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The Shock of the Old and our innovation - centric view !
Investing in Innovation
SANCHIT GHULE
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HISTORY OF SCIENCE AND THE PUBLIC HS6017

The Shock of the Old and our innovation-centric view!

Guide

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Abstract

In this paper I'm gonna introduce various old technologies which are still relevant today, some of them are mystery of the past, some information about it, I will also draw my personal analysis / observations and arguments for the current day technology. I'll also discuss possible future direction for innovation and research, its outcomes, and emphasising more on reconciliation in research.

0.1 Introduction

We have lived with technology for a long time, and collectively we know a lot about it. But Change! we all change. Every single cell in our bodies changes, no exceptions just as society changes. That which seemed fast to our parents, seems slow to us, Both young and old have suddenly ended up in a digital society.
How do we ensure everyone can reap the benefits of these new possibilities?
How do we keep trust as the foundation of our society?
How do we deal with dialogue and decision making? and how do we use data responsibly?
How can technology support us in living a longer and healthier life?
How do we ensure the constant learning and education of both young and old, very young and very old?
What can we do to prepare businesses and employees for a completely new economy?
How do we keep urban and rural areas attractive?
How can we protect ourselves? our personal data, our freedom?

These dilemmas require well-thought-out solutions for the long term.

- Life in a digital world -

  everyone has to deal with it, every cell of society.

  Everything should be made as simple as possible, but not any simpler
  —Albert Einstein

Together, Let us create A Better World!

Figure 1: abstract

Chapter 1

1.1 TECHNOLOGIES AND INVENTIONS OF THE PAST

We probably cannot remember every single fact or skill we were taught when we were at school. Our memories fade over time, and if we don't practice the skills that we've been taught regularly, we eventually forget how to use them at all. That doesn't just apply to individual people, though - that applies to the whole human race! There's plenty of evidence that our ancestors had various skills and abilities that we lack today, and we will try to cover various technologies, which existed even today! Which is even more relevant than today's hi-fi technology!

We often believe that modern science to be the zenith for the humanity thus far. Incorrectly perceiving technology as a modern craft, but some societies of the past were actually significantly more creative than we ever give them credit for. Not only the craft technology we are still useing today, but sometimes they were designed things that we still fully don't understand yet. These are the oldest technologies that scientists Can't explain !

1.1.1 Wootz' Steel

Wootz steel is one of the finest metals we have ever heard of. Back in the middle ages this material was used to fashion the famous Damascus blade. A legendary weapon allegedly capable of cutting through the rifle barrel or cutting a hair in perfectly two. The material wootz steel has a mystery of its own.

Figure 1.1: sword made of wootz steel

Wootz steel originates in India, sometime around 500 BC, it is generally recognised for its unique textural patterns, Often in the shapes of waves, ladder or roses. The world's foremost metal producers have concocted a a super secret technique to develop what they were calling "The Finest Steel in the World." Which is pretty confident considering many of them likely would never have actually explorer the entire world! Those producers would be pretty happy today, knowing that there secret have remained intact.
Modern scientists are baffled by this mysterious metal, attempting to reproduce its unusual texture. None have succeeded of course!

1.1.2 Greek Fire

Fire is the one of the most dangerous weapon. Just think about flamethrower, the molotov cocktail or 1999's smash Smith classic guns, all of them Are pretty modern. But over a 700 years, the Greeks found a new ways to use fire.

It was pretty ingenious. Developed and used by Byzantine Empire, when they find themselves in battles they throw these unusually shaped granites at their

1.1.2) Greek Fire

Figure 1.2: greek fire

1.1.3) The Voynich Manuscript

Figure 1.3: The Voynich Manuscript

chosen targets. When they would ignite the flames would sticks to their target and were impossible to put out without water. In fact the flames were just well burn on top of water then anything else.

Scientists have found no credible way of explaining that, and the secret was lost to the history.

Physics tells us water cannot support flames. So how on earth is this possible?

We'll probably never understand how this incredibly strong weapon worked.

