

B-SCHOOL PROVOKING NEW PRODUCT
**TEACHING SCIENCE FICTION WRITING IN A B-SCHOOL TO
PROVOKE NEW PRODUCT OR SERVICE IDEAS**

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Abstract

The article explores the possibility of using science fiction writing in a B-school, to provoke students to imagine the future, based on the kind of problems that may occur and how mankind would try and solve them. The students would be encouraged to extrapolate a solution partly based on current technology and partly logical progression of current technology that extends into the future, limited to the year 2050. They would use the art of storytelling to explore the benefits and the fallout of a new idea in society.

Keywords: *Science Fiction Writing, Education, Creativity, Innovation, New Design, Management Education, Futurists, Ideation*

"The limits of the possible can only be defined by going beyond them into the impossible."

Arthur C. Clarke

If we taught management students to write science fiction, would we be able to train them to be innovative thinkers and develop exciting new ideas for the future? Can science fiction be used as a tool for ideation and innovation? This was the questions postulated before the start of a 3 credit course on Creativity and Imagination.

SciFi as a tool for innovation: Creativity and innovation are increasingly being included in the curriculum of management schools to inculcate the habit of innovative thinking for future managers. Design thinking, brain storming, pain storming, synectics and other such tools have been deployed successfully and taught extensively as techniques for idea generation. However, a tool that has immense potential and that has not been fully explored as a classroom subject, is science fiction. Science fiction writers have imagined and designed futures that are not only plausible, but inspired engineers and technologists to invent new products, and to imagine the consequences of their inventions on a future world. As far back as 1485, the polymath, Leonardo da Vinci imagined products and solutions that we use today. For this reason, science fiction writing, also called science fiction prototyping, is being increasingly used by companies like Intel and IBM productively. Our idea was to introduce Science Fiction into the MBA curriculum, combining imagination, provocation, storytelling and future projection as an idea generation technique.

Asking what If: Deep questions can be raised. Where will our next store of energy come from? How can we decongest Earth? Can we turn plastic into fuel? What happens if our water supply runs out? What kind of transport will we use to go from place to place? How will we communicate? What if our food supply dwindles? How will we evolve? What will we need? What will money look like? Can we extend our senses? Can cars fly? Can men fly? Can we talk to each other through thoughts? Can we grow new body parts? Can we live on an asteroid? Can we eliminate fire? Can we live undersea? Science Fiction starts with a fundamental question: What if?

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Science fiction writers ask these questions and imagine and create elaborate futures, where men can fly and plastic can be eaten by genetically modified organisms. A future where we conquer strange worlds and learn to breathe with fortified lungs that take in what the air offers and convert it to what the body needs. Science fiction writers have imagined space travel with ideas that NASA has adopted to travel as far as Jupiter and Saturn, and most recently past Pluto to the edge of our solar system, the Kuiper Belt. And science fiction writers have imagined cell phones in the 1960s that have become a ubiquitous part of our lives in the 2000s.

Students are expected to ask questions, try and devise solutions, using their imagination and storytelling skills.

Inspiration from SciFi: The greatest science fiction novels have inspired scientists, engineers and inventors with bold ideas that have changed the world. Arthur C. Clarke, Isaac Asimov, H.G. Wells, Mary Shelley and a host of others have inspired innovations and conversations in every field – from technology to ethics. NASA Associate Administrator Robert Lightfoot has said, “There’s an undeniable tie between NASA’s bold mission and Arthur C. Clarke’s audacious ideas. Clarke’s work and NASA’s accomplishments have run in parallel, from space stations to exploring other worlds. It’s our hope that, not too far in the future, our science and his fiction will intersect for the benefit of all humanity.” (Northon, 2016)

Of course, among the best known science fiction-inspired work is what NASA has done, drawing inspiration from Arthur C Clarke’s 2001: A Space Odyssey. Not long after his 1950 book *Interplanetary Flight*, NASA began its work to make such a technological, scientific and cultural feat a reality.

