involved John Doerr, Vinod Khosla and Bill Gates. Apparently you did something that made your friends grumble. I remember UCLA, UC Berkeley, UC Davis, Harvard and MIT involved with this butanol endeavor. But your micro-scale devices are all over the world. Is that our hypothetical road to energy nirvana?

MPE Nirvana is utopia and nothing in energy is a panacea. Renewable bio-butanol and bio-glucose holds promise on many accounts but it is not the only solution. It is one tool in our tool-kit which also includes manufacturing energy from nuclear fission and fusion.

HBO That is a naïve statement Madame President. I know you were born after the events in Three Mile Island (1979) and Chernobyl (1986) but Fukushima (2011) was a monumental event during your teenage years. Your simplistic statement on nuclear technology may sound too hollow to global citizens.

MPE It will sound as hollow or obtuse if I made this statement to a patient in my neurology out patient clinic – I think that regenerative stem cell therapy aimed at the substantia nigra may reduce the involuntary motor neuron activity in your digitus minimus tertius and the pollex.

HBO

What?

MPE

Precisely, Mr President. You are discombobulated by my statement. If you are not trained in neurology or the symptoms of Parkinson's disease or the patho-physiology of the neural nuclei in the brain implicated in this disease, then a muffled "what" is all one can expect. The march of unreason has sufficiently taken advantage of the scientific illiteracy of the people to deliver carefully crafted misinformation by pseudo-scientists in collaboration with massive doses of political hypocrisy piled high with garbage disguised as facts to obliterate the distinction between the events that transpired in Three Mile Island (1979) and Chernobyl (1986) vs the accident in Fukushima (2011). You were not born during World War I or World War II but will I assume that you know nothing of its history?

If accidents should terminate operations then why does Union Carbide continue to proudly exist within the banner of Dow Chemicals since 2011? It is as if the 1984 incident in Bhopal which killed 8,000 people and injured 200,000 more never happened. Accidental release of methyl isocyanate (MIC) gas asphyxiated individuals as they struggled for air, vomiting violently and their eyes burning. The released gas (MIC) was breaking the walls of the lungs causing people to ooze white foam from their mouth causing many to drown in their own bodily fluids. Deaths were also due to circulatory collapse and pulmonary edema. Autopsies revealed the changes to the lungs, cerebral edema, tubular necrosis of kidneys, fatty degeneration of the liver and necrotising enteritis. Stillbirth rate increased by 300% and neonatal mortality rate increased by 200%. This massive devastation could not stop the entente between Union Carbide and Dow in 2011.

The progress in safety of nuclear reactors, safe handling of nuclear materials and the phenomenal strides made by ITER based on the Tokamak (TFTR) seems to escape from public knowledge. Reports about the 28th March 1979 meltdown at Three Mile Island, Pennsylvania, clearly upholds the triumph of US safety standards and the protection the public can expect when safety is implemented by the contractors. Not one living being was hurt or injured by the event on Three Mile Island. After a quarter century of epidemiological studies we have not yet succeeded in linking a single instance of cancer with the accident. We know that the tragedy and mayhem in Chernobyl was man-made due to lack of safety. Chernobyl could have been contained if the contractors were held to the US standards.

If we want to talk about Fukushima in the same breath then we should sue the construction contractors and the City and County of San Francisco for the San Francisco – Oakland Bay Bridge collapse when the upper deck on the eastern cantilever side fell onto the deck below due to the 6.9 magnitude Loma Prieta earthquake which struck the Bay Area in 1989 when the third game of the 1989 World Series baseball championship was about to begin.

Scientific illiteracy due to lack of rigor in mathematics and science education is not restricted to those people demonizing nuclear energy. What about the morally bankrupt people who poured venom over the Golden Rice? *Oryza sativa* rice was genetically engineering to biosynthesize beta-carotene, a precursor of vitamin A, necessary for children to fully develop their eye sight. It was a humanitarian tool to be grown and consumed in areas with a shortage of dietary vitamin A in the food supply chain. Vitamin A deficiency leads to pathologic dryness of the conjunctiva and cornea. The conjunctiva becomes dry, thick and wrinkled. If untreated, it can lead to corneal ulceration and ultimately to blindness as a result of corneal damage. Xerophthalmia from hypovitaminosis A is specifically due to lack of the hormone-like vitamin A metabolite retinoic acid (along with certain other growth-stunting effects). The condition was shown to be reversed with dietary vitamin A. This breakthrough was published in *Science* in 2000. It was the product of an 8-year project by Ingo Potrykus of ETH and Peter Beyer of the University of Freiburg. Golden rice, if consumed, could have saved an estimated 670,000 children, under 5, each year, mostly in sub-Saharan Africa.

The blood of these children are on the hands of the environmental and anti-globalization activists who poisoned the world against bio-engineering. If the public wishes to have a dialogue, I welcome the dialogue based on hard facts.

Please take a look at your eyes in the mirror and then these eyes. Golden Rice could have saved these eyes and prevented these lives from abject morbidity.



- HBO Clearly I have spoken out of turn and revealed my ignorance on so many levels. Let us get back to less resource-intensive sustainable energy. I guess that bio-inspired energy will continue to be one of your priority targets.
- MPE Half century ago we knew that algae and bacteria could manufacture butanol and glucose from carbon dioxide and water using sunlight or solar energy as the primary energy source. Konrad Bloch at Harvard pioneered some of the initial research in microbial metabolic biochemistry during the early 1960's. Several academic institutions are continuing that line of research which we refer to as metabolic engineering. A few labs created microorganisms which were invested in for-profit energy start-up. The thrust of these collaborations and companies (Joule or Algenol or Gevo) were to maximize the yield of liquid fuel from these microbes. It is one rational approach. We offered a different perspective. Think about energy for limited energy users. We argue in our science fictional approach that micro-scale production may offer sufficient energy resources for 80% of the world not in the US or EU.
- HBO Macro-scale manufacturing is a volume issue. You didn't want to wait for them to create large volumes because you believe small volumes can provide sufficient energy for consumers with smaller appetites.
- MPE Imagine you want a drink of water. You ask me for a drink and I tell you that I am filling the tank of water. It holds 10,000 gallons and it will take some more time. After I fill the huge tank I will give you a glass of water. My assistant Cindy listens to the conversation and takes a small bottle to the water source and fills it with water. Cindy gives you the bottle of water. Your thirst is quenched and you feel good. You did not need the huge tank of water. A small volume was sufficient for you and you paid a small amount.
- This is exactly what we did. We requested institutions to help build a micro-scale photo-bio-reactor manufacturing device to produce 1-2 gallons of photo-synthetic bio-butanol per day (photo bio-reactors require sunlight). This very low volume (VLV) renewable photo-bio butanol production when converted to electricity by an off-the-shelf electric generator could serve the daily need for households in more than 160 countries which houses 80% of the 7+ billion population. We thought that James Liao at UCLA may help us. We hoped the Tata Center at the MIT Energy Initiative will be excited to support this effort but neither Charlie Fine nor Sanjay Sarma could be reached. But rejection is not a nail on my coffin. We pushed forward.

We requested the Harvard folks at the Wyss Institute to help build a device using cyano-bacteria to produce renewable glucose as a photosynthetic product. Because photo-bio butanol required sunlight, it may be difficult to produce butanol in countries with low or little sunlight (countries with low insolation). If we produced glucose from cyanobacteria then glucose can be used as the primary energy source and bacteria can convert glucose to butanol without the need for sunlight. Use of non-vegetative glucose as an ingredient in the energy supply chain makes butanol a global solution, that is, butanol production may be agnostic of sunlight. Glucose is a non-flammable, non-toxic material which can be transported. If Africa made photo-synthetic glucose it could be a cash crop. The world can make butanol from glucose. Hence, we ushered in the vision of a new age, an energy agnostic global economy (eAGE) which can reclaim our freedom from the grips of OPEC.

HBO Photo-synthetic glucose from bacteria eliminates the food versus fuel debate. We no longer have to use corn or sugarcane as a source for liquid fuel. Stored glucose provides energy security and independence from petroleum. What about yield?

MPE Nothing will ever be attempted, if all possible objections must be first overcome. We know the yield of glucose is low and the efficiency of butanol extraction is not great. However, very low volume micro-scale photo-bio butanol manufacturing devices are now in place, they are working and they have re-shaped the economy of sub-Saharan Africa. Arid regions in India no longer suffer without electricity and vast areas of South America are butanol farms or cooperatives which pool their micro-scale volumes to supply utility producers to generate renewable electricity.

HBO Essentially the need for petroleum may meet an asymptotic death. You have pulled the plug from the mid-east oil economy. Will the mid-east survive?

MPE I am not going to worry about that immediately, Mr President, but I will tell you that the mid-east needs water to survive. Water is the next oil and we have the tools and the knowledge to grow new lines of profitable businesses.

HBO Import fresh water from Canada and export water-tankers to mid-east?

MPE That is not a bad idea but it may not be energy efficient. My idea focuses on desalination. Licensing desalination technology will help people.

HBO Desalination on a global scale may affect marine resources and irreversibly damage our ecology. Shouldn't we prioritize water-use efficiency? Why promote 'more water to meet higher needs' because we have the technology?

MPE Pundits proclaim that the only way to grow out of a recession is invention, innovation and investment. Then, why is this drive to conserve commodities yet the burning desire to create a more developed world? What if I rationed your data plan and set you back with a modem? Conservation of resources is a very important goal and reducing use of natural resources must be taken seriously but not at the expense of growth. Instead of buying what is under the land in various African nations in order to provide the raw materials to build infrastructure, why don't we explore hair-thin columns of nanotubes or graphene to serve as the future of infrastructure for our buildings, bridges and boulevards. Building sustainable housing with non-earth materials (less resource intensive) can revolutionize the Habitat for Humanity. We have an estimated 1.4 billion cubic kilometers of water on planet earth. Therefore, think about 1.4×10^{18} cubic meters of water in our world compared to global consumption of 6.4×10^{10} cubic meters of fresh water per annum. I think we can desalinate for our growing need and still have sufficient time to explore alternatives and pursue water-use innovations to prevent ecological damage.

HBO You have demonstrated mastery of key solutions for healthcare, energy and education. How did you connect all these things to pursue solutions which converges multiple science and engineering disciplines?

MPE I wanted to help people, I wanted to change the world. I found loyal advisors who were dedicated. I had education and fortune on my side. I had enough to eat. I didn't mind taking the road not taken. But, the fact that I was not risk averse was perhaps the most important reason why we succeeded in transforming some of the vision into reality. My group of friends are smarter than me, they are in high places, they supported me, helped me with PR and a genuine camaraderie has ensued to use our global visibility for world peace.

Salon Hypatia may have seemed over the top but we knew we were in pursuit of purpose. It was not a "royalty" show. It was publicity for world peace. We succeeded in convincing people the good we can achieve. People realized that we were a global force for good. Running for the US Senate and my role in the UN was quite obvious. The run for The White House was fueled by our success in education, healthcare and energy. I have something tangible to offer. My focus is to strengthen the US economy and help others. I

have requested Elizabeth Warren to explore the TNET approach in order to plan for a national endowment for healthcare (NEH).

HBO You ran a different campaign. I want to know your thoughts behind it. Please tell me about the Potluck Primaries and Hot Dog Fund Raisers.

MPE It has been suggested that nearly 60% of Americans are likely to spend at least one year below the poverty line at some point between ages 25 and 75. I view this statement in parallel with the projected spending by Presidential candidates in 2012 which eclipsed an astounding \$8 billion. Presidential Primaries are supposed to reflect the will of the people through the Electoral College. Jane and John rarely show up at these Conventions. So I decided to take the Primary to Sue and Sam. We organized potluck dinners in homes across America, in neighborhood community halls, project housing and rural places off the beaten track. I am a vegetarian. It doesn't cost much to make me a plate of stir-fried vegetables. I wanted to eat their home-cooked flavors. I wanted to hear stories of their trials and tribulations. I wanted to let them know that I have walked "*with Kings---nor lose the common touch.*"

HBO Your photographs with the royals and the one where you are sitting on the floor with a child in your lap in an adobe hut in New Mexico is the new *If*.

MPE That is the message. It is unplugged, unspun and unfiltered. I am no stranger to affluence but I measure wealth by kindness, tenderness and dignity. If you count wealth by purchasing power parity then you can buy goods, surround yourself with luxury and may never cease to want even more, by comparison. Money can buy you food but not appetite. Perceive wealth by the hand that you hold, the heart that you touch or the arms that embrace you, then, you shall find peace and happiness, gratitude and cheer, warmth and dignity. A leader must raise the moral imperative. We cannot be a retail nation. I am not a preacher but I am an advocate of decent living and higher thinking which includes, among other things, equal respect for women and their rights.

HBO Each week you have delivered that message from your TV talk show where strong women representing success, ambition and dignity also talk about their lives, failures and vulnerabilities.

MPE After my son was born, I received baby blue T shirts with 'Future President' printed on the back. My first born didn't receive Think President - Think Progressive. My daughter only received Think Pink. Unfair? Unjust? Unusual?

HBO Inequity is somehow in the blood and gut of our civilization. We wrestle with it in our conscience. We hope that those who were treated unequally may learn not to treat others and perpetrate the vicious cycle. But it is rarely true.

I was gobsmacked when I found some letters which revealed that among emancipated slaves, the equity of women and the rights of women to earn as equals were certainly not on the table. You would think that those who earned their freedom from slavery may know better about the need for equity. I share with you what I found in Letters of Note.

In August 1865, Colonel P.H. Anderson of Big Spring, Tennessee, wrote to his former slave, Jourdon Anderson. He requested that Jourdon come back to work on his farm. Jourdon, since being emancipated, had moved to Ohio, found paid work and was supporting his family. Jourdon's response is spectacular in its analysis and a vivid example of inequity.

We have concluded to test your sincerity by asking you to send us our wages for the time we served you. This will make us forget and forgive old scores, and rely on your justice and friendship in the future. I served you faithfully for thirty-two years, and Mandy twenty years. At twenty-five dollars a month for me, and two dollars a week for Mandy, our earnings would amount to eleven thousand six hundred and eighty dollars.

MPE Point well-made and the reason why we need to address the issue of equity in every frame. Equality of aspiration has been bludgeoned by the media to the extent that ESPN has a drop-down menu item "dislike female commentators" on its website. These issues are brainwashed in such an intense manner that even I instinctively chose a lamb for Rose's costume but a lion for Alexander for their school show.

In 2011, I wrote to Katherine Green, SVP at CNN and then to Susan Grant, EVP at CNN, to consider starting a show which may mimic Charlie Rose on PBS. But the discussion around the table will be hosted by school students, girls and boys. They will ask the questions and the respondents will be scientists, business heads, thought leaders and occasional Hollywood-Bollywood folks. Neither Green nor Grant replied. In 2012, I took matters in my own hands. I called on Oprah Winfrey and Jane Fonda to deal with the broadcast media logistics to enable me to start the talk show you just mentioned, *In Praise of Imperfection*. We named the show to honor Rita Levi

Montalchini, the Italian neurobiologist who was awarded the Nobel Prize in 1986 for her discovery of nerve growth factor (NGF).

HBO Using secondary or middle schools as live broadcast platforms turned heads.

MPE If heads turn, often the mind follows. Instead of the sterility of the TV studio, I wanted the girls and boys from every walk of life to feel a measure of involvement with these great minds or interesting personalities. You could feel the excitement in some of these school children when they were engaging face to face with Françoise Barré-Sinoussi or Herta Müller or Aung San Suu Kyi or Ada Yonath or Toni Morrison or Elinor Ostrom. The local community was electrified because the children were from neighborhood homes. These were fire-side chats, unscripted, unedited. To hear about the personal failures from the lips of successful people makes you realize that the struggle is mortal, you begin to understand that these individuals attained what they did due to their diligence, values, priorities, propriety, ambition, aspiration, inspiration and ethics.

HBO You suggest we re-visit, evaluate and reflect on the quality of our values or what constitutes wealth, life, liberty and the pursuit of happiness.

MPE If owning a Lexus makes one ecstatic over driving a Ford Focus then happiness may indeed need re-evaluation. I cannot thrust my point of view on the nation but I can urge them to find that balance, respect, dignity. Our TV show was not a call to resist consumerism but an exploration of a higher plane to uncover the meaning of prosperity. We cannot give unless we have enough but it is important to recognize that we make a living by what we earn but we make a life by what we give.

HBO But that didn't stop you from \$5,000 to \$50,000 per person fund raisers. You wish to indoctrinate the nation to find reasonable restraint yet you continued the age old fund raising dinners. Michelle and I paid \$100,000 to get into one of your dinners where all we got was a Costco hot-dog and drinks which we had to buy for \$1.49 plus tax, serve ourselves and carry the used items back to the collection point.

MPE Change may not be abrupt Mr President and I am guilty as charged. Without your help and of many others we would not have the resources to run the campaign. If the good I intend to do is buried then what did I accomplish? It is for this reason I had to raise money and the dinners were one mechanism.

But you most certainly observed the change. Didn't you? There were no lobster dinners or steaks. We contracted Costco to *sell* hot dogs and the veggie burger with rice pudding in plastic cups. We changed the style but we couldn't eliminate campaign funding.

It is somewhat similar to what I have heard from some of my closest advisors who are still with me and have worked for me for decades. They work for me because they believe in me, in my message, in my pursuit of ideas, in my determination to make this world a better place. I have paid them quite well and they have asked to be paid well because they must take care of their families. If they are worrying about the needs of their families they cannot give their professional lives to me 24-7-365. But, without fail, each of them one has told me over and over again that they will work for me without a penny if they had the resources which could support a decent standard of living for their families. I know they are speaking the absolute truth.

Campaign funding and expensive dinners which excluded 99% of the Americans were a thorn in my side and have bothered my conscience to no end. I reached Above and sought guidance. When I was embroiled in a mental wrestling match over the *modus operandi*, I thought I received a response from Above. It was delivered in flesh and blood through a saying attributed to Mother Teresa's version of a parable. It says, "God is no man's daily drudge, no maids either. If you are worthy of it, She will snatch you from the jaws of death and stand you on your own two feet. Once you are on your feet, you must fight with all your might and all your craft because She has to be fair to your enemy, too."

I have had no moral dilemmas since then over \$50,000 dinner guests in order to run the Campaign. It was not creating my wealth. My opponents are doing the same or even more. I have promised that I will not use one iota of negative messaging or tactics which lack dignity but I must fight the fight with the resources I need to get my message across. Hence, you paid \$100,000 for the hot dog dinners, Mr President.

HBO You did the right thing, Madame President. People respect you for your depth and convictions. When 1 child dies every 5 seconds due to hunger related causes and a billion people go hungry each day, it is not necessary to serve foie gras or caviar.

MPE Do you know the menu for the Presidential Inauguration later tonight?

- HBO Yes, it is remarkable. There are 117 heads of State in attendance and you are serving sandwiches and coffee. No drinks or hors d'œuvres.
- MPE There will be no excesses in this White House. We don't need parties to prove we are in power. We need progress and that will only happen through perseverance, persistence and purpose. My first joint State dinner with our neighbors Canada and Mexico is next week and we have splurged a little. The menu consists of vegetarian hot dogs as well as Apple Pie and coffee or tea.
- The White House of my Presidency shall be defined by a *home* for simple living. I will invite the world to visit. They will experience our warmth, enjoy our company and they will find themselves replete with hot dogs and Apple Pie. To indulge in their caviar dreams they can always call on Mr Putin.
- HBO Is it true that you had your Vice-President selected when you were a Senator? My friend from Massachusetts mentioned he found great reasons to believe in you.
- MPE I requested the UT Austin Dean of Law to help me. Governor Patrick may assist Sheila Bair and Carol Greider who may co-chair TNET. Mary Schapiro may help us reduce financial waste. I expect Dr J Larry Jameson to lead HHS.
- HBO *Religious Freedom and the Constitution* is your VP's academic perspective. Did that clash with your views or the electorate in certain segments?
- MPE My views were widely known. If you have DNA in a test tube is that life? We have had DNA in a test tube since 1869-1870 when Friedrich Miescher isolated nuclein. Have we succeeded in creating life by organizing parts of the cell or the intracellular organelles? Unless the organization of cells and organs reaches a certain stage there is no life except its potential. Stem cells have potential but its use does not kill "people" and to abort a fetus is a woman's right. If we fail to educate the woman how to exercise that right then it is the failure of the social fabric. The proponents and opponents of abortion can have their say but the final analysis is the woman's decision. The Constitution must support her to exercise her right. I abhor burning of the flag but I shall fight to defend the Constitutional right of that individual who may burn the flag unless it harms or sends a message of hate to others.
- HBO You are very clear in your mind on these issues, so are you in favor of evolution or creationism and God in our schools?

MPE Evolution is based on scientific observations and research. If you pool the key facets of evolution can you trace the beginning of life? Perhaps. Evolution is not an alternative. It is the science of life. The question may be asked whether Evolution negates belief in God. It does not. Ask my friend Charlie Townes. God must not be an icon of faith spawned by fear. God-fearing should be an oxymoronic term. God is an adventure of the spirit. Practice of faith must not hurt, rebuke or belittle any human being, nation or religion. I see God in love, charity and kindness. I see God in nature, people and actions. I find God in selflessness, humility and dedication.

In the movie *Rab Ne Bana Di Jodi* there is a song about seeing God. The main male character is singing about seeing God in the main female character. If you observe the scenes that keep changing during the song you shall see that the couple enters and exits through different Houses of Gods. They enter a Temple but exit from a Synagogue. They enter a Mosque but exit through a Church. In my view, God, or whatever you wish to call it, is One entity. It is at the center of our inner world. The space of God can be reached through many doors but each door may have a different sign. It may say Jain, Protestant, Catholic, Baptist, Muslim, Hindu or Buddhist. It is your preference which door(s) you wish to choose but we may arrive at the same space. It does not conflict with science or the science of evolution. I think what Einstein wrote in his letter to philosopher Eric Gutkind on 3rd January 1954 summarizes the essence of what may be said about science and religion. *Science without religion is lame and religion without science is blind.*

These values are not going to take roots overnight or due to one President. I have a set of values and the people may wish to know about it. The election of a President must be driven by tangibles and the economy may be the last word. It is futile to use the pulpit to institute values and ideals if the tapestry of basic living is falling apart or unpaid bills are piling up or it is difficult to put enough food on the table.

HBO There are no textbook cases in your campaign. Your values are lofty, dignified, yet simple for people to grasp and relate to in their own lives, through their personal actions and beliefs. But instead of delivering sermons you actually evangelize about the catalysts for economic growth. Your domestic agenda is balanced with great foreign relations. That is why people respond. You are not talking about tweaking policies but actually showing them tangible examples of what you can accomplish at home and abroad. You did not stop at lessons in ethics. You are demonstrating how distributed

energy in every garage like distributed computing in every pocket can change billions of lives. You have achieved all of this with no drama, great compassion, grace and dignity. You drive your vision and policies using science to benefit society. Few can claim such a logical scientific approach. Yet you show great humility, caring and thoughtfulness. How did you banish arrogance and invite balance to handle the analytical and emotional?

MPE

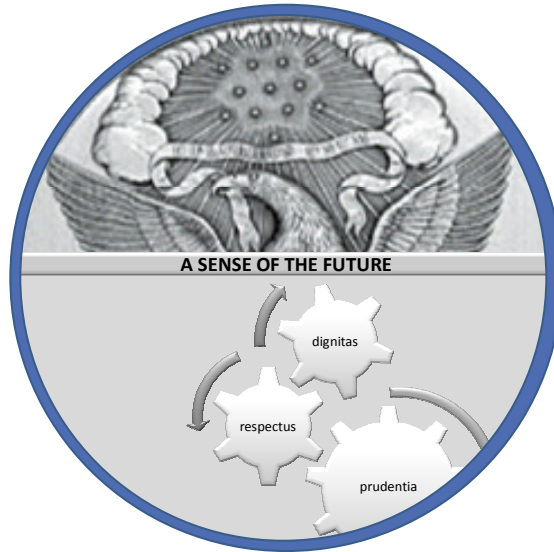
By focusing on an aphorism attributed to Claude Bernard, a 19th century physiologist. *Science increases our power in proportion as it lowers our pride.*

I try to remember we are dealing with people even if the opponents are malicious. I attempt to focus on pragmatic domains and dissect the problems in an analytical manner. Disequilibrium is an anathema to progress. Claude Bernard coined the term *milieu intérieur* which is referred to as homeostasis. Maintaining homeostasis may be similar to maintaining *status quo*, which is also an anathema to progress. Unless we disrupt *status quo* we may not induce change but prior to the process of disruption we must have a plan how to restore equilibrium or homeostasis. Entropy cannot run wild. But entropy never returns to the same level. The new equilibrium or homeostasis will settle at a different level, on a different playing field. Hence, if we decide to disrupt then there must be an exit strategy to restore a higher level of accomplishment, achievement or administration. Thus, we engage in strategic discussions, we decide steps to create solutions or demonstrate what we believe can be implemented for greater good. Hand waving does not impress people nor can I build an elephant using the mouse as a model. Through all these steps scattered over multiple dimensions, I strive to maintain dignity in whatever we pursue or whoever we may upset in the process. My approach to problem solving is to discuss, decide and demonstrate but without negative tactics or sacrificing dignity.

HBO

You have inspired me, the young and the old. Your advisors represent a rare congregation of talent. I knew Elinor Ostrom. I know Laura Tyson, Katharine Abraham, Elizabeth Warren, Mary Schapiro and Janet Yellen are your friends. Inspired by you, your mission and the company you keep, a blogger quoted GBS to describe her uplifting experience while working for your A SENSE OF THE FUTURE Foundation: *This is the true joy in life, the being used for a purpose you consider a mighty one, the being a force of nature rather than a feverish, selfish clod of ailments and grievances complaining that the world will not devote itself to making you happy.* Incorporating a part of the Presidential

Seal in the logo of your Foundation was the message, loud and clear, for those who had the foresight or *prudentia* to understand your role in the future.



A Sense of the Future Foundation incorporates the Masi Treaty Seal of 1825.

MPE We used the resources at the Foundation to show that we can help improve global public goods. My inclination to lead the nation was embedded in the logo but we worked to earn the credibility, eligibility and dignity one must possess to serve this nation in its highest office. I worked for the people, for decades, to be worthy.

HBO I hesitate to broach this topic but it is in the front and center of your role in this Office. Your views on military and defense are central to your leadership. You have received NSA briefings over the past few months and Secretary Rice is your good friend but what is your view of the transformation of our military? Are we still going to fight wars for peace?

MPE My answer to the Tolstoy-esque timbre of your question may be found in the words of the great author. *A man is like a fraction whose numerator is what he is and whose denominator is what he thinks of himself. The larger the denominator, the smaller the fraction.*

I have no credentials to claim that I can offer an answer to such a profound question. In my limited view, the threat or potential for war should pave the way for peace. Whether we will continue to fight wars only to seek peace is a

conundrum as old as civilization itself. I do not think I am equipped to answer this question.

With respect to my view on the ongoing challenges of transformation of our military, it needs no overemphasis to recognize that national or global defense and the nature of maintaining security is vastly different post 9/11. Secretary Rice as well as Secretary Powell and Secretary Panetta often share their wisdom with me. General Kern was an early transformation leader in the US Army. I benefit from his knowledge of the field and advice from Paula Thornhill, former Dean of The War College. We are less likely to be in direct conflict with States with defined armies. In general, the State may be less important than the individual. At one point in the summer of 2011, the US Treasury had less money than Mr Steve Jobs and Apple. Warren Buffet or Bill Gates could swing any financial pendulum far rapidly than any country in the EU or the US. George Soros played money games with currency exchange to destabilize Malaysia, the country. Hence, increasingly, our conflict and battle is with individuals or with entities driven by a single individual or ideas marketed or manufactured by a group or label. The State function is almost negligible in defining the opponent and the affiliation of the opponent.

Transformation of the military is essential because we must be nimble enough to respond to multiple threats or theaters, in parallel, without undue lag or delay in deployment. The attacks are likely to be sporadic, supposed to unleash the surprise factor and designed to inflict or optimize psychological trauma over and above financial destabilization, death and destruction. The insurgents and disenfranchised parties escape scrutiny by operating within the shadow of daily routines by slyly embedding their nefarious activities in the social fabric of their targets.

How do we identify these individuals and/or monitor their activities? Part of the answer lies in the old world concept of espionage by human agents to be the eyes and ears on the ground. The collection of data and information is central to pattern recognition. Any breach of a “normal” pattern may serve as a clue, trigger or signal. The future of local and global security depends to a large extent on this data and the non-obvious relationship analyses (NORA) between data streams from diverse areas or domains, for example, social chatter and financial transactions or ATM withdrawals versus purchases or car/van rentals.

- HBO You will evoke the ire of the peace-loving public if data collection is a veneer for perforating the right to privacy in order to justify your global scavenger hunt. Snowden made us look foolish, incompetent and naked.
- MPE It was, it is and it will remain a highly debated issue. I don't think I have a solution. Did you? Data collection in high risk environments is one way to secure the peace loving public from brewing threats. The process of data collection by human agents and/or technical devices makes it possible to disrupt potential plots. I remain cognizant about the ongoing debate but I am concerned about the fate of the human agents in this service. We must use precision tools and technologies to serve as the eyes and ears on the ground to have an "always on" option without risking the lives of our human agents.
- HBO You are referring to Smart Dust type of programs pioneered by DARPA.
- MPE They have become smarter and intelligent enough to reduce false-positives. Reducing the face to face human contact is essential both in espionage and in combat situations. Torture or loss of human lives impact our hearts and colors our mind. We must review our analytical resolve which was designed, in the first place, according to the Powell Doctrine of "overwhelming" force. To reduce human engagement, we often re-visit the scope of action and create a less "overwhelming" strategy which defies the purpose by enabling the enemy combatants to escape, re-group and retaliate. We create this vicious cycle of half-baked half-hearted half-measures which may not even work half of the time. We are loathed by a segment of the world because we are afraid to take decisive action to break the cycle. The fear of retribution from segments of the electorate is equally chilling. Our "superpower" status festers in the quagmire of indecision and impotence. Our enemies are empowered by our weakness and strikes back with impunity.
- HBO The situation may be analogous to the reason why a dose of antibiotics must be taken in its entirety rather than stopping after a few tablets once the symptoms or the sore throat appears to get better. Let me assume that we use tools to acquire voice, video, data for intelligent analyses to identify potential problems. But how do you eliminate the need for human elements in face to face engagement once we have identified likely targets or plots? If you use humans then you risk casualties. The latter limits what you can continue due to public outcry over their loved ones returning in body-bags.

