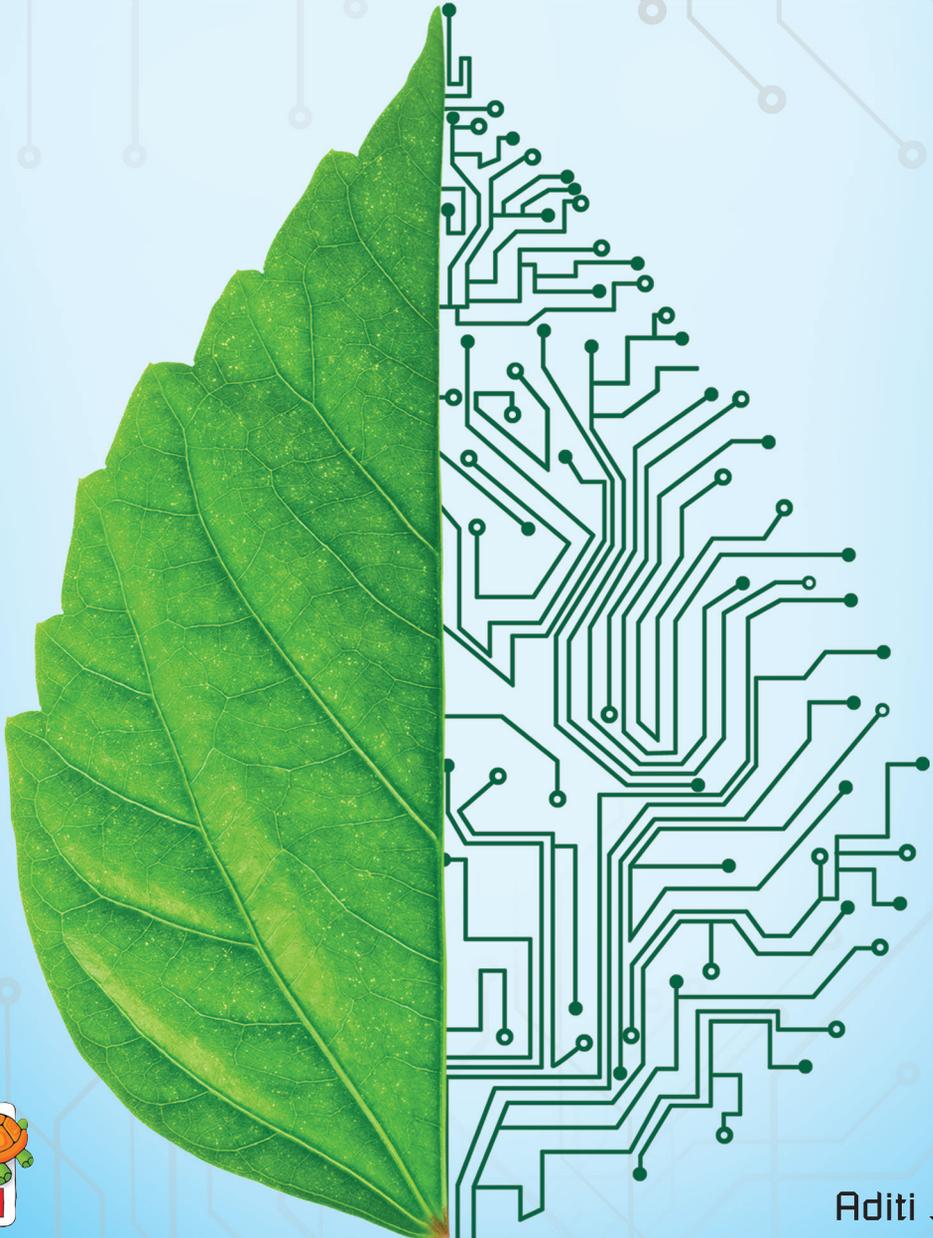


Green

GADGETS



Aditi Jindal

From the desk of Dr R K Pachauri

Modern technology is transforming our lives at a bewildering pace by revolutionizing creation, consumption, and dissemination of content almost on a daily basis. At the forefront of this revolution lie an array of gadgets – the miracles and marvels of modern technology.

