

# Sci planet

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A new year begins; and with every new beginning, we look back at how far we have come, where we started, and where we are now. The truth is we all start at the same place; only we do not know it, or at least do not recognize it.



By: Maissa Azab

In my humble opinion, if anyone wants to learn how it all begins, one should watch *Cast Away!* Watching this agonizingly great movie, it never fails to scare and shock me; I mean to be reminded of our utter vulnerability. With all the comforts and luxuries we splurge in, we definitely forget that what Mankind really needs to survive at the core of all things is fresh water, food, some kind of shelter, hopefully fire, and—if we are really lucky—a companion, even if it were an imaginary one.

This brilliant movie, among so many deep meanings, boldly underlines the Bare Necessities, the simple bare necessities. Wait, are they really so simple? Sitting on my couch, in my warm apartment, a bottle of mineral water by my side, a bowl of delicious munchies at hand's reach, they sure seem simple. Unfortunately, that is not the case; not by a long shot.

Mankind has struggled for millennia to secure sources of fresh water, catch food, find or build shelters strong

enough to give us a sense of security, and warmth. Mankind has always had to fight for these bare necessities; fights that sadly, but inevitably, have and will invoke ugly wars.

However, the truly sad part is that, with all the development, progress, and prosperity we have achieved, we should have matured enough to make sure we all get what we need without hurting each other or future generations. As things stand, that is not the case by any means; not even the most arduous Earth lovers' efforts have been able to bring us closer to this seemingly utopic state.

In this issue, we simply tackle the bare necessities; the original necessities, Mankind's struggle to secure them, the challenges they still present to us. We also tackle new necessities that modernism has both blessed and damned us with.

We hope you enjoy the new issue and the new year, and to hopefully make a new, more sustainable, beginning out of it for yourself and others.



# EXPLORING THE BARE NECESSITIES

By: Dr. Jaidaa Gawad Hamada  
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Once upon a time, from the swirling dusts of a nascent solar system, and with an oxygen-rich, life-sustaining atmosphere, there emerged a gigantic abode for Mankind called Planet Earth.

Once the newborn organized itself among its brethren into concentric shells, its continents, oceans, and atmosphere came into being, and eventually life emerged on it. Of all its siblings in the solar system, Planet Earth had proven to be the most benevolent, endowed as it was with varied assets that made it habitable, and by implication, welcoming to Mankind.

There was an even broader dimension to those privileges; as far as humanity was concerned, its resources made it a congenial milieu for laying the groundwork of civilization. Nonetheless, to be habitable, and even hospitable, did not mean that it had always been the land of milk and honey. Planet Earth was never utopian!

Over the centuries, and up until this present day, Man has been incessantly endeavoring to make his existence more

comfortable; hence, setting his creativity to work to come up with a plethora of inventions. Not only are these inventions a tangible manifestation of Man's ingenuity, but they have also proven to be a measuring yard for charting the history of human development.

Bare necessities they have become, thereby necessitating their being broached in this issue of our newsletter. In this context, one cannot but highlight the widely propagated proverb "necessity is the mother of invention". Practically speaking, it is impossible to study the history of human science and development without turning to a set of bare necessities that have become part and parcel of Man's existence.

In each and every age and culture, inventions form the pinnacle of human development. Occurring in varied contexts within the continuum of technological development, the nature and scope of man's inventions reveal how imperative they are to our modern lives. Throughout human history, these bare necessities

have enabled man to alter the very course of life on Planet Earth, yielding far-reaching consequences in all walks of life.

On the other side of the spectrum, drastic changes in climate; ever-increasing population growth; mounting levels of pollution; devastating nuclear contamination; shortage of water supplies; scarcity of food; among a barrage of other manifestations of environmental impairment, have come to pose a potent threat to Man's relationship to Planet Earth. This, in its turn, necessitates a systematic plan to counter the setbacks of technological innovation.

In short, these bare necessities have become indispensable to the point of their being interwoven into the very fabric of our daily existence on Planet Earth. As you navigate through this issue of our newsletter, we wish you a most stimulating reading, underpinned by a most bare necessity to explore some of our bare necessities.

# earth's COUSIN

By: Sara Khattab

Since its launch in 2009, NASA's Kepler Space Telescope has been hunting planets that could be other Earths. Each discovery is a significant milestone in humanity's efforts to find evidence of life elsewhere in our galaxy; astronomers are looking for a planet that mimics the Earth's characteristics to be able to support life.