Wikipedia Link: `https://en.wikipedia.org/wiki/Greek_fire`

Figure 1.4: The Antikythera Mechanism

1.1.3 The Voynich Manuscript

Some books are just impenetrable. Maybe they are overwritten, or there are any languages that we didn't understand. Even the Experts!
The voynich manuscript is admittedly a little more complicated than just a language problem. It is weird, unusual and very mysterious book. Two thirds in the manuscript the readers discovers a line drawing of a bath surrounded by pipes, And filled with naked women. The next few pages contains more naked women's in increasingly unusual so real scenarios. All of them accompanied by some strange text. The only problem is this text is complete nonsense. Since its discovery in 1912, the book has been looked by hundreds of experts. From cryptographers to linguists, who has tried to decipher whatever it is! But all of them have failed! Experts remain insistent that this book is not a hoax. But nobody is able to explain its meaning.

Wikipedia Link: `https://en.wikipedia.org/wiki/Voynich_manuscript`

1.1.4 The Antikythera Mechanism

The world of ancient Greeks was nothing short of fascinations. The technological innovations that they were created Were really something else. One of the earliest computers ever to be discovered!

In 1900s, the group of sponge divers in the middle of maritime corridor

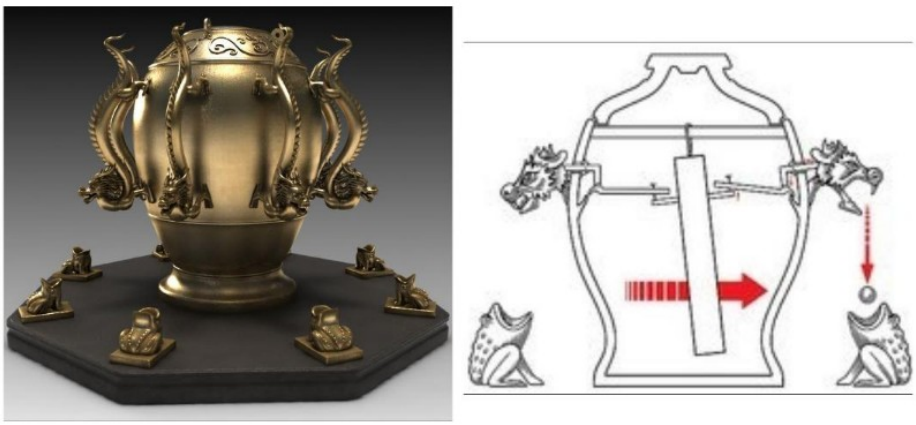

Figure 1.5: The Ancient Earthquake Detector

were forced off by a strong storm. When they happened to stumbled, swim up on unexpected treasure of the coast of the island Antikythera. A sunken ship wreck contained hundreds of priceless greek antiques! The most notable however encrusted bronze hunk of something, eight months after its discovery, the object was found to be some kind of computer. Made up of 30 gear wheels. Scientists have been unable to crack its purpose. Conforming that this was the most advance piece of technology Of the time. Scientists have run multiple investigations and experiments on this odd computer, But had turn up absolutely nothing. It seems whatever its purpose, it's clearly not cent-ain't enough to share with us.

Wikipedia Link: `https://en.wikipedia.org/wiki/Antikythera_mechanism`

1.1.5 The Ancient Earthquake Detector

It seems that whatever genius invention western world comes up with, the Chinese got their first! Of course thousands of years before!
In this case we are looking for a seismograph or earthquake detector.

In 132 A.D. Chinese inventor called Jing Wang created the world's very first

seismoscope. Designed to detect earthquake from some distance, without need of shaking of the device whatsoever. The technology behind this device is so complicated that is it's almost not even worth trying to summarise in part. Because scientist still unable to explain how exactly mechanism worked. Through the Chinese, an earthquake was a sign from a heaven that must be monitored. So it's no surprise that they came up with such impressively constructed monitoring tool. It's not just worth picking a risk of heavens concern!

`https://www.ancient-origins.net/ancient-technology/incredible-earthquake-detector-invented-nearly-2000-years-ago-001377`

1.1.6 Iron Pillar of Delhi

Science is apparently not bound by the laws. Just unusual guidelines!
Yes! Fire can exist on water, objects can defy gravity and apparently metal doesn't have to rust.