MPE I do not know of any definitive substitute for human engagement. But, I foresee investment in mass production of intelligent, collapsible, adaptable anthropomorphic robots as a partial substitute for direct combat.

Cynthia Breazeal at MIT has created robots which may be adapted for our military. The robot-army may be tuned to a limited number of “intelligent” field responses (to reduce cost) or it can be “fed” with responses in real-time from human-aided remote operations running intelligent analytics based on real-time data from the point of action. The remote server-operator can work from relative safety but can “see” and “hear” through the robot engaged at the point of action. The form factor of this robot requires camouflage or other effects where the collapsible nature may be useful. For example, what if the robot looked like a large egg? It may “break” its shell and the “collapsible” robot unfolds to “beam up” as a humanoid or a Trojan Horse or a dog.

For the target, the confrontation may be overwhelming by introducing an element of surprise. A modular robot simplifies logistics and engineering change management. The external form of the robot may be adapted and printed on-site using 3D printing. We ship 3D printers, material and robot-on-a-chip rather than shipping fully assembled robots. Variant configuration management enables dynamic adaptation of camouflage in the context of the landscape or terrain.

HBO We invested in The Institute for Soldier Nanotechnologies at MIT to monitor the health of humans with wearable and implantable devices. Your robot army makes it inconsequential to produce that shirt which can monitor your blood pressure or blood oxygen level. How do we salvage this investment?

MPE The robot army reduces military casualties and collateral damage, hopefully. The investment for wearable and implantable devices which can upload medical data or monitor patients is extremely useful to the world, for example, the use of iWashlet from ToTo which was acquired by Global Engineering. How do we reduce healthcare cost? Ubiquitous remote monitoring is one answer. The tools from MIT may be the ammunition we need to restrain the cost demon lurking in our healthcare operations. Pervasive diffusion and rapid adoption of remote monitoring for healthcare and preventative medicine is not a matter of if or when but how soon.

HBO Remote monitoring is critical for healthcare but the barriers to implementing and integrating with healthcare information technology are not trivial. If only the top 1% or 10% can use them then the masses are out in the cold.

MPE I am not prepared to create yet another chasm. If we leave out the masses then what does it say about my integrity? What does it say about our national ethos? How we treat the masses or the less fortunate is a key performance indicator of the quality of our future. I am reminded of the incisive foresight and pathos in a foreboding quote from William Blake's *Auguries of Innocence*.

*A dog starved at his master's gate
Predicts the ruin of the state*

We must find ways to use wireless sensor based healthcare monitoring technologies for the greater good. Our four VIHS hospitals have deployed pervasive wireless sensor networks to acquire real-time data sense and response. More people are embracing the wireless monitoring benefits of wearable sensors. My Dad wears a pulse oximeter which is a sensor designed to detect blood oxygen levels and estimate arterial partial pressure of oxygen. This wearable sensor is essential to monitoring the state of his COPD (chronic obstructive pulmonary disease). Messages are sent to his iPhone which enables him to take preventive measures at home and stay out of the hospital. The latter reduces cost for hospitals and improves the patient's quality of life. We continue to demonstrate how to reduce cost yet improve quality of service (QoS) for healthcare.

HBO Indeed, Madame President. You have showed the world by example what a true leader can achieve, at home and abroad. You have made it seem simple and effortless, too. I think your focus on people, in particular, implementing the tangible elements in their daily lives is what differentiates your strategic platform from others. You developed strategic intervention organizations not only to successfully address education, health, environment, energy but you used the platform and the media spotlight on you to extract the best from people all around the globe.

MPE Without the tangible changes all that is left is talk. I am guilty as the next person because I talk about my vision, ideas and values. But, if my plans and proposals cannot help put food on the table or improve the quality of life then I have exercised my constitutional right to freedom of speech but neglected the responsibility that accompanies that lofty ideal. Neither woman

nor man can live by dignity alone. If they are starved of food and basic public goods then no amount of self-respect will catapult them to economically productive citizens. If my actions cannot help economic growth then I have not made the case strong enough to ask the public to vote for me, my strategies and my Presidency.

HBO Your accomplishment in transforming some of your ideas to reality, albeit on a small scale, is what differentiates your policies and your politics.

MPE My critics are vociferous about the scalability of my projects which I created as operational models with the resources at my disposal. We have to find ways to replicate the projects once I am at the helm of the nation. To remove a mountain one must begin by carrying away the small stones.

HBO You did the right thing to start small locally and then globally, to sow the seeds of success and help people light up with a smile.

MPE Thank you. If you explore the number of projects we started you will see that it was quite a few in different dimensions. We couldn't put all our eggs in one basket. It stretched our resources and we were constantly in search of funding from private donors. But, all projects were driven by my desire to create what matters, offer tangible value to society and catalyze economic independence of women. I used the familiar mantra of Dr Yunus which he practiced in the form of micro-credit but the loans were made only to women through the Grameen Bank.

HBO It takes us back full circle to where we started this conversation. Education of a woman may change the destiny of a nation and the freedom to develop.

MPE That is the point of my origin. *Mrs Dignity* is about social propriety. But the young girls (and women in general) need much more than decorum to lead productive lives in order to become contributors to our economic growth. Education, health, energy and the environment are inextricably woven into the fabric of our lives. The women we have featured are no exception. If I wish to claim myself to be a force for change then I cannot remain oblivious of the "whole" human being. I must address the factors which will help these women in their pursuit of happiness. These women have children and as a woman I know that my family comes first, which includes the male members. Hence, I started the journey with *Mrs Dignity* to highlight the need for change but I cannot stop at *Mrs Dignity*.

I cannot preach the gospel of dignity and consider my activism to be successful. If I stop at raising awareness then I have delivered a great message but it is hanging out there to dry as it dangles above a table devoid of food, it curls up in a house without a hearth and stares upon a staircase laden with laments as it descends to the abyss of hopelessness.

HBO It is truly awe-inspiring that you are able to span vast horizons in your global vision yet distil the ideas to find pragmatic solutions which have helped individuals and families build better lives.

MPE I faced an uphill battle when I started to address the “whole” human being. Nothing of value has ever been achieved without heartache and sacrifice. I knew that friends and colleagues pegged me in categories but I am far more than those labels. Hence, I diversified to address the “whole” human being. We wanted to bring to life some of the ideas from welfare economics outlined in *Development as Freedom* by Amartya Sen.

HBO You pushed yourself out of your domain, your comfort zone and stepped beyond your circle to assume the responsibility of leadership. You created *Jennifer Lynn Seamstress* to highlight the plight of women and children.

MPE *Jennifer Lynn Seamstress* was a tool which I was fortunate to implement and push forward with the help of my friends in the film industry. It was an instrument to highlight the women and children who labored or slaved for meager compensation. It was necessary to shine the light on dark corners.

HBO Michelle is a customer. Please share your story of *Jennifer Lynn Seamstress*.

MPE Red carpets and runways are designer showcases for the famous few. Celebrities advertise designer dresses which are then replicated and women flock to buy. I have participated in this process, too, to showcase Karen Caldwell, Emanuel Ungaro and others. In the spotlight of glamour, we ignore the countless seamstresses who work in the shadows. In addition, we have little knowledge of the masses involved in the garment industry in other countries where sweat shops use women and children as laborers. Using my so-called appearance as an edge, I wanted to celebrate the women whose unheard sighs fills the sound of darkness in designer dungeons.

We actively sought out seamstresses capable of distinctive creations. I must preface by mentioning that this was a difficult task because we were

selecting a few of the best. But, I had to start somewhere and this seemed to be an appropriate initiation. My mission was to make sure that the seamstresses in my company, *Jennifer Lynn Seamstress*, earned sufficient amount to have a decent life in the environment where they lived. If any children were involved, we made sure that they had access to sufficient resources. Of course, the seamstress earned recognition for her work, too.

The designs were generally reproduction of styles and fashions from all around the celebrity world but we used uncommon fabrics to differentiate our products. Silk and brocade was used extensively for high glam factor.

HBO But your seamstresses were not all from abroad.

MPE Of course not, Mr President. Charity begins at home. I cannot ignore the plight of those around me and rush to save others elsewhere in the world. Each life is worth the same but I must take care of the folks in my backyard. We have a large number of women in the Bay Area who are from Eastern Europe and the Soviet colonies from the days of USSR. These women and their children are US citizens. I know of instances where they are still oppressed. I have used *Jennifer Lynn Seamstress* to shine a light on domestic violence, abuse and women who face daily threats yet remain silent only to prevent being ostracized from their micro-communities. I was honored when Diane Patrick, the First Lady of Massachusetts, volunteered to liaise with my efforts and discuss on my platform her experiences living in an abusive first marriage for seven years before she married Governor Patrick Deval.

HBO *Jennifer Lynn Seamstress* is your for-profit business and you charge high prices for your products. Is the profit used to uplift these families and expand the reach of *Jennifer Lynn Seamstress* on the runways of the rich and famous?

MPE We charge our wealthy clients standard “high” price for our products and services. In addition, we actively solicit gratuity and always encourage a sizeable donation. The First Lady has helped our cause and the Duchess of Cambridge is a vocal patron. I urge celebrities to wear our dresses and draw attention to it on the Red Carpet.

HBO You call Kate Winslet or Piper Perabo and ask them to ditch Oscar de la Renta or YSL or Stella McCartney or Vera Wang in favor of your *Jennifer Lynn Seamstress* produced no-name copy of a previously seen dress off-the-rack.

- MPE Correct.
- HBO You must be on the “most wanted” hit list among big name designers!
- MPE You would think so but I can surprise you. Sarah Burton sent me an “unpublished” Alexander McQueen sketch as a gift. The designer had finished the sketch the day before he committed suicide in his London apartment in February 2010. I haven’t used it yet. Other designers including Ralph Lauren, Orla Kiely, Missoni and Rebecca Taylor volunteered their time and designs to help promote *Jennifer Lynn Seamstress*.
- HBO Designers should view you as “eating their lunch” but instead they are your comrades. The dignity of your efforts and your conviction to make a difference turns things around. Your self-less efforts have been greeted with cheer which defy the expectations based on conventional wisdom.
- MPE Call me unconventional. Let us turn convention on its head. Experiment.
- HBO You are unconventional indeed. On that note of being unconventional, I want to briefly return to your unconventional statement about not *running* for another term but being a President for the term you have been elected. You have a vision which will take time to deliver results. We need you for a second and a third term. I had a second term plan in front and center to continue the job which remained to be done.
- You seem to have a steely determination to get things done for the people of this nation irrespective of the political debris in Washington special interest circles. I applaud it but I am surprised by your candid admission about your potential one term Presidency. But, if the nation spoke to you directly through digital referendum and asks you for a second term, what would you do? Your powerful imagination must have created and cached a plan for that scenario. Would you share with us what you may have thought?
- MPE If I were to pursue a second term in this Office then it must offer far more lucrative opportunities to improve quality of life and options to re-shape the nature of camaraderie which is necessary but lacking in Washington DC. It is my plan to seek a Republican VP if I am inaugurated again as the President of the US in January 2045.
- HBO Republican Vice President with a Democratic President?

MPE Yes, Mr President. Republicans are good people. Consider Senator Olympia Snowe. Your role model was the first Republican President of our nation. They can be great leaders and statesmen. The strength in unity must be taken seriously. Can you ever stop wondering the depth of thought from Republican Abraham Lincoln when he used axioms from Euclid's Elements as his basis to argue the legitimacy of legal equality of blacks and whites?

HBO I cannot even conceive what the Republican VP may have to bear or suffer in the hands of the GOP. What a shocking plan!

MPE Washington DC views dignified bipartisanship as a plague. I wish to challenge the nation and the two parties to work together for the common good and unify behind grand pursuits. If I face the march of unreason then I see no value in the second term. If I have a second term in this Office then the march of reason must be in quest for greater economic growth. I do not expect to compromise or negotiate or broker any deals simply to occupy this prized real estate, albeit briefly.

Hence, the question of my second term is quite simple. If we can unify as a benevolent and prudent force multiplier, then I shall lead for another four years. If the nation wants me to stay for another term in The Oval Office, then the onus is partially on the nation to elect Governors, Congressmen and Senators who are credible people devoid of fanatic views or personal financial agendas who can work in relative harmony for national goodwill.

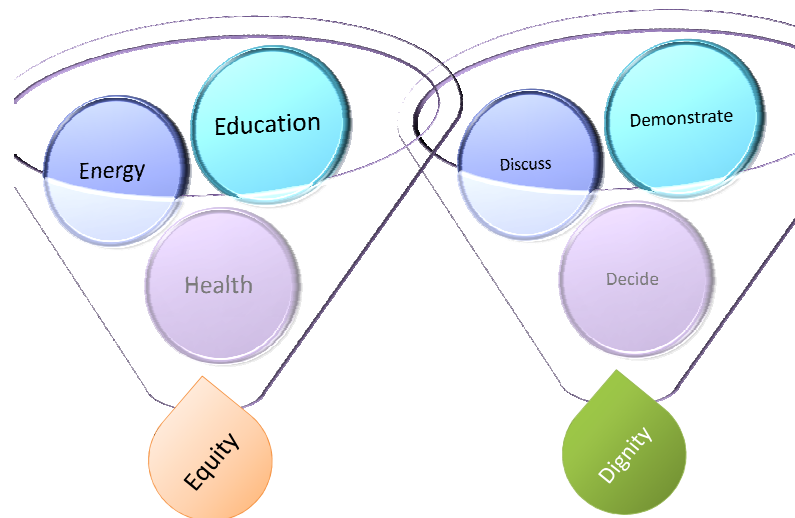
HBO That is a tall order for Washington DC politicians who thrive on polling data as drivers, focus group tested sound bites, apocalyptic sensationalism and the adrenaline from opposition. The lobby groups stoke the power struggle already underway in the Halls of Congress. Neither logic nor reason may be expected to survive in a drought of equity. Returning to what we have at hand, Madame President, do you plan to promote any key messages as the hallmark of your Presidency?

MPE I have a Venn diagram which illustrates the salient ideas and that is my message. The importance of catch-all sound bites cannot be denied but my messages must have substance in its foundation. If we pound in the message without delivering the beef then you can forecast the opposition strategy. They don't have to think hard or travel far. The opposition will purchase their anti-MPE mantra from Wendy's Inc. *Where's the beef?*

What works in my favor are the demonstration projects and the studies which show that they are making a difference, albeit in small segments. I hope to convince the nation to adapt and replicate part of these systems for nationwide deployment, gradually. I have invested decades creating the systems. I am speaking from experience rather than the rhetoric from campaign promises. But, it is one thing to drive changes based on assured capital support versus dealings with the US Congress where the volatile mood swings from one day to another can be quite polarizing. The success of my efforts hinges upon the ability to create the infrastructure, institutions and building stable organizations which can support programs after I leave The Oval Office. However, I also understand the potential importance of a long term message that needs to be out there and percolate through society to inform people. Some of the issues are important for our future as well as the future of those who are not yet born. I have toyed with some text but *dignity* and *equity* are two words I hope will survive the test of time and PR.

HBO

I suggest you also add the importance of global public goods which you have so successfully used to usher peace. You have demonstrated, first, before “talking” about your plans or using words. But, in this Office and in politics it is very difficult to abide by that principle because the electorate wants to hear about your plans, first, before they elect you. Evolving socio-political events shatter even the most well thought out plans and by the time you are just about ready to execute your campaign promises you find that the context has changed. Even more complex is planning for peace. You wonder who moves the goal posts?



- MPE Peace is a difficult target to claim, achieve and stabilize. It always seems ephemeral because somewhere some group has some other agenda which was left uncovered. I may not pursue peace *per se* but I shall aggressively create the infrastructure, tools and organization to transform to reality what we need to find peace or the peaceful state of mind. Nutritious food, clean water, clean air, access to education, jobs, access to healthcare and ground below the feet (when we are old or fragile) may help to promote peace.
- HBO Is it your plan to provide key elements of the infrastructure and facilitate the organic growth of peace?
- MPE Planning for peace is complex, as you pointed out, Mr President. Planning is a function of horizon and peace is a function of knowledge. The time horizon for any human being to gain education in order to acquire knowledge is quite lengthy even under optimal conditions. To attain peace one must address this long process. But the political reality of institutionalizing policies which demand continuity over the lifecycle of several administrations may be difficult. There is a Chinese proverb that says, *if you are planning for a year, sow rice seeds, if you are planning for a decade, plant trees, if you are planning for a lifetime, educate the people*. Planning for peace is a lifetime investment. I have and I will continue to pursue math education with great vigor. But peace is not about pockets of education, it is about global education.
- HBO The long view of education is not compatible with the fast pace of news cycles and short term bravado which is the expectation from the public. You are correct. Don't give up even if it looks like you are going to be alone on that long term road. I have heard from your circle of friends that you have planned your Presidential Library and it will operate a school on the premises as a part of your long term vision.
- MPE Yes. Peace is the end game and it may be a cliché but that is my goal. My life is about backward scheduling. If I want to reach my goal, the end game, then what should be the nature of the journey to reach my destination? Hence, there must be a life and pursuit of peace after my time in The White House. Thus, the legacy after the Presidency requires some thought. The Presidential Library is one stop, the next stop, on that journey after The Presidency. My Presidential Library will be a working library for the community. Education is central to peace hence my plans started by including a school on the ground floor of The Library.

HBO Again, it is an awe-inspiring grand vision. History may make future planning for peace synonymous with you. Your Library is set to occupy about 10 acres in San Francisco.

MPE I am grateful to the City of San Francisco for allowing me to use about 1% of the land area covered by the 1,000 acre Golden Gate Park. We hope to use the far end of the park with ocean frontage to provide easy access to the school in the Library.

HBO Is it true that the libraries may be a replica of the Colosseum?

MPE Guilty as charged, Mr President. However, there are some differences. I wish to replicate the structure of The Colosseum. In the center there will be a rotunda with steps leading to a band stand. But, instead of a solid round structure we will split it with a stream or a fish pond. The open band stand will also serve as a bridge. The band stand will have a dual sided garden bench in the center with a statue of two children sitting cuddled on the bench, facing the ocean and horizon.

HBO Children facing the horizon signifying the youth, a new world and the future.

MPE That is the idea.

HBO How tall is the Library? As tall as the real Colosseum in Rome?

MPE Yes. It is as high as an average 12 storey building with a height of 50 meters or 187 feet. We aim to reproduce the dimensions of the Colosseum. There is no need to re-invent what is already quite perfect. The Library will be inclined or stepped downwards toward the open air mall in the center which divides it into two halves. The elevation at the lowest end is 10% of its maximum height. It makes the rooms on the ground floor lovely and airy with ceiling height of 5 meters. The maximum length of each half is 615 feet and at its widest part it is 255 feet. The outer circumference of the oval measures 1,788 feet. Without the center divide the 2 halves, if combined, covers an area of about 6 acres, similar to The Colosseum. The viewing gallery on top of the structure (white ring in illustration) will join the halves and sit on the arched entry way on both ends of the mall which is 510 feet wide and 615 feet long to fit within the dimensions of semi-circular halves. Each entry way, on opposite sides of the central mall, will be distinct. I have thought about a carved wooden door with one half made from Burma Teak from Myanmar. The other half may be made from fallen wood which we may

find in the Redwood National Forest in Northern California. Sculptors from various countries can each carve a segment of their choice.



HBO The ground floor will serve as the location for a K-12 school.

MPE The ground floor is symbolic of foundation. The foundation of the future is about children and education. That is our road ahead on the journey to find peace. Hence, the school will be an extended middle school, grades 5 to 9.

HBO Why a middle school? Is it the idea that you must inspire early to aspire?

MPE Yes. It is the same core idea. If you recall, we created similar academies in our K-12 projects for Wallenberg HS, Jordan HS and East St Louis HS. I believe that middle school education of a child defines the fate of an adult. In these formative years the child shapes her outlook, develops preferences, creates criteria for what is good and bad, grows personalities and expresses aptitude or interests. Middle school may be the 'seat' where future sits and peace rests, perhaps, on a tripod. The legs symbolize past, present and progress (P•P•P). Each leg is connected with the other. Past, present and progress is inextricably linked with peace and a sense of the future.



HBO Does the hypothetical P•P•P framework relate to the academic content?

MPE Applying the P•P•P framework to the middle school curricular content is simple. Past signifies the content that the students must know as it exists, for example, how to find square roots or that water boils at 100° Celsius equivalent to 212° Fahrenheit. In other words, facts we need to know to form a foundation or acquire appreciation of history, for example, history of science and technology. People drool over Hedy Lamarr's 1933 Czech movie *Ecstasy* but few know about her invention of frequency hopping spread spectrum which protects radio communications from enemy snoops by switching frequencies. It is the basis of modern day Bluetooth and WiFi.

HBO I have only heard about Hedy Lamarr's scandal when she briefly appeared nude in the movie *Ecstasy* in 1933.

MPE Thank you for your honesty, Mr President. Do you now realize how women can be mis-represented and mis-labeled? This is why I had to create *Mrs Dignity* to help society look beyond the veneer of physical attributes, the ephemeral exterior and isolated events in a professional career which may not represent their reality. The on-screen performance of Hedy Lamarr in *Ecstasy* was just that, a paid acting performance. Period. It has no relevance to the real, brilliant and visionary mind which is the inventor Hedy Lamarr but hidden in the body of actress Hedy Lamarr.

The imagination of our society is so out of focus that it cannot see beyond the nudity in 1933. This is the *past*, the history of science, the vision of Hedy Lamarr that the children in the middle school may begin to appreciate and understand how telecommunications which we take for granted today may have its origins in the mechanics of the piano.

HBO Brilliant connections Madame President. But, aren't you forgetting a critical component necessary to transform the genius of your convergent thinking

into lesson plans, classroom activities and explorations suitable to be assimilated by the middle school children?

MPE Teachers. You are referring to teachers in the classroom who will be capable of disseminating these ideas and facts in a manner which will inspire and excite the students (whose attention span is about 15 minutes) to further explore and develop an affinity for learning as well as *how to* learn.

HBO The key is teachers who are educated to extract and deliver the joy of learning. We have just reiterated your emphasis on content qualification.

MPE That is where we started Mr President, the subject matter expertise that teachers must have. If we have teachers in the middle school with actual degrees in physics, chemistry and mathematics then we promote interdisciplinary planning for science and technology integrated with mathematics and reading. I would like the language arts teacher to teach English using the biographies of these great women and men of science. This is the rich *past* which is represented by one of the legs of my tripod.

HBO The *past* translates to basic mathematics, science, language and traditional curricular material but delivered in a manner which may be interdisciplinary. What does *present* deliver in the P•P•P framework?

MPE Aptitude. The tools of the *present* foster analysis, connectivity and convergence between topics and applications. Problem solving is a higher order skill which may unlock the aptitudes or talents latent in the children. Problem based learning (PBL) may be adapted to be a part of the *present* in a manner which drives students to enhance their analytical skills. The *present* should develop problem solving skills.

HBO PBL is an old idea. It was pioneered in the medical school program at McMaster University in Hamilton, Ontario, Canada in the late 1960's.

MPE It was also used in the New Pathway Curriculum at Harvard Medical School since the 1990's. The quality of execution of PBL approach depends on the strength of the scaffolding by the teacher or tutor. Content qualified teachers are essential to provide the necessary support required for analysis and stretching the student's understanding necessary in the "*present*" phase of the framework. It will be combined, hopefully, with an adequate amount of experimentation and field observations. We hope to request Bruce Alberts of

UCSF who founded the Science Education Partnership to help us install rigor in this phase of the P•P•P framework.

HBO Sounds quite Presidential but full of hot air for Joe Plumber who wants to acquire the trade skills essential in his profession. He may make more money than you and me. What is your option, strategy and cheerleading tactics for that part of society?

MPE Mr President you have been on this bandwagon and pushed for every child to go to college. Does Joe Plumber need to go to college and learn biology to be a skilled plumber? We have touched on this point before when you pointed out that the graduates from the East St Louis High School may be the skilled trades people we desperately need in the US.

I was uneasy about this option when we discussed it earlier and I will remain uncomfortable because my instinct says that all students should be college-bound. Many years ago Glenn Seaborg and I had a disagreement with David Baltimore on this very topic. At that time David Baltimore was the President of Cal Tech. He asked me why I was insisting and why it was necessary for everyone to take rigorous science and mathematics courses in the K-12 system to be scientists or molecular biologists.

I should apologize to him. Today, I confess, I find myself agreeing with him after my first hand experience in many classrooms and drop out prevention programs. Some of these students need different type of education to become skilled and lead productive lives with dignity.

HBO Differentiated education with a track for trade's school is a viable alternative.

MPE Politically it may be a risky gamble if securing votes is my only goal. But, I must help people find their economic freedom. We must vastly improve skills training options. Workforce development must start from high school, for example, Cisco Networking Academy, which started in 1996 at the Thurgood Marshall Academic High School in the Bay View - Hunter's Point area of San Francisco. Professional courses and AA degrees from two year community colleges should be bolstered to offer diplomas and certifications necessary for certain fields, for example, healthcare technicians, emergency medical services or building surveyors.

HBO

I see great benefit in gently altering the education debate, at least partially, from erudition and scholarship to aptitude. In your P•P•P framework allow the pursuit of aptitude to lead where it may - there is nothing wrong if the aptitude leads to elites who will go to Harvard or MIT versus the skilled who will repair cars and build buildings or install your HVAC. The end game should be about productive tax paying citizens who can lead healthy and happy lives. Because health and happiness is not confined to scientists and philosophers, I must agree with Professor David Baltimore. I, too, thought every student should be college-bound but I see that you are more pragmatic and you have extracted the wisdom from your experience.

Enabling students to pursue their aptitude will invariably require separate tracks at some point, preferably from their sophomore or junior year. This is where you will run into political mayhem because a sector of people will cry segregation, some will scream exclusionary, others will view this as squashing the dream and communities will transform this into a race issue for those who are not on the university-bound bandwagon.

MPE

You are absolutely correct. I expect the media to spin the reality of aptitude and scholastic meritocracy in a way that its flavor will turn rancid. Skills training will be a four-letter word. It will be used to paint a grim profile which then will be extrapolated to fuel the concept of segregation. Some folks will stoke passions that has divided this country, triggered assassinations and in some respects exemplified by a non-black male shooting to kill a black boy just because he seemed different or was wearing a hoodie. If these ills are allowed to gain momentum we know what may follow. I remember when the First Daughter was compared to a dog on TV and a law student was called a slut by a radio talk show host.

When will we realize that scientists in Stanford and Seoul cannot make this world a better place without the electricians and plumbers in England and Poland? Why is the profession of a nurse less dignified than a doctor? Why is a farmer less valued than a financial planner? Why do we fail to understand that dignity is a factor associated with each job which is well done? If the janitors in our hospitals did a less spectacular job then scores more people will die from post-surgical sepsis. I cannot fathom why we cannot find and ascribe the dignity which is due to each and every janitor. The dignity of the janitor or nanny is nothing less than my personal sense of dignity. If I have to put down somebody in order to feel better or higher, then, I am not worth the dust below their feet.

HBO Manya Sklodowska, at age 17, worked for five years as a governess (nanny) in Szczuki, a small Polish village, about 55 miles north of Warsaw. She earned 500 rubles a month. We know of her as Marie Curie, winner of two Nobel Prizes. I agree with you about the dignity of labor, any labor, but, do you think those talk show hosts will stop to churn out the disgusting yarn?

MPE The meaning and value of dignity in everyday life appears to be an alien concept to a few people in this country. I have a difficult task ahead when I think of the system which forces a student to take general biology which she will fail. Perhaps she wants to be a hair dresser. I don't agree with setting our sights low but I cannot force my views or aspirations on the masses. I pray she learns biology and perhaps gets excited about nursing school or even medical school but it is her life and she has the choice. It is my job to make sure she knows what the future holds, what is possible and what is on the horizon. We have to stop asking a child what do you want to be? The child does not know what exists! We have to turn conventional wisdom on its head. But, at the same time, we need hair dressers. Can you imagine Hollywood-Bollywood without hair dressers? Can you imagine the mortality rate in a hospital without janitors? Dignity of labor must be sacrosanct.

HBO Is that where *progress* fits in the middle school for your Library?

MPE Indeed *progress* is about the future, providing the children values, a sense of the future, the possibilities. In some cases, the knowledge of the teachers in the classroom will be the rate limiting step in this process. Teachers must be allowed to interact with higher education through summer institutes, research in universities, field explorations, academic travel and multi-cultural exposure. If we update the practical, intellectual and professional reach of the teachers then we can hope they will share their excitement in the class and sow the seeds of vision in our children.

Skills training will require tools, technicians and practical outlets for students to work as externs or interns. It will require a professional ecosystem which will guide the development of the child and empower the professional of the future.

HBO It is a grand and necessary idea. Your school will be college prep only?

MPE Differentiation at the level of the middle school may be premature. It is my hope that the school will be a college prep school irrespective whether the

college is 2-years or 4-years or a life-long learning endeavor. The bottom line is that the middle school should enable the mind to develop analytical tools.

HBO That is far easier said than done, Madame President. I once taught at a local college and in my zeal to sow the seeds of analytical thinking I went beyond the chug and plug dumbing down syllabus. Do you know what happened?

MPE What happened? Let me guess. You were ostracized by students, the department chair seized on an excuse to fire you and the Dean acquiesced.

HBO You hit the nail on its head. Students didn't want a higher level of challenge. The administration told me to dumb down the content, micro-managed the topics and denuded me of my academic freedom to teach an assigned class.

MPE Now imagine what could have happened if these students who know so little yet molly cuddled by the administration as "mature partners in education" actually had analytical capabilities. These students could have jumped to match your zeal and grasped the opportunity you were providing to rise above the common denominator of mediocrity. The behavior of these students could have been changed to keep pace with change if they had the confidence in their early education and if they realized that the pursuit of excellence was the sole driver and purveyor of civilization. I believe that student proficiency in music, language and mathematics in the middle school holds the key to the adaptability of individuals in our changing world.