In a recent study conducted in the USA, as many as 84 per cent of respondents admitted that they could not think of spending even a single day without their smartphones. This is a stark reminder of how thoroughly dependent on, if not addicted to, gadgets we have become. Lack of patience, frequent temper tantrums, and estrangement from family and friends are just some of the many unfortunate consequences of such dependence.

From a sustainability point of view, too, gadgets reveal a dark side. The more features packed in a gadget, the more electrical energy it is likely to guzzle to remain operational. At a time when rapidly increasing consumption of conventional energy has become a matter of global concern, the significance of saving energy cannot be emphasized enough.

Today, if a gadget stops working, it is more likely to be replaced rather than sent for repair. Moreover, the breakneck speed at which modern technology is evolving ensures that it takes mere months from its launch date for a gadget to become “outdated”. Every year, millions of such gadgets end up in landfills across the world, leading to the problem of e-waste. In 2012, India generated over 0.8 million tonnes of e-waste. This already massive volume is expected to cross over 2.15 million tonnes in the next five years. The situation is grim indeed!

Many electronic devices contain trace elements of toxic substances, like arsenic (in LEDs), cadmium (in cellphone and laptop batteries), and polyvinyl chloride (in cable insulation). These harmful elements can seep into the groundwater or get released into the air when incinerated, thus contaminating water bodies and the air around us, from where we get water to drink and the air we breathe.

While various electronic goods’ companies are doing their bit by phasing out hazardous chemicals from the manufacturing process, the onus is equally on us – consumers – to have our say in this matter. *Green Gadgets* provides information on a number of eco-friendly and energy-efficient alternatives to various electronic devices. At the same time, it hopes to inspire the reader to apply “greener” decisions, like opting for renewable energy as a source of powering their gadgets. Last, but not the least, it aims to create awareness by discussing ways of properly disposing of gadgets to ensure minimal impact on our planet.



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CONTENTS

- THE EVOLUTION OF GADGETS 4
- A MICROSCOPIC VIEW 12
- GOING GAGA OVER GADGETS 24
- THE DARK SIDE OF GADGETS 33
- GREEN-O-VATION 39
- ECO-TRONICS 48
- IT'S EASY TO "GO GREEN" 52

THE EVOLUTION OF GADGETS

THOUSANDS OF YEARS AGO...

As the human race evolved, humans realized they needed to work to sustain themselves. Hard workers, as they were known to be, humans were solely dependent on their own selves. Their hands and legs were the only tools that existed. But as the adage goes, "Necessity is the mother of invention", they moved ahead, beginning the age of invention.

Before we study early man's behaviour any further, let us first understand some terms and their association, for instance, the relation between an invention, device, tool, and gadget.

Whenever you imagine or brainstorm about something, various thoughts float in your mind to later take the physical form of a "device". If it has not existed before, then it is an "invention". And the invented piece of machinery is known as a "gadget".



It is hard to believe that technology has taken a big leap on Earth, which was once inhabited by dinosaurs.

FOR THE EARLY MAN...

Any tool that helped in making his tasks simpler and faster was a form of necessity. This very idea of making life and work easier with little effort led to the development of gadgets. After all, it is human nature to think, and sooner or later put that thinking into action. For example, when rubbing two stones together caused sparks it caught man by surprise, but soon he began reaping the benefits of "fire". Undoubtedly, this inquisitive nature of early man paved way for the innumerable tools and gadgets that are changing the way we live today.

ANCIENT GADGETS BEGAN...

The journey of science and technology through time has not been kind to the earliest set of gadgets. Not only were they rare in the ancient world – unlike the way they surround us in modern times – but they were prone to damage as well, because of their brittle nature.