The iron pillar of delhi is huge, 7.2 m tall, had stood for over a thousand years! Dating back around 300 A.D. and yet there is not a single bit of rust or deterioration. Nobody knows why it's there or where it came from. But scientists are more baffled by bizarre lack of any sort of rusting. While there are many theories why is the case, There is no evidence why this is?

The only damage can found on the iron pillar is the result of people touching on the surface! Which forced the addition of fencing around the iron pillar.

1.1.7 The Giant Ball of Costa Rica

These are the unexplained objects of the past.

1.1.8 The Codex Gigas

The codex gigas is the ultimate Swiss knife army to beat all other books. This book is most likely the massive book in the world. Containing 623 foot tall pages and whole host of texts. Not only does this whopping book featured the old and new testament's, but also book on exorcism, medicine, a full-page drawing of a devil! (Devils Bible), grammar. Researchers have long been searching for answers in the

Figure 1.6: Iron Pillar of Delhi

Figure 1.7: Giant Ball of Costa Rica

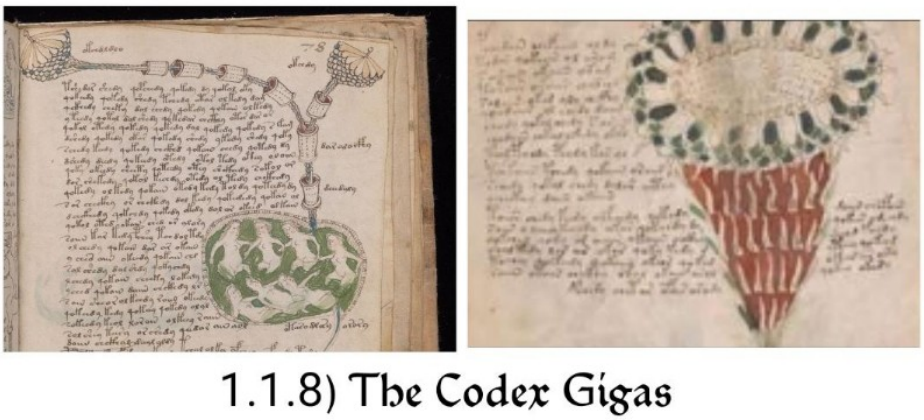

Figure 1.8: Codex Gigas

mysterious case of Codex Gigas, but they came up empty. Nobody knows nothing! [For all we know, this book was written by devil. And he was just narcissistic]

https://en.wikipedia.org/wiki/Codex_Gigas

1.1.9 Japan's Atlanta's

Deep beneath the ocean, on the southern coast of Japan, a pile of 10,000 years old rooms lie submerged. Their origin is unknown. Their purpose unclear. These greatest unusual rooms discovered in 1995.

https://www.bbc.com/reel/video/p0884j4s/the-truth-behind-japan-s-mysterious-atlantis-

Figure 1.9: Japan's Atlanta's

Chapter 2

2.1 Inventions needs to Uninvent

If there is a way to go back in the past, maybe using Time Machine, there are few things which needs to re-invent, or rather better Uninvent!

As innovators we should always look past that excited us for our idea, an idea or an invention which gonna change the world, change people's life, change our organisation, which is really taken to a brief look at history of an idea, and where did it possibly go wrong, where was its use resulted in something negative or unintended consequence.
What would be unintended consequences of our ideas?
What are the ways that some idea can be use in unintended ways?
How our idea could be misused?
Of course some of them can be positive but some of them can be negative also!
What is Ethical Innovation?
Rather talking what we should do in future, possibly we have to take a look at how could our idea be misused in future!
Because most, if not all innovations can be both good and bad, and it's important as an innovator that we go with our eyes wide open. Look what happened historically, and if we could rewind the clock! What we have done differently!

2.1.1 Atomic Bomb

An atomic bomb is perfect example where something is good and something is not so good. The use of atom for medicine, Atomic energy these all are phenomenal inventions. But the atomic bombs use as a weapons, now being used as deterrence, if we have magic, better to keep it's good use.
Let's get rid of the atomic bomb!