HBO Is that why you taught middle school mathematics for several years?

MPE Yes, Mr President. I believe in middle school math. After I retire from the White House, I am going back to the classroom to teach mathematics in the middle school. But to start with, I was inspired by one of your good friends.

HBO Let me guess. Norm.

MPE The one and only Norman Augustine. I met Norm Augustine the first time at the White House event when he was awarded the Presidential Medal by President Clinton. We were chatting during dinner and he told me about teaching middle school mathematics in the inner city schools of Baltimore.

HBO That he could lead Lockheed Martin, teach engineering at Princeton and math in middle school is a mind bending cathartic trinity of grand unity.

- MPE He is the quintessential DFTBA. That is why I thought it was PR lunacy when he was quoted saying that teachers must teach to the test.
- HBO I know. He was the head of the competitiveness council I had appointed and then I see such a ludicrous quote from Norm. I guess his PR staff managed to bungle up. Anyway, we are all allowed a few mistakes. Aren't we?
- MPE I know I will make so many mistakes with the Library, when it takes shape.
- HBO What else have you planned for The Presidential Library?
- MPE The structure may have 5-6 floors. We have enough space to serve the usual function of a Presidential Library as well as a vast underground parking garage, performing arts center, screening rooms for feature films and documentaries, conference facility, wedding venue, studio space for artists and roof-top restaurants.
- HBO It will be a visitor attraction bustling with activity and a source of revenue.
- MPE We hope the real estate investment generates a return for the community.
- HBO In reality the Library looks more like a community center.
- MPE What good is a sterile collection of artifacts inside four walls?
- HBO This is going to be "living" Library which shares with the children and visitors your ethos, spirit and legacy, daily.
- MPE Legacy sounds like a prelude to mummification. I think of it as an educational institution which can support the growth of knowledge, invite global citizens, inculcate dignity and help in that long term planning for peace.
- HBO Your work in education and healthcare demonstrates that your plan to procure peace is rooted in extraordinary vision. You pushed the envelope right out to the edge with your post-secondary mathematics endeavor, the vastly successful and globally recognized Seuss-sonic "*Math, I Am*" program. Please share with us how you germinated the effort, especially because it is in contrast to the vision you project when you talk about TNET and the future potential of creating the Federal Education Reserve (FER).

- MPE *Math, I Am* is at a different point in the lifecycle defined by the cradle to the grave. Education strategy cannot be the same for toddlers, youngsters and adults. Consider Michelin. They produce tires for Vespa scooters and earth movers. Can Michelin use the same operations and supply chain strategy for these different products? Operations must be in tune with the product. If we have several products then it is likely we need corresponding management tools to suit the product.
- Math, I Am* is a MOOC driven experiment for mass production of analytical machines. The twist is that this machine is not an inanimate product from the assembly line. It is a product but in the context of an adult mind. In other words, *Math, I am* is a neuro-engineered mass production formula to create man-machines. Of course, the best man-machines are the woman-machines. In contrast, TNET and FER aim to uplift the entire ecosystem for school teachers who are essential as the medium of delivery of education to the untrained mind, the omnipotent child and the carefully orchestrated stroke on that virgin canvas of life still unmarked, untarnished and undifferentiated.
- HBO *Math, I Am* targets the post-secondary near-adults and adults, globally.
- MPE Near-adults and adults can benefit from online instruction and mathematics is easiest to deliver in the MOOC format. Hence, we created *Math, I Am* as the vehicle for global mass production and the SKU label is education. I wanted to shift the equation to favor the path to peace, global harmony and local camaraderie. I think, I believe and I know that an educated mind capable of analytical reasoning may serve as a voice of reason, offer balanced opinions, urge non-violent actions and catalyze economic growth. Philosophy, anthropology, art and literature are things I love dearly and these subjects can be delivered effectively online. However, the pragmatic workforce development attributes are disproportionately weighted toward math, if the online degree may serve as a tool or base for future earnings and prosperity.
- HBO Science can claim similar attributes.
- MPE Delivery of science via MOOCs requires virtual labs and simulation. These tools are too cherubic and still inadequate due to their cook-book approach. If a person is grounded in math, then that individual may find it far easier to move ahead in the sciences in a brick and mortar institution where you must put your bottom on a seat in order to earn a complete degree in science.

- HBO *Math, I Am* raises the receptivity index for the masses. Therefore, *Math, I Am* graduates may learn or grasp other advanced topics with reasonable ease.
- MPE That was and is my hypothesis when we approached some of the institutions with the *Math, I Am* business plan.
- HBO It was your idea but you co-opted a stellar team as founding members. Your price tag raised many eyebrows.
- MPE Teams are pivotal to move big ideas. I called Maria Klawe at Harvey Mudd. She is a visionary, she is on the Board of Microsoft and even Bloomberg recognizes her entrepreneurial zeal. I also knew that edx, coursera and udacity may reject the program because *Math, I Am* wanted to offer a college-comparable four year BS in math degree at a total cost of \$99 equivalent.
- HBO \$99 for a four year university level BS degree in math, locally and globally.
- MPE Everyday low pricing to raise the bar, high, way high.
- HBO The price tag itself may be the dominant incentive for the entire world to explore obtaining a BS in math from *Math, I Am*.
- MPE That is the idea. Start the analytical engines humming.
- HBO Your standard of math in this program is apparently very high.
- MPE The lessons from *Nation At Risk* were imprinted on my mind by Glenn Seaborg. What is the point of all this effort if we lack excellence?
- HBO I reviewed your correspondence and the variety of ideas you discussed with Glenn Seaborg. You know that your file is number 276 in the Glenn Seaborg Archives in the US Library of Congress.
- MPE Glenn Seaborg and Charlie Townes were instrumental along with Carol Christ to help teachers and start an online tutorial program in mathematics in 1996. UC Berkeley students were helping students in the San Francisco Unified School District through the Interactive University Program which was directed by David Greenbaum and sponsored by Carol Christ. The initiative received funding from the NTIIA, US Department of Commerce and also included Oakland. The world wide web was just getting started in 1996.

- HBO You were far ahead of the “online” vision, almost by 20 years.
- MPE I think a lot of people had similar ideas. I was one of them. The tutoring via point to point ethernet connection was limited but it unleashed possibilities which resulted in MOOCs. In a similar manner, we got Cisco Systems to start the first Cisco Networking Academy at the Thurgood Marshall Academic High School in the Bay View Hunter’s Point area of San Francisco.
- HBO In that cover article in 1996 in US News and World Report, your school was prominently featured as one of the first sites for Cisco Networking Academy.
- MPE The credit is due to Dennis Frezzo, a brilliant young teacher, who was dedicated to learning and innovation. He is the one that we should celebrate.
- HBO It boils down to that one teacher. Doesn’t it?
- MPE Always, Mr President. The one teacher who touches eternity.
- That one teacher who is whipped in several directions by the arcane demands of the educrats but she still finds time to rise above the fray and dedicate her time to the students. That one teacher works twenty hours a day, at least six days a week, sacrifices vacations, gives up leisure to answer student and parent emails, late into the night. That one teacher spends her own money to buy supplies, tables and chairs from IKEA for the classroom, brings food for the students who are hungry and still finds the time to teach her own daughter. That one teacher is a marvel of mankind. That one teacher is what made you who you are, that one teacher makes the world go around on so little yet for so many.
- That one teacher is the soul, essence and eternity captured in George Eliot’s *Dorothea in Middlemarch*, “*But the effect of her being on those around her was incalculably diffusive: for the growing good of the world is partly dependent on unhistoric acts; and that things are not so ill with you and me as they might have been, is half owing to the number who lived faithfully a hidden life, and rest in unvisited tombs.*”
- HBO Please allow me to lighten the mood and suggest that today you can buy marble headstones with built-in free WiFi to attract more visitors to your grave, in case it is unvisited. But you won’t have that problem. Will you?



MPE Isn't it amazing how the dead weight of old technology can market us after fate has willed us to cease public relations and turn off the iSkin.

HBO What happened with the \$99 related PR of your math degree program?

MPE I was fortunate that Carol Christ agreed to be a part of our team. She had just retired as the President of Smith College. Then I asked my friend Andrew Fire. Andy's undergraduate degree is in math. Salman Khan and Lap-Chee Tsui joined soon after, as founding members of *Math, I Am*. But I still needed a team leader. I was blessed with Stan Metzenberg. Several years ago, Stan and I co-founded Associated Scientists with Glenn Seaborg and others to work on K-12 science and mathematics standards for the State of California.

HBO Please tell me about the content of the *Math, I Am* program.

MPE We didn't want to reinvent any wheels. We needed a brand to deliver the BS degree. The big boys didn't come forward fast enough and we were eager to stick a label on the BS. We were in quest for a global brand. As you now know the BS in math from *Math, I Am* is jointly awarded by UC Berkeley, Harvey Mudd, Smith College, Bryn Mawr, University of Chicago, University of Hong Kong, Universidade de São Paulo, NCKU, UNAM, UMIST, IIT, NUS and KAIST.

The course structure was guided by MIT OCW and University of Cambridge as well as the framework of the IITs. The sequencing and differentiation is an evolving and dynamic process which is adaptable to levels within the BS, for example, BS Pass (basic), BS (standard) and BS Honors (advanced). Even the basic level is intense and its rigor is in the same league of MIT or Cal Tech.

HBO What about the payment structure?

MPE Each course has a minimal dollar value, about \$2. Students take all the requisite course work for the BS degree in math but the actual degree is not awarded unless they also take the liberal arts courses and general science. If you add up all the costs, the entire four-year equivalent package is about \$99.

HBO What prevents cheating?

MPE This is the last-mile question. We have used a traditional format in this space. Final exams for each module were supervised by a *Math, I Am* designated person or alum that was local or we could liaise through our network. Coordinating this aspect is the most labor intensive part of our endeavor. The answer packet was graded by one of the institutional member teams.

HBO If a student cheats on the regular work then she/he will pay the price at the end of the module.

MPE This strategy has worked quite well, thus far.

HBO What about enrollment?

MPE We have about 100 million students in the program. About 80% of the students are from India, China, SE Asia. US and EU students comprise less than 2% while 10% are from South and Central Americas including Mexico.

HBO To promote your \$99 math education model you rely on big donors. Your past relationship with the Late Margaret Cargill has paid off in the form of sponsorship from The Cargill Foundation. It also appears that The Hinduja Family is firmly behind you. You have, uniquely, tapped into a very different pocket, that of John Malone, Ted Turner and the top land owners. I know that Jeff Bezos ranks around 25th on that list and he has bequeathed the financial output from his 290,000 acres to your math philanthropy. You seem to be relying on pockets that earn from commodities based wealth management because it is less volatile and more sustainable over long periods even if it is not as sexy as the Gates-Buffer philanthropy outfits.

All of this speaks volumes about your funding strategy but the conservatives who can shut down the Government in order to defund Affordable Care Act will view your thrust with great disdain. Analysis of your enrollment data clearly shows that *Math, I Am* students are less than 1% from the US. Yet you are asking Americans to support your philanthropy which benefits others.

MPE I expect that sort of protectionist ideas from those who may have read Oscar Wilde but did not understand the profound depth hidden in his words, for example, *we are all in the gutters but some of us are looking at the stars*.

My pragmatic philosophy is lost on such people. My pragmatic approach to higher expectations was lost of those students who wanted to dumb down the content and the chairman who championed their cause. Let me turn to some numbers that even people like Ted Cruz may grasp if all he knew was arithmetic from elementary school.

Math, I Am offers a BS in mathematics and stops there, in most cases. If I am Brittany in the US or Muhammad in Indonesia, I will have to find a way to use this brain power in order to uplift my standard of living.

Brittany lives in Lake Havasu, Arizona. She drives a few hours across the Mojave Desert to find herself knocking on Tim Draper's door. Hi Tim, I have an idea. Every time I see a cute guy passing me in a car, I want to say "Hi" and may be ask him out. I want to create an app QTπ to plug in the cute guy's car license plate to send a message or photo on Facebook. My app [QTπ] taps on DMV and the cute guy receives an email or text "Hi Brit Marling here. I saw you in your car this evening on Lombard at Van Ness. Click on this link to see my photo. I have a BS in economics from Georgetown University. Please reply

with a link to your LinkedIn profile and attach your cv or resume. I want to meet you and snog at Café Nervosa over Java. Are you listening?"

I should add that Brit Marling, in her dream, received a message. It was framed as a haiku of sorts. Here it is for the entertainment of the audience.

Somebody Told Me

You are an outrageous flirt
In the habit of keeping men's shirt
As a token of adroit nocturnal exploit
In so many places from Damascus to Detroit

HBO That could become a home-wrecker's hymn.

MPE Amen!

HBO Your argument is that the funding of *Math, I Am* by American dollars may educate only a few Americans and an abundance of others but these very few math graduates in the US have access to ecosystems, such as Silicon Valley and its VCs, whereas the bulk of the graduates in other countries may still have to slog in Tesco even with a BS in mathematics because they are not connected to the entrepreneurial network which is omnipresent in the US.

MPE That wasn't difficult to understand. Was it? Brit Marling gets funded by Tim Draper and QTπ Unlimited Inc (QUI pronounced OUI as in "yes" in French) is off to a roaring start with a plush office in Redwood City, CA. On day one QUI registers the first client, Larry Ellison and his vanity license plate IAMGOD. Brit recruits a handful of people to run the operations in Redwood City and hops on a plane to London to explore setting up an office in Redhill, Surrey.

American money from Margaret Cargill and Ted Turner and Jeff Bezos helps *Math, I Am* churn out math graduates. Our ecosystem helps a few to create new lines of business. It spurs economic growth through skilled job creation.

HBO Conservatives will catch you by the throat and point out that the job that just got created may be exported or outsourced. What did the US gain?

MPE Let us say Brit Marling grows her business to create 1,000,000 new jobs. Following the 80/20 rule, about 80% of the jobs may be off-shore. Therefore,

Brit's QTπ created 200,000 jobs in the US economy but four times as much (800,000 new jobs) in SE Asia where the total population is about 4 billion. Ted Cruz is grilling Brit Marling on the Senate floor. Ted Cruz screams why the "dumb blonde" can't understand that 800,000 is more than 200,000. The dumb blonde, Brit, speaks softly and says Senator Cruz there is something called ratio. Let me call your friends in Texas and get you a calculator from Texas Instruments. If we create 200,000 jobs in an economy of 300 million then we have created about 333 new jobs for every 5000 men, women and children in the US. SE Asia including China and India has a population of about 4 billion. If we have created 800,000 jobs then we have created only one new job for every 5000 individuals. Isn't 333 a bigger number than 1?

To sustain the business and grow revenue, QTπ needs human capital with skill sets based on mathematics. Skilled labor volume in the US is unable to support the growth QTπ can expect to experience. If *Math, I Am* did not help lift the skill sets, globally, Brit's lovely idea will languish no matter how much money Tim Draper or Vinod Khosla may wish to invest. If Brit's QTπ failed to germinate due to lack of skilled workforce in the US then these 200,000 jobs cannot be created. Therefore, American dollars funding *Math, I Am* actually created new high paying jobs in the USA. It also contributed to greater good.

HBO Profoundly Presidential, Madame President. Deeply insightful from the perspective of trade agreements and immigration policies Congress must carefully craft as we move ahead and adapt with what lies beyond the horizon. We must remain cognizant of the dependencies on skill sets and workforce demographics which will drive dividends. It is the Higg's Boson of globalization as well as an elixir to maintain the vigor of the global economy. Is it true that MOOCs are unlikely to make a major dent at home in the US?

MPE The concentration and self-discipline necessary to pursue online degrees requires a certain character trait which is less prevalent in the US. But there are green shoots. We are observing a higher number of US students who are browsing MS programs in computational mathematics, econometrics and financial engineering. I think advanced degrees attract mature students who have more experience and may be more focused on their long term goals.

Math, I Am offers a collaborative platform for math applications in design we call MAD. The purpose is to connect *Math, I Am* graduates and precipitate ideas which showcase the applications of mathematics in society. It is headed by my friend Arati Prabhakar and she is assisted by Sokwoo Rhee and Lalana

Kagal. MAD created a partnership with Samsung, Honda and McDonald's which enabled our graduates to create the McDonald R23D at the corner of Healthy and Happy next to a Walgreen's store in Ohtemachi, Tokyo.

HBO I have been there and it is incredible as well as a stunning model of precision.

MPE What did you order?

HBO I went in and sat at a table at McDonald's R23D. The table top logo said "iSkin" and it transformed into an interactive touch screen. I ordered breakfast egg mcmuffin, hash brown and coffee. The panel on my right side opened and a robotic arm placed my cutlery and a plate. Next, a shower head type of arm appeared and started "printing" my egg mcmuffin. It was complete in less than a minute. These arms went inside the panel. I heard a beep, to find a conveyor belt type platform emerge from the panel with a tray of steaming hot coffee and hash browns. It gently approached the level of my table and delivered the products. I finished my food and as if somebody was watching or sensing, the panel re-opened, extended an arm precisely at the location of my plates and cups. I deliberately moved my cutlery to a corner and the arm knew where to go and collect the cutlery too.

After my breakfast, McDonald's asked my permission via my phone to send my nutrition data to my personal physician at the Bethesda Naval Hospital. It also offered to test my urine using Walgreen Instant Health, if I stepped in the washroom.

MPE I am glad you experienced R23D. The operation is headed by Hideki Sakai, who is a robotics enthusiast. It is an amalgam of sensors, robotics and 3D printing displayed in a social scenario. If you add holonic manufacturing and nano-fabrication to this mix then you have the tools to manufacture aspirin tablets or print a jet engine. The consumption data feeds back to McD supply chain streaming data via the industrial internet's Kanga-Ruh visualization.

These tools and technologies cannot exist without math skills. *Math, I am* is driving and delivering the tools necessary for workforce development.

HBO Do you wish that people remember your disruptive workforce development strategy when they recall your role in creating the *Math, I Am* program?

MPE Only time will tell what history may choose to remember. If you ask me what I shall hold dear in my heart about *Math, I Am* then the answer is different.

HBO What do you hold dear in your heart about the *Math, I Am* endeavor?

MPE It is still preliminary and perhaps premature to thrust this information on a global platform but we have been sharing our enrollment data with the Gandhi-Mandela Center for Local Peace. Rob Engle is overseeing the data analysis. It is awe-inspiring to note that when we select data for males, we observe that with increasing enrollment in *Math, I Am* programs there is a decrease in hate chatter mapped using Twitter feeds. If you correlate with local law enforcement data, we observe marked decrease in events involving violence with increase in male enrollment in the 18-25 and 25-35 age group.

HBO Correlation and causation are slippery slopes unless statistically verified.

MPE We are extremely cautious on that point Mr President and the reason why the analysis is under the watchful eye of Rob Engle and a team of experts who report to Rob. But this is not the news that rocks my boat. What is far more abundantly obvious is the enrollment by females in interesting cities, such as, Teheran, Tabriz, Kandahar, Kabul, Karachi, Mogadishu and Yangon.

HBO *The education of a girl may change the destiny of a nation.* You have come full circle, Madame President.

MPE Indeed, Mr President. If you want to remember me for anything, try to remember that *Math, I Am* lit a fire of desire among women in a few of the troubled spots in the world. These women and their collective goodwill is the force which will re-shape geopolitics and grow roots for sustainable peace.

HBO I have seen parts of this data. I had the opportunity to provide a nomination to Oslo for the Peace Prize. I have nominated you, Madame President, for your work related to education as a driver for peace as well as improving access to health and energy as global public goods. You have helped to improve lives and allowed peace a chance in places we had written off. I thank you, Madame President, for sharing your thoughts and speaking your mind with such clarity and transforming your vision of peace.

MPE Thank you. Peace without food on the table is storm in a tea cup. Neural sciences, the medical profession and global public goods will continue to be

an important part of my existence. It is in my fiber. Human rights, women's rights and gender-agnostic respect are also key issues. My actions on these topics may help people. It may require us to take a stand, review our relationships with big powers and create difficult choices. But, we must never fail to show our solidarity for those who are shunned in their quest for peace via egalitarian non-violent routes to equality, liberty and fraternity.

HBO When you gathered your ideas and published your thoughts, you were very young and the world was at a different time than our moment at present. Do you re-visit your plans, do you find that you need to change, adapt or modify? Critics say that your perspectives are a couple decades behind the times.

MPE Criticism is something one can avoid easily by saying nothing, doing nothing, and being nothing. That doesn't work with me or with you. Yes, part of what I thought yesterday will still be valid tomorrow and in part what I thought of yesterday may need to be viewed with a new pair of eyes. The best made plans may be worthless soon after they are completed. My history of ideas is a derivative from my ideas of history which is based on my own intellectual standpoint at the time when I collated my thoughts in my book. It is not a matter of truth, to ask whether those ideas still hold true. It is a delicate adjustment of thought to thought, which is independent of the mere blunt question of truth. The thought today may have changed from the time when I formulated my thought but that does not make something untrue or illegal based on the circumstances, context and collateral developments.

The NSA leaks which perturbed your second term were predictable and inevitable with the march of time. When I was at MIT during my MBA, we had a lecturer from Wharton who used Jane Austen's comedy of manners, *Sense and Sensibility* to illustrate the passage of time versus real-time information.

You may know *Sense and Sensibility* follows two provincial English sisters along their rocky paths to marital bliss. Much of the tension in the story involves breakdown in sharing information. Is Marianne Dashwood really engaged to dashing Willoughby, as everyone suspects? Is her sister Elinor in love with Colonel Brandon, as her chaperone overhears? Is Elinor's true love Edward Ferrars committed to her, or to the girl who claims to be his secret fiancée? No one is certain until the denouement, when all is revealed.

At the turn of the 19th century, when word of mouth and written correspondence were the only reliable means of communication, such questions could easily remain mysterious. The world is different today.

What was once private and personal is increasingly public knowledge. Over the past two centuries, new technologies have dramatically broadened the scope and accuracy of information about individuals and their actions. We are witnessing an even greater explosion of personal tracking, recording, and monitoring. Combining data from roadside sensors, GPS, cell phone towers, license plate recognition (LPR) and credit card transactions, we can now accurately track if you are at home, school, office, pub or places you shouldn't frequent. These developments are producing significant changes in social interactions, it will pose novel challenges for the law in a manner that you experienced first-hand. We will have to re-adjust our notion of privacy.

The significant problems we face cannot be solved at the same level of thinking we were when we created them. That is the key we must use to unlock the opportunities the future may present rather than trying to find solutions to problems we thought existed. Often we cannot visualize these opportunities because opportunity has a sly habit of slipping in by the back door. Often it arrives disguised in the form of misfortune or temporary defeat. Perhaps this is why so many fail to recognize opportunity.

HBO What do you wish to convey through this conversation? Is it about your long-term vision? If it is, then you haven't yet mentioned global resource depletion or address how the US shall provide leadership to tackle the tsunami of inequity as reflected by the disparity of the GINI coefficient. Is this meant to be a message to the world? What is America's role in the middle of the 21st century? What will be America's role at the dawn of the 22nd century? How will your leadership shape the US to become a genuine leader interested in the long-term welfare of the planet, devoid of conflict and a true secular catalyst for gender-blind race-agnostic global economic development?

MPE I do not expect praise for my imperfect or partial vision but the role of the US is to be a purveyor of civilization. You may think it is hollow, naïve or just stupid. My leadership must remain cognizant of the fact that this task of restoration of the civilization must start at home. On Labor Day 2013, it was a better deal not to work in a minimum-wage job in 35 states but to take advantage of federal welfare programs. In 13 states welfare paid more than \$15 per hour. The national champion was Hawaii, which offered \$60,590 in annual tax-free welfare benefits compared to work-related wages. That is more than \$29 per hour. Other welfare high fliers were DC (\$50,820 per year and \$24.43 an hour), Massachusetts (\$50,540 and \$24.30), Connecticut (\$44,370 and \$21.33) and New York (\$43,700 and \$21.01). Welfare cannot

become a way of life. To empower people to aspire to work and not seek welfare, we must invest in education. *Math, I Am* is one example.

Therefore, in my feeble defense of educational leadership, I summon to my aid the words of Kuan Tzu and must reiterate. *If you are thinking 1 year ahead, sow a seed. If you are thinking 10 years ahead, plant a tree. If you are thinking 100 years ahead, educate the people.*

HBO Education is your Holy Grail and I agree both in philosophy and as a pragmatic tool for economic growth irrespective of country or state. Whether we like it or not, consumption drives the global economy and the educated customer is our best consumer. The simplicity of your quote and your skill in its apt use once more at the correct time reminds me that a fine quotation is a diamond on the finger of a witty person, but a pebble in the hands of a fool.

MPE Then I better keep my mouth closed and be thought of as a fool then to open my mouth anymore and remove all doubt.

HBO Doubt is not a word associated with you, Madame President. I think the word is “firsts” or something similar. We are getting close to our allotted time but before we conclude I want you to comment on the very first Executive Order that you are signing in the first minute of your Presidency. From what I gather, it is a drastic measure and some are already saying it is draconian.

MPE Critics are correct and so am I. My first Executive Order is to reduce my pay and that of the Vice President of the United States to 1 cent per annum. The pay for elected members of the Congress and the Cabinet will be \$1 per year. If you are in the job of running the nation then it must be your labor of love. If any individual requires a helping hand then they can file a RFA and we will help. Senator Kirsten Elizabeth Rutnik Gillibrand is in charge of the program.

HBO Diane Fienstein introduced such a bill several years ago but it never emerged from Tip O’Neil’s desk. But, is this savings plan going to make a dent?

MPE Mr President you are wrong. You are off-track on this matter. This is not a savings plan. I do not believe that we or any other nation or any corporation can grow by saving. Growth is an investment strategy, growth is the fruit of innovation and growth is the product of education. If you reviewed the draft of the \$1 per year salary strategy you would know that the elected officials and the members of my cabinet must collect that \$1 on Thanksgiving Day,

each year. In public, preferably in a middle school venue, they have to hand write a note to receive the \$1 from the hands of a middle school student.

The note will read “I am thankful to receive \$1 today and I am thinking about the plight of about 1 billion people in the world who may have to survive on less than one dollar per day.”

HBO You require that the elected members of both the houses of the Congress and your cabinet members actually hand write this statement on a piece of paper in order to receive their \$1 salary, each year, to be delivered in a middle school by a middle school student on the day of Thanksgiving. Why?

MPE Let me take you back about six hundred years to 1450. It was around this time that developments started trickling in, from 1436, which culminated in a printing press which we attribute to Gutenberg. Now imagine poetry. Do you think that a poet or her poetry can be influenced by the invention of printing? But, imagine if a poem can be read and re-read. It shifts the focus from the rhyme or the rhythm to the meaning, the allusion and the allegory. Invention of printing changed the impact of the visible written word.

Asking members of my cabinet and the Congress to write that note when receiving the \$1 salary may reveal my elementary school teacher qualities but those practices in elementary school which connects the brain to the hand are essential for engagement. In writing this one line note in a middle school, these individuals are reminded of education and the plight of the less fortunate, all around us, in their constituencies, locally and globally. I hope that this action may help us to reduce our disengagement, dislocation, and disconnect from the basic issues of life, liberty and the pursuit of happiness.

HBO I see. This is, as always, far more profound than mere savings from salaries. This money just goes back to the Treasury?

MPE In some ways it goes back but not what you may think. I have tasked a high school intern and a college intern in my office to pool this money and channel it to help janitors in hospitals, school teachers and long term care options for our veterans. I know it is a nano-drop in the yotta-bucket but I think it keeps us thinking about the most fundamental people in our society.

HBO Janitors, school teachers and our vets in Washington DC may find a few more pennies in their pockets from your generosity.

MPE It is not going to be distributed in Washington DC. I have two interns working on this effort. Florence Colgate is a high school junior from Buffalo County, South Dakota and Lucia deSola is from Texas but originally from El Salvador. Lucia's family later moved to Kiryas Joel, NY. Lucia earned the Paul Erdos Medal and attended Bronx High in NY. Lucia received the Dudley Hershbach Scholarship and now attends Harvard University as an undergraduate. She worked in Buffalo County, South Dakota as a mathematics teacher through a program called *Girls Who Code* sponsored by Barry Mazur at Harvard. Lucia taught Python to Florence. We are fortunate to have them work as a team. Engineered by Florence and Lucia, the savings from the salaries of elected officials is targeted to provide assistance to custodial staff in hospitals, teachers and veterans in a few select counties in Texas and South Dakota.

HBO Why have you focused on custodial staff in hospitals?

MPE I was approached by Dr Benjamin Solomon Carson of Johns Hopkins to use part of these savings to create an endowed chair for a promising pediatric neurosurgeon, Dr Suresh Magge, at the Children's National Medical Center in Washington DC. Florence and Lucia met with Dr Magge to discuss the suggestion. They reported to me their "thrilling sensation" – and that is a quote from Lucia – after meeting Dr Magge. He explained that rather than "oiling an well-oiled machine" – that is referring to himself – we should think about those who are rarely recognized by the medical industry.

Dr Magee convinced my interns and me that without the sacrifice, dedication and attention to details by the cleaning staff at the hospital, we would be in grave danger. According to Dr Magee the most important people in the hospital are the custodial staff and janitors. We are throwing up our hands in frustration when we talk about methicillin resistant *Staphylococcus aureus* or MRSA. The people who clean our hospitals, sterilize the equipment and make the hospital beds are the force which keeps contamination at bay. Therefore, we have chosen to focus a part of this effort to recognize the custodial staff.

HBO Dr Magee took a line out of your book. You emphasized the role of janitors.

MPE Dr Magee demonstrated the core of what humanity is all about.

HBO But Dr Magee didn't get his endowed chair as proposed by Ben Carson.

MPE Dr Magee received more than what Dr Carson suggested. I was speaking about him at a lunch hosted by my friend Dr Patricia Donahoe of MGH in

honour of Dr Bernard Lown. A few days later, Dr Donahoe and Dr Lown called me to say that Dr Vappu Taipale and her husband endowed to create the Malala Chair for Dr Magee at the Children's National Medical Center.

Also, based on this funding from Dr Vappu and Illka Taipale, the Children's National Medical Center will re-name the Children's Research Institute to create the Malala Children's Research Institute. Construction will commence to create a new wing – The Erwin Neher Pediatric Neurosurgery Center. The Center has already appointed Dr Suresh Magee as its Founding Director.