Those that have survived the ravages of time and have been studied by scholars and historians are the ancestors of gadgets – wheel and abacus, for example – that are still very much in use. It is true that they have been modified time and again, but they are based on the same principle.

THE WHEEL

Often considered to be the most spectacular invention of all time, the wheel was believed to have been invented by the Sumerians (people of ancient Mesopotamia). The earliest wheels were made from joining planks of wood together and were put to use for shifting heavy logs of wood from one place to another, as otherwise it would have been very difficult to carry such heavy material. And the rest, as they say, is history.

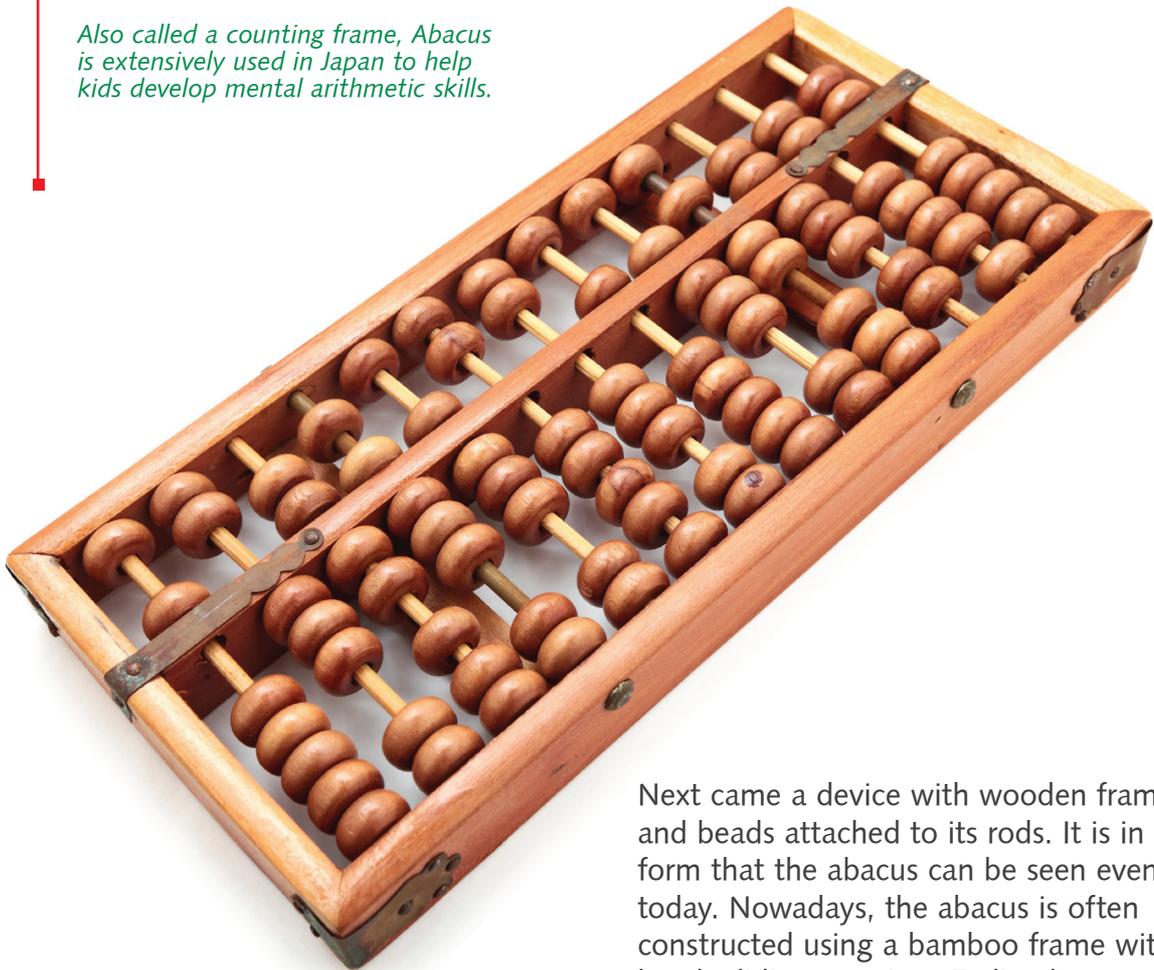
Today it is hard to imagine a world without wheels. After all, from tiny watch gears to automobiles, simple machines like lever, pulley, and scissors to computer disk drives, our lives revolve around the wheel. Even the aircraft that travel very long distances through air require wheels for take-offs and landing.