Some of the previously discovered planets were found in the habitable zone of its solar system, but are all at least 40% larger than Earth's size. The habitable zone is the region around a star within which a planet can sustain liquid water on its surface given the right atmospheric conditions; being in this zone does not mean that the planet is habitable though.

Life on a planet requires the presence of liquid water; so a planet with the potential for life would not be too close to the star, which would be too hot that the water vaporizes, yet not too far than the star, where it would be too cold that the water freezes. Size is a critically important factor; scientists said that if, for example, a planet is about 50% wider than Earth, and it is packing a lot of mass, its gravity could attract a hydrogen-helium envelope, shrouding the surface in a gassy atmosphere that is too thick for Earth-like life.

Several months ago, NASA announced that its Kepler Telescope has uncovered a new solar system about 500 light years away from Earth and they gave it the name Kepler 186; this star is an M-dwarf, also called a red dwarf. M-dwarf stars are usually cooler and dimmer than sun-like stars; that is why their habitable zones are located much closer to the star. These stars also gravitationally interact with their planets, causing tides that heat the planet and often cause their rotations to be tidally locked, which means one side always faces the star and the other faces the old open space, much like our moon is tidally locked with Earth.

Researchers had previously thought that tidal locking would make a planet inhospitable to life; as such a world would have one scorching-hot hemisphere and another freezing cold hemisphere. More-recent modeling work suggests that air or water currents could transport heat around such planets, evening out their temperatures.

There are five planets orbiting the M-dwarf star Kepler 186; four of them are too close to the star, therefore they are too hot to have liquid water. The outermost planet, Kepler-186f, is the first planet with a size similar to Earth to be discovered in the habitable zone of another star. According to the astronomers' observation, Kepler-186f takes only 130 days to orbit its star,

which means it is on a tighter orbit than Earth is.

This planet receives one-third of the energy from its star as what the Earth receives from our Sun; it would still be warm enough to prevent liquid water from freezing, in case it has an atmosphere that provides a substantial greenhouse effect. At high noon, the planet's surface is only about as bright as the Earth is at sunset.

The planet's size influences the strength of its gravitational pull, and its ability to pull in abundant gases as hydrogen and helium. At this size, Kepler-186f has a small chance that it could have gathered up a thick hydrogen and helium envelope, so there is a good chance that it does have a rocky surface as Earth.

Actually, it is not easy to know if the planet is habitable; astronomers need to get a sense of the atmosphere and its greenhouse effect. Still, Kepler-186f, nicknamed "Earth's cousin", is considered a huge discovery that proves the existence of worlds that might be similar to our own, and will undoubtedly shape future investigations of exoplanets that could have terrestrial surface environments.

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# Home, Lost Home

By: Hend Fathy

The United Nations has set the right to proper housing as an essential human right. The truth is, like any other creature on Earth, preserving a proper habitat is not merely a right, but a necessity for survival; a bare necessity.

Sadly, a massive number of species are threatened due to habitat loss. It is identified as a main threat to 85% of all species described in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species.

Habitat loss is the process by which a natural habitat is rendered unable to support the species present, so that populations decline and extinction becomes more likely. It could happen due to natural environmental changes, geological processes, or human activities.



## Vanishing Forests

Forests are subject to rapid change, mostly due to high land conversion rates for agriculture, intensive harvesting of timber, wood for fuel and other products, as well as overgrazing.

According to the World Wildlife Fund (WWF), the net loss in global forest area during the 1990s was equivalent to 2.4% of total forests. Tropical forests, for instance, contain at least half the Earth's species; the clearance of some million square kilometers each year is a dramatic loss for biodiversity.



## Barren Pandas

Pandas live in bamboo forests, which grow at altitudes ranging between 500 m and 3100 m. However, most of the lower altitude lands were converted for agriculture; the habitat is now confined to higher land, which is also affected by human activities.

Across the panda's range, the habitat is broken into 20 isolated patches, leaving many panda populations isolated in narrow belts. As pandas cannot migrate between these far-flung habitat blocks, they have less flexibility to find new feeding areas and face a greater risk of inbreeding, which can lead to many reproductive problems. A pair of pandas needs a minimum of around 30 km<sup>2</sup> to support them.