HBO You have left no thought unturned but the choice of the two states begs to ask the question whether you have already forgotten that you lost the electoral college votes in South Dakota and Texas in your Presidential race.

MPE You must plant trees under whose shade one may never sit. I am the President of this entire nation and not of the states where I won. If I believe in America then I must be an American and not act as the head of a tribe or party. My words must be supported by action. Words are like seeds, sterile unless planted or like music, silent unless played.

HBO These gestures are Presidential but a few may say that these acts are akin to platitudes. These actions represent band-aid diplomacy and may boost your news cycle but ephemeral in their impact or real change.

MPE If these gestures are akin to platitudes then, Houston we have a problem, with the attitudes. I value the team as a working entity even if the idea may originate from one individual. We are celebrating Peter Higgs with the Nobel Prize but Higgs Boson was detected by a huge team of physicists at the CERN. If you look at the original paper by Peter Higgs in 1964 in Physics Letters, one may find that Peter Higgs proposed the existence of this particle or field when he improved upon an earlier work. A few months earlier, in 1964, Walter Gilbert provided a proof that the failure of the Goldstone theorem in the nonrelativistic case is of a type which cannot exist when Lorentz invariance is imposed on a theory. The purpose of Peter Higgs seminal paper, a few months later in 1964, was to show that Gilbert's argument fails for an important class of field theories, that in which the conserved currents are coupled to gauge fields. Hence, prior to Higgs there were a team of scientists and following Higgs proposal there were even more teams working on the proposal. The discovery was made by the team who were searching for the standard model Higgs boson in proton-proton collisions with the ATLAS

detector at the Large Hadron Collider at CERN. Team work is a key ingredient for success. A few people may generate new ideas but most often it is the team which is essential for execution.

I view the Congress as a part of my team and I want them to think about these issues every day. The \$1 payment is a reminder and writing the note is a booster shot. We cannot work in silos nor can we hope to build a nation using a nuclear me-me-me approach.

Many moons ago my Dad went to visit Pittsburgh, PA to see one of his cousins who was then the head of the R&D division of PPG. One morning he was admiring the Corinthian structure of Carnegie Mellon University on Forbes Avenue and strolled over to the next field where he found two young men working on a large block of stone in the middle of the field. He asked what they were doing. One man replied, "I am cutting down this block of stone to smaller pieces." The other man replied, "I am on the team that is building the Cathedral."

HBO Cathedral of Learning.

MPE The administrative offices of the University of Pittsburgh are housed in this iconic cathedral-like structure called The Cathedral of Learning. You can easily find it on Forbes Avenue in Pittsburgh, right next to CMU.

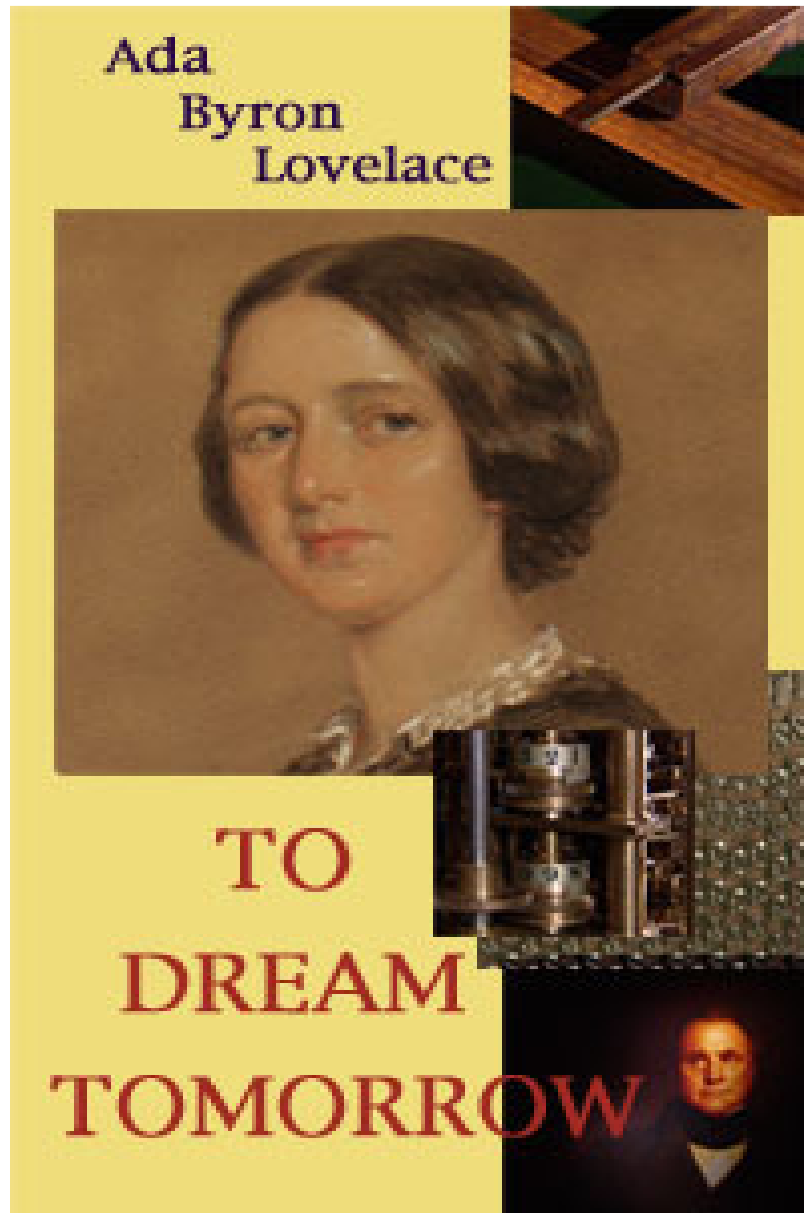
This is the message that I wish to send. This is the team spirit which is at the heart of those efforts that shall stand the test of time. I am on a team that is helping in the progress of civilization. It is not a platitude. It ***is*** the attitude.

HBO You have removed all doubt, Madame President, on so many levels. The buzz in the country is about your skill to turn a mess into a message, a test into a testimony, a trial into a triumph and transform a victim into a victor and victory. Your happiness, inner peace and optimism are ingredients essential to the tonic we have been waiting for all these years. I thank you for raising our spirits. I thank you for shining the light on dignity. I thank you for your magnanimity. Your concluding thoughts, Madame President.

MPE The aim of my arguments and our discussion was neither to claim victory of my thoughts nor my deeds, but to put forward a path to progress and dare to propose the pursuit of peace. In every walk of life, to pursue prosperity and peace, we must strive to ask the right questions, which are objective and not

colored by our greed, religious affiliations or personal inadequacies. The Government by the People should aim to achieve the simple things that enable peace and prosperity for all, not a few. I must always ask and re-ask, what people may need for a better quality of life. It is that simple. There is nothing complicated in my plans. I am not trying to simplify the complexity but my bridge to the future stands on determination, diligence and dignity.

In conclusion, I wish to take this opportunity to thank the trees that have made my life fruitful but more importantly I want to recognize and thank the grass that has ever kept it green. Mr President, thank you for your vote.



On two occasions I have been asked [by members of the British Parliament], '*Pray, Mr. Babbage, if you put in the machine wrong figures, will the right answers come out?*' I am not able to apprehend the kind of confusion of ideas that could provoke such a question.

CHARLES BABPAGE

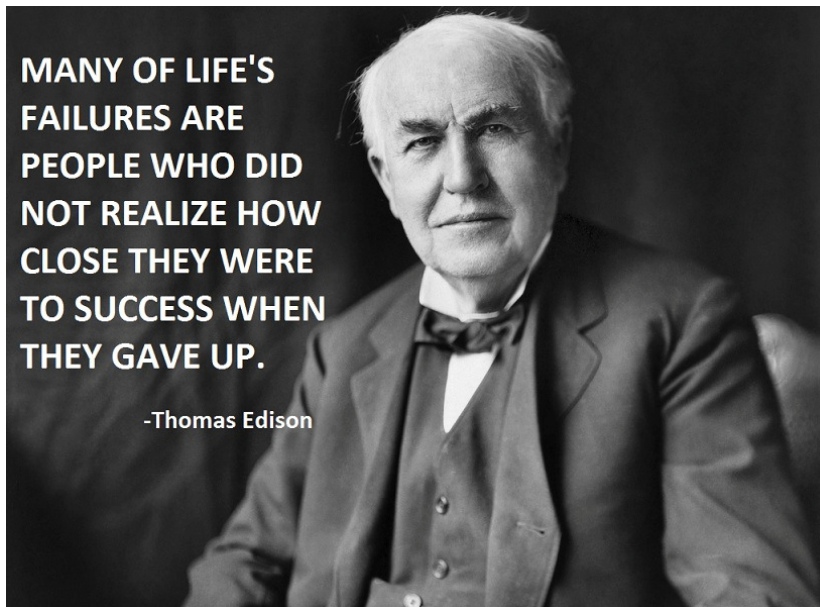
Imagination

Business Fiction of the Future

Dinner table chatter about education, healthcare, energy crisis and the social fabric of our evolving lifestyle may provide clues to the future of business growth, patterns of profitability and new lines of commerce. Engaging the emerging economies will be anything but payment as usual. This article is in the form of a hypothetical interview which explores the role and the power of big business to usher change, create wealth and uplift lives. An appendix sketches technologies to enhance our lifestyles.



Conscience
and
Common Sense



Part II : Imagination

TIME Magazine's Man of the Moment Mr Geoff Robert Emmell's accomplishments in transforming business at Global Engineering (GE) may not find a parallel in real time. Mr Geoff Robert Emmell's profoundly disruptive and innovative strategies for profitability of Global Engineering may be only comparable to Ayn Rand's astounding panorama of business zeal captured in *Atlas Shrugged*. BCFN Magazine's business editor Alexandra Dorsoduro Daddario caught up with Mr Emmell on the flight from JFK to NRT and later at the Westin Hotel in Ebisu (Tokyo). Mr Emmell was honored with the Japan Prize for his vision, altruism and economic stewardship to increase shareholder value as well as improve ethical corporate responsibility through global investments supporting social business entrepreneurs. This edited transcript was submitted by Alexandra Dorsoduro Daddario (**ADD**). The appendix was provided by Mr Geoff Robert Emmell (**GRE**) and Global Engineering (GE). This is an exclusive to BCFN Magazine published by Bella Cosa Far Niente Inc (San Francisco, California). "*At Last, Unshrugged*" was the running title of this article.

ADD Thank you Mr Emmell for agreeing to spend some time with the readers of BCFN.

GRE I thank you for taking the trouble to travel with us. Hope it is worth your time.

ADD I am sure your vision will be illuminating and scintillating. The broad question is what triggered you to combine secondary education as a software driven business catalyst for growth and profitability of Global Engineering?

GRE Several issues converged on us to conceive and then design parts of this software driven global equalizer. Software based services are increasingly dominating all businesses. Education and healthcare is next. Let me try to share some of the issues.

[1] In just one decade, (2001-2011) we were wiped off the top 10 list of companies ranked by market capitalization. In 2001, our market cap was close to half trillion dollars and by 2011 we were less than half of that number. We are no longer in the top 10 list. Our current revenue is about \$150 billion and 54% of the earnings are from overseas operations.

[2] We need to add products and services which can scale. Profitability depends on scalability. In other words, we must grow those operations which will provide economies of scale. We need to deliver systems or solutions, not widgets. We must rapidly scale without insurmountable financial barriers to entry. In emerging markets the "scale" is immense but purchasing power parity (PPP) is limited. We must find ways to avoid the PPP bottleneck.

[3] By market cap, the top 10 list of global companies included Microsoft for each year from 2001 through 2011. We have not explored software for analytical services or for new lines of business services, sufficiently or adequately. About \$4 billion in revenue trickles in from software services embedded in operating lines of business. This is a growth area. It requires out of the box thinking and development. We must meet and greet the risks associated with entrepreneurial innovation if “imagination” should be more than just a by-line in our logo. We must try to adopt a systems vision to problems and embrace open source platforms to improve interoperability [i]. We must imagine new ways to profit from globalization [ii]. The era of big ticket items and high end pricing are declining. Hence, we created the Software COE to explore profitability from integration of products with services.

[4] When I think about markets and business growth, the key is demographics. That is, the potential customer to be, not the customer we know or exists. The question is, using an analogy from hockey, where will the puck be, not where the puck is. I think about demographics with respect to market penetration and preferences. It is a lesson from McD. Happy Meal is one strategy to create the next generation of loyal customers for Angus Beef burgers. Even more relevant is what McD did in Japan. They added to the local menu items preferred by Japanese adults, seafood tempura burgers, in keeping with the demographics in Japan which are increasingly skewed due the very low birth rate and increased longevity.

[5] In our current line of business, the demand from the aerospace industry is high and we profit from aircraft engines. Planes are on order from India, China, Thailand, Indonesia, Singapore. The population in these emerging markets expect to afford air travel for business as well as pleasure. One third of India’s 1.2 billion population are in the 0-14 years range. **That** is our future market in 10-20 years. I want a segment of that population to be our loyal customers.

[6] The 400 million in the 0-14 year segment in India [iii] has a parallel in China although China’s median age is a bit higher than India due to drop in China’s fertility rate. Let us add another couple hundred million in that age range from SE Asia. Now we are talking about one billion school-age children in Asia. They can be our potential customers, if, they knew what we do, what services we can provide, what products we sell. We must create a prior relationship with our brand and our integrity could be a tool to earn their business trust.

ADD This is not just another project, this is a grand vision and a multi-tiered, multiple year plan for far reaching revenue growth and increasing corporate penetration.

GRE Our company with over 300,000 highly educated employees must have a vision of how to grow its business over the long term without compromising the short term need to remain profitable and increase shareholder value.

If you analyze our dividend payments over the past 35 years, you will find magnitudes of increase, from 0.00833 in 1975 to 0.15 cents in dividend in 2011. We need to maintain and exceed this growth trajectory. Long term sustainable growth must find new markets. Hence, my personal drive to repeatedly converge new strategic innovation with imagination and the spirit of entrepreneurship commonly found in start-ups. If we stay within our comfort zone and do not invest in dynamic diversification, we will lose our edge and competitors will lure away our customers. We will become a dinosaur in an era where progress seems to be measured in Tweets per second or reduced to face-time frequency on Facebook. In other words, we cannot remain satisfied building only the engines of the plane, we have to find ways to help fill the seats on the plane if we want to profit from building airplane engines. Business is a dynamic ecosystem always in flux and disequilibrium. Complacency and *status quo* are to be abhorred. We must resist paranoia but assume risks, weather failures and never cease to experiment. We must play our role as a global channel master to make sure all parts of the machine are configured to endure stress, tests, strain and shock. I continue to harp on corporate social responsibility and the practice of ethical globalization with an eye toward investment in “social businesses” in order to foster greater global equity.

ADD It seems that the social tapestry of your business ecosystem is important to you.

GRE It is the Holy Grail. If society cannot support innovation then how will we profit from our innovative products? If we cannot help build the society or invest in quality of life which can pay for these services then we have driven the nail on our own coffin. If we wish to employ creative and brilliant people but we have not done our part to inculcate the supply chain of talent then where will we find our employees? Social re-investment is the salt of industry.

ADD Basic and higher education [iv] of the masses. Thrun and Norvig may have a similar idea [v].

GRE Education is the bedrock. The educated consumer is your best customer. We bring good things to life and the foundation of good life is rooted in education. Horatio Alger is alive and well in our social fabric. The Governor of Massachusetts, Deval Patrick is a living [vi] legacy. Education of the boy Deval Patrick changed the future of the man Deval Patrick. The height attained by our President is also defined by his education. As you know, I serve as the Chair of the President’s CEO Roundtable. I can

state with confidence that my colleagues on that panel will agree on one issue without hesitation – the need for educated and skilled HR in the US workforce. Stanford’s AI course and MIT’s free courses are on the right track.

ADD Hence, your unusual business development delivering secondary education as SaaS.

GRE It was not a leap. It was an informed choice based on the birth of Khan Academy and MIT’s OpenCourseWare (OCW). In one hand free online tutorials and the other is a model of excellence. We are not philanthropists. I do not envision a free-for-all system. I am happy to see Mr Khan and Mr Gates pursue those altruistic options. My business plan is focused on the markets I mentioned, the market of about one billion potential school-age customers in Asia. About 10% of 1 billion may be from households who may afford \$2 per day on average per pupil for their education, starting at age 11 or 6th grade, till they complete 12th grade.

ADD 100 million students at \$2 per day for 7 years translates to \$511 billion in revenue.

GRE But it is not \$73 billion in annual revenue because of the ecosystem necessary to execute this project. The number of paying subscriptions will increase in phases, over years. We have created an organizational infrastructure and structured secondary education to create an output which has global brand recognition, integrity and credibility. We have licensed ebooks or purchased a variety of existing resources which we have subjected to frame by frame analysis, evaluation and testing by experienced cadre of subject matter qualified teachers. We have reviewed the California K-12 Standards shaped by Nobel Prize winner Glenn T Seaborg but added more rigor, as expected in Asian markets. From about age 11, any student can start her/his education, online, on an Apple MacBook provided at no extra cost if you subscribe to the secondary education service. SES is a micro-payment based software as a service (SaaS) for education, available and recognized globally.

ADD There are many reasons why this may or may not work. I am sure you know at least some of the negatives and what people like Clayton Christensen may opine about your for-profit effort. There seems to be a rush to capitalize on online ventures to gain access to markets.

GRE There will be nay-sayers but the role of a leader is to provide leadership for change which may not be in line with conventional wisdom or the “forced fit” that arm-chair experts may advocate. Nothing will ever be attempted, if all possible objections must be first overcome. That is a quote from Samuel Johnson (1759).

Let me explain how we structured the \$2 per day SES which has two broad components, tools and content. We have partnered with Apple which makes the tool

appealing to pre-teen and teenagers. The MacBook may be replaced every 2 years, which makes it attractive for Apple to introduce new hardware. We share with Apple 25 cents on the dollar which amounts to \$365 per MacBook for a potential market of 100 million. In addition, there is the salvage value of the MacBook when returned by the SES subscriber after 2 years. Apple can sell iTunes, iMovies, iTalk and other services. MacBooks have screens that swivel or detach to convert to an eBook reader or iPad. We pay 5 cents on every dollar to the University of Cambridge which administers an end of course (EOC) exam each year through its Local Online Examinations Syndicate (LOES). Successful EOC's are followed by the school leaving exam for the high school graduation certificate from the University of Cambridge. I cherish this liaison. It is a recognition of the quality of our joint venture in education.

- ADD You are still capable of earning \$51 billion annually with 10% market penetration.
- GRE For the secondary education pool that is likely. We also started the Bachelor's Degree Program in select subjects where we have partnered with University of California and MIT as well as the Indian Institute of Technology (IIT). This is a restricted offering because hands-on experiments in science subjects are rate limiting. For BS degrees we abide by the content guidelines from MIT OCW. We focus on mathematics, statistics, computational mathematics, computer science, systems engineering, business administration, finance, computational finance, accounting and principles of biotechnology. Physical science combines physics and chemistry and finally, energy and environmental science with simulated labs. This is a work in progress and we are taking baby steps. The subscription system for BS is \$25 per credit. Graduation requirement includes a thesis for honors students and 200 course credits (courses are 4 credits, each) or \$5000 per student.
- ADD In this segment, you have a greater population in the 15-45 age group who may pursue a BS degree from your online service given the stellar credibility of your academic alliance.
- GRE The conservative estimate assumes a limited pool of 100 million candidates for a total of \$500 billion in gross revenue from Asia for BS degree programs. Since the content is from the universities, we may earn 20% of the gross revenue. We also expect students from US, EU and South America to take advantage of the BS program as we move forward.
- ADD Your tuition based online program will compete with tuition-free undergraduate programs at stellar institutions, for example, the University of California. UC will waive tuition in lieu of a 5% earnings life bond which may be capped at \$10 million.

- GRE ELB5 (5% earnings life bond) will reduce the financial barrier for talented students to study at UC but the ROI for UC may be limited to \$75,000 per student paid over 30 years if we use \$50,000 as an average salary for the UC graduate. The online version is not for those who are planning to attend UC or other great universities. It is a different market. \$5,000 for a BS degree program without any lifelong debt or bond may not sound unattractive even to those who aspired to attend UC. We have stellar academic partners. We aim to be vigilant about quality, standard, rigor and the real world earning potential of the individual. But, online education will never replace the thrill of being in a classroom with a gifted professor.
- ADD I think ELB5 is an astute strategy to substitute for tuition and fees. Imagine the benefit from the future Andrew Grove if he had signed an ELB5 with UC Berkeley. In case of GE, you are adding online education to your portfolio of businesses but as a subset of your drive to profit from software services and analytics. Your front office label may be content vendor.
- GRE I hope to do better. There is demand for a global yardstick and customers are seeking relief from fly-by universities that lure students and offer shoddy products. If education is the global foundation and if we can deliver the content in a manner that the world can afford, then why should I squander this business idea which offers long term micro-revenue?
- ADD Let me play the devil's advocate. A group in China copies the instructional modules and sells it at half price. How will you enforce copyright? How do you catch those who cheat on tests?
- GRE Voice systems, camera monitoring, keystroke analysis and browsing history may eliminate cheating. We will also have supervised online EOC tests through local partnerships. We cannot stop re-selling of pirated modules but remember we offer the school leaving diploma from the University of Cambridge. Can the street vendors copy that badge of authenticity? You can leak the content and spread the learning, which is not a bad idea but you cannot deliver the stamp of recognition. For BS, a similar stamp is at the end of the line. Without the stamp of credibility the access to jobs and higher quality of living may sputter. Mom and Pop stores may employ a few people but claiming to have acquired 'similar' content without a transcript or visible online portfolio may not fly from a HR perspective. This is a branding issue. We see people peddling faux Louis Vuitton purses and Rolex watches on Riva Degli Schiavoni near the Metropole Hotel in Venice or outside the Sheraton Grande Sukhumvit in Bangkok but LVMS and Rolex are still coveted items. Mimicry helps to spread the word. The risk of temporary revenue loss outweighs brand recognition.

ADD What about translation into local languages?

GRE The global language of business is still English but there is no doubt that translation in Chinese, Thai and Hindi may increase our business penetration. We are exploring bringing our business content, for example, our six sigma principles, to the non-English market. We shall find an appropriate push-pull necessary for profitability.



Harish, 11, a school boy uses a laptop.
Khairat (90 km from Mumbai) 9/7/10

Fruit vendors in Wuhan, Hubei. 10/14/2011

ADD If a customer in India signs up for SES and takes home a shiny MacBook. Then they don't pay, move or claim that it is stolen. You are liable to Apple. What do you do?

GRE We are also in the insurance business and this may segue to the idea why education is not only a business but a platform to bolster other businesses. We may cross-sell insurance and find millions of new customers for micro-payment insurance business. If the MacBook is stolen from home, aren't the home and its contents insured? Cross-selling home-owners micro-insurance may be an option. We can also evaluate credit history and offer a credit card from our card services. If the client is buying a flat or house, we can offer mortgage services, loans, assist with financial planning, portfolio risk management, investments, wills.

- ADD Is the delivery of education to children a marketing hook to sell other products or services?
- GRE It is a platform. But, it can also serve as a hook, if you converge retail up-selling strategies related to lifestyle services, finance and technology solutions desired by billions to improve their standard of living. Earning may be proportional to education. We are a conglomerate in quest for risk pooling strategies, synergy and symbiosis to increase profitability. In 2011, Facebook's operating profit was \$1.5 billion from \$3.8 billion in revenues. We may not reach such margins but business services and SaaS products may help us get closer to that target.
- ADD I am going to come back to your distinction between a platform and a hook but I still want to know your protection from liability if someone simply disappears with the MacBook after they sign the micro-payment plan or SES contract. Will you litigate or absorb the losses?
- GRE Stealing is easy to fix. Each MacBook has an unique IP address. When the stolen MacBook is turned on, its location-aware wireless function [vii] will broadcast itself on the network. If activated, the network will remotely deliver an instruction and it will turn off the MacBook. It is similar to use of telematics to turn off the ignition in a stolen vehicle. If the customer has suffered a loss (it is actually stolen), then the customer can activate the SAFETY PIN which initiates a text message specific to the IP address of the MacBook. This code, when delivered, will switch off the MacBook using a device-to-device encrypted command.
- ADD What about SES on PC or India's Simputer? Isn't Nic Negroponte beating down your door with his "one laptop per child" miracle mantra for education?
- GRE We are inclined to pursue a virtual vertical integration with dedicated partners in our ecosystem. Apple has a brand recognition and we want to deliver a high quality product with attractive features which are user friendly. Apple offers a variety of entertainment options which will create an independent revenue stream for their products and services. All advantages are temporary. If we find a reason to include PC or collaborate with OLPC or Simputer or Acer to augment our penetration, we will cross the bridge when we arrive.
- ADD Should I conclude that access to SES requires an always-on wireless connection?
- GRE You have hit upon an important point and the answer is going to be somewhat amorphous. In an ideal scenario, an always-on wireless connection is desired to

interact with content from the cloud-grid. The content, including quiz, exams and evaluation can be packaged and delivered on USB drive (different payment plan) which reduces the need to connect except for occasional exam uploads or tutor conference. Areas with higher broadband penetration may be rational targets better suited to online education business. In emerging economies the bulk of population may be in rural areas devoid of connectivity. If the 80/20 rule applies and 80% of users who can afford to pay are in urban agglomerations, then, always-on is the default. In Africa, India, China and Indonesia the distribution may vary widely.

- ADD The medium of delivery, for example, cable, broadband, 4G or WiMax can become the game changer for education SaaS in geographies with variable population?
- GRE Let me ask you – how would you deal with this scenario? What would you do?
- ADD Google is offering free wireless services for select villages in India. GE can profit from vertical integration by delivering wireless medium to connect your services.
- GRE Exactly. To deliver education from cloud based grid services we are adding service delivery or telecommunications to our business portfolio. Vast areas of the world with significant population are in the “dark” and will limit our access to new markets. If we are serious about growing software analytics and services as a profit center then we must not rely on someone else to deliver our services. WiMax protocol 802.16m makes it possible to deliver WiMax to these markets. We may jump start by buying companies like Blue Ocean Services or Altobridge. This integration will enable our customers to connect, use mobile services similar to TOKTUMI to place phone calls through a pervasive mesh network rather than requiring a telephone service provider (AT&T, O2, AirTel, Vodafone, Orange).
- ADD Are you implying that your vertical integration approach will enable your 802.16m network to deliver voice and video which may put phone companies and providers out of business?
- GRE It could reduce traffic for traditional telcos and impact their bottom line. Mesh networks can use mobile handsets as receivers, transmitters and routers. If we deliver 802.16m, it will carry voice, data, video within the mesh. Outside the mesh the cell towers may step in to carry the signal. Hence, you have an end-to-end pervasive network. This is not a new tool but few places except Seoul has a functional, stable and reliable WiMax in operation.
- ADD Will other service providers be allowed to deliver their services through your network?

- GRE We can bill customers and share profit with other vendors transmitting data, voice and video using unique IPv6 id [viii] and packet tracking software SaaS from our analytics division [ix]. WiMax eliminates the need for hot-spot locations. It has a wide range. If you are in the middle of a parking lot you can still ping Google using WiMax. Customers pay per use. Vendors (Google, Amazon) can pay us when their services are accessed using our mesh. If there is a mutual benefit we may execute reciprocity contracts, for example, our services on Amazon's cloud EC2 via WiMax. If you want to sell cars, you must help to build the road. In our case, the equivalent is the telecommunication delivery channel for SaaS.
- ADD Education subscribers accessing your SaaS in the cloud may use your delivery medium. It can also deliver iTunes or stream Netflix movies. Hence, it is a source of your revenue or profit sharing or some financial *quid pro quo*. Is this why Google bought Motorola Mobility?
- GRE The education platform is an investment by the customer for her future and quality of life. Our investment in education is a tool to educate, acquire and retain lifelong customers. We earn revenue over the lifecycle of the customer as long as the customer relationship is **relevant** and delivers on-demand services for the customer as she matures from pre-teen to teen to an adult, gainfully employed, hopefully. If the adult requires air or train travel or logistics or healthcare or insurance, we have these business units and she already trusts GE.
- ADD The education platform that you are delivering is promoting, by default, a global standard of education. Isn't it? You are following a curriculum that your customers are buying and by the power of the market invested in you, you are advocating a *de facto* standard. In fact, if you were to administer an alternative to SAT then institutions may choose to use and pay for your globally administered tests. You can raise or lower the bar on global education.
- GRE We must remain vigilant about rigorous standards but without being elitist or exclusionary. To meet diverse needs, we will differentiate instructional plans to offer various levels of graduations, diplomas and degrees but skills training or apprenticeships may be excluded.
- ADD It appears that you are keeping the customer in focus while converging and adapting the development of business services, such as insurance, to serve the individual either in a personal capacity or in their business dealings, over their lifecycle. In both instances, you expect to provide the products and services from your business units.

- GRE That is correct. STEM [x] education or healthcare [xi] SaaS are personal services which empowers the individual to pursue a financially rewarding lifestyle. An adult may wish to connect to social media as well as execute responsibilities where intelligent objects [xii] may play an important role through the internet of things (IoT). Adults may require personal financial services or business insurance. Financial success may translate to consumption of business services such as logistics, travel, energy [xiii], security and SOX compliance. These in turn use heavy equipment, risk management [xiv] and capital as well as business analytics based on connectivity of objects through the business IoT or enterprise of things (EoT) for SOX 409 compliance. We have businesses in these sectors which may be increasingly chosen by decision makers (individuals) who have grown to trust our integrity and our brand.
- ADD Your insurance business seems to be poised for growth in parallel with education.
- GRE Insurance offers peace of mind but purchasing insurance for every line item in our daily life is perhaps a Western practice. We are exploring a different model based on micro-revenue generation. Education and its necessary paraphernalia is one example which may open up new avenues but the traditional insurance market, such as, car and home insurance, is still in demand. We have to be creative in selling insurance. Lump sum payments or blanket coverage may not be the *modus operandi* for the emerging market of billions. Rather than service levels, I think pricing strategies may be the ultimate driver to create new markets.
- ADD The McDonald's approach to generating volume by offering 99 cents value options.
- GRE Simple, direct and affordable insurance may be the key to unlock the business growth we need. Pay-per-mile auto insurance and pay-per-hour home insurance.
- ADD If someone hits my parked car then your insurance will not cover damage because at that moment I am not "driving" by your pay-per-mile micro-insurance rules.
- GRE Micro-insurance is essentially a risk management concept taken to new heights. To offer micro-insurance we must share the risk with the buyer. Customers understand the concept. If you are careful as to where you are parked, your car may remain unscathed. The risk of collision in this case is low or avoidable. Hence, we have eliminated the option in order to offer the micro-insurance rate. While driving, the risk of accident is higher and the client wants to buy protection for her peace of mind. An average cautious person presents a low risk to the insurance industry and risk averse clients are highly profitable if they choose to buy insurance. A thrifty aging population may prefer our approach and our lucrative rates.