While space flight is too far-fetched for ordinary life, and lies in the realm of elite astrophysics and science, let’s think about what science fiction imagined and inspired in regular, pedestrian life on Earth. The cell phone, as essential to us today as food and water, was first imagined by Gene Rodenberry in *Star Trek*. On their missions where no man had gone before, the crew carried hand-held communicators that flipped open. The top section had a transceiver antenna and the bottom had user controls, a speaker and a microphone. The device was imagined, designed and built by Wah Chang, who also built many of the other props used in the series. (wikepeida, n.d.)

Captain Kirk’s communicator gave Martin Cooper a stunning idea – to develop a handheld mobile phone. Martin Cooper, known as the father of the cell phone, created the first personal cell phone while he was working at Motorola. His first call on the 28-oz. (800 g) cordless cell phone — dubbed “the brick” — was to his rival at Bell Labs Research. (Browning, 2010)

“Between 1973, when we demonstrated that phone, and 1983, when the first commercial service started, we actually built five models. Each one was successively smaller and by 1983 we were down from one kg to 16 oz. The one I carry with me today weighs 3 oz.”, Martin Cooper has said of his *Star-Trek* inspired invention. (TIME, ND)

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Forty-five years later, the cell phone has become an extension of our hands. From the brick phones to the flip phones like Captain Kirk used on *The Enterprise*, to the slick versions we have today, it was all imagined by writers with imagination.

Gene Roddenberry's *Star Trek*, in fact, has been the motherlode of great ideas. Not only has it inspired scientists and engineers to choose careers, and name their discoveries after objects in *Star Trek*, but also inspired a slew of ideas and products for the future. Take, for instance, the Altair 8800, the first home computer. Ed Roberts, the inventor, named it after the Altair Solar System in a *Star Trek* episode. NASA's space programme boasts of unabashed "Trekkies", who have gone on to implement some of the ideas they saw and read about, growing up on a diet of science fiction. From Mark D. Rayman, Chief Propulsion Engineer at NASA's JPL, who was inspired to develop Ion Propulsion because of *Star Trek* to Professor John Adler who invented the "Cyberknife", a robotic device that uses lasers to deliver radiation directly to cancer tumours without cutting into the patient, the past is peppered with stories inspired by people who imagined the future. Many of today's non-invasive scanning and medical procedures can find their antecedents in the futuristic vision of *Star Trek* in the 1960s. (Gladstone, 2017)

Star Trek's Tricorder – that nifty gadget that was a sensing, computing and recording device that could diagnose disease, scan the environment, analyse technical data and much more – has been replicated in bits and pieces, each aspect separated into an easy handheld device. The race to clone a medical transcoder, for example, has been on for years. MIT researchers worked on a handheld device that used a Nokia 770 as the gadget for display and user input. "As the name suggests, the inspiration for the Tricorder comes from the fictional device of the same name from the original *Star Trek* science fiction television series. The fictional version of the Tricorder was a self-contained device capable of sensing relevant information about whatever it was being pointed at (e.g., life signs 50 meters back, magnetic disturbance above, or plot thickener ahead). Our Tricorder device aims to achieve the same goals, but rather than being self-contained, our Tricorder pulls sensor data off a surrounding wireless sensor network." (Lifton, 2007)

Dr Andrew Conrad, head of Google X Life Sciences (now Verily, overseen by Alphabet), wants to build the Tricorder. "We use *Star Trek* as our guiding force around Google because there used to be a computer called Tricorder—you'd talk to it and it would answer any question. That's what we're really looking for at Google X," he says in an interview to Steven Levy at Backchannel. (Levy, 2014) Qualcomm and XPrize Foundation announced and awarded a 10-million-dollar prize for developing the Tricorder. (Qualcomm Tricorder XPRIZE, n.d.), "which will accurately diagnose 13 health conditions, capture 5 real-time health vital signs and provide a compelling consumer experience," according to their official website. 34 teams registered to contest and 7 finalists made the cut. Perhaps we will soon have our own Dr. McCoy practising *Star Trek* like diagnostics and treatments.