## Emery Elephants

In tropical Asia, about 20% of human population lives in or around the Asian elephant habitat. In the face of large development projects, the habitat is shrinking and being fragmented leaving

elephant populations small, isolated, and unable to mingle.

Fierce competition for living space has led to serious elephant-human conflicts. Incidents of elephants raiding crops and villages cause losses to human property and lives. Up to 300 people are killed by elephants annually in India; villagers often kill these elephants in revenge. Experts consider such confrontations as a primary cause of elephant deaths in the Continent.



## Changing Seas

Marine habitats—covering over 70% of the Earth surface—are home for thousands of species. These habitats severely suffer due to irresponsible human practices. Destructive fishing techniques such as bottom trawling, dynamiting, and poisoning destroy habitats near shore as well as in the deep sea. Tourism brings millions of boaters, snorkelers, and scuba divers into direct contact with fragile reef ecosystems. Huge ships damage habitats with their hulls and anchors. Spills of oil substances kill thousands of creatures and leave a toxic environment behind.



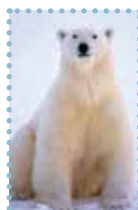
## Stranded Turtles

For millions of years, marine turtles lived across the world's oceans shores, performing a vital role in maintaining the marine and coastal ecosystems. They graze on the sea grass, helping to keep it short and healthy, which in turn is an important breeding ground for many marine creatures.

Over the last 200 years, human activities have seriously affected the turtles' habitat; of the seven species of marine turtles, three are classified as critically endangered by the International Union for Conservation of Nature

(IUCN), and a further three are classified as endangered.

Uncontrolled shore development directly destructed vital nesting places; lights from roads and buildings attract hatchlings and disorient them away from the sea. The feeding habitats such as coral reefs and sea grass beds are continuously damaged as a result of sedimentation, nutrient run-off from the land, insensitive tourist development, destructive fishing techniques and climate change.



## Starving Bears

The sea ice is a dynamic habitat that varies annually in distribution and character. Annual sea ice forms and melts within a single year, and represents the primary habitat of polar bears. They spend much of their time on the sea ice hunting, mating, breeding, and creating maternal dens.

The sea ice has undergone recent declines in area, duration of cover, and thickness as a result of climate warming; for example, the extent of sea ice in winter declines 1.5% per decade, and permanent pack ice 10% per decade. Moreover, declining duration of cover has negative effects on polar bear population; it shortens the feeding period and lengthens the period the bears must fast with less stored fat.

Last but not least, climate induced changes to the sea ice may result in changes to the prey species available to polar bears such as the harbor and the harp seals.

Habitat loss is among the greatest threats on this planet, and is generally viewed as the largest single cause of biodiversity loss worldwide. Violating other creature's habitat is denying their right to survive, which goes against the laws of nature, and consequently, will bring along disastrous outcomes for life on Earth.

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One of the basics of life is to locate a place to call home; without shelter humans are subject to the forces of nature. Having a roof over your head not only adds a sense of security, but it also protects you from being vulnerable to unpredictable weather, wild animals, among many other dangers that can plague humans.

In every survival scenario, whether in a book, a movie, or a series, one of the first things people that are stranded do, is to look for shelter and food. They first look for a natural enclave; if they find one, they inhabit it. If not, they start scouring for materials that can be used to build a shelter; they fashion rudimentary shelters that are very close to what early humans used to fashion.

As humans evolved, so did their dwellings; some built rudimentary tents like homes, and some opted instead to look for natural enclaves that would provide them with protection. We know that early humans used to dwell in caves from the traces left behind by some of them, whether they are drawings on the walls, traces of fire, or tools left behind them. Caves provided an environment that was not too cold and not too hot; humans did not always reside in caves though, but they could create settlements at the opening of a cave and use the cave for ceremonies.

The Bureau of Land Management stated in its article *Welcome to the Underground* under the heading *Human*



# HOME SWEET HOME

By: Jailane Salem

## THE BEGINNING

*Use of Caves* published in the *Science and Children Magazine*: “Human occupation of caves dates to sometime within the Paleolithic Period—two million to 10,000 years ago—of the Stone Age, when early hominids first began to create and use stone tools. This Period also witnessed the evolution of the human species into true modern humans, *Homo sapiens*”.

As modern humans emerged in Africa around 195,000 years ago and spread into northern Eurasia about 40,000 years ago, they would sometimes dwell in caves and rock shelters, and this was closely related to a hunting and gathering economy.