MONEY MAKING IDEAS

Connect (telematics software) with personal automobile id (IPv6) to bill distance data.

Growth potential from pay per mile car insurance

Estimated number of personal automobiles in India and China 30 million

Estimated average distance 6000 miles or 180 billion car-miles per year

Charge (average) 2 cents per mile (age adjusted) for car insurance *

Revenue pa with 10% share **\$360 million**

Pay Per Mile insurance reduces barrier to entry and improves economies of scale

* US average for low risk, low cost insurance for middle-age individuals approximates 5 cents per mile based on 12,000 miles per year.

MONEY MAKING IDEAS

Connect (domestic telematics SaaS) with WSN - IPv6 (self-organizing motion sensors ad hoc mesh)

Growth potential from security - pay per hour home insurance

Estimated number of personal homes in India and China 250 million

Estimated average 4 hours unoccupied or 365 billion home-hours pa

Charge (average) 1 cent per hour

Revenue pa with 10% share **\$365 million**

Pay Per Hour insurance reduces barrier to entry and improves penetration

- ADD** Your home micro-insurance rates assume the premises are unoccupied 4 hours per day. Why such a low number of hours when people in Asia work such long periods?
- GRE** Asian families care for the elderly. Parents may occupy the house when clients are outside the home. Because of the community structure, the risk of theft and burglary is low. People seeking peace of mind when the house is unoccupied are reluctant to seek coverage with bells and whistles. We sell a line of DIY wireless sensors and cameras which may be easily pre-installed by the customer to monitor occupancy. Wireless sensor networks (WSN) forms self-organizing mesh and uploads real-time data. Customers subscribe to the GE Home Safety Service to view data or monitor their premises. An additional service tier allows customers to access items or appliances on smart phones via the GE portal which connects and operates the things in the home connected through the GE internet of things (IoT). From their office, they can turn on their gas oven through the GE portal and monitor the potatoes boiling in the pot or check the temperature of the pot roast in the oven before they start their commute from work to home. They can even check remotely the sugar level in the urine of their elderly diabetic parent who is at home.
- ADD** For children of Alzheimer's patients, I know it is a great benefit to have a WiFi linked Zojirushi water dispenser at home which can alert you when your parent uses the (hot) water. It offers you peace of mind assuming that the person stays hydrated. Hence, I understand how IoT may aid the real-time information you described but how does healthcare fit in this context of business services?
- GRE** The trust we wish to earn through quality of service level and brand recognition may enable us to pioneer a new form of healthcare [xv] business. Isolated or disjointed attempts to offer "pockets" of health services are unlikely to succeed. The demise of Google Health is one proof. Individuals are unwilling to store their medical data in Google's vault. We want to take a long term approach to healthcare and establish an in-depth customer relationship.

The healthcare genie in our company is still in the box because we have thus far grown our health business as a device engineering or diagnostic tool kit business rather than a systems or solutions approach. Transformation is on the agenda within our healthcare silos. We are mapping the gaps. Providing healthcare services as a solution must begin with the healthy. Keeping customers health-aware and healthy earns the trust. Hopefully we will have begun the process of gaining customer trust with our education platform.

We are increasingly inclined to view healthcare from a radically "old" approach [xvi]. The decentralization of health services has driven up the cost of healthcare because

each decentralized unit must operate as an independent profit center to remain viable. The cumulative effect of such a system is likely to reach a threshold where the quality of service deteriorates because the recalcitrant business drivers (KPI) undermine the system that it was designed to serve. At least in the US, we have arrived and may have even crossed over that threshold. Thus, the need for the radically old approach of a vertically integrated healthcare service (VIHS), in much the same way we view an integrated education platform.

ADD Aren't you applying the same principles of integration to two diverse verticals?

GRE It is referred to as a systems engineering approach. Vertical integration is a principle and applicable to many operations. Apple is an example. Dell and Apple are both in consumer electronics industry but Dell's modular approach to boost supply chain efficiency to reduce cost is rapidly approaching its asymptotic limit. Apple's integrated service approach has projected the company in an unique league where its cash in hand on 31st July 2011 were in excess of the US Treasury prior to debt ceiling approval by the US Congress on 1st Aug 2011.

Without reducing QoS, healthcare cost reduction may be accomplished under a loose vertically integrated system [xvii]. One of the tenets of VIHS is the remote acquisition of health data from healthy individuals to monitor their physical state. We are in the business of device engineering as well as HIT or healthcare information technology solutions, for example, Centricity. Data from our devices are largely sterile because we do not have a healthcare service. We are positioned as a health systems vendor. Centricity is sold as a licensed software, similar to EPIC Systems. The devices, users, patients and software are operating in silos, albeit, profitable silos, but the data and the semantics are disconnected.

The task ahead is to orchestrate the health related pieces to provide solutions both for the industry and the individual. We must extract information from the data. The individual user is the key in this process. The solution and service must be in primary relationship with the end user. Hence, trust between GE and the user is crucial. It is this trust that we wish to nurture. The platform of education may be one catalyst. Healthy individuals must agree to remote healthcare monitoring [xviii] and permit analysis of the data uploaded through our healthcare SaaS. This may be a difficult step. Data must be highly secured. The data on our own mesh network may be better protected. For this reason, parcels of offering (Google Health) may find it difficult to gain long term traction. Our healthcare business has a long history and if we can extrapolate that value then we can expect a productive future.

The industry credibility from device business must be translated to individual credibility. Data from our devices and diagnostics along with remote monitoring data from individuals will begin to form a medical profile of the individual which can offer value if delivered in real-time to the point of care physician. The seeds of such a system are scattered in our units. We must synergize to converge with a clear vision of the solutions approach which must be scalable as healthcare SaaS and combine health informatics for intelligent analyses.

The ability to remotely perform routine tests for diabetes (blood glucose) and heart disease (blood cholesterol) will save time and money by reducing out-patient services. Data, over time, will provide clues to patterns of change, which, if detected, may save an emergency room visit. These are not fly-by-night operations. These are long term investments in the community. To be mutually beneficial the community must trust the service. Education as a platform engages the community through their children and the educated community is likely to understand the need for and subscribe to our preventative healthcare services.

ADD You believe that preventative medicine through remote health monitoring will be influenced by the relationship building exercise which starts with your education platform?

GRE What's the alternative? Will individuals volunteer their medical data for analysis? If that were true then why did Google Health languish? Some say we are not ready. There is an element of healthy skepticism in the West but the reasons may be different in the South or in Asia. We do not yet have a healthcare SaaS to broach the subject in India or China. As you know, we have relocated our 115 year old x-ray equipment operation from Waukesha, Wisconsin to China. Manufacturing and selling the equipment is the old business. Can we out-perform our key competitors, Mindray and Siemens, in China, by selling x-ray **services** as a part of biomedical decision systems (**bMDs**) instead of selling the x-ray machine?

As suggested [xix] in bMDs, x-ray data from our devices may be correlated with fractures to determine osteoporosis. Forecasting [xx] potential fractures based on dietary information, data mining and pattern recognition may improve the quality of life. The challenge is to migrate from the *status quo* to the value-add through analytics and informatics. We must reshuffle our product marketing and view potential solution approaches with a new lens. If we can meaningfully associate x-ray data to other data, for example, blood pressure, then we may begin to explore correlations and patterns in the profile which may help the patient. The ability to create and provide these connecting tools for the patient and the doctor using healthcare SaaS is the next frontier. It may be driven by intelligent [xxi] analytical

software, a forum for imagination to drive innovation and business luck to remain viable. We must help the customer to imagine and that may commence with education. We must listen to out of the box suggestions [xxii], have the conviction to experiment with *what ifs* and execute proof of concept *in the field*, because we cannot build a race horse using an earthworm as a model.

ADD Sources have shared with me that your first meeting later today is a business dinner in Kitakyushu with Teruo Kise and Kunio Harimoto which was driven and organized by John Dineen. What are you planning with TOTO the toilet manufacturer which involves John Dineen of Healthcare rather than Charlene Begley of your Home & Appliances business?

GRE Charlene and John are equal participants in this meeting with Oriental Ceramics. We aim to discuss ToTo iWashlet, the intelliGREnt toilet II.

ADD Are you about to acquire TOTO or its Washlet?

GRE Yes, we hope to finalize the deal and announce it in Tokyo.

ADD That is why GE portal can now also update the sugar in the urine of the parent or patient.

GRE Lifestyle technologies calls for convergence of services. In 2006, I outlined a convergence in the context of automobile services in an article published by TEKES, science and technology agency of the Government of Finland [xxiii]. Why would we sell a Washlet for only \$500? No matter how unique or intriguing the Washlet experience may be its novelty will wear off. But, we can sell pay-per-pee (P3) healthcare service for 49 cents. If the client opts for the analytical mode twice per day then we earn over \$1500 per person per Washlet over five years. Site licenses can be issued for one or two or family or bulk users. The latter may be used by restaurants or hotels if they choose to provide the service. Pragmatic tools and technologies which may enhance our lifestyle are increasingly tetherless, pervasive and must be feasible for a micro-payment option if we expect rapid diffusion and adoption. I have sketched out a few other lifestyle scenarios including electronic voting using SaaS.

ADD How will your system analyze my urine if I am eating in a restaurant or in a hotel, abroad?

GRE Pre-registered biometric id in combination with your unique IPv6 number will be on your GE Washlet Healthcare portal and it will trigger unique identification anywhere in the world as long as the Washlet portal you are using subscribes to our service. Biometric id match can send a code to your cell phone in a manner similar

to bank transactions. Entering the code on the Washlet control panel may double the encryption for secure transmission of the health data to your PC or hospital, depending on your specification. The Washlet can be location-aware and query you on entry if you wish to use the service. You can enter your P3 code to use the system and pay for it using the credit card on your profile or PayPal. This is a service which depends on sensors. There are many ways for customers to use it, restrict it, switch it off or turn it on. The customer has a unique id and is always in control of the data.



- ADD** You can sell the service and not care about the actual porcelain toilet bowl as long as the sensors are compatible with the interface to receive the data and process transmission.
- GRE** It will happen, soon. Traditional toilet manufacturers will move up the value chain to convert their “dumb” toilets to “intelligent” toilets. They may integrate our sensor and services suite or use products from other competitors providing home healthcare services.

- ADD What if the law enforcement in Singapore uses the wireless intelligent Washlet to profile potentially irresponsible drinkers in pubs and restaurants? What if FBI uses “toilet taps” to remotely detect individuals who may be dealing and using restricted substances or drugs?
- GRE Big Brother may monitor excretion of controlled substances but the instances of such use may outweigh the benefits of preventative medicine and continuous monitoring for those who may need real-time attention. We cannot claim anything to be perfect. Can we?
- ADD Your average 20-something may not buy or may not be able to afford pay-per-pee luxury.
- GRE The average age of a person in the US buying a new BMW or Audi or Cadillac is approaching 50 or more. These folks are increasingly health conscious. In general, we are living longer. That is our market in the developed countries. It may be a decade or two before we expect Washlet Healthcare as a common function in middle income households in Asia. ToTo’s intelligent Washlet helps more than 10,000 people in Japan since its introduction in 2005. It is the right time for GE to pursue these diagnostic tools to reduce overall cost of healthcare.
- ADD Would you share your lifestyle technologies emerging scenarios with our online readers?
- GRE I will give you a copy which you can attach as additional material for your online article.
- ADD I wish to digress briefly to ask your opinion about the estimated \$100 billion IPO from Facebook. How does Facebook, Google, Twitter change your business and/or profits?
- GRE The jury is still out there but social media is an important addition to the existing plethora of factors. It is a channel to advertise and extract customer preferences which are useful.

Big data analytics and non-obvious relationship analysis using neuro-sensory networks may yield patterns which may empower business trends, predictive analytics and forecasting. P&G has realized that their \$10 billion traditional advertising budget may be trimmed by using Google, Facebook, Twitter as marketing channels. I hope P&G is successful.

The hype of the Facebook IPO is reminiscent of the dot com bubble. The market will correct Facebook excesses in due time and we will recognize that market

capitalization of Facebook was an error but not before a few individuals have extracted a few billions from this circus. Google offers services which may increase in value and it will stand the test of time. I don't have time to write on the wall and the writing is on the wall about the value of mindless drivel that you find on most of the social media sites. Twitter mediated "Arab Spring" are few and far between. I remain aware of social media and we will use it if it is profitable.

ADD Thank you. This has been a flight of imagination. Thank you for a sense of the future for Global Engineering and its emerging portfolio of new lines of business. May I change gears and ask you, you as the individual Mr Emmell, a global citizen, about issues unrelated to your company?

GRE I am not an expert in any field but if you are seeking my personal opinion on any issue, I can respond, if I have anything to contribute on that topic, as a matter of general discussion.

ADD That is exactly what I am seeking – your opinion as a member of the global society. Do you believe that post-elementary online education will replace brick and mortar schools?

GRE No. That is the short answer. The long answer is quite long and cannot be just one answer because we do not live in an uniform world. Online shopping eroded the earnings of shops in the mall but retail is still very much alive and well as a tool to extract ephemeral pleasure. In a similar manner, online education will co-exist with various forms of brick and mortar institutions but the reach of education, penetration and access may be increased. The latter will engage children from areas where the physical development of schools are slow to materialize. In the US, if you expect middle and high school children to stay at home for their online education then one must entertain significant social changes to the workforce if at least one parent or guardian must stay at home because children under 16 years of age cannot be left alone or unsupervised in homes. Pre-college educational institutions serve as en masse baby-sitters. If online education destabilizes that service then the economic potential of families in industrialized nations may undergo some not so subtle changes. On the other hand, if you view online education in the context of families in China, India, Brazil and the continent of Africa, the change in the earning potential may not be a major factor if one or both parents are at home due to lack of employment or social structures where the mother is the resident home-maker. Taken together, there will be many shades of grey on the solution palette of which only one may be suitable and successful in one area. Adopting that shade of grey for reproduction in another area, however related or in geographic proximity they may be, may or may not lead to the same experience, outcome, impact or success. Online

education is a delivery tool in much the same way that 802.11 or WiFi is a delivery tool which has increased penetration of communication without physical cables.

ADD It appears that you are of the opinion that if resources are available then the brick and mortar school is favored over online schooling.

GRE That is not my opinion in its entirety but it is a part of my opinion. The key word in your question is resource. In the context of the US scenario, when we talk about resources we refer to the facilities as well as the human resources. HR for a classroom is the teacher. It is a variable with the greatest disparity. If we have the resources so that we check the boxes but the students are turned off from mathematics because the mathematics teacher is really the football coach who may not have had any formal training or degree in mathematics. In this case the resource “box” is checked but in reality it is a sham and quite detrimental to education. But, if we use the so-called mathematics teacher as an individual to baby-sit the class while the students in the room access a online portal then the *tool of online education* may be used to deliver excellence to the student (anywhere) in the form of mathematics taught by Salman Khan or Peter Norvig or Sebastian Thrun or Barry Charles Mazur.

ADD Therefore, the tool of online education may catalyze the brick and mortar structures in industrialized nations that we call schools, today, to gradually transform to holding stations or baby-sitting mega-centers “manned” by individuals who are not required to be teachers but credentialed as hall monitors.

GRE Your succinct description may be what the future holds for post-elementary education in the industrialized nations. The socio-economic impact of changes in workforce dynamics may be reduced by transforming schools to community holding cells for working parents.

ADD The grim iconography of “holding cells” will cause consternation to congeal the opposition.

GRE Nothing of any value was ever achieved without the opposition. Society must entertain dissent, tolerate resistance to change and allow alternates as long as public resources are used with reasonable equity. It is the charge of the leader to educate the consumer about the value of excellence that can be delivered through the tool of online education in that “holding cell” that conjures morbid imagery. How about calling these centers the ***IQ SPA*** ?

ADD SPA lends to the imagination a form of immersion. The students will go to the IQ SPA to be immersed in excellence from great teachers who can help students become true learners.

- GRE It is all about marketing. Isn't it? It is about the image, imagery and imagination which may be induced by visualizing the context of the tool of online education which offers an advanced vision of the future potential of learning, yearning and earning. It is the task of the visionary in education to articulate this theme. Unfortunately the vision is lacking from public education administrators. Paper-pushers may correctly view the progress of online education formats as a threat to their job security. The middle layer or the administrative functions are easily replaced by software. You do not need a host of deputy superintendents to repeat the tasks what can be done at a fraction of the cost by software systems. There will be resistance from vendors who make a living out of public funds for education.
- ADD If this scheme is even partially implemented then the educational financing (FTE) model based on property taxes may break down because schools in Palo Alto and East Palo Alto can now have the same excellence of teaching through the ubiquitous online education tool.
- GRE Application of the online education tool for post-elementary students may usher an equity of access to excellence. It will require re-evaluation of public education funding and disbursement. It will offer access to the content that elite schools offer for their Ivy League bound students. But, subtract the motivation some teachers may provide in the classroom by inspiring students to aspire, in addition to, sowing the seeds for a lifelong of learning.
- ADD In this scenario elementary schools are still necessary because a five- or six-year old is hardly likely to follow a personal regimen of education on an iPad or Simputer. What does the future hold for professionals who may wish to be middle or high school teachers?
- GRE This is an equally a complicated scenario with partial answers and void of absolutes. There will be teachers in all sections of public education but their relative numbers may vary due to the future nature of the classroom. The association between a teacher and classroom may be subject to modification if a classroom could function with a virtual teacher and a hall monitor. In other words, the imagery from Raphael's *School of Athens* may always be true even if the slate on the floor with Euclid's proof is replaced with an *iPad* or another *Surface*.
- ADD What about experiments in physics and chemistry, dissections in biology and physiology?
- GRE Hands-on learning experiences may not be entirely substituted with simulations. Therefore, the IQ SPAs will hire teachers to conduct labs. Online education tool is a part of a tool kit to enhance delivery of post-elementary education. Online education

must hybridize with real teachers. Collectively, the hybrid may increase and improve the delivery to approach the quality of instruction expected in college prep schools, for example, Roxbury Latin, Lowell HS, Phillips Exeter Academy, St Paul's, TJHSST, The Lawrenceville School or Stuyvesant HS.

ADD You have mentioned about the potential of ushering uniform standards by default. Is it your expectation that all students will have to meet those standards to graduate?

GRE I doubt that we can hold all students to the same criteria. Drop-out prevention will be impossible to reduce if all students had to understand how to use Excel to simulate a binomial distribution. This is a political dilemma. The idea of "track" is social allergen. Yet that is what we practice by allowing property taxes to dictate the quality of public education which manifests as an equity of access issue. I think many are blissfully unaware that the middle level jobs are evaporating. The workforce skills necessary in the future are likely to be poles apart. We need scientists, strategists, pundits and Presidents but the numbers of bank tellers, retail associates, cinema ushers and HR specialists will dwindle to extinction. Demand for janitors, butchers, waiters and builders may increase along with high-tech service providers which include nurses, doctors, programmers, engineers and financiers. Therefore, based on supply and demand, graduation from high school may lead students to one of 3 tracks: graduate, advanced graduate and an honors graduate.

ADD Meritocracy based aristocracy harks back to a Tocquevillian take on social classes.

GRE I wanted to avoid Tocqueville in our discussion but I guess I have failed. I don't think we are going back to Tocqueville in any shape or form. In my opinion, Tocqueville was wrong about many things he appeared to write about in *Democracy in America*. Alexis de Tocqueville offered a myopic view and an even more closeted analysis. Gustave de Beaumont, his travelling partner, is the one we should praise for objectivity, thoughtfulness and pragmatic presentation of the society they encountered in the US in 1831. But, please, let us focus on meritocracy in our present day. Do you believe that Sue, Tom and Dick without advanced education can manage the government or administer the country? We need merit where merit is needed. Tearing down the President as an elite because the President went to Yale or Harvard is short-sighted, ignorant and dangerous. It is equally obtuse, irrelevant and unnecessary to expect your waiter to understand supply side economics or calculus. The uneducated President and the intellectual waiter are not the instruments which will help the economy to grow. We need job-appropriate tools not blunt instruments dealing with the jagged edges of global political economy while intellect and wisdom is rotting in a kitchen.

- ADD If common sense prevails, society may grasp the pragmatic necessity for high school graduates, advanced graduates and honors graduate depending on the level at which the student decides to complete and compete. What is your view of the path to employment for the high school graduates? What is the next step for those who are not advanced or honors graduates?
- GRE It is an answer that is steeped in quagmire. In other words, I do not have a clear answer. What I think I know is that we have to re-think along the lines of workforce development and job training programs as a part of the community college infrastructure, which is mostly applicable to the US and perhaps in some measure in UK where polytechnics may still exist. The other path is internship or working as an apprentice in an industry. It is a tried and true method used extensively in the last century in Germany. The combination of community college programs and industrial apprenticeship is a very hands-on approach to address employment options for basic high school graduates. It will require robust state wide programs to channel these graduates and reduce number of drop-outs. Using 3rd party service providers will drain the resources of the state without adequate impact and/or outcome. If we want to prosper as a society in some form of harmony, then we must enable this class of graduates to find jobs which will help them to enjoy a decent standard of living, be a consumer and contribute as tax-payers. The advanced and honors graduates may not need substantial help from government programs.
- ADD Will you hire a high school graduate to work in GE?
- GRE Of course, we hire high school graduates for a variety of jobs but perhaps what you are asking is that do we hire high school graduates with skills training. Yes, we do.
- ADD Is skills training key to employment. These individuals must be trained to deliver value. What happens when that skill does not add any value or is obsolete?
- GRE Job re-training programs are one answer to your question. This is what we lack in the US economy. How many times do you see the US Department of Labor in the news cycle? Who know who is running the US Department of Labor. The last time we heard of the US DoL was when Bob Reich was the Secretary of Labor. We need to find ways to bolster the services from state and federal labor agencies to continuously provide assistance to this sector of our society. US Department of Commerce continues to polish the chrome by advocating US goods and services but if the US Department of Labor does not tune the engine then the US cannot provide the advertised goods and services based on US workforce which leads us to the reason why we copiously outsource.

- ADD If these discrepancies are so evident and people like you have direct access to the President then why isn't there a greater push to synchronize the education, graduation, training and earning?
- GRE How often do you interview the independent owner of a tiny convenience store?
- ADD What you are implying is that the issues of basic high school graduates, basic job training and the humdrum employment options are not attractive for attention?
- GRE I am also implying that the media does very little to highlight the trials and tribulations of the humdrum small and medium enterprises which constitute the bulk of our economy. It is far attractive to write about Intel or Boeing or GE or IBM but the bulk of our high school graduates are looking for jobs in Sunset Lube, Little Bangkok, Welcome Food Stores, B&B Landscape, Motel 6 and Sunshine Laundry. Unless there is something lurid, sensational or murder in a gas station, we rarely see SME's on the front page or on the evening news. The industrialization of society has created a void where once there existed a dignity of labor. Hence, labor, stripped of its dignity, is now a pariah.
- ADD The social disequilibrium of industrialization reflected by the growing chasm of inequity is abundantly evident in the post 2007-2008 recession in the US and elsewhere in the world. You seem to empathize with the plight of the SME's and the pool from which they derive their human resources. In the environment of global discontent, what do you predict for the future of post-secondary institutions which are likely to serve as the next home for some of the advanced and honors graduates from high schools around the world?
- GRE There are no simple answers but there may be at least one theme which could be helpful. I want to make it clear that the top 100 schools and the bottom feeders are excluded from this opinion. The top schools will continue to innovate, create, deviate and disrupt the norm. That is why they are in the top tier. Let us consider the middle-tier schools in US and EU. I do not have sufficient grasp of the circumstances in SE Asia or South America but I think the generalization which I am about to suggest may be widely applicable because it is based on concepts promoted by Dr Yunus in his discussions about social business as a platform for economic growth opportunities for the poor by helping them solve specific problems in a non-dividend manner. I wish to propose social business with an entrepreneurial twist for the middle-tier schools in the US and EU.
- ADD I am assuming that your version of social business or social entrepreneurship theme will pursue a for-profit operation.

- GRE Non-profit and not-for-profit operations are far more difficult to build and sustain than for-profit ventures. If my theme intends to help middle-tier post-secondary institutions of higher education then it will be sort of a zero sum game if there are no opportunities to be profitable. The purpose of this theme in the context of these institutions is to create new sources of revenue for the institutions which will be ploughed back in the academic programs of the institution or university.
- ADD It sounds like an altruistic *modus operandi*, overall. The profit, based on your schemes guided by your version of the social entrepreneurship theme, shall be reinvested to enhance the academic functions executed by the not-for-profit institution or non-profit university.
- GRE In that context, my version of social business or social entrepreneurship suggests that universities interact far more aggressively with society and business to identify problems, create solutions and charge for the services.
- ADD Social consultancy in some form?
- GRE Social consultancy and SME business solution provider are likely tags. In any standard university there are quite a few people who are working on ideas and concepts which can be monetized. You don't know which ideas could be monetized unless the university is in constant dialogue with the community and the business community. Industrial liaison and sustaining platforms for dialogue with businesses and communities are not common practice in middle-tier universities. But, these interactions form the bread and butter of all top tier universities which are also research universities. Prestigious universities have multiple forums, groups, think tanks and roundtables where they invite businesses to share their problems, ideas, research directions, product development and growth expectations. Big businesses contribute financially to sustain these platforms based on the intellectual aura of the institution and the strength of innovative ideas they can harvest from the liaison. The results indeed indicate that the symbiosis is bi-directional in its profitability. In 2009, corporate funding at MIT for such platforms amounted to \$123 million or about a fifth of the funding from external sources (\$661 million) which included another fifth from private donors and the remaining (60% of \$661 million) from various US government agencies.
- ADD Copying the MIT model may not be prudent for all mid-tier universities in US or EU.
- GRE The MIT model and other models similar to MIT, for example, Stanford, Harvard and other top schools, are irreproducible at the middle-tier university level. Hence, I am offering a modified suggestion about profitable social entrepreneurship. The wealth of the ideas in middle-tier universities may lack the glamour but may not lack in

substance. The reach of the middle-tier universities may not catch the eye of the Fortune 100 companies but it can reach SME's which are in the thousands. Globalization has made it possible to reach SME's not only in the immediate geographic location but in far away corners of the world.

ADD The volume of potential clients are orders of magnitude more if we shift our gaze from the blue chip Dow Jones companies to the SMEs.

GRE The cumulative profitability of the volume factor is even more encouraging when you consider that it is slightly less difficult to pursue a small fee from many customers rather than million dollar contributions from a few behemoths.

ADD Your suggestion boils down to a micro-revenue strategy which delivers higher profitability if the economies of scale are on your side.

GRE I think it is more than that if you consider the nature of the relationship which makes micro-revenue more profitable. In this model one can reduce the financial barrier to market entry by lowering the cost or fee or charge by contracting based on a micro-payment model which claims only pay-per-use fees over the lifecycle of a service or product rather than the short-term profitability from a higher priced fixed sale. The scalability of the service or product may add to the revenue potential in a manner comparable to other micro-revenue based business models, for example, PayPal, which racked up \$4 billion in payments in 2011.

ADD If PayPal charges 1% for the transaction volume then it earned \$40 million in 2011.

GRE That is the profit logic behind my theme. Let me explain some of the specifics using a general scenario. The easiest to explain is software visualization tools. Whether you speak with healthcare workers or energy vendors or academic groups, it is often evident that they do not know that they can better acquire data, analyze data and visualize data in order to gain transparency (for example, monitoring a diabetic patient, improving energy efficiency, mundane document management for various academic tasks in schools). In most cases these groups or the SMEs delivering solutions to these groups lack the innovative skills, depth of field and analytical ability. The university can offer a consultancy service which may be at a fraction of the cost (or over a long term results-based criteria) compared to traditional consultants (for example, KPMG or Deloitte or TCS). The university team could better analyze the business process and help design improvements. If software solutions are the answer then the university can use its student in CS to create software or liaise with skunk works in software rich locales (India) to custom build the functionality in a manner that remains open and interoperable with other systems (compared to SAP or Oracle). The success of this operation may yield a

visualization or analytical tool which may have sales potential in a far bigger market of SME's (vendors) pursuing related businesses. This is where the scalability factor surfaces. If the tool is related to data analysis, the analytical engine may be hosted by the university. The customer(s) may be charged only when the tool is used, thus, ensuring a long term interaction and long term earning potential from analytics.

ADD The "social" part of your theme relates to finding out what society (includes businesses) needs and then creating devices or software or products to serve or solve those issues. The engagement begins with consulting and analysis followed by planning and proposal. If the proposal is accepted, the university team executes the plan and implements the solution.

GRE There will be a nominal engagement fee if the consulting reveals there is need for analysis and if the SME is willing to engage beyond the initial consultation. If the proposal is accepted by the SME, there will be other fees based on the work necessary to execute and implement. At all stages of the operation the fees and charges may not exceed twice the actual cost (compare to 10-100 fold excess charged by traditional consultants). Revenue sharing models may be considered if solutions create more revenue or savings for the SME.

ADD This SME may not be located near the university if there is a business development arm of this endeavor which could market these services from the university to the world market. In part that can be achieved via the web but it may be even more profitable to link up with small consulting outfits in various parts of the globe.