Michael Venables who writes about "disruptive ideas in science, technology and cultures", as the byline of his article in the *Forbes* magazine states, provides a list of inventions inspired by writers and film-makers imagining the future. The inventor of

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MP3, for instance, was inspired by Data (the only sentient android, playing music on his computer) to conceive of a digital music file. LCARS – The Library Computer Access and Retrieval System (the Enterprise’s library), was used by the United Federation of Planets on the Starfleet vessels and later morphed into the PADD (Personal Access Display Device) with touch screen capability used by various aliens in the 24th Century. What did they spawn? Apple’s iPad and iPad Mini. Siri and Google Assistant, such an integral part of our lives today, were prototyped on The Enterprise, where the crew often turned to the onboard computer for helping locate stranded colleagues and ships and for crucial status updates.

“Science fiction has always been the genesis of our greatest technological triumphs,” states Venables in his article. “The idea for land ironclads, first written about by H.G. Wells, was adapted by Winston Churchill into the first tank in military history. The idea of military aeroplanes was first written about by A.A. Milne, of Winnie the Pooh fame. The concept of atomic bombs is another idea that was first generated by H.G. Wells.” (Venables, 2013)

Jules Verne proposed the idea of light-propelled spaceships in his 1865 novel, *From the Earth to the Moon*. Today, technologists all over the world are actively working on solar sails. Science fiction does not necessarily predict the future, but inspires it. “The task of science fiction,” according to Eileen Gunn in an article in the online Smithsonian magazine, “is not to predict the future. Rather, it contemplates possible futures.” (Gunn, 2014). SciFi writers imagine incredible futures based on plausible technologies. Science fiction is not fantasy, but a logical extension of current technologies and worlds. It is based on the principles of life – physics, chemistry, biology, technology and human endeavour.

Jayant Narlikar, noted Indian Astrophysicist and writer of science fiction shares Hugo Gernsback’s definition of science fiction: “By ‘scientifiction’ I mean the Jules Verne, HG Wells and Edgar Allan Poe type of story—a charming romance intermingled with scientific fact and prophetic vision... Not only do these amazing tales make tremendously interesting reading—they are always instructive.” (Shenoy, 2016)

SciFi Writing – Unfettered Imagination: Science fiction writers are not constrained by the possibilities of current technology, as scientists and engineers can be. Not knowing enough about what is available and possible with the current state of knowledge, gives them the freedom to paint on stark white walls. As a new study by the University of Toronto, Rotman School of Management revealed, structure can be a killer of creativity. Too much knowledge and immersion in a domain, blinds one to new insights into it. (University of Toronto, Rotman School of Management. "Too much structured knowledge hurts creativity, shows study." (University of Toronto, 2017). Writers of fiction on the other hand, are unfettered by rules of the industry. Their wild imagination can actually sow the seeds for disruptive innovations.

Science fiction is not really about solving today’s problems. As Claire Evans, the futures editor of *Vice’s* technology offshoot *Motherboard*, an online magazine and video channel that sets out to explore 'the intersection of technology, science and humans' says, science fiction is “just a method for discombobulating the reader just enough that it forces you to redefine what’s normal.” (Zukerman, 2014). In that sense it could

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be a viewport through which you examine the present. “Science fiction almost always incorporates criticism of today,” says James Bowers, a political scientist at the University of Illinois. “If, when you write about tomorrow, if your tomorrow seems a lot like today but a lot darker, it is in essence a criticism.”

Scifi imagines a way of life in the future based on current trends and projects problems that may crop up and solutions to problems that have not even been envisaged in the present. It’s a crystal ball that allows us to prototype a life without living through its travails. Writing a fictional account allows immense freedom in exploration. Renowned novelist and poet Ursula K. Le Guin. “The future is a safe, sterile laboratory for trying out ideas in,” she tells *The Smithsonian*, “a means of thinking about reality, a method.” Le Guin’s award-winning 1969 novel, *The Left Hand of Darkness*—set on a distant world populated by genetically modified hermaphrodites—is a thought experiment about how society would be different if it were genderless. (Gunn, 2014)