It is not possible for us to find out who invented the wheel. However, the entire humankind will always be grateful to the contribution that this invention has made in our lives.



General consensus dates the invention of wheel at around 3500 BC; however, its true beginnings date back possibly as far as the Paleolithic era.

Also called a counting frame, Abacus is extensively used in Japan to help kids develop mental arithmetic skills.

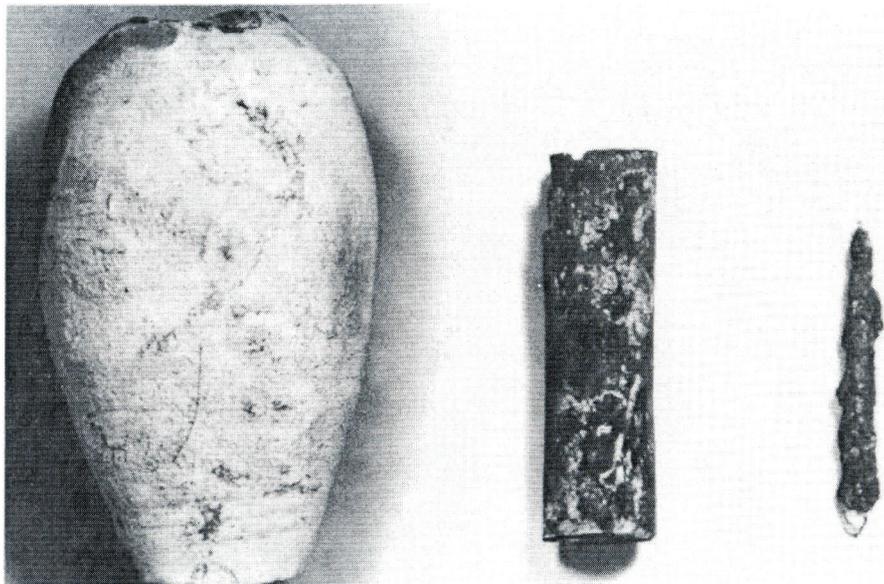


ABACUS

The history of the abacus started from the time man learnt to count. Believed to be of Babylonian origin, the abacus has been traced as far back as 2400 BC. Various civilizations had their own version of the abacus. Initially, the calculations were done on a sun-dried wooden frame, over which sand was sprayed. Then, a stick or finger was used to write on the sand. Once the calculation was completed, the sand was thrown away or probably re-applied.

Next came a device with wooden frame and beads attached to its rods. It is in this form that the abacus can be seen even today. Nowadays, the abacus is often constructed using a bamboo frame with beads sliding on wires. Earlier, beans or stones were moved in grooves in sand or on tablets of wood, stone, or metal.

Making its appearance in Japan in the 16th century and Europe during the late 17th century, the abacus is still in use in places like China, the Middle East, and Japan. Clerks and small businessmen in these countries calculate much faster on the abacus than their counterparts using electronic calculators! It is also used to teach young children arithmetic calculations, especially multiplication.



Some scientists suggest that the Baghdad batteries could have been used for treating patients through acupuncture technique.