GRE Theoretically what you described is the same as the big boys at MIT and Stanford which has the global name recognition. Due to their excellence, businesses from all over the globe seek services from these elite universities through their memberships and affiliations in forums, groups, workshops and conferences. It remains to be seen at what level a middle-tier university can create that magnetism.

ADD Is there anything else you wish to add?

GRE Perhaps a few words on energy [xxiv]. In my view we depend on the trinity of education, health and the environment, which includes energy, for the progress of civilization [xxv].

We are committed to our energy business and believe that safe nuclear energy is essential to reduce the volatility due to fossil fuel dependency and *what if* scenarios post-2050 for source of liquid fuel [xxvi]. I believe nuclear fusion may be commercially feasible by 2050. We are not yet invested in manufacturing renewable energy and that may have to change. Micro-manufacturing non-fossil,

carbon-conscious, photo bio-fuel may help energy self-sufficiency [xxvii]. The importance of business growth through atypical entrepreneurial alliances needs no overemphasis. We may wish to indulge in off-beat innovation to harvest the benefits of connected imagination. There are thinkers out there but their ideas rarely reach the market. Either they are not connected or the people they connect with are mired in the day to day operational doldrum. Managers are unable to conceive application of new ideas or too busy to find the mental space to imagine. I am guilty, too. I need to proactively entertain, generously support and aggressively pursue more unconventional wisdom [xxviii].

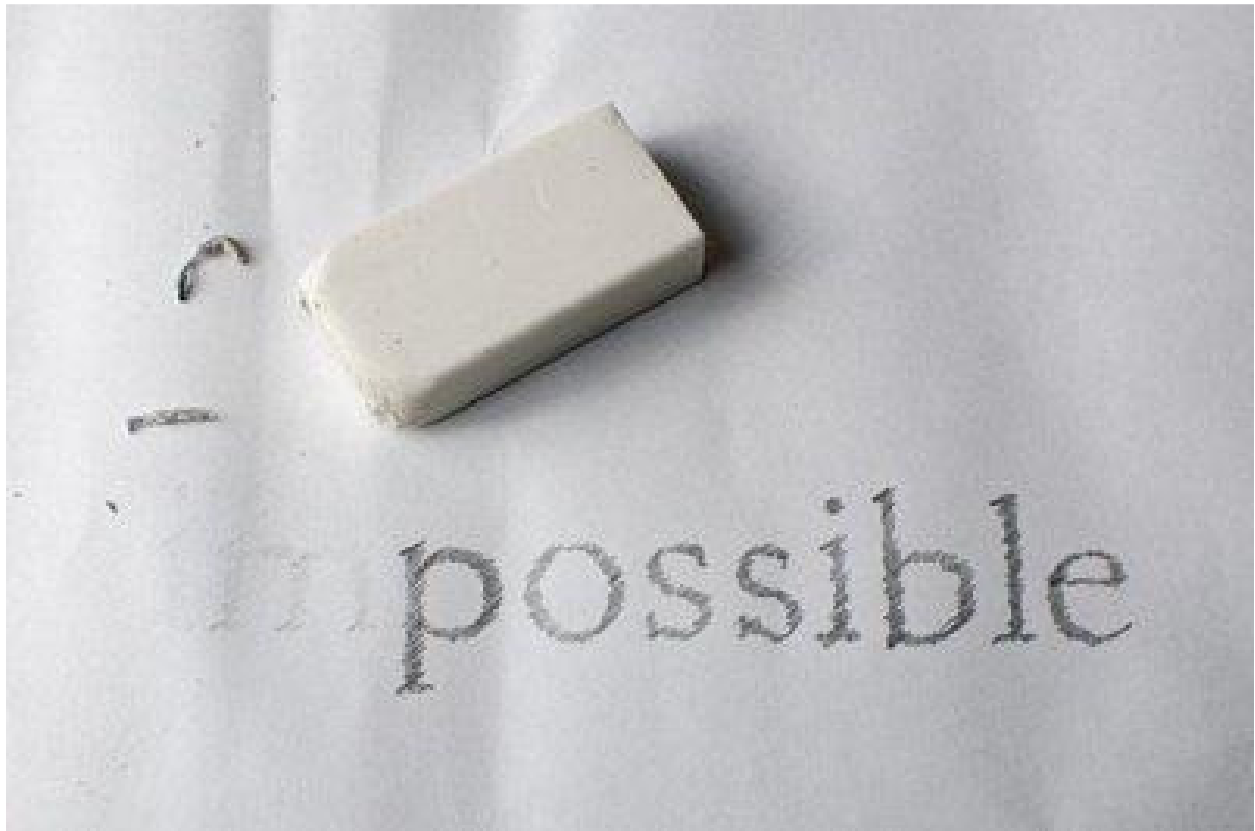
ADD Are there any specific words of wisdom you wish to share with our readers?

GRE Think different, words pioneered by Apple. It is important to view problems with new eyes. Allow individuals with non-traditional backgrounds to be a part of strategic teams and experiment with suggestions [xxix]. If people with same degrees and similar experiences pontificate incessantly on issues of cost versus value then we may never have the guts to achieve glory or take the quantum leap. We will grow by fractional increments. I often reflect on an event at General Electric and share with our managers the incisive foresight of the lesson based on the mistake GE made in 1959 [xxx] when they pushed aside the views of their scientists and engineers in favor of market research which risk averse business people use for self-preservation. Did Mark Zuckerberg conduct a market survey before he launched his egregious dating site which he modified to create The Facebook? The lesson from GE was succinctly captured by Tellis and Golder in MIT's Sloan Management Review in 1996.

In 1959, GE recruited the consulting firm of Arthur D. Little in Boston to conduct a study to determine whether there was a market for portable TV sets that GE could now build using solid state transistors. Several months later in 1959, after spending a staggering amount of money (millions) in focus groups and discussions, Arthur D. Little Inc. sent their analysis to GE suggesting that they do not believe there is any market for such TV sets. GE management pushed aside the project proposed by its engineers. Just before Christmas in 1959, Sony introduced a small B&W TV in the US and sold more than 4 million TV sets within months.

Does fiction really need facts ?

- i <http://esd.mit.edu/wps/esd-wp-2006-10.pdf>
- ii <http://esd.mit.edu/wps/2007/esd-wp-2007-24.pdf>
- iii www.censusindia.gov.in/Census_Data_2001/
- iv <http://wp.me/p1z8d1-3>
- v <http://www.ai-class.com/>
- vi <http://wp.me/p1z8d1-l>
- vii <http://wp.me/p1z8d1-D>
- viii <http://esd.mit.edu/wps/2008/esd-wp-2008-09.pdf>
- ix <http://wp.me/p1z8d1-D>
- x <http://dspace.mit.edu/handle/1721.1/62251>
- xi <http://esd.mit.edu/wps/2008/esd-wp-2008-17.pdf>
- xii <http://esd.mit.edu/wps/2008/esd-wp-2008-09.pdf>
- xiii <http://dspace.mit.edu/handle/1721.1/59804>
- xiv <http://dspace.mit.edu/handle/1721.1/43948>
- xv <http://esd.mit.edu/wps/2008/esd-wp-2008-17.pdf>
- xvi <http://wp.me/p1z8d1-r>
- xvii <http://dspace.mit.edu/handle/1721.1/62251>
- xviii <http://dspace.mit.edu/handle/1721.1/58972>
- xix <http://dspace.mit.edu/handle/1721.1/41911>
- xx <http://dspace.mit.edu/handle/1721.1/41906>
- xxi <http://dspace.mit.edu/handle/1721.1/41914>
- xxii <http://esd.mit.edu/WPS/esd-wp-2006-11.pdf>
- xxiii <http://dspace.mit.edu/handle/1721.1/56251>
- xxiv <http://dspace.mit.edu/handle/1721.1/54800>
- xxv <http://dspace.mit.edu/handle/1721.1/62217>
- xxvi <http://dspace.mit.edu/handle/1721.1/59804>
- xxvii <http://dspace.mit.edu/handle/1721.1/62251>
- xxviii <http://dspace.mit.edu/handle/1721.1/54837>
- xxix <http://dspace.mit.edu/handle/1721.1/43945>
- xxx <http://dspace.mit.edu/handle/1721.1/41908>



PART II - APPENDIX

Lifestyles of the Wise, Wired and Wireless

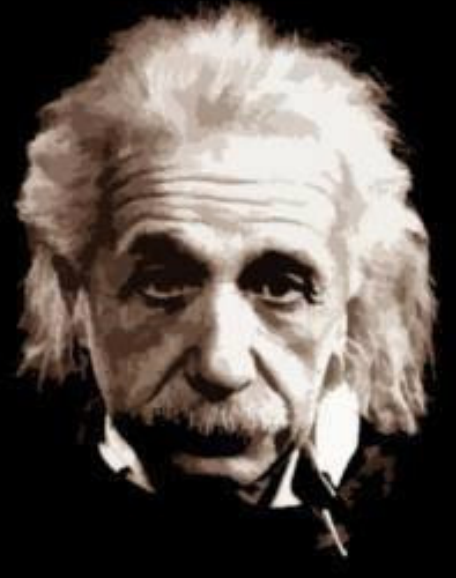


Imagination

BCFN Magazine received this APPENDIX for its online portal. These sketches were provided by GRE following the interview with ADD. These hypothetical scenarios consist of many converging layers of technology which provides the tools and connections we may use to enhance certain functions of our daily activities, for example, retail, utilities, banking, energy and marketing. The sum of all or part may represent consumer lifestyle systems in industrialized nations. The names and products used may have a counterpart in reality but are used only to make the scenario appear plausible as a lifestyle systems network or digital service chain. People, corporations or institutions indicated in the scenario did not endorse or support the scenario or have any idea that their names, logo or brands were used to script the scenarios. This is fiction. It reflects an opinion about aggregation of relational applications with social media and business services. It highlights the inevitable convergence of diverse niche applications which may spawn new systems anchored by global conglomerates who may have the wisdom to build open platforms for aggregation. Taken together, the ecosystem of systems, cloud computing and analytics may combine to offer lifestyle technologies where context, relationship and connected interoperability are in great demand from global digital citizens.

“If you want to live a
happy life, tie it to a
goal, not to people or
objects.”

-Albert Einstein



Being Ebullient ♠ An eBoolean in a Googlean Universe

Koenigsegg Agera Electric Vehicle user Eva Gaëlle Green is at Kirkham Street & 11th Avenue in San Francisco. Eva notes that her 245 mile range electric vehicle can travel 10 miles before the battery charge indicator may threaten to move from orange to red on her CARNET. She installed this new device and plugged it in her dashboard USB port after she “energized” her Koenigsegg Agera sports coupe with a Tesla Roadster engine coupled to a A123 battery. Eva loves the Nordic contours of her Koenigsegg Agera but prefers her “green” engine from Tesla which is delivered with BRUT, Tesla’s Bluetooth Remote Update in Real-Time. BRUT syncs with the CARNET system using embedded Bluetooth in the battery system which transmits to the CARNET screen the status of her battery power, how many miles she can travel and the locations of the charging stations within her driving radius before the vehicle battery signals a crisis state. The CARNET app on her iPhone displays the same data if she wants to check the status of her battery and allowed range (miles) before she gets in her electric vehicle (EV).

Eva reviews the EVC (electric vehicle charger) stations in 1 and 5 mile radius on her CARNET GPS interface. She downloaded an app called zAPP to refresh EVC locations on the VeriWise GPS embedded CARNET. Eva locates an EVC inside the UCSF garage (Parnassus and 3rd Ave) and another 4.5 miles away in Japantown (directions synchronized with her pre-set lunch destination at One Market with her friend Vesper Lynd). She touches the “update status” button which reveals a wait time of 00hrs41min for the BetterPlace EVC inside the USCF garage and 00hrs07min wait time for Japantown EVC location.

She decides to recharge near Japantown at the Starbucks (1501 Fillmore Street) which offers the additional perk of being a wireless EV charging location powered by WiTricity. When she approaches this location (waiting at the traffic lights at Geary Boulevard and Steiner Street) her CARNET shows a 20% off e-coupon identification number (eCID) for any purchase in Kinokuniya Book Store (inside Japantown mall) valid for 120 minutes. She touches the “share” button coupled with the Facebook logo on the eCID skin on her CARNET touchscreen and shares the eCID with her friends who may be in the area. Her iPhone buzzes in seconds. Her “share” feature is linked to her Facebook app on her iPhone and the eCID from Kinokuniya Book Store is beamed to her iPhone (she doesn’t have to remember the eCID number). Her friend James Bundt uses the same convergence feature of Facebook-iPhone link and she wonders if James might walk over to the store (he is a front office manager at the Kabuki Hotel on 1625 Post Street). James may want to buy washi with the 20% eCID she shared. Seconds later her iPhone buzzes, again. This time Starbucks delivers to

her iPhone a Groupon eCID for 10% off any purchase valid for 90 minutes from the time after docking at the WiTricity EVC at the Starbucks parking lot (1501 Fillmore Street). While Eva is gently driving on to the wireless EVC charging grid (parking lot space with white perimeter) her iPhone buzzes with a Googlean jingle. It contains coupon from competing Peet's Coffee inside the Safeway Bakery (1335 Webster Street) offering a tall cup of free Peet's Coffee if you buy groceries in Safeway (1335 Webster Street) for \$10 or more and 20% off Peet's Tea gift wrapped boxes if you visit Peet's Coffee and Tea retail store near Japantown (2197 Fillmore St) in the next 24 hours. Googlean also delivers an eCID for 2 for 1 movie tickets (limit 4 pairs) for *The King's Speech* at the Sundance Cinema (1881 Post Street) for any matinee.

Eva is parked on the charging grid and waits for her car to synchronize with charging system from PG&E. In moments the PG&E logo flashes on her CARNET screen. Pacific Gas and Electric (PG&E) flashes a live Avatar (bot) on her screen:

"Hi Eva Green, I am Erin Robotovich."

ER Welcome! BRUT says your car needs 25 kWh for a full charge. If you charge your battery at this station for a full re-charge then you will receive a 5 cent per kilowatt discount for your next charging session at this station. Please say "yes" to accept or "no" to decline.

EG Yes

ER Thank you, Eva. Your VIN has been detected. Verify by touching the RFID button on your toolbar.

ER Thank you. VIN accepted. Eva we are synchronizing your BRUT. It will take only a few seconds. Synchronization complete. Your vehicle will be charged with a wireless WiTricity 230 volt charger for 25 minutes to deliver a total full re-charge of 25 kWh. Please say "yes" to accept or "no" to decline. Thank you, Eva. Your credit card on CARNET profile will be charged for \$100. Please say "yes" to accept or "no" to decline" or "other" if you wish to use any other payment option.

EG Other

ER You are at station BUCS1501. Your payment options are [1] "cash at station" [2] "credit card at station" [3] "mobile ebill pay code" and [4] "GEMS" (GE Mobile Money System).

EG 3

ER Check your mobile phone for pay code and say “yes” if you received it or say “help” if you have not.

EG Yes

ER Please press reply and insert your bank details.

EG BOFA3USN.1970

Reply from Verfiy with Visa → Your payment code is PGEC0070. Resend code to vendor to pay ebill.
Your code is valid for 60 seconds.

ER Payment received. If you wish to sit in your car and use WiFi, say “yes” or “no” if you are leaving.

EG Yes

Eva switches off the car and uses the WiFi to Skype her friend Vesper Lynd. But Vesper’s desk had a video-note for her to call Google Voice and leave a message because she had to cancel the lunch with Eva at One Market. Eva calls and reminds her by voice mail to credit her mobile donation pot at Facebook Foundation which will run nano-philanthropy collection for Dana Farber Cancer Center on Monday. Then she gets down from the car and walks into the Starbucks. She turns around to see the controller light just turned to red as her vehicle charging commences. The EVC will not operate if it senses the vehicle is occupied.

Inside Starbucks (IS)

EG Hi, how are you? May I please get a Mocha Valencia grande with an extra shot of espresso, hold the froth, dust with cinnamon, please. Could you please blend in a smidgen of non-fat soy whipped cream? Thanks!

IS Is that all? It will be \$4.95. Cash, credit or mobile? Do you have an eCID?

EG Mobile, please. Yes, I have an eCID, too. Will I read it to you?

IS Yes, please.

EG Got it? Is it in your system?

IS Yeah, it is here. With the discount, it is \$4.45, please. Your ebill code is UR1QT3.14159265

EG Thanks, so are you!

IS How nice! You got the pi!

Eva taps on her GEMS app on her iPhone. In the vendor box she inserts Starbucks unique vendor id displayed on the register (BUCS1501) followed by her ebill code in the next box (UR1QT3.14159265) and finally the amount in the box below. Eva presses send. In moments she receives a confirmation with transaction id.

A message box shows her that she now has accumulated 7.007 GEMS credit. She can receive 7.007 cents off per kWh if she charges her car at any GE EVC location in the continental USA or she can gift her GEMS credit to anybody on her Facebook or LinkedIn network or convert it to Amazon Rewards on her Chase credit card.

IS Thanks, Miss Eva Green. Enjoy your Mocha Valencia.

Eva walks toward Kinokuniya Book Store and tries to figure out what she needs to take with her to Albert's dinner party, later that weekend. Albert loves broccoli, she thinks. Why don't I make him a grand serving of beef and broccoli stir fry with ginger and spring onions? She taps on a cooking app on her iPhone and Julia Childs inimitable voice welcomes her. She plugs in the key ingredients (beef, broccoli) and receives 18 suggested recipes. She quickly browses and sees one with House of Chiang sauce. That's the one she will make. Albert's party is for about 10 people. She decides to pick up the groceries three days later (on Friday) for the party on Saturday. She taps on her iMAY app and selects Andronico's (1200 Irving Street) to send the grocery store a pre-alert that she "may" buy her ingredients from the recipe list which uses House of Chiang sauce to make a beef and broccoli stir fry serving for about 10 people.

"Hi" Eva looks up and there is James at the door of Kinokuniya. "Hi James, thought I would see you here!"

iPhone buzz. Andronico's delivers to Eva a 10% off eCID valid on Friday if the items bought in store on Friday include 2 lbs of beef and a bottle of Chianti or Valpolicella.

Eva says to James, "Going green really pays back. Micro-savings keep flowing. I guess vendors are cashing in on micro-revenue, too. But, I still want to buy an A123 Systems charger and charge my EV at home."



James It is more convenient. I can monitor using a wireless sensor network. These location-aware lifestyle coupons are great for vendors, they are earning micro-payments **and** saving on transaction cost.

EG So, James, how have you been?

James Great. My check-up was yesterday. I exchanged my Google Nexus S phone for the Nexus SM model.

EG What's the SM?

James Same phone but with a built-in photoplethysmograph. See, how it records my heart beat and blood oxygenation level among other things. It uploads to the net via BlueTooth or WiFi or when I am connected it sends the data as a SMS to my cardiologist Dr Elyse Foster at UCSF School of Medicine.

EG Is this because of your parents? (iPhone buzz) Oh! Here's my Mom on Facebook – she is in Harrod's!

James Yes, Eva. Although I am young I have a history of coronary heart disease. Dr Foster recommended eHealthRT to monitor my status in real time. About 3-4 million Americans have ischemic episodes yet they remain unaware. Silent ischemia could be deadly. I could land up in the ER or worse. With real-time eHealthRT monitoring hopefully I won't be that ER statistic.

EG I should do the same with my blood sugar. My Mom has diabetes and my granny had glaucoma. For Christmas, I bought my Mom the iWashlet health service to monitor sugar in her urine.

James My colleague in Boston uses a remote glucose nano-sensor system. His blood glucose is uploaded via WiFi to a bMDs at Massachusetts General Hospital, round the clock. If the analytical system detects anything unusual it will alert the doctor and if he senses anything wrong, he will call me, if urgent.

EG Send me the link. I will get one. James, is this the same Secret Garden Tea House which is on Lincoln?

James Yes. Want a cup of tea and some crumpets with clotted cream?

EG Lovely! Earl Grey tea, please.

James Please could we have a pot of Earl Grey and some cucumber sandwiches, crumpets, marmalade and clotted cream, please? Please heat the pot with hot water before brewing the tea. Warm cups, please.

- Host Of course. That will be 22.90. I see you have a link to eHealth, should I enter the item codes?
- James Yes, please. eHealth tracks my diet, food, groceries to keep me health-aware and track my wellness.
- EG Most people don't even know how beneficial health prediction could be! (iPhone buzz) OK, that's perfect. I have 15 minutes before my charging is complete.
- James Let's enjoy the tea and here's to real-time alerts for car chargers and remote health monitoring!
- EG And to Being Digital made possible by Nic Negroponte Inc (iPhone rings)
- EG Hi Randi, how are you? Yes, you can change Monday's banner to MSF but Zuck needs a clip for MSF. OK, I will prepare a script and get a video with Zuck for MSF. Bye. Sorry James, I had to take this call.
- James Is this your nano-philanthropy banner for the Facebook Foundation?
- EG Yeah. Randi, Priscilla and I are really making it happen. By the way, this tea is really good!
- James Is Randi moving out of FB? Which organization is MSF?
- EG MSF is Médecins Sans Frontières or Doctor's Without Borders.
- James Priscilla Chan is from Harvard but now goes to UCSF?
- EG Yes. We have Zuck's attention on this project, at least for now.
- James But this was your suggestion, wasn't it?
- EG Yes, I read about the suggestion in 2006 in a publication from Finland. The guy proposed using highly visible sites like Amazon to do the same as we are doing now with Facebook. We are approaching 1 billion visitors hence the added value at FB but the original idea came from that article.
- James I think I know the basic theme but please explain what you are trying to accomplish. More tea?
- EG Yes, please. Thank you. The idea is really simple. Zuck has a banner space on the Facebook log-in page. As soon as you log in he comes on and says ... wait ... why am I paraphrasing, here it is.

Eva logs on to Facebook on James' new Google Nexus SM and the video clip starts.

Hi, I am Mark and welcome to Facebook. I am sorry to take your time and if you wish to skip this message please close the box. Thanks for not shutting me out. I appreciate it. To summarize, I am requesting you for your help. Each day Facebook chooses one worthy organization and we connect the organization on our site. Today we are hosting the Imperial Cancer Research Fund. Please donate one dollar using PayPal or GE Mobile Money or SONY Cash or deduct from your Facebook Foundation piggy bank. Help us to help the world by connecting through micro-philanthropy. Thank you for connecting and making it an open world. If you click on the banner you will find out more about Imperial Cancer Research Fund and how to donate or how your money goes directly to the charity or organization.

I have more to say but if you wish to close the box, please feel free. I want to explain why I may be annoying some of you by requesting your help, every day, each time you log-on. We are here to connect people to friends and family. We have fun but also wish to be responsible and caring as individuals. You have made it possible to create a country, Facebook, which has a population nearing 1 billion global citizens. We are the 3rd largest country, after China and India. Our population may soon exceed that of China and India. We will be the largest country in the world. As a global leader we have responsibilities. Your action today, contributing one dollar or equivalent in your currency of choice, is a part of that responsibility. It is part of our responsibility to share our good fortune with others, help in the progress of humanitarian values, improving the quality of life and building a better future for the civilization yet to arrive. Nobody can accomplish this task alone. I cannot. I need your help. I have agreed to donate half of all my fortune to philanthropy. I want to be worshipped. I am fortunate that with your help we can all contribute to that process. Please spread the word to your friends and family, please ask them to join Facebook and log on to Facebook to contribute one dollar or equivalent, if you wish, to the organization of the day. Each day we will feature a different organization or global charity. Each day your help will count. Please log on to Facebook for President Obama's Town Hall Meeting in my office on 20 April 11.

James If 10% of 1 billion members donate \$1 then the charity receives \$100 million from a single exposure.

EG There is a transaction cost to execute this activity 365 days a year. We keep 1% for operations.

James By enabling nano-philanthropy, Facebook earns \$365 million pa simply collecting \$1 from members.



EG You are assuming that 10% of 1 billion members donate \$365 each year. If you apply the 80/20 rule, then 80 million may donate \$1 per year but more importantly 20 million members may donate \$1 per day which is about \$73 billion annually or about \$250 million for the organization of the day.

James That's the mega-world of nano-philanthropy!

EG Yes, James. Every little helps. Let me turn on my washing machine (Eva takes out her iPhone).

James Did you subscribe to Connected Sense! Great service. I can "sense" gas leaks, find out how much I spent this morning using my dryer or check my car battery charger status on any i-skin interface.

EG It is IPv6 under i-skin but it is great for energy optimization. My Mom uses it for health monitoring.

Later that evening, after the excitement of the Town Hall Meeting, Eva starts her blog.

Interactive-skin aka i-skin is gaining an ardent following and prominently featured in today's (20 Apr 11) Town Hall Meeting with President Barack Obama, Mark Zuckerberg and Sheryl Sandberg at the new offices of Facebook (which is featured in a deeply controversial but awe-inspiring documentary *The Sun Also Rises In The West* jointly produced by Shirin Ebadi, Nawal Kamel and Mira Nair). President Obama used i-skin functionality to show how the White House helped Americans by driving the rapid passage of the Resource Management Act (HR 2011) aka "waste control bill" which stimulated innovation, helped the economy and saves money for hard-working families. President used this instance to demonstrate that "big brother" may occasionally step in and take the initiative before the market starts to lead for public goods.

A discussion of the Resource Management Act and i-skin is my blog du jour. HR 2011 focused on reducing "excesses" in terms of petroleum and food. This Act mandates the introduction of higher fuel efficient vehicles by 2013 which will save an estimated one-third of the total fuel consumed by vehicles in USA. While some critics even warmed to the "big brother" syndrome in the government control over fuel consumption, most critics vociferously objected to the "big brother in your home" perception conveyed by the second theme in HR 2011 - to reduce wastage of food. Currently, 26% of all food in the US lands up as garbage. The bill calls for analytics to determine demand, replenishment and perishability to control food items in US homes and coordinate food supply chain data to better forecast or adapt inventory.

The White House took clues from a little known suggestion made in a sub-section (section 5) in a book chapter (<http://dspace.mit.edu/handle/1721.1/41908>). CJ Cregg, White House Press Secretary, reminded the press and the obstreperous critics that in the 1920's the government deployed law enforcement officers to pin-down adults to vaccinate them against chicken pox. What was then slammed as a civil liberties violation has morphed over time as a healthcare right that citizens demand. It is one for the history books to determine if this bill (HR 2011) to reduce wastage of food through better coordination may fall in the same category of global public goods.

i-skin is the proposed tool and the trinity of co-innovators are Whirlpool, GE and Cisco. GE wishes to move away from dumb appliances. GE wants to embed intelligent software as a service on the "skin" of the appliances that millions (billions) touch everyday in order to mine analytics. John Chambers of Cisco wants a better legacy than merely a plumber, albeit, plumber for the internet and indeed a plumber extraordinaire. OmniPresence is the new Cisco mantra which wants all things you touch to be with you or within your reach at all times, as best as possible. With the ability of IPv6 to provide unique IP addresses, the internet can connect more data and Cisco wants to be the grande connector.

IP on everything is also the chant of Vinton Cerf, the father of TCP/IP. Look at Vint's Facebook photo and observe his pun with IP (*I pee*) on everything (now he is at Google). It blends well with the pay-per-pee healthcare monitoring service which analyzes your excretory products in your iWashlet.

IP on everything started at MIT. It includes Sanjay Sarma's "Internet of Things" and Raffi Krikorian's PhD thesis (leading to IP on all electrical switches at Neil Gershenfeld's Center for Bits and Atoms). However, identifying everything uniquely, although necessary, is not sufficient, because, data is *not* information. Identifying information and extracting the knowledge required to execute an actionable transaction is preferred. "Learning" about the outcome for a future "intelligent" decision support is an additional layer. For the latter, it may require convergence of IPv6 with semantics or the semantic web, a nexus still steeped in deep quagmire (<http://esd.mit.edu/wps/2007/esd-wp-2007-17.pdf>).

On a pragmatic level, Whirlpool's former executive Reuben Slone often wondered how to make the "skin" of appliances more useful in a manner that utilizes the vast external surface area, for example, the ubiquitous refrigerator. A meeting of minds produced the i-skin which extended the suggestion published in 2004. Generally, speaking i-skin is a service which can be adapted for use on almost anything with computing-compatible surface. It can be also accessed by any "surface" including PDA, iPhone, iPod and ERP systems such as SAP or healthcare software (Epic Systems, Centricity, etc).

The i-skin in this blog will highlight food waste reduction. The refrigerator is probably the most common kitchen appliance globally used for food. Users of i-skin will belong to a specific group and we make certain assumptions which may not be globally applicable but applicable in the industrial world. One assumption is that many items we store in the refrigerator has a barcode and may have a RFID tag in the future. The i-skin serves as a “gateway” to manually enter or capture when presented (deliberate data input) the items you place in the fridge. If you are in the grocery store and do not remember whether you have milk in the fridge, you can query the fridge on your iPhone and your i-skin on the fridge surface will inform you that you placed a container of Meyenberg’s Goat’s milk two days ago in the fridge. You may have taken out the carton umpteen times over the two day period but i-skin does not capture that data unless you configure the ‘mode’ of data capture. One may deduce from the basic data whether you still have sufficient milk in the carton or if it is better you pick up another carton of Goat’s milk.

Similar deductions about item usage may be made by your local grocery store if they have the information that you bought a carton of Goat’s milk two days ago and your usage pattern. Analytics may forecast the probability that you may need another carton of Goat’s milk on day three.

This forecast may improve in accuracy with repeated data logging and refining the parameters (for example, eggs and toast on weekends for breakfast) that drive the data mining applications which may use artificial neural networks (ANN), use SVM derived weights for BPN, deploy fuzzy or neuro-sensory network (NSN) using atypical sensors as a part of a suite of data for analyses. Data collection may operate on multiple complementary levels. The store RDBMS may connect the customer with the SKU of the item (assume customer uses rewards card) and refrigerator content may be uploaded to “the cloud” (<http://senseable.mit.edu/wikicity/rome/>). The customer may feed the store receipt to the i-skin and the purchases may be uploaded to the refrigerator (miniDB) inventory on the i-skin. Aggregated cloud analytics may forecast the demand for food products by zip code. The shared data may be used by retailers to optimize inventory, hence, reducing wastage. It excludes food wasting habits of people. This concept is in operation at Amazon where customer driven aggregation of usage habit drives optimization of Amazon’s Subscribe and Save service for bulk goods (bathroom tissue).