2.1.2 Social Media

People have been commenting on social media in negative effects. in many ways social media turns into echo chamber, in fact it amplifies based on some algorithm, things like opinions, discussions, common things etc. social media used algorithms to amplify those kind of messages is just a bad thing. It is a misuse of communities, it's a misuse of friendships, it's a misuse of data and information manipulation, and just intellectual gymnastics.
There are ways to use social media in good way.

2.1.3 Speed Cameras (Red light cameras)

These are the cameras that municipalities post up on traffic lights or down the streets and they clock us, they snap our pictures, and sends us automatic tickets, Which has good results in terms of safety. But many of the GPS systems will tell you when you are comeing up on a red light camera or speed camera, and you adjust your speed accordingly, so does it really help?
The good part is we will get automatic bills for our car toll or bus ticket using these efficient systems. But these are being misused, many companies are approaching municipalities saying that we will install the cameras for free, we will install the red light cameras for free, and split the toal you get. And businesses get money of illegal activities.

2.1.4 Robo Callers

These are the callers that are trying to sell us contracts about automobiles, telemarketing campaigns etc, and these robo callers are the real pain. Many people are getting around 8 to 10 calls per day from robo callers. It is just a result of innovation, telephone systems are going digital, voice over IP (VoIP), generated calls are doorways for the invention of Robo calls.
Now the inventors of VoIP could not think about the fact that their VoIP could be misused. Developers can easily write some software on computers or laptops or the servers and can generate thousands and thousands of calls simultaneously, call regulators are not able to keep up with this kind of innovation. Could the innovators or the regulators would have shut that down in the past! By making it illegal earlier!
[However politicians love Robo callers to get their election campaign going]

2.1.5 Biological or Chemical Weapons

This is particularly started pre-World War I, with inventions of things like mustard gas!
What is the use of mustard gas? Other than harm or kill people!
Now, because we have invented, we opened whole Pandora's box. Now countries are working in this area primary as deterrents. There are all kinds of treaties saying that nobody can work in biological weapons, But we never know!
[Call me a sceptic]

2.1.6 Tobacco and Cigarettes

Tobacco is being around from long time, long before even the arrival of Europeans to the United States, tobacco was actually a crop of the Indians, we exported it to Europe etc. And spread that throughout the world.
Some of the people are Tobacco farmers, tobacco harvesting, and it feels a livelihood, but tobacco is very negative it's a ubductive, it's bad for health.
Probably we can't argue against the negative effects of tobacco, particularly cigarettes have had on people's health, lives, mental costs, longevity etc.

2.1.7 Plastic

Plastic actually has a lot of positive effects, including in areas of medicine, Certain devices that actually get inserted into the body now.
The early version of plastic which never degraded, never decomposed is the real problem. Think about all the plastic in the ocean, all the plastic on the landfills, which has never degraded. This is a good example though where something was invented there is a unintended consequence and then that actually encourage innovators to go solve that problem, (to solve unintended consequence problem).
In a form of plastic, are there other things that can be invented, that could serve the same purpose as plastic, but that are biodegradable. e.g. plastic bags, things such as sealed food etc.
Is there an alternative packaging which reduces the need of requirement of plastic? I think this could encourage some interesting innovations!

2.1.8 Computer Viruses and Malwares

The early days of computer viruses, it is not done as negative thing, it was basically used to keep track of illegal copies of softwares. In early days of softwares, people would make illegal coppies and everybody just distribute and duplicate sorts of discs, publishers are trying to shut down that therefore created a bits of code which would keep a track of who was the original license key owner and who tried to subsequent copying for each generation of the original copy. Ultimately trying to trace back it's original duplicate.
There is a lot of energy and time spent on these in early days (mid 70s and early 80s). Originally it was intended for good but got twisted for bad, now that's turned into malwares which results in all kinds of nastiness around the web.

2.1.9 Over Use Of Chemicals In Food

Today if we read the ingredients list of all the foods we eat or drink, the number of chemicals that are there, a lot more chemicals that are just there for the benefit of producers, make a food nice or last it longer, be more stable during shipment, lower cost of same food which gives the same test, which all has many unintended

health consequences. Example of replacing sugar with hyper-sucrose/fructose etc.