This brings us to another powerful wormhole that science fiction writing can let us slide into: the ability to visualise the social and ethical impact of ideas. While an idea solves a current problem, what of its negative impact? Like Mary Shelley’s *Frankenstein*, which is not only about the possibility of organ transplant and resurrecting life, but a social comment on what could go wrong and the horrors that irresponsible ideas could unleash. Sebastian Buckup, Head of Programming, Global Programming Group, Member of the Executive Committee, World Economic Forum, talks about two main ingredients in sci-fi stories: great science and a keen understanding of contemporary hopes and fears. (Buckup, 2016). Scifi writing is not only about exploring technological utopias and dystopias but also economic, financial, political and social scenarios. It helps us to test out ideas in a fictional landscape before they are launched. We can hide behind the fiction and preview the good, the bad and the ugly as our ideas and prototypes fit into an almost real world.

Increasingly, tech companies are not only using science fiction storytelling to imagine how their ideas and inventions will fit into the future, but they’re hiring science fiction writers to help them imagine new ideas and inventions. Writing in the *New Yorker*, Nick Romeo writes about Ari Popper who formed the company SciFutures, which specialises in writing customized stories for companies like Visa, Ford, Pepsi, Samsung, and *NATO*. Popper calls this work “corporate visioning.” (Romeo, 2017)

Science Fiction Prototyping: Businesses like SciFutures resonate with the idea of Science Fiction Prototyping, a term introduced by Brian David Johnson in 2010. Working as a Futurist for Intel, he conceived of a methodology that uses science fiction stories about possible futures. He has developed a five step methodology: (Johnson, 2011)

Pick Your Science and Build Your World; The Scientific Inflection Point; Ramifications of the Science on People; The Human Inflection Point; What Did We Learn?

Put simply, Science Fiction Prototyping needs a full-fledged world with characters and a plot where the science that is being tested, resides. It will visualise the ramifications of the science or idea, the good and bad effects that it will have on the people in that

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society. All problems that can arise from the science or idea will be envisioned and the conclusion will either fix the problem or kill the idea. It allows the writer to get back to the drawing board and tweak the idea or visualise its perils and eliminate it and start afresh. Using characters and a story makes the idea relatable and testable on fictional real people.

“I really like design fiction or prototyping fiction,” says novelist Cory Doctorow, whose clients have included Disney and Tesco. “There is nothing weird about a company doing this—commissioning a story about people using a technology to decide if the technology is worth following through on. It’s like an architect creating a virtual fly-through of a building.” Doctorow, who worked in the software industry, has seen both sides of the development process. “I’ve been in engineering discussions in which the argument turned on what it would be like to use the product, and fiction can be a way of getting at that experience.” (Johnson, 2011)

In 2012, Stephenson partnered with the Centre for Science and the Imagination (CSI) at Arizona State University to create Project Hieroglyph, a web-based project that provides, in its words, “a space for writers, scientists, artists and engineers to collaborate on creative, ambitious visions of our near future.” The first fruit will be an anthology, *Hieroglyph: Stories and Blueprints for a Better Future*, to be published this September by HarperCollins. It will include stories by both established and newer writers who have been encouraged to “step outside their comfort zone,” as Ed Finn, the director of CSI, puts it. The same goes for readers. Finn sees the core audience for Hieroglyph as people who have never thought about the issues these authors address. “I want them to place themselves in these futures,” he says. Neal Town Stephenson, American writer and game designer founded Project Hieroglyph, a platform for science fiction writers and scientists “to learn from, and influence, each other - and in turn, the future”.

(Siegelbaum, 2014). The stories told take on big, difficult problems: Stephenson’s story envisions the construction of a 15-mile-high steel tower reaching into the stratosphere that would cut down on the fuel needed to launch space vehicles; Madeline Ashby applies the mechanics of gaming to manage U.S. immigration; and Cory Doctorow’s story suggests using 3-D printing to build structures on the moon.

With imagination, science fiction allows us to play out our own lives in the future. In his book, *Futuring: The Exploration of the Future*, Edward Cornish talks about projecting current supertrends into the future, assuming that the supertrends will continue in the same path. He calls it “continuation scenario”, much like science fiction allows us to do. The flights of fancy here are rooted in logic and current trends. What science fiction allows us to do is imagine a future that could technologically and scientifically possible, using knowledge of physics, chemistry, biology and the way the Universe works.