Critics of HR 2011 have issues with data acquisition from individual users (personal food purchase). The President’s argument gained strength from *Pox: An American History* by Michael Willrich.

In an interview with Mrs Bianna Golodryga Orszag, co-anchor of the weekend edition of Good Morning America, Mr Josh Lyman, the White House Chief of Staff, said that it may be time for “big brother” to intervene in order to reduce food wastage and rein in the 26% of food that fills our landfills. Mrs Golodryga-Orszag added that about half of the world’s 7 billion people are struggling on less than \$2 a day and 1 child dies every 5 seconds due to hunger (www.bread.org/hunger/global/).

Cisco’s capability of uniquely identifying information using IPv6 coupled with GE’s intelligent i-skin analytics and the usability of Whirlpool’s surface computing capabilities based on MIT’s “sense table” provides the necessary convergence of tools to implement the policy outlined in HR2011. Additional evidence that the technology can actually work may be gleaned from Google’s Gas App (*gasup*) which you can download from the Android App Store. It enables you to visualize the gas prices in any area in the US. It uses a camera on the gas price sign of gas stations which uploads the gas prices as advertised while GPS coordinates the location and embeds it on Google Maps. You can survey your area of choice on your Androphone and drive to the gas station by preference or price. In the new line of refrigerators that GE and Tatung will market, there is a mobile Lytro camera inside the fridge on a grid that can crawl anywhere you want to visit. It will display on your iPhone what is in your fridge even if it lacks a barcode or if you did not enter the data on i-skin or if you wish to know the (remaining) quantity or volume which the i-skin may not have captured. It is making my skin crawl!

Next morning, Eva finds an email from her high school friends who are now advisors at the White House.

Dear Eva,

Your astute blog on the convergence of policy, science and technology innovation with energy and healthcare prompted us to add these thoughts shared by John Holdren (OSTP), Ernie Moniz and Eric Lander (PCAST). Energy distribution influences physical mobility of humans and dependent objects. The medium of mobility on land is the automobile, generally. Decreasing availability of liquid fuel will increase the number of electric vehicles. The shift in form of fuel may necessitate changes not only for EV manufacturers and consumers but also for energy producers and distributors. Electricity operators must account for peak capacity to balance energy supply versus demand to recharge mobile assets which may increase geographic uncertainty of consumption. Demographic changes will accompany this mobile lifestyle evolution and usher in factors unrelated to the core business of EV manufacturers and EV recharging stations. Embedding social media attributes within the infrastructure or operating platform of EV related services may improve profits.

The demise of fixed payment options for most services will increase the use of micro-payment methods which will rely on economies of scale for profitability. The demographic profile of prospective EV users may map to the lifestyle of the post-internet generation. The dynamics of the latter is farthest from the stoic practices of the utility industry which must fuel mobility.

This discussion may address ways to bridge this chasm between 21st Century users and utilities. Dynamic pricing of energy based on near real-time forecast of potential users per unit (grid) area (or plugged-vehicles as storage) may help the utilities industry to profit from the internet of energy. *But, these advantages may be only temporary.* The need to bridge this chasm by extracting real-time demand profile to match supply will decrease over time as [0] the pattern of charging stabilizes or fluctuates with diminishing uncertainty with [1] predictable increase in saturation of EV users, [2] diffusion of home charging stations and [3] decrease in range anxiety with increasing range of EV. The latter may aid transportation and logistics operators to plan location of charging stations along highways or routes taken by fleet operators for movement of goods.

Future lines of software and systems business requires a vision of *consumer-centric lifestyle* perspective where relationships and connections are drivers rather than the business-centric “product” development.

The recommendation is to create business service platforms (rather than products) which can host ecosystem of converging software systems, semantic dictionaries, mobile money and always-on analytical clouds. These functions must be open, dynamic and may be easily added (subtracted) to increase, modify or adapt value propositions to customers based on their demographics, preferences, segments and location awareness to offer near real-time service, predictions and forecasts. In other words, anchor and develop *lifestyle software*, as a business service to evolve the “intelligent interactive skin” which may be inseparable from the customer. Services via i-skin generate micro-revenue each time customers use i-skin to transact. Capturing high volume granular pay-per-action billing is similar to meVote which utilizes the vast unique addressing capability of IPv6 (<http://esd.mit.edu/wps/2007/esd-wp-2007-17.pdf>) to id each vote.

Policy discussions around the future of digital citizenship usually relate to the “long tail” or in other words what will be the big drivers to offer substantial benefits and financial incentives for users to adopt the first elements. It may start with big ticket items such as energy (<http://dspace.mit.edu/handle/1721.1/59804>) and preventative healthcare with remote monitoring (<http://esd.mit.edu/wps/2008/esd-wp-2008-17.pdf>).



Extending the long tail effect means over time the digital convenience and familiarity would extend further along other verticals or segments where the benefits are less and/or the diversity of elements are larger or diffuse. The dynamic connected online *lifestyle services* may be stimulated by adoption of such services by industry (utility, cleantech) and government (healthcare) in order to heed the consumer demand (citizen sensors) for a better deal and government ambition to reduce cost of energy and healthcare. Thank you.

Heather (Zichal), **Philip** (Weiser) and **Andy** (Mulholland)

Eva smiles. They remembered the IPv6 killer app – mobile eVote or meVote. Eva starts a new blog du jour.

Sampling public opinion is essential in politics. Predicting potential for success or forecasting failures could influence the content, criteria and clarity of the policy in question. Product marketing, taste testing and social acceptance are integral elements in the business world which may also benefit from reliable and relevant public opinion data. The ability to obtain real-time opinion polls from individual contributors in a manner that is identity-protected, verifiable and reliable, may change the nature of the impact of public participation in governance, legislation and decision metrics.

The value of any e-polling mechanism increases exponentially if the system is refractive to electronic vandalism and can be reasonably trusted to deliver authentic user experience or opinion with minimal scope for data manipulation, deliberate duplication, phantom voting and identity falsification or misrepresentation. Security ¹ is a measure of success of public e-vote systems ² while user friendly technology ³ may determine the business use and adoption of opinion polling data acquisition tools. Confirming mobile identity was not possible (for data packets) using IPv4 addressing schema. IPv6 and its vast scope to assign unique individual numbers ⁴ lends itself as a mechanism to deliver mobile eVote system.

¹ www.cs.ucsb.edu/~seclab/projects/voting/issta08_voting.pdf

² www.cs.ucsb.edu/~seclab/projects/voting/evotespec.pdf

³ www.pciipro.com/audience-polling-technology/

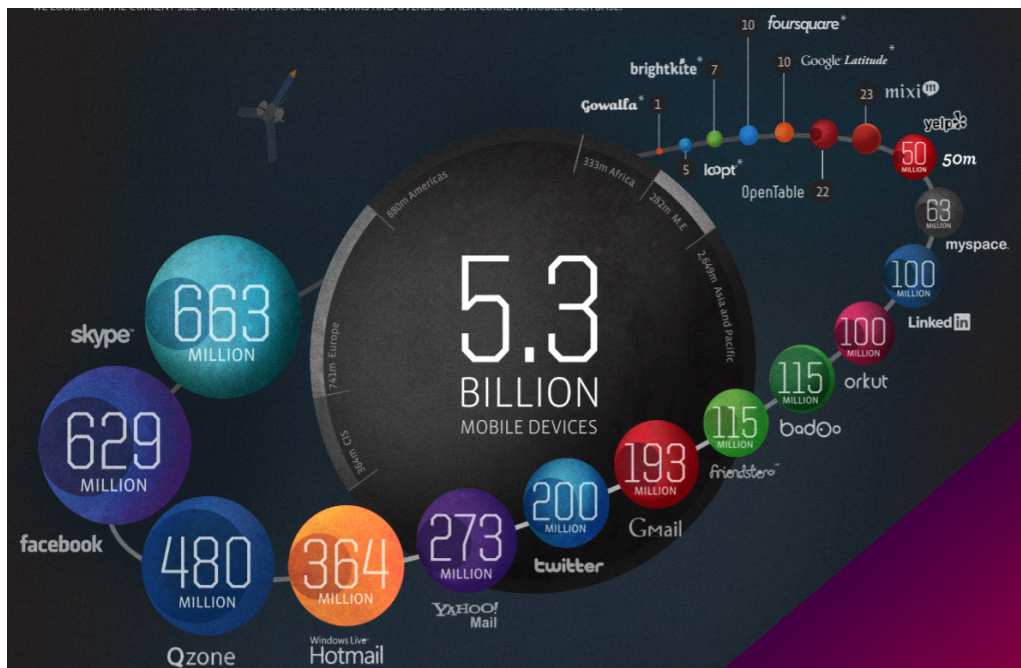
⁴ <http://esd.mit.edu/wps/2007/esd-wp-2007-17.pdf>



meVote ☑ Scenario

Angela Brooks visits meVote.com and registers in education nested under Politics > City > School Board. She lives at 40 Brattle St (Cambridge, MA 02138) but registered for the cities of Cambridge, Newton and Milton (where she went to school).

The City of Boston visits meVote to register as an authenticated polling entity in the category Politics > City. In pursuit of excellence, Governor Deval Patrick requests Mayor John Menino to find a way to encourage the local academic institutions in Cambridge (MA) to engage high school students from Boston Latin School in summer research. Both institutions cite under-age of BLS students as a barrier to acceptance for research programs. Governor Patrick persuades Presidents Hockfield and Faust to revisit the issue by enabling a poll of residents, faculty members and graduate students to share their perspective. Anna de Leo of Ropes & Gray was retained as an uninformed party to formulate and e-administer a couple simple questions and upload them through the City of Boston authenticated user id under the category Politics > City > School Board > Cambridge and enables only the residents legally residing in zip codes 02138 and 02139 to respond.



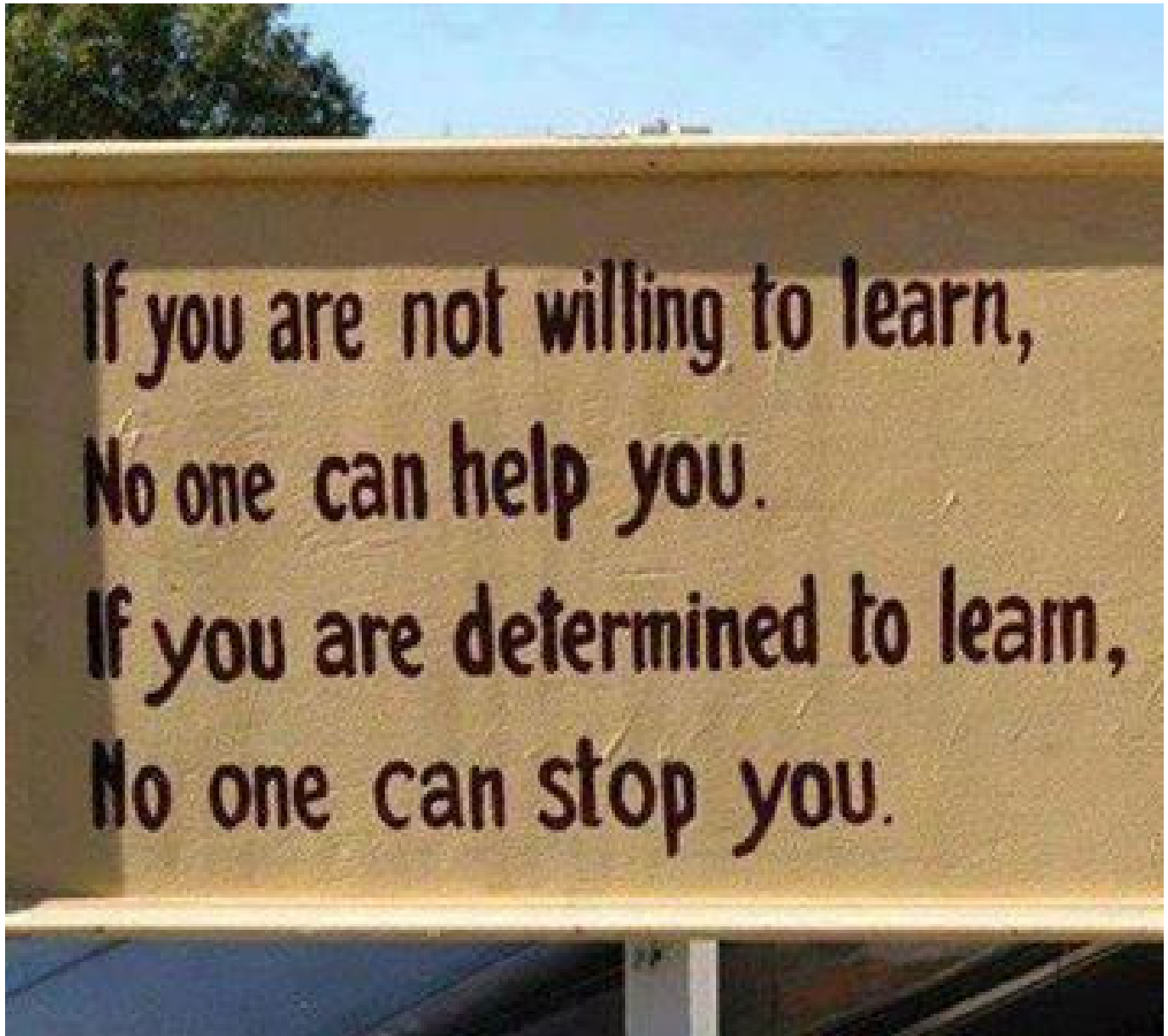
Connect the Dots meVote operates as an IPv6 app to deliver real-time opinion polls with unique id.



Angela Brooks is in Venice to attend her friend's wedding. She went to school with Nancy Poon from Boston Latin School. Angela is walking down Campo San Maurizio when her HTC 4G phone throngs. She searches for her phone in her purse while walking through Calle del Piovan by the front of the church where Nancy will be marrying Michael Mastropasqua, few hours later. She finds the phone and finds a blinking "pen-in-hand" which she chose to personalize her meVote alert. Ironic, she reflects, as she looks up, a few steps away on the right, is one of the unique and most original stores in Venice, *Il Papiro*, famed for superb stationery, unique marbled paper and leather-bound journals. It is a paradise for those who still love to write by hand. She was finding her way to the store to buy a gift for Nancy and Michael's wedding.

She stops outside the store and logs on to meVote on her phone. As a registered user residing in zip code 02138 (location criteria selected and specified by the user) and Harvard alum she is doubly qualified to cast her vote in this opinion poll (although she is not a faculty or current graduate student). She chooses 5 (strongly agree) to support BLS summer research programs. Ropes & Gray delivered the results (72% affirmative, 20% abstention, 8% negative) of the poll the following day. Both institutions found that alums and residents in zip 02138 and 02139 supports high school students to work in academic labs to conduct summer research. meVote technology converged to help the students find more than one reason to aspire.





Part III

Science Fiction

APPLICATION

Micro-Scale Renewable Energy Manufacturing

Paradigm shift in energy geo-politics is possible through liquid fuel production by photosynthetic microorganisms. However, micro-scale manufacturing is a renewable solution. Glucose produced by cyano-bacteria in sufficient amounts can disrupt the global energy network and create social micro-businesses.

Shoumen Palit Austin Datta
Science Fiction

Conscience and Common Sense



Part III : Application

Micro-Scale Production of Non-Fossil, Carbon-Conscious, Renewable Liquid Photo-Bio Butanol and Glucose

THE BOTTOM LINE

Carbon-neutral, renewable photo-bio butanol is not a panacea but an alternate fuel from non-fossil sources which does not exacerbate green house gas (GHG) emissions. Micro-scale manufacturing of energy may generate an energy cottage industry where users can sell or auction excess capacity if the smart grid is enabled for bi-directional flow of electricity. It will create cloud based business services offering dynamic pricing incentives from operators to manage demand versus capacity and engage households or cooperatives to intelligently transact with utility vendors over the internet of electricity. Taken together, micro-energy manufacturing and software as a service (SaaS) for energy businesses may lead to economic growth and create new jobs for the sustainability industry.

Butanol can directly replace gasoline used by standard vehicles. Butanol can be produced by micro-organisms but suffers from very low yield in photo bio-reactors which uses sun light as the primary energy source. The debate rages on whether the method may be sufficiently scalable for mass production. *The suggestion is to transform this handicap into an advantage.* Small scale or micro-scale energy production is a distributed concept of energy self-sufficiency. If every household or unit product produced *some* energy or just enough, then, scalability is not an impediment to energy self-sufficiency. High volume users can aggregate by creating *butanol farms* in high insolation zones or use arid inhospitable land (for example Bihar, India) for *farming* photo-bio-butanol in a manner analogous to *server farms* which needs massive cooling and hence their location in Iceland.

Bio-energy tools are at hand to produce micro-scale bio-butanol or related products. It may liberate the economies of the developing world and improve the lives of about 80% of the global population whose ability to earn a basic living is eviscerated by and is at the mercy of fuel prices. Bio-butanol does not deplete food sources because it uses renewable solar energy and carbon dioxide from our atmosphere. Therefore, it is carbon neutral and does not add to green house gas (GHG) emissions.



Energy self-sufficiency is almost within our grasp. If the cost of energy ceases to plague our economy then we may expect long term job growth. Energy availability and its volatile cost will no longer be influential issues. This is the concept of an energy agnostic global economy (eAGE). To visualize eAGE consider the analogy of *distributed* computing made possible by the iPod, iPad or notebook *computers* if compared to the first computer, ENIAC, which required 30 separate floor units occupying 15,000 square feet and weighed 30 tons.

Sources of oil (gasoline) and electricity today are analogous to the ENIAC if we consider oil exploration, drilling, refining, distribution and transportation to the last mile gas stations. The electricity producing power plants generate 60-80% of the electricity by burning fossil fuels, mainly coal, in the US. These activities continue to add green house gases (GHG). Steps to reduce or restrict GHG emissions in an uneven global economy fuels acrimony between nations which fractures global goodwill and catalyzes a geo-political power struggle in the name of climate change.

One can appreciate the importance of the computing analogy if we recognize that advances in science and technology succeeded in shifting the paradigm of computing from a feeble ENIAC weighing over 30 tons to the high performance iPod touch weighing about 120 grams.

Application advocates a revival of the spirit that led to the iPod from ENIAC. A similar shift is necessary to relieve the world from the vagaries associated with fossil fuel sources. The world seeks freedom from the cartels which control our economy through oil and reduces our ability to invest in education, healthcare and global public goods to improve the quality of life.

The paradigm shift in energy is technically at hand but difficult to inculcate and disseminate because of geo-political issues and the lobbying power of the energy behemoths. The shift is based on the fact that nature has offered us the gift of a 4-carbon molecule, butanol (which can directly replace gasoline). Special micro-organisms can produce butanol using sunlight as their primary energy source. We can *manufacture energy*, albeit still depending on solar energy. Fossil fuels are products of drilling industry because oil, gas or coal must be excavated. Nuclear (fission) energy depends on mining the raw material but the bulk of the nuclear energy industry is manufacturing.

Thus, we have achieved the ability to use sunlight and carbon dioxide from the atmosphere, as renewable raw materials, through the medium of microbial growth, to manufacture butanol, a liquid fuel which is a direct replacement for gasoline. The rate-limiting step in this manufacturing process is the yield, that is, the volume of butanol produced per unit. It may be a small volume.

Small volume means reduced net efficiency but small is also a *relative* term. Let us explore the scenario where you require 10 gallons of gasoline for your transportation every day. Perhaps you are travelling 50-500 miles per day. Are you? Boston to New York is about 200 miles. On an average, in the US, we add 33 miles per day or about 12,000 miles per year on our car. At 10 miles per gallon that is 1200 gallons of gasoline per year or about 3.3 gallons per day. For an average household of 4 we need 13.2 gallons of gasoline per day if all 4 adults commute the average distance.

Butanol is a direct replacement but releases about only 90% energy equivalent of gasoline. If household demand is 13.2 gallons per day then equivalent demand for butanol is 15 gallons per day. We have, naturally, used the US (population of ~300 million) as the model in the above rationale. What about Europe? Do EU households travel as much by private transportation? The distance between London and Paris (in two different countries) is just above 200 miles, each way.

We have not addressed the electricity demands of US household to run washing machines, dishwashers, refrigerators, electric stoves, lights, heating and cooling. Estimates reveal that an average US household of four uses about 150 kWh (kilo Watt-hours) of electricity per day (5 times the global average but only one third if compared to Iceland). Converting the numbers in terms of butanol reveals that we need another 5 gallons of butanol per day per US household for domestic use. Therefore, an average US household may be *energy self-sufficient* if it *manufactured* 20 gallons of butanol per day and converted 25% for domestic electricity use (remainder for transportation).

Let us visit “small” with respect to volume of butanol currently produced by photosynthetic micro-organisms. Is it 2 or 20 gallons per day of butanol? If the answer is 20 gallons then meeting the energy demand is not a problem. If it is 2 gallons per day then we must ask what good can come from 2 gallons of photo-bio butanol per day? To create new markets, one may move beyond US and EU (~800 million) to China and India (~2500 million) as well as South-East Asia (~840 million). For households in Asia the average daily energy consumption may be below 5 kWh (0.2 kWh per person per day in Bangladesh). Energy from the “small volume” of 2 gallons of butanol per day per unit may power about 10 households or a market of 3.5 billion or half of the world’s population.

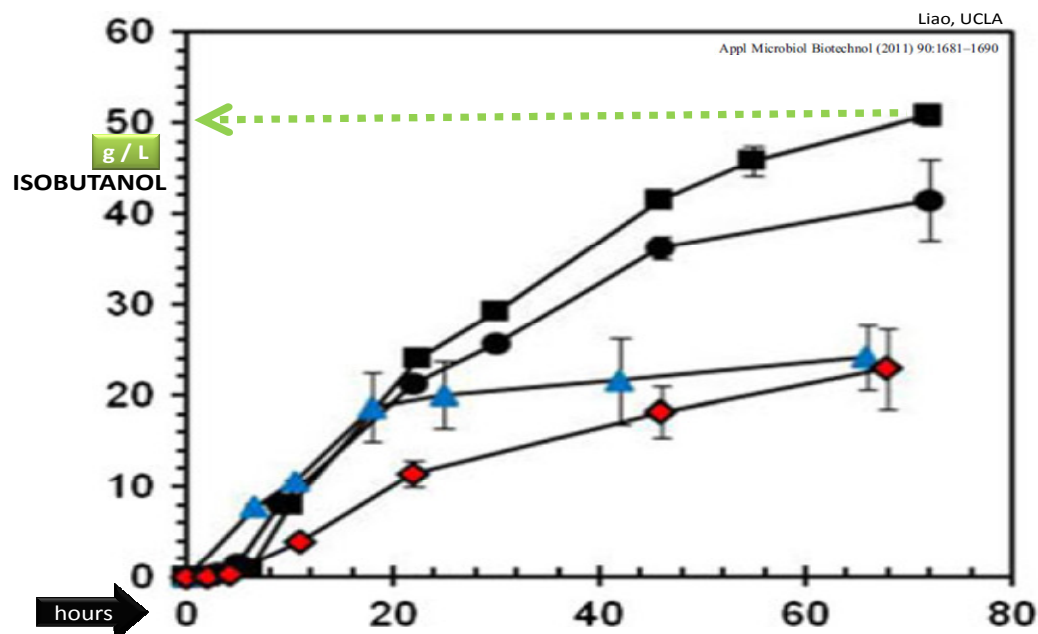
This is the *value of a small volume* butanol if manufactured in an unit resembling a domestic appliance producing about 2-3 gallons of butanol per day. The increase in volume may be necessary to buffer the inefficiencies of conversion of chemical energy to electrical energy by the generators which must work in conjunction with this proposed appliance. Providing renewable energy relief to half or more of the world’s population may work wonders for economic growth and global peace. This is the *concept of distributed energy* manufacturing which whittles away impediments from lack of scalability. By distributing the ability to produce butanol to households, the system benefits from micro-scale energy autonomy. When aggregated, the micro-scale serves the macro-scale energy need. It paves the road to global sustainability as well as energy security. Distributed energy micro-manufacturing is, therefore, analogous to distributed computing which was achieved when the functions of the 30 ton ENIAC were delivered in every pocket by the iPod. The scope of the geopolitical tsunami from butanol driven micro-scale energy autonomy may send shudders through the OPEC cartel and the global petroleum oligopoly.

The dependence on solar energy for photo-production of butanol makes it less attractive to industrial nations high in the Northern Hemisphere where the ability to access sunlight is limited. Fortunately, there is an alternative which leads us to a win-win scenario. It promises to be an economic revitalizer for the tropics and create new lines of commodities business for the energy supply chain. In addition to butanol, the solution is to produce glucose, as a secreted photosynthetic end product from micro-organisms in countries with abundance of solar energy.

Methods exist to convert glucose to butanol *without sunlight* using microorganisms which feeds on glucose. Corn, sugar cane and biomass are vegetation-dependent raw materials for glucose used to produce cellulosic ethanol. Vegetation-dependence has caused much consternation and ignited the food versus fuel debate. The price of food continues to increase since food sources are used for manufacturing of high value molecules. Principles of biotechnology similar to photo-production of bio-butanol can also produce glucose in bacteria in the presence of sunlight. Nations with abundance of sun light may manufacture butanol for consumption and produce glucose to be sold as an energy commodity or cash crop.

Nations or corporations may lease high insolation real estate (regions with abundant sun light) and set up glucose plants in the Sahara Desert or Bihar (India) or Indonesia, in a manner similar to entrepreneurs in Singapore who leased islands from Indonesia to set up chemical plants. Innovative groups in South America may use the Atacama Desert or North Americans can use parts of Arizona, New Mexico, Nevada and California as glucose factories. Packaging and transporting semi-solid glucose may be less expensive for logistics compared to liquid fuel. Stockpiles of glucose with its long shelf-life may offer much needed energy security and may pause the oil wars.

It is a conundrum as to why such an important and transformational change which is poised to revolutionize the future of the global economy appears to be a light shining in obscurity. To understand this quagmire it is important to recall that this proposal presents the need for an unit or machine or domestic appliance to produce butanol. The product to produce the liquid butanol may be analogous to a bread machine but the process is continuous. The photosynthetic microbes will secrete the butanol in the medium from which it must be separated and extracted. This machine may be limited in its liquid fuel production volume and extraction efficiency. An optimistic view of published data suggests 2 gallons of butanol production per day may not be entirely imaginary.



Investors keen on maximizing return on investment demand a “bigger” machine to scale the production to improve profit. But, the chemical reactions that constitute the biological processes are influenced by several factors including feedback inhibition which may be difficult to optimize. Investors agonizing over cost of scalability (per kWh) may note that 1MB RAM in 1957 cost \$411 million. In 2010, it declined to 1 cent per 1MB RAM. The first VCR manufactured by AMPEX in 1956 cost \$50,000.00 and then declined in cost to a point where VCR production had to cease in 2006.

Biological processes, generally, do not scale in a linear manner. For example, if you add two oranges to a juice machine you may expect one cup of juice. If you add 20 oranges to the machine you expect 10 cups of juice. This linear relationship may not hold in our attempt to increase butanol photo-production in bio-reactors in order to scale from 2 to 20 to 200 gallons per unit per day. Photo biosynthesis suffers from other drawbacks which include the availability of average hours of direct normal irradiance (DNI). Indirect sun light, diffuse, reflected and refracted light as well as high-angle-of-incidence solar irradiation may be useful but not all of the energy spectrum in the sun light can be used. The photosynthetic pigment chlorophyll works best in the blue (430 nm) and red part of the spectrum (680 nm). Hence, the quality of sun light may be an issue. Because the growth of the microbes require energy from sunlight, it follows that increasing the volume of medium may be counter-productive because penetration of sunlight may decrease with increasing volume (think about sunlight penetration in ocean). But, the optimizations necessary are far from insurmountable because commercial photo bio-reactors are widely in use. It is ultimately about **net** energy gain.

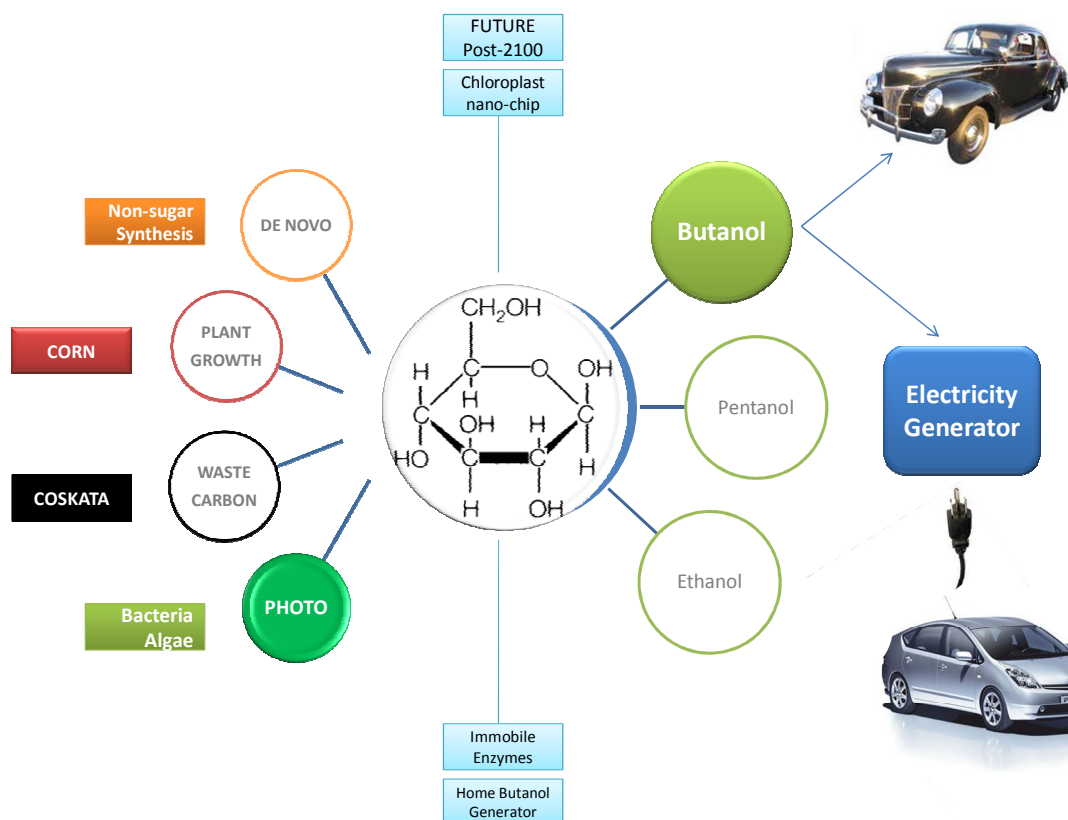
The cost of this domestic appliance will determine the rate of its adoption. The demand for this appliance may break records if a small volume unit producing 2 gallons of butanol per day may cost \$500 or less. Let us use the numbers from India and China where gas prices are \$5 and \$4 per gallon, respectively. The use of one \$500 domestic butanol unit may serve the domestic electricity demand for 10 households. Investing \$50 per household is equivalent to about 10 gallons of gas in India or domestic electricity for 50 days assuming 0.2 gallons per day per household. Even if the product has a life cycle of one year, the investment to buy a new unit every 12 months may be well worth it because the initial investment will be recovered in 2 months. The picture may not be as ‘rosy’ due to systemic inefficiencies in energy conversions which will affect return on investment. The demand for this product in Asia may exceed 50 million units (1unit per 10 households) if we assume 500 million households. If we account for increasing demand, growth of electricity consuming appliances and electric vehicles, then, in a decade, every household may need their own unit. Manufacturing will create new jobs. There will be a need for services (maintenance, microbial replenishment) which will generate micro-revenue for the entire lifecycle of use by the consumer.