Chapter 3

3.1 THE SHOCK OF THE OLD

In today's world our society is largely market driven, everything is gauged by it's market values which largely affects innovation centric view, The innovation is to focus on the technologies we actually use rather than Tomorrow's World-style, bright new things that mostly never catch on with the current demand or which won't long last. After all overlooked technologies affects our lives in great extend which further leads to thought-provoking ideas that challenge our innovation-centric view!

> We have lived with technology for a long time, and collectively we know a lot about it.

[It is a fact that future of technology is set by the promoters of new technologies. When we are told about any technology from then on we are made to think about novelty and the future. For many decades now the term 'technology' has been closely linked with invention (the creation of a new idea) and innovation (the first use of a new idea). But how true it is?
It looks like we are entering in a new historical epoch as a result of technology. In the new economy, in new times, in our post-industrial and postmodern condition, knowledge of the present and past is supposedly ever less relevant. Inventors, even in these post-modern times, are 'ahead of their time', while societies suffer from the grip of the past, resulting in a supposed slowness to adapt to new technology. **There are new things under the sun, and the world is indeed changing radically**, but

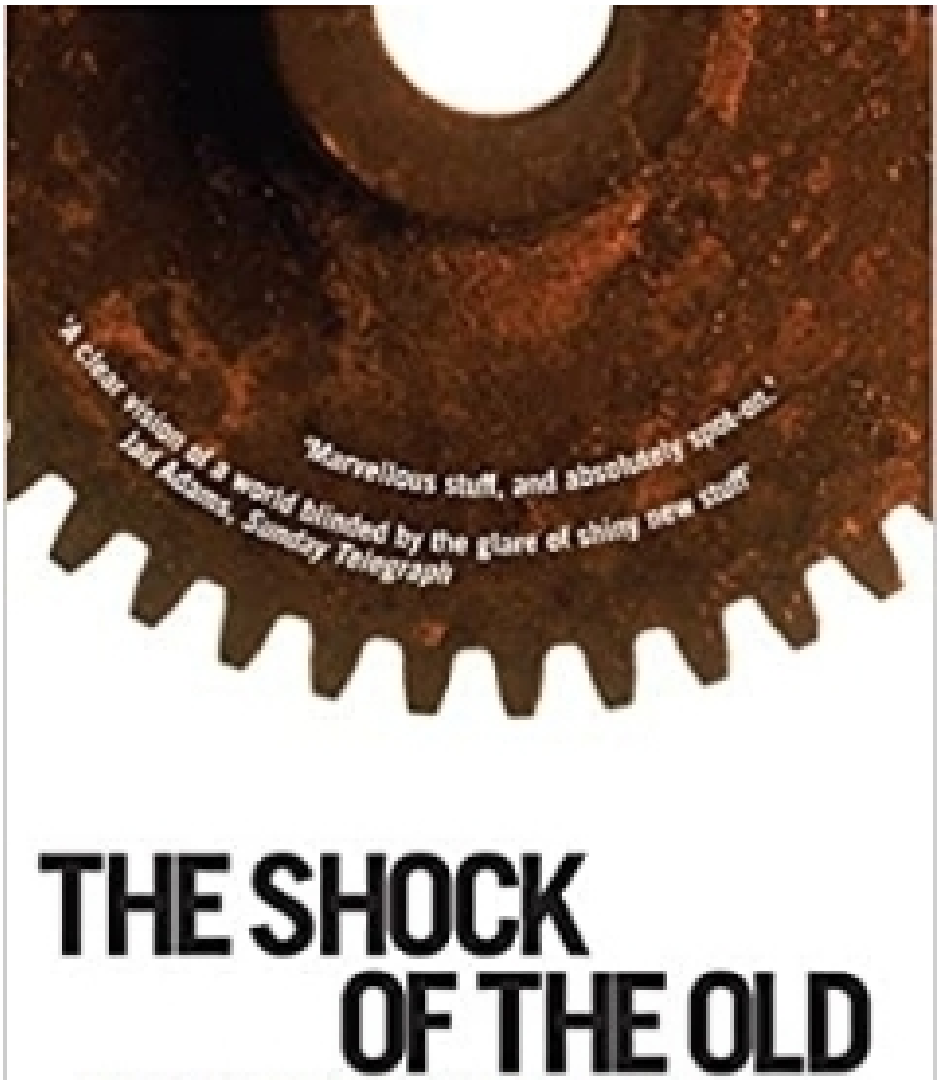

Figure 3.1: THE SHOCK OF THE OLD

this way of thinking is not among them. Although the emphasis on the future itself suggests originality, this kind of futurology has been with us a long time.
In the nineteenth century the idea that inventors were ahead of their time and that science and technology were advancing faster than the ability of human society to cope was a commonplace. By the early twentieth century this notion was made academically respectable with the label 'the cultural lag'. In the 1950s and even later, one could claim without embarrassment that scientists 'had the future in their bones'. By the end of the twentieth century, futurism had long been passé. The technological future was as it had been for a long time.
Intellectuals claimed there was a new kind of future, one prefigured by 'post-modern' architecture. Yet this new kind of future was to be brought about by an old-style technological or industrial revolution which would change everything.]
Which raises few fundamental points.

3.1.1 Ship of Theseus Paradox

The Theseus' paradox is a thought experiment that raises fundamental questions, whether an object that has had all of its components replaced remains fundamentally the same object? Which urges us to think about future improvements, corrections and supervised learning in our innovation.

Oftentimes new innovation/technology is just the reputation of old technology with correct and acceptable reasons. The challenge remains is adoption of technology.

The Theseus' paradox is relevant for today's modern world of technology where everyday technology changes, but question remains unanswered whether technology brings back its core value which was the main purpose behind building technology.

3.1.2 What has changed?

Everything! Right from the mattresses we wakes on every day to the last meal of the day.
Technology is everywhere. It's playing a crucial role to make our lives easier than before. But thought to ponder is, Are we becoming more dependent on technology? Does technology overrules our lives? In future generations what would happen if there is a sudden loss of technology? Still Will we able to survive?