BAGHDAD BATTERY

Invented during the Parthian period (about 250 BC), the Baghdad Battery is also called the Parthian Battery. Resembling earthenware jars the size of a man's fist; the Battery was excavated in 1938 near Baghdad. In 1940, Wilhelm König, the then Director of the National Museum of Iraq, published a paper in which he stated that the jars, which were five in number, might have been a galvanic cell, probably used for electroplating gold on silver objects.

The jars contain a copper cylinder, which encloses a single iron rod. The iron rod is isolated from the copper by asphalt stoppers at the top. Both the rod and the cylinder fit closely inside the opening of the jar, which bulges outward. The copper cylinder is not watertight, so it surrounds the iron rod as well

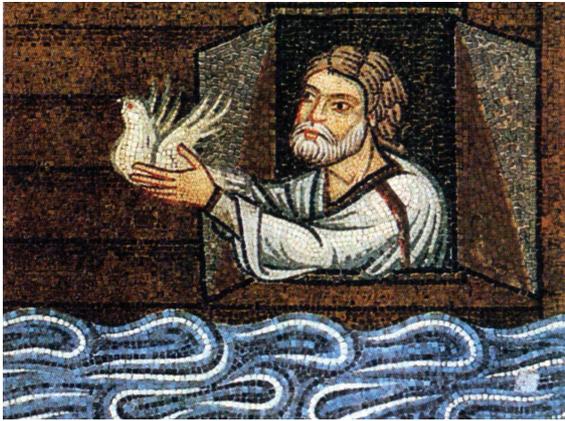
when the jar is filled with any electrolytic solution. An electric wave is produced once a reaction takes place.

Some scientists believe that lemon juice, grape juice, vinegar, or any other liquid containing citric acid was used as an acidic agent to speed up the electrochemical reaction between the two metals. Unfortunately, the Baghdad Batteries disappeared during the looting of the Baghdad Museum in 2003.

COSO ARTIFACT

The Coso Artifact is believed to be a spark plug enclosed in a lump of hard clay or rock. It was discovered on 13 February 1961 by Wallace Lane, Virginia Maxey, and Mike Mikesell, while they were looking for geodes (rocks lined with crystal or other minerals) near California. When

Mike started to examine the Artifact, he did not find the cavity that is typical of geodes, but a perfectly circular section of very hard white material that appeared to be porcelain. In the centre of the porcelain cylinder was a 2 mm shaft of bright metal. The metal shaft was found to be reacting towards a magnet. A lot of



Some scientists are of the opinion that the Coso Artifact dates back to the time of the Biblical figure Noah.

other unique aspects were also observed about the Artifact. It was layered with fossil shells from outside. Two non-magnetic objects were found in the crust. These objects appeared like a nail with a washer. Surprisingly, the inner layer was hexagonal and contained a layer of decomposing copper, which formed a skin around the cylinder.

According to Dr Donald Chittick of the Institute for Creation Research, the Coso Artifact was an ancient spark plug, thus concluding that ancient civilizations were extremely advanced in technology!

ONSET OF THE GADGET AGE

Now we know that the history of gadgets dates back to the time when our ancestors began creating tools to make their lives easier. While some were quite satisfied with the way their life was moving, others wanted to think ahead and discover new things. They were the Franklins and the Edisons – fascinated with creating something that had never existed before.

It is believed that about 2,800 years ago, the Greeks discovered electricity. Did you know electricity, which has become indispensable in today's world, was once something people were averse to adopt? It was regarded as a by-product of some black magic or voodoo practice, primarily because of electricity's capacity to attract! The term electricity owes its origin to the word *elektron*, which means amber, a



Wall relief from the temple of Hathor at Dendera. It shows an Egyptian Pharaoh carrying a bulb connected to a wire.

yellow-coloured resin found in tree sap. The Greeks found that if they rubbed amber against wool and other lightweight objects, such as straw or feathers, they would stick to it. Today, we know this phenomenon as static electricity.

Green Gadgets (A savvy, green guide to gadgets for a sustainable, low-carbon lifestyle)



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