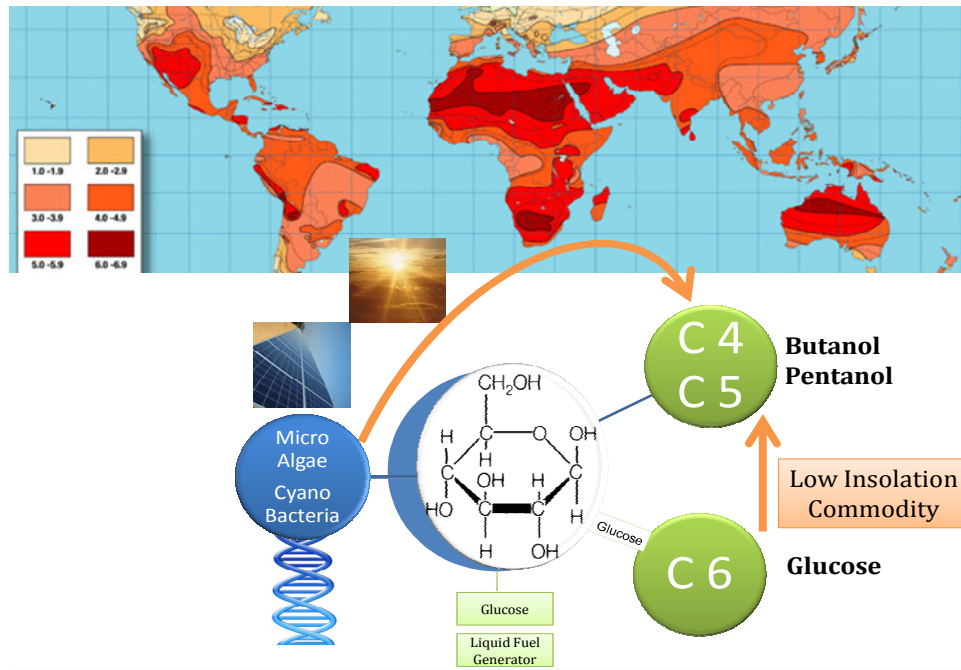
In parts of US or EU the next generation of these appliances may produce butanol indirectly using photo-bio *glucose as the starting material* (agnostic of sun light). But, in the beginning, US consumers may view an array of 10 units to produce 20 gallons of butanol per day as a \$5000 monstrosity. In addition the customer must purchase maintenance services at \$1 per unit per day. Return on \$5000 at an average US gas price of \$4 per gallon is about 3 months. ROI in UK and EU may be about 1 month due to higher gas prices. If 10% of households in US and EU aspire for energy self-sufficiency then 200 million micro-scale units must be manufactured (array contains 10 units) to meet the demand for 20 million households (total ~200 million households in US and EU).

The temporary advantages of distributed micro-scale manufacturing may be obsolete if advances from other walks of science can deliver renewable energy in a manner that is cheaper and promises rapid rates of adoption or perform better due to economies of scale. That is a risk factor.

Renewable energy and liquid fuel from micro-scale butanol manufacturing is promising but within limits. It may serve domestic users in emerging economies and in the developing world. It may remove the threat of environmental embargo on nations that are aggressive in their development and must have the freedom to build infrastructure. It may also help small and medium businesses to escape carbon taxation and gain carbon credits. But large offices, industries, factories, organizations, government operations, emergency services may still require conventional energy from the electricity grid.

Nuclear energy from fission and fusion may be the long term solution if safety features improve and provide the public with confidence. The ability to use hydrogen as fuel for transportation may be a step forward if infrastructure grows. Advances from scientists like Kristala Prather, Michelle Chang, Nate Lewis, Daniel Nocera and Kris Niyogi may also fuel disruptive innovations.





Solar energy is necessary but not mandatory. Glucose is an alternative commodity in the energy supply chain.

SOLAR	WIND	PHOTO-BIO BUTANOL	PHOTO-BIO GLUCOSE
Electricity generated is perishable (limited storage)	Electricity generated is perishable (limited storage)	Butanol (C4) can be stored indefinitely. Convert-on-demand.	Glucose (C6) can be stored indefinitely. Convert-on-demand.
Photo-voltaic cells are still expensive	If and when there is sufficient wind power	Increases energy security	Increases long-term energy security
Cannot be used as liquid fuel for vehicles	Cannot be used as liquid fuel for vehicles	Fossil fuel independence	Serves as revenue generating cash crop
			Easily transported (non-flammable, non-toxic, non-food item)

The challenge in this venture is the *efficiency* of separation, isolation and extraction of the butanol family (C4) of molecules from the micro-scale photo-bio reactor. The latter will determine the *usable output volume* of butanol. Conversion efficiency will ultimately determine *net* energy gain. Production of glucose by bacteria still needs optimization. Based on published data it may be possible to generate 55 kWh power per day from an one cubic meter (1 m³) photo bio-reactor for C4 (**Model 55**) or 5 kWh from 0.1 m³ reactor for C4 (**Model 5**).

To estimate demand and projected product sales, compare energy output (Model 55 or Model 5) to electricity consumption per person per day by country. To calculate sales volume by country assume 10% of households may purchase product for \$500 (to calculate the number of households divide the population of each country by 10, to be conservative). US household has 4 individuals on average and consumes 150 kWh per day or about five times the global average.

SALES CALCULATION Number of Households	Global Rank	Country	Electricity consumption per person per day in kWh
	1	Iceland	75
	9	United States	35
	11	Australia	30
	13	Taiwan	26
	19	Singapore	21
	22	Japan	21
	23	South Korea	20
	44	United Kingdom	16
	46	South Africa	15
	86	China	6
	97	Thailand	5
	102	Mexico	4.5
	149	Philippines	1.4
	152	Indonesia	1.2
	156	India	1.1

The fictional 2 gallon (1.8 gallon per day based on data) butanol photo bio reactor which may generate 55 kWh assumes current published laboratory level of production without any efforts to improve the system or performance either via metabolic engineering or process optimization.

April 1972 Processor: 8008 Number of transistors: 3,500	Nov 2006 Processor: Core 2 Extreme QX6700 Number of transistors: 582 million
March 1993 Processor: Pentium Number of transistors: 3.1 million	Jan 2008 Processor: <u>Core i7</u> (Quad) Number of transistors: 582 million
Feb 2004 Processor: Pentium 4 Number of transistors: 55 million	June 2011 Processor: 10-Core <u>Xeon Westmere-EX</u> Number of transistors: 2,600 million

Let us assume we fall short of 55 kWh per day target due to efficiency issues but manage to reach two-thirds of the target to generate 35 kWh per day. For China and more than 100 countries which rank below China, including Mexico and India, this amount of energy (35 kWh per day) may supply the daily need of almost all standard households.

If this is the best we can achieve with the current state of technology, then, at this level of efficiency (35 kWh per day) it is easy to see why US investors may choose to ignore this small-scale approach. To supply a US household you need 3-5 devices occupying 3-5 cubic meters or 50 square feet for 5 units in a row. Suburban households in the US may have 2-3 fridge-freezers but five photo bio reactors in the “garden” may give pause. It may be impossible for individuals or families in US cities.

But, even at two-thirds efficiency, Model 5 (micro-scale) may generate 3.5 kWh per day. One may perceive an irony in that number which represents the average per capita electricity consumption in Iraq. The micro-scale unit can still serve the daily requirement for households in Philippines (rank 149/212) and more than 50 countries which rank below Philippines in energy consumption. The energy agnostic global economy is here but its execution may be limited by *our* imagination.

'Dan Shechtman is talking nonsense. There is no such thing as quasicrystals, only quasi-scientists.'

Linus Pauling

The Nobel Prize in Chemistry for 2011 was awarded to Dan Shechtman *"for the discovery of quasicrystals"*.



Discovered by Joseph Priestly in 1774

Part IV – Literary Fiction

▶ REJUVENATION

Shoumen Palit Austin Datta

Conscience and Common Sense



What greater thing is there for two human souls than to feel that they are joined - to strengthen each other - to be at one with each other in silent unspeakable memories.

(George Eliot)

Part IV : Rejuvenation

My five year old daughter finds the idea of not talking, while she is awake, a profoundly absurd concept. She must speak, nineteen to the dozen, always. After her mother brought her into this world, it took Lucia less than a year to master the language. Since then she has not wasted a single moment in silence. Often, her Mom will exercise the motherly prerogative to keep her quiet but I cannot do that. If Lucia is quiet for more than a few minutes it seems so unnatural. I cannot bear such silence. For that reason, Lucia talks with me, incessantly.

On such a morning, I had just started on a new chapter of my novel when Lucia storms in my study, points at a tree outside my window and complains, "Dad, Olga says that those aren't ravens, they are crows! She doesn't know anything, does she?" Before I could even attempt to explain the complexity of species, Lucia climbs on my desk, sits cross-legged and fires off her next comment, "You know Paolo says that elephants spray water from their trunks and that is why it rains! Oh my goodness how silly of him to talk so much! He always talks, all silly things, always." But she doesn't wait for my response, she asks, "Dad, who is Mom to you?" I smile and coax her to go play.

Lucia jumps down on the floor and starts screaming numbers, one and two and three, and claps her hand once in front of her and once behind her. I try to concentrate on my novel, Mr D Nemuohs is introducing himself to Mme Aicu L Dalos on the platform of stazione Santa Maria Novella. Nemuohs will be imprinted for life with the intellectual dignity and vivacious charm of beautiful Aicu, but that is my fiction not this story.

My study provides a great view of Santiago from one window and the other opens onto the narrow lane snaking up the Cerro de Santa Lucia. Often I hear the call of the street peddlers from that end. I was engrossed with my fiction when Lucia darts to the window and shouts, "Kuri, oh Kuri!" A big man, dressed in worn out baggy clothes with a cloth hat and long gunny bags thrown over his shoulder was trudging up the road. How did this man induce such joy and exuberance in little Lucia? Why was she suddenly keen to get his attention? I couldn't think of any reason but I stopped writing to take care of the peddler in progress.

Lucia's screams did reach him. I stood up to look out of the window. He has turned around and started approaching our house with a big smile on his face. He had features resembling a giant, or at least that could look like a giant to a kid. As soon as he started approaching our house, Lucia ran out of my study and toward the inner yard. Could the gunny bags hold a few little kids like her? Stolen kids?

The man crossed the pebbled path, walked around the deck chairs and stepped up on the foyer. I came out of my study. His skin is pale but parched by the Chilean sun, his beaming smile accentuates the wrinkles along his slanted eyes. He looks like those oriental peddlers that often come to Chile from Peru. But he is a big man. His smile forces me to exchange greetings. He wants to sell me kuri, the Japanese chestnuts that kids like and he also had dates from Arabia. I buy some. He keeps talking, about politics in Japan, about the oxen which fell from the dock at Antofagasta and how he loaned money to this gambler who lost it all on the race track in Vina del Mar. Finally, he closes shop and prepares to leave. He asks me what happened to my daughter, the reason that he stopped.

I ask him to wait and I go down the inner steps to the kitchen garden. Lucia sits quietly beside her Mom on the day bed under the canopy. I cannot control my laughter. Isn't it absurd that she is so quiet? Her mother looks at me and hides her face in her sleeve to stop her giggles. I pick up Lucia and bring her out on the foyer. She clings to my knee as I put her down. The peddler reaches inside his gunny bag and brings out a small packet of cashews and holds it out toward Lucia. No, Lucia is not so easily moved, she never accept gifts from strangers! How can she? Lucia clings to my knee even tighter and hides her face behind me. It wasn't a great interaction, after all.

A week later, I was preparing to leave for Valparaiso. I came down from our bedroom and was about to enter my study through the foyer when I saw Lucia in the outer garden seated on the deck chair. Facing her was the "kuri" man, squatting on the grass and looking up at her. Lucia was talking away in full force and the man was beaming and sometimes adding a word or two to Lucia's monologue. In Lucia's long life perhaps she had never found such a patient listener! In one hand she held a packet of cashews.

I came out and looked at the "kuri" and said, "Please don't give her cashews, anymore." I took out a coin, an aduli, and gave it to him, he looked at my face and took the aduli, after a moments hesitation. He departed. I left to catch the 10:10 train for Valparaiso. Within minutes of entering my home the next evening, my wife reprimands me, "Why did you let that guy give stuff to Lucia? How did Lucia get the aduli?" Lucia flies down the steps at the sound of my voice. I pick her up but ask her sternly, "Where did you get the aduli from?" "Kuri gave me!" "Why did you take it from him?" Lucia is now on the verge of tears, "I didn't take it, he gave it to me." I learn from Lucia that "kuri" came again, last afternoon and this morning. Around our mountaintop home, there are no strangers, our doors are always open. Lucia chats with him in the garden without her mother noticing. He gives her cashews, dates, California raisins.

In these few visits, it is clear that he has captured a part of the tiny heart of my little daughter and she has grown very fond of him - a shabby man with giant-like features who frightened her at first, someone she may have even suspected, the other day, of hiding small children, like her, in his gunny bag. With an eye and an ear focused on the outer garden, I try to use my other faculties to proceed with my novel where the conversation between Aicu and Nemuohs focuses on aspirations and is growing intense on the Pendolino from Firenze to Roma. Aicu's sister and travel companion, Anileca is seated across from Nemuohs and is playing with Frederica, travelling with her Dad, a fellow passenger.

My attention drifts to Lucia at the garden, as Kuri's footsteps on the pebbled path become audible. Lucia has established a welcome joke for Kuri. Her Spanglish and his Spanglish are not quite the same. Kuri adds on other languages as he speaks, particularly the intonation of Japanese rings in my ears. Lucia jumps up on the deck chair and greets Kuri, "So what are you carrying in your sack today?" "Oh, Pelusa, Lucia, big elephant, okii zo!" They both start laughing, bubbly squeaky laughter of a happy child and the contented booming laughter of a satisfied adult. "Pelusa" I start wondering, that is a special term of endearment for something tender and precious: Pelusa Lucia, my sentiments exactly, a father's sentiment but not limited to a father or a child. I often address Lucia's Mom by that name, too.

The happy laughter of two such dissimilar human elements make my day brighter, I wander over to my window, Santiago looks prettier, the warm February air lifts my spirits, higher. I look up and gaze at the blue sky, the lazy clouds. I thank Someone. Another joke seemed to be a standard exchange between Lucia and Kuri. He would ask, "So when will you go to see your in-laws?" Lucia is too young to figure that out, she retorts, "When will you go?" Kuri shakes his big head and shuffles his body to say, "Oh, I don't no!" Kuri's body language makes Lucia laugh and Kuri joins in her laughter.

Some time has passed by, Kuri is a regular visitor. Kuri's family lives in Uchino, at the foot hills of Mount Fuji. His father is Japanese and his mother is from Egypt. His parents were ship-hands on a Liberian tanker and Kuri was born in Lima. He goes home during September. I wonder how concerned he really is about peddling his nuts, cashews and handicrafts. I have learned that he makes loans to other peddlers and vendors at a high rate of interest. The local people are rarely helped by the banks and people like Kuri are a way out. I find him interesting and sometimes I join in with Lucia. My wife is not comfortable with this visitor and she has repeatedly asked me to do something about it. But, how can I ask him not to come when he asks for nothing but fills Lucia with pleasure, laughter. Can you stop the innocence of love between two souls, which are so pure? Each year when he travels to Uchino, I know Lucia waits for his return with great trepidation.

It is Lucia's tenth birthday, 25th July. We planned the evening but the lunch party at noon is especially for one, for Kuri, planned by Lucia herself. She wants undivided attention for and from Kuri. It is a cold morning, my coffee steams, it is about nine, I have a few hours to concentrate on Aicu and Nemuohs. They arrived at Roma Termini. Aicu and Anileca decided to stay at the same hotel as Nemuohs. They are walking down via Carlo Alberto to Hotel D'Este. I hear running feet, I stand up and look out of the window.

Kuri comes barging in, closely followed by two policemen. I see blood splattered over his long sleeves. Lucia runs to Kuri and the policemen stop, somewhat puzzled. "Where is your sack, Kuri?" "Oh, Pelusa, the elephant..." he stops as a group of men rush into my garden.

The policemen hold them back. "What is wrong Kuri? Why are you bleeding? What is wrong Daddy?" Lucia has sensed something is amiss. "I wanted to wish you Happy Birthday, Pelusa Lucia, so I ran up to you." "But I want you to have lunch with me!" "They won't let me." Kuri's "other" profession caused this. He had loaned money to a vendor who was stalling him for a long time and then told him off. He got angry and they got in a fight. Kuri stabbed him with his penknife that he uses to shell the nuts. The man lost balance, rolled down the incline and was pretty injured.

Lucia didn't leave her room for lunch or for her birthday party that evening. Next day, I went down to the police station to see if I could bail out Kuri and explain my interaction with Kuri to the constable. The injured man died of a fractured skull after rolling down the incline. Kuri was charged with second-degree murder! I am baffled. I really know a convicted murderer! I try explaining to myself that it was an accident. I walk up the street to my house, like Kuri used to, I could picture the pleasure on my Lucia's face each time she heard his footsteps on the pebbled path. Kuri was sentenced 15 years in prison.

Time passes by, we heal our wounds. Kuri receded in the background, the past. Lucia's eleventh birthday passed without any incident but without celebration, she didn't want any. Lucia's twelfth birthday was celebrated abroad. We went to Cambridge, Massachusetts in the United States. There at the house of our friend at 16B Grant Street, Lucia enjoyed her special day. We left USA on 26th July. That day is significant to my novel, on that day Aicu will leave Rome in the early hours of the morning from Hotel D'Este and Nemuohs will see her for the last time in his life, but that is another story.

Lucia's 13th birthday was celebrated in Santiago. Kuri didn't invade our memory. Lucia spends most of her free time on the phone, I am not her "partner" anymore, she spends more time with her Mom and I complained that I think it is unfair! She graduated from school with honours, her poetry was judged to be excellent. I am happy, I am sad - I didn't know when she applied to Harvard College and when she was accepted. She majored in literature. After her first year, she moved "off-campus" to rent a room. When did she become so organized, intellectual, dedicated and wonderful? When did she grow up?

My wife runs her fingers through my sparse hair, she wants to talk, perhaps. She doesn't know that I am already awake, my eyes are closed. I open my eyes at her touch. She puts her head on my chest and cradles me in her arms, then she pulls out her arm and places her palm on my chest. "Lucia looks so happy." "I know." "It will get busy very soon, the caterer will be here by seven, why don't we wake her up and have breakfast, just the three of us?" I sit up on our bed, pull my wife up on my chest, "Yes, dear, I was thinking just that but I didn't want to wake you up." She lifts her head, kisses me on my forehead and then on my lips, "Let's go." We are about to get down from our bed when we hear a knock on the bedroom door, we looked at each other. "Mom, Dad."

Today is Lucia's wedding day. Yesterday was her 25th birthday. She met the love of her life very soon after arriving at Harvard. Alejandro went to school in New York City and excelled in carpentry, he is from El Salvador. Lucia sets the table and serves us breakfast, she made it already, it is 5 am! Tears stream down my cheek into my coffee, her Mom's fingers tremble to lift her cup to her lips. Lucia stands behind me, presses her cheek on my head and puts her arm around her Mom. We walk into my study to admire the sunrise over Santiago. Who is coming up the road dressed like a garbage collector? We ignore the person and huddle together at the window. There is an unmistakable shuffle out in the garden and a sharp knock on our front door. Lucia and her Mom quickly move behind the bookcase toward the inner door. "Who is it?" "Sir." "Sir, Kuri, Sir!" I recognized him from his smile. He lost weight, his hair was short and his clothes are different but less raggedy. "When did you arrive?" "I got released from jail last night." Jail! Right, for murder! I shuddered!

In the presence of a convicted murderer, my whole being churned. I felt myself coiling in, my senses urging me to distance myself, not to let the negative vibration enter my house on this day of Lucia's wedding, my beloved daughter's very special day. I said, "We have some events at our house today, it's not a good time for your visit." Kuri stepped down and turned around to depart, but turned his head back and then turned around, looked at a small packet he had in the palm of his hand and softly said, "Is Lucia home? May I see her once?" His voice suggested that he expected Lucia to come running out through the door and joke about his gunny bag so he can reply about the elephant, as if time hasn't passed at

all and how could Lucia grow up? "You cannot see anybody today, you cannot see Lucia today, we have an occasion at our home today." He stared at me but didn't look at me. Then, he looked at me, straight, with calm. "Good day, Sir." He turned around to leave. His calm, angerless gaze touched something in me. Just when I was debating whether I should call him, Kuri turned around from the bottom of the steps, looked at me, looked at the small packet. "These cashews are for Lucia, would you please give it to her?"

I took the packet and reached inside my dressing gown. Kuri comes close to me, bends down slightly and holds my wrist with both his hands, "You are so kind, Sir. I'll always remember your kindness but please don't pay me! Sir, just as you have a daughter Lucia, I, too, have one child, a daughter at Uchino. It is for this reason, for my daughter's sake, that I visit your house, that I visit Lucia. I do not come here to peddle my wares." He puts his trembling hand inside his worn out shirt, near his heart, and pulls out a nearly soiled piece of folded paper. With extreme care he unfolds the paper, puts it on his palm and gently brings his palm close to me.

I could see the imprint of a small palm, an imprint made after some coloured chalk was rubbed on the palm. Not a photograph or a painting, just an imprint of a small palm on a piece of paper. This is Kuri's life line, it is the power of that tenderness that empowers this man to travel thousands of kilometers to sell his wares so that he can provide for the precious little daughter who awaits his arrival. The warmth of his daughter's memory gives him the strength to trudge, again, when all strength has left his body, the weight of emptiness in his soul is lifted by the spirit of that simple imprint.

I looked away from the imprint, to hide my approaching tears. At that moment I could not remember that he was a street peddler and I am a celebrated author, at that moment I could only think that Kuri is a father to his daughter as I am a father to Lucia. His daughter's imprint took me back to my Lucia, to my reality. I ushered Kuri in my study and went inside to fetch Lucia. Her mother could not understand why Lucia needs to see him. I did, I insisted.

At the prime of her youth, with the freshness of the morning, Lucia came into my study, a little uncertain, a little shy. Kuri stood up as if carrying a heavy weight, his tired eyes look startled, he put his hand out then pulled back, "You are..." stuttered and stopped. The silence in the room, the silence between Kuri and Lucia, the silence of the words unspoken reverberated in my small room. It was a golden silence. It was that beautiful silence when you cradle someone in your arms so dearly, with love, with joy, with tenderness and you gaze in their eyes, you look on their face and you kiss ever so gently, with respect, with dignity, with hope and with your heart on your lips.

Kuri finally said, "So when will you go to see your in-laws?" Lucia blushed, now she knows what it means. My mind traveled back to the first day Lucia met Kuri. How she clung to my knees! My heart wrenches in pain, yes, Lucia will be at her in-laws, soon.

Lucia started to walk out of my study. Kuri wanted to say something more, something relevant. I heard his inaudible sigh, saw the unshed tear in his eye. Abruptly, Lucia turned around, stopped and walked up to Kuri. His face lit up like a thousand candles. Lucia put her arms around him, her face got lost in his chest. I could see the muscles on her forearm strained as she held Kuri ever so tightly. Not a word spoken. The golden silence and the hug lasted longer than a hug. It was an embrace, a solace to a soul, an exchange of vows ever so strong that only silence shall guarantee that it may last a lifetime without a single word.

Then Lucia pulled back, ever so gently, looked at Kuri's glowing face. His radiance said that what no author could ever write, no ballad may ever capture, no poetry could ever convey. With a voice I haven't heard before, he spoke to Lucia, "I have something for you, something that I wish to share. These are only words, borrowed from Elizabeth, a poet I admire." He pulled out a piece of letter size paper and held it, with both his hands toward Lucia. With her dancing eyes gleaming with joy, she opened the palm of her both hands. Kuri placed the paper.

"May I read it?" asked Lucia. Kuri nodded and whispered inaudibly, "You are beautiful."

Beauty of Silence by Eliz A. Beth

To see colour for the first time in a world long-filled with grey,
To feel assurance in a mind accustomed to dismay,
To feel cared for in ways more than one,
To evoke such joy that makes one want to dance underneath the warm rays of the sun
I feel the arms of love wrap themselves around me,
Tears and sadness have no place in the person I am going to be.
Suddenly everything has changed,
Yet my mind in some ways still seems deranged.
I never would have guessed I would meet one who could make me feel so sane,
That would have the ability to make me see myself apart from immense pain.
Many demons have been slain,
Yet some still have managed to maintain
Their rigorous storms ringing with red stains.
I am not sure I will ever escape them all,
On the days I begin to feel tall they make me feel oh-so-small.

I find strength in my surrender to you,
I am complete when I hold your hand.
My eyes are no longer blue.
To be so connected to another being,
Has brought to me the most meaning.
Sometimes I ponder life without you,
And I fear that I will return to the person I used to be.
For my new being was cultivated and fertilized by your soul,
Greatness catalyzed by your very role.
I do not want to ever bid you farewell,

But the reality of time and life tells me that eventually I will.
As much as my future excites me,
I must profess,
That my Life, without you, feels slightly less.

I have such deep love for all that you are.
I hope you know this sentiment is true, when I near or from afar.
When I am with you I enjoy our silence the most,
For no words can convey the beauty I feel in such peace,
Nor do they belong in those moments of temporary release.

The phrase that comes to mind
is something along the lines
“only speaking if what you have to say is more beautiful than silence”
Thus, I remain silent because I cannot think of any words
that could even come close to
The beauty I feel when I am with you.



Lucia looked up. She walked very close to Kuri. She put her hand on his chest, on the sternum. She repeated. "The beauty I feel when I am with you."

She stood still for a few moments with her hand on his chest. Lucia spoke, again, her voice muffled by waves of emotion, her breath caught in a breathless moment, her eyes brimming with affection which is ever so much powerful than love alone, "I like not only to be loved but also to be told I am loved. I am *your* love. I am *your* darling."

She pulled her hand away, turned towards the door and said, "Beautiful young people are accidents of nature but beautiful old people are works of art. There are no goodbyes between us." She walked out of the room, head held high by the triumph of dignity, by her courage to acknowledge and fearlessness to create that space in her soul to cherish the beauty of eternal love.

Kuri sat down on the cold marble floor, transformed. He was visibly young again, his eyes were clear and shining, he was dreaming. The look on Kuri's face reminded me of the proverb that age cannot protect you from love but love may prevent you from aging. Within the past few minutes Kuri has regained his vitality. He took my hands, looked deep into my eyes and said, "If there is any goodness in me, I, Nemuohs, will always pray for Lucia's peace and happiness. I have prayed for her since the day I set my eyes on her."

Nemuohs? Is that Kuri's real name? That was the character in my novel who would never see Aicu again! Truth is stranger than fiction! Nemuohs may never see Lucia again. Or, will she? But, the good wishes from Nemuohs shall brighten this special day, the celebration. I know the spirit of Nemuohs will be with Lucia, every day. I know that Nemuohs will always "give" his love to Lucia, quietly, with warmth, respect and without expectation. I turn on my favourite song *you are nobody till somebody loves you*. I am reminded that we may make a living by so many means but we make a life by what we love, who we love, how much we love.



This fiction may be hard to read. But, it must be read because the tasks that lie ahead of us are difficult, not easy. People may not know that they need this book for the present to flow into a brighter future. Relics of the past will give way to the inevitable blizzard of change. But, often people do not know what they want to keep in pace with change. You may think you don't need this fiction. We didn't know that we needed the iPod or the airplane or the telephone. Your generation wonders what is a public telephone? I have a mobile phone in my wrist watch. Hundred years ago, if I asked people what they wanted, they would have said a faster horse.

HENRY FORD



Shoumen Datta's fiction and the imagery of his characters have brought a fresh interest and inspiration to the subject matter of the future. I think as a fiction writer Shoumen has succeeded. Great fiction writers are thief of thieves, they steal all the truth out of facts to create their version of fiction. AYN RAND

THIS IS A FICTION?

YOU DO NOT HAVE TO DECIDE. YOU DO NOT HAVE TO AGREE, EITHER. WE MAY HAVE BLURRED THE LINES. FUTURE IN THESE PAGES IS ABOUT AN AGE OF HOPE IN AN ERA OF CHANGE. WE HAVE SCULPTED THE ART OF THE POSSIBLE IN THESE CHAPTERS. THEY ARE LINKED YET MAY BE READ INDEPENDENT OF EACH OTHER. WE DISCUSS A FUTURE PRESIDENT, WE IMAGINE BUSINESS VENTURES, WE ADVOCATE A SENSE OF DIGNITY, NEED FOR PROPRIETY AND THE PURSUIT OF HAPPINESS IN LOVE.