Sometimes technology plays an impressive role in creating unemployment, unresourceful and senseless things. Inventors have to diligently think about the problems which technology creates in everyday life.

3.1.3 Technology – advantage or disadvantage

I would like to gain your attention in digging more relevant discussion topics in this domain.

Automotive Industry things are changing rapidly. These days we are moving from internal combustion engines to electric vehicles.

Information Technology today everything is moreover software oriented. Anybody wondered about who controls backend and who has axis of My Personal Computer!

Cloud Technology This is very buzzing word. But I'm wondering where is this cloud! I could not see it in OPEN SKY!

We always need to be very careful about the technology we use. Many times most of the corporate houses cannot reveal the actual deep technology involved which further creates a heavy mess. But as technology is evolving Peoples are also evolving! Big Tech giants cannot fool people any more. Through online mode of learning and multiple learning resources many things are unfolding and much to learn!

Chapter 4

4.1 Conclusion

Once we buy something, do we own it? do we really own it? like we can do whatever we want with that thing? It sounds a very simple question but there are actually a lot of limits to what exactly we can do with what we own. Let's say we buy a car, we get the title saying we own it, it's ours ! and we can do whatever with it, driving it somewhere, but yup we cannot drive over certain speed in certain places, hmm that's limit, we get it, due to some safety reasons. If we consider another example of printer, we can print whatever we want, but what happens if we start photocopying money? it will just doesnt let us ! So there are certain limits that we accept for every thing which we own.

4.1.1 Right to Repair

If we own something, and if that breaks, should we be allowed to repair it? fix it? That should be pretty easy ! No one is gonna stop us for doing that, there is no such law which prevents repairing, it's almost impossible to actually do it. it's the companies that makes the things, that often we trying to repair, they are trying to stop us, before even we get that far.
A piece of technology which we own, and part of it breaks, so there are two sides, (of course there are two sides for every coin), one is the user side and there is a manufacturer side. User side is just easy to understand because we should just be able to repair that thing and keep using that technology. Of course we should be able to repair technology which we own, and there are millions of great reasons to

do it, repair saves the user's money ! It saves the environment, instead of creating unnecessary e-waste by throwing out perfectly usable technology. We can make a meaningful change to this throwaway economy that we live in. Just keep using things as long as it works ! The more easily replaceable and repairable parts that are in our gadgets, the better it is for users. That means the manufacturers and companies making these things are on complete opposite side of that equation, they're gonna want a control of it.
Once we buy a technology their best interest is retain as much control over that technology. Because everything about this transaction is better for them if they have more control. They can keep selling us accessories and everything made for that technology. They can continue to make money off of the thing they have sold to us. Companies and manufacturers should not control everything, that would be a Monopoly!

