

Why and how industrial revolutions form and to how to take part in them

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20 Mar 2019

It seems everyone is talking about the Fourth Industrial Revolution, often abbreviated as 4IR and also called Industry 4.0, but why and how do these revolutions form, and how can you take part in them?



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Do you battle to understand what it is?

Relax, once you understand innovation and evolution in the context I will give below, you will have a high-level interpretation of what is this (the Fourth any coming) Industrial Revolution, why and how it forms, and how to take part in it.

The standard – and the most cut pasted – definition of the Fourth Industrial Revolution goes like this:

The Fourth Industrial Revolution (4IR) is characterised by a fusion of technologies that is blurring the lines between the physical, digital and biological spheres, collectively referred to as cyber-physical systems. It is marked by emerging technology breakthroughs in a number of fields, including robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the Internet of Things, the Industrial Internet of Things (IIoT), decentralised consensus, fifth-generation wireless technologies (5G), additive manufacturing/3D printing and fully autonomous vehicles.

The simple context to understand (Fourth) Industrial Revolutions: Evolution and new-innovation

What is innovation? It is that which works, i.e. is effective and thus successful.

When a comedian tells a joke and makes you laugh, the joke is the innovation because it is effective and successful with its intention to make you laugh.

Innovation is that which works and thus is successful.

When the joke is repeated – say you have the comedy film – and it still makes you laugh, it is thusly still an innovation because works: i.e. is effective and successful in making you laugh.

Innovation is that which works and is effective, regardless of whether it's old or new.

So, to build a ground of understanding, distinction and narration in this post, let's call innovation that is new (e.g. a new joke) a 'new-innovation.' And, let's call innovation that is old or exists as just 'innovation.'

'New-innovation,' happens, or, it is adding/fusing/mixing/stacking two or more innovations, components, attributes or things (it could be anything). In addition, the mixed components should sync and/or ascend to make a new thing – a new-innovation – that works, i.e. it is effective or efficient, and thus succeeds to achieve a role.

For example:

- YouTube mixed internet and video to produce a new innovative tool that was efficient, virtual and agile: This was online-streamed videos.
- Facebook mixed text, video and many other tech innovations – old and new. It was a new-innovation when it came out. Facebook keeps adding other innovations to keep in the lead.
- A wooden chair mixed wood and a geometric structure that allows a person to seat.
- Even a new joke (new or old) mixes two or more components. Example of a joke:- 'Q: Why are men's feet on average longer than women's? A: So they can stand further from responsibility.' That's a funny joke I made up. It mixes both genders, adds feet, and reflects a societal perception or notion that men run away from parental responsibly.

Remember, a new innovation has to work, be effective and thus succeed in order to be a new innovation. This post is only about explaining innovation so to help you understand what is the 4IR.

We human beings are also an innovation. An old one at that. We are a mixture of atoms and molecules. But, plus-minus 200 thousand years ago we were a new-innovation when we evolved into homo sapiens. Our innovation or evolution was a mixture of two or more genes or atoms and molecules.

Therefore, new-innovation is innovation that moves forward.

Human beings evolved to have cognition with the ability to make objects and move innovations forward – thus we are ever producing new innovations. Animals can't make cars like us – or rather all the other animals can't. However, we can. Even though monkeys love a banana shake, they can't make (invent) a blender to make the shake. They invent nothing those monkeys.

The 'Fourth Industrial Revolution' is nothing but innovation moving forward

This was so with the previous Industrial Revolutions: 1st Industrial Revolution (mechanisation, water power, steam power), 2nd Industrial Revolution (mass production, assembly line) and 3rd Industrial Revolution (computers and automation).

In a simple sense, the Fourth Industrial Revolution means there have been breakthroughs in different fields – as always because human beings are ever innovating forward, e.g. biotechnology, 3D printing and nanotechnology.



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Humans are wired like that. This revolution like other revolutions is the inter-stacking or fusion of existing (older and current) innovations to produce new innovations. Innovation stacks and inter stacks.

Like mixing video and the internet to have YouTube. Mixing wood and geometry to have a wooden chair. Mixing wood, steel and geometry to have wooden-steel-chair. Or mixing electronics with biology to create heart a heart/cardiac pacemaker to save lives.

Let me give you an absurd example of what happens or is possible in this current (Fourth) Industrial Revolution.

Nanotechnologies are a breakthrough. 3D printing is a breakthrough. These two technologies are more or less separate or seem so. New-innovation is about bringing together and or inter-stacking other innovations and components to have a new or improved innovation.

Imagine that we mix 3D printing and nanotechnologies. Nano is one billionth of a metre, i.e. the measurement metre zoomed into a billion times – it is very small. We can maybe be able to produce a particle or equipment that can go into the human body to kill off cancer cells – because human hands are too big to handle nano-sized particles. N.B. This is very absurd and maybe not possible within this (Fourth) Industrial Revolution but another.



Part 2: Will the so-called fourth industrial revolution propel SA forwards?

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This illustration above is to show simply that an Industrial Revolution is stacking up of existing innovations to produce new and agile innovations. It follows the same model of creating new-innovation – i.e. stacking innovations. Newness cannot be created out of nothing. It stems out from existing components.

Here are current examples in the current Industrial Innovation (also their newness/novelty is in stacking up of current innovations):

- **Smart refrigerators**

Source – Wikipedia: The LG Internet Digital DIOS smart refrigerator. It provides information such as inside temperature, the freshness of stored foods, nutrition information and recipes. Other features are a webcam that is used as a scanner and tracks what is inside the refrigerator. In addition, electricity consumption is half the level of conventional refrigerators.

Smart refrigerators stack-up existing refrigeration engineering, new power saving technology, camera, and plus other innovations.

- **Virtual assistants**

Source – Wikipedia: Amazon Alexa virtual assistant. It is capable of voice interaction, music playback, making to-do lists, setting alarms, streaming podcasts, playing audiobooks, and providing weather, traffic, sports, and other real-time information, such as news. Alexa can also control several smart devices using itself as a home automation system.

Virtual assistants stack up voice recognition, Wi-Fi, and plus other innovations.

- **Cryptocurrencies**

Source – Wikipedia: Bitcoin is a cryptocurrency, a form of electronic cash. It is a decentralized digital currency without a central bank or single administrator that can be sent from user to user on the peer-to-peer Bitcoin network without the need for intermediaries. Transactions are verified by network nodes through cryptography and recorded in a public distributed ledger called a blockchain.

Cryptocurrency fuses money with blockchain technology, crowdsourcing, and plus other innovations.

- **Genetic testing**

With just your saliva, predictions can be made of your vulnerabilities to inherited diseases. If it can be predicted it can be curbed.

Source – Wikipedia: 23andMe offers DNA ancestry testing and other health diagnoses.

Genetic testing fuses microarray chips, data, and plus other innovations.

In conclusion

The examples above are a combination and or intercombination of existing innovations. Some new and some old. The whole point is to achieve newer agility, use, effectiveness and efficiency.

This is how (Fourth or any upcoming) Industrial Revolution forms. The why is because human beings innovate further and further. If you aren't, someone out there is – building an empire. It is a competitive environment.

The rest is for you to brainstorm what new innovations can be and maybe create them.

ABOUT TISETSO MALOMA

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