So how does science fiction writing help a management student, who is neither an engineer nor a scientist, imagine the future. Science fiction writer Lee Konstantinou sees science fiction as a way to spur creative thinking (Siegelbaum, 2014). From new product designs to new ways of doing business, providing services, understanding

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possible new needs and trends, science fiction writing and prototyping can be a good tool in the arsenal of problem solving and creative thinking lessons in the classroom.

Futuring – Its Time is Now: By journeying on the supertrends that exist today, we can project forward in time. Edward Cornish has named six in his book *Futuring: The Exploration of the Future*, (Chapter 3, Six Supertrends shaping the future): Technological Progress, Economic Growth, Improving Health, Increasing Mobility, Environmental Decline, Increasing Deculturation (Loss of traditional culture). These trends probably encompass most of human needs and issues of growth and/or concern, today as well as in the future. As future managers, MBA students will need innovative solutions to address problems that they will encounter in these areas or even to think of entrepreneurial ideas that address these needs. According to Cornish, “By projecting our supertrends forward in time, we can create a new scenario of picture of what the world might be like at a specific time in the future, say, the year 2040. This scenario assumes that the supertrends will continue much as they are now and that there will be no big surprises to invalidate our expectations. It can be described as a “continuation scenario”. Imagining and prototyping these scenarios can not only help students to visualise what life could be in the future, but also what can be avoided to reverse a downward spiralling trend. (Cornish, 2005)

Science fiction is not a soothsayer’s crystal ball. As stated earlier, it is not so much about predicting the future, as inspiring a way of life. It is creating a map of the future that scientists and engineers, designers and thinkers, politicians and professionals can use to create new ideas and shape the world and society. No area is off-limits to science fiction – how will we work and live, where will we work and live, what will we eat and drink, how will we travel, will we commute, what diseases will we conquer, what new diseases will we encounter, how will we govern ourselves, how will we transact, how will we communicate. Somewhere between asking these questions and creating what-if scenarios lie great ideas and inspiring world-visions.

SciFi in the Classroom – a rough model: Combining imagination (the bedrock of great ideas), storytelling (learning to develop characters and plots), and science and logic (current technologies, current social, economic, political trends, etc), students can be taught to use science fiction writing and prototyping as a tool to ideate and then test their ideas in a world that’s not real but populated with real people.

Based on these fundamentals, a small module on Science Fiction Imagining and Writing was introduced in the Creativity and Innovation elective, culminating in a graded assignment. The module included a lecture on the concept of Futuring and science fiction writing, as well as reading science fiction short stories and analysis and class discussion of the same, covering the characters, world built, concept projected, technology used and protagonists and antagonists in the story, problems encountered and solutions imagined, as outlined in *Science Fiction prototyping* by Brian Johnson. The students then had to submit a science fiction short story using the techniques of prototyping learnt in class. The short story had a word limit – not more than 2000 words. A template was provided so they could follow a line of thought.

Sample Task Given: It is the year 2050.

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The Technology/service/product/area: Example: Sleep, Personal Transport, Financial Transactions/Money, Education, Working Spaces, Longevity, Diet, Personal Relationships, Entertainment, Human Habitation.

What's the Setting?; Main Story/Plot. What was the main problem?; Was there any secondary problem because of the main problem?; Main Characters Good/Evil; How does the new solution affect the lives of your characters?; What are the challenges that it creates (Fallout)?; Is there a solution?; How does the story get resolved?

The results were promising. Students managed to explore ideas freely. From artificial wombs to 3D organ printing, fashion to furniture, the quantity of ideas generated was significant. While some students managed to tell a story, a number of them could not take the idea forward. Only 1 student asked "What if" questions and developed a great story and a great idea (artificial wombs).

Management students, being mainly from engineering backgrounds, hold back on imagination, probably due to their grounding in hard sciences and are unable to imagine freely. Science Fiction writing, with its technical/scientific slant, can be combined with story-telling to help them think innovatively. Further research and a revision of the pedagogy is proposed to validate this.

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