These days technology is getting very complicated !! As technology is getting better, it's getting more and more well optimised and more tightly integrated. Parts are connected to each other more, they talk to each other faster, as these things happens, things are getting less repairable at the same time. Maybe 80s and 90s were the golden age of technology.

Technology can be mainly classified by two different categories:

1. Repairs that are more difficult due to technological progress.
2. Repairs are more difficult because of the manufacturers just like a better way to put it.

Repairable things does not mean that we need to go back to the stone age. The problem is not with the smaller or the harder repairs, it is innovators responsibility to figure out how to fix or repair the technology when it gets better, snaller or more integrated. It is not about larger board becomes a tiny chip, but at least we would be able to repair the device which we own.

The ultimate truth is technology is going continue to evolve so those who repair technology will also continue to evolve and continue to meet that particular

challenge. So Well-written and well considered legislation (which does not allow anticonsumer, anti-competitive, and anti-repair behaviour of many manufacturers and companies) would help to shape the better future.

"Future of technology is set by the promoters of new technologies."
This kind of thinking has to be change. The future of technology should be always based on the end-user. It should not be like pushing services/products on users, rather creating demand for pull of better services and better products.

" When we are talk about technology from on we are made to think about novelty and the future. For many decades now the term 'technology' has been closely linked with invention (the creation of new idea) and innovation (the first use of a new idea)"
In the new economy, in new times this looks like a very vague statement. Think about a cooking recipe, if you are the best chef in the world then, Do you keep your cooking recipe Secret? Will you have fear of losing your recipe? will you exclusively charge your foodie customers for understanding the recipe? or, will you charge your foodie customers for enjoying the tasty food?
Anyways, the sad truth is there will be always somebody who will come up with the better taste and healthy food recipe than yours so what you're gonna do? Will you be still keep selling your old-fashioned food recipe?
So better advice is always keep sharing the best skills you've acquired so that new ideas could always keep on adding to the existing things.
There's a nice thing about cooking, we can't really increase or decrease all the ingredients in the same proportion in a recipe, their relative contribution to the recipe is different, so we need to realise on contribution of each ingredient in the recipe.

"Heal the world, Make it a better place, For you and for me, and the entire human race, There are people dying, If you care enough for the living, Make a better place for you and for me. "

We need to understand the barriers to interactions in todays technological digital world, technology could Impact both individuals and the entire communities lifestyle and their living. so we Need to consider following areas :

- Economic and workforce development

- Civic participation
- Digital Education
- Healthcare
- Public safety

Access the availability and affordability of digital technology both public access and individual household access

Adoption Digital literacy and consumer safety when accessing the internet.

Application Implementation of digital inclusion initiatives in education, health care, public safety and economic development initiatives.

The focus of Technology should be on adoption and it's application:

1. The need to equip individuals with basic digital skills that empowers them to be self- reliant.
2. The need to ensure that technology can be accessed by everyone regardless of their abilities.
3. The need to provide tools (technologies) to help access the technology.
4. The need to ensure that technology is created in such a way that it can be accessed using easy mechanism.

Let us think of some common accessibility problems encountered when accessing technology (Diverse Abilities and Barriers)

How can we ensure that technology is created and rendered in a way that ensures inclusion,
i.e., by the targeted users or (if possible) universal access, i.e., access by all?

the term 'technology' has been closely linked with invention (the creation of a new idea) and innovation (the first use of a new idea). One thing is sure, Building codes and laws, new technologies, and materials are ever changing in this industry !!

Thank you

Figure 4.1: Technology Inclusion