One of the oldest shelters to have traces of human life can be found in the Indian subcontinent and is called the Bhimbetka Rock Shelters; an archeological site that is situated in the Indian State of Madhya Pradesh. Paintings have been found on its walls, and it is believed to have been a site of human activity more than 30,000 years ago at the beginning of the South Asian Stone Age. Due to its status as one of the earliest shelters of human life in Asia, it has been declared a World Heritage site in 2003.

There are many other caves that have been used for shelter and for other social activities; one of the very famous caves is one that is located in France “Cave of Chauvet-Pont-d’Arc”, which has wall paintings that date back to 31,000 years.

Many would use caves during seasons where they either needed respite from the heat or protection from the cold. Caves were also used as religious temples thousands of years ago, and until today many caves are a site for religious pilgrimage. Some of the earliest Buddhist shrines and Hindu temples were situated in caves, and many people to this day still travel to visit those places.

If they did not end up resorting to caves and rock shelters, early humans created structures that would provide them with the protection that they needed. One such structure is that of the conical looking tent, where logs of wood would be placed in a circle, leaning against each other and meeting at the top in the center, creating a space for humans to use.

Evidence has been found to show that such structures were made; one big clue was the finding of circles of stone, which would indicate the area of the foundation of the tent like homes. Material, such as mud, has also been found that could have been used to create the roof atop these structures.

One must remember that thousands of years ago, animals that are no longer in existence used to roam this Earth, one of them being the woolly mammoth. These animals existed alongside early humans; not only did they provide humans of that time with sustenance, their bones and tusks were used as building blocks.

Evidence of such dwellings can be found in Dolni Vestonice in Eastern Europe, where an encampment from around 25,000 years ago has been found. The people who inhabited that location used to hunt mammoths; not only were they eaten, but their hide and bones were put to use as well.

These Mammoth Bone Settlements would usually consist of a fence like boundary, which encapsulated a number of huts within it, each for a different use. Some were flint workshops where tools were made, another could be the butchering area where prey that was caught was cut and stored for later consumption.

The mammoth bone dwelling usually took on a circular shape; the walls were erected by stacking large mammoth bones together, while the mammoth tusks would be placed at the opening to mark the entrance of the dwelling. Inside of the dwelling a hearth usually takes center stage, and probably was used as the main place for social activities.

Eventually humans changed from just being hunters and gatherers to being able to settle down in one place and farming the land. This shift caused a new way of building settlements that were bigger and more elaborate than previously done. One of the oldest towns known so far is the one of Jericho and its location has been populated since the day it has been settled. Today it is a city situated near the Jordan River in the West Bank in occupied Palestine.

What attracted the first settlers to this place was its location; even though Jericho was in an isolated spot, its proximity to the river, and the presence of a reliable spring of water made it a good spot to settle in,

and the availability of water also allowed for vegetation. This is why the Natufian people settled there thousands of years ago.

Successive settlements have been discovered in that area, the first dating back 11,000 years. The first settlement covered about ten acres; a new technology at the time was used to build their homes: bricks. The bricks were made from clay and straw; it was first shaped and then left to dry in the sun. Once hardened the bricks were used in making round houses.

The roof of the houses was in a conical shape and was made from not only the mud bricks but also of tree branches. The houses were about five meters across, with a hearth inside as well as outside. After the walls were built they were then plastered in mud to give them a uniform look. These round houses usually only consisted of one room; however, some had up to three rooms.

Catal Huyuk was a large Neolithic settlement that was discovered in Konya, Turkey. This settlement was inhabited from 7500 BCE to 5700 BCE; the average population of Catal Huyuk varied between 5,000 to 7,000 inhabitants. One of the most striking things about this settlement is its organization and mode of entry into the houses.

The houses were built next to each other forming a sort of clumped honeycomb like structure; to get into your house you did so via an opening in the roof. This opening led to a ladder that allowed one to climb down into the house; these openings also served as ventilation sources for the dwelling. These were important since each house had an open hearth and an oven; airing the house would have been extremely important.

The people who populated Catal Huyuk survived by farming and breeding cattle, and therefore could stay put in one place instead of following a nomadic lifestyle. Wheat and barley were cultivated, and therefore it was no surprise that each house had its own oven where bread could be baked. The settlement had no roads; instead, people navigated the place by walking on the rooftops of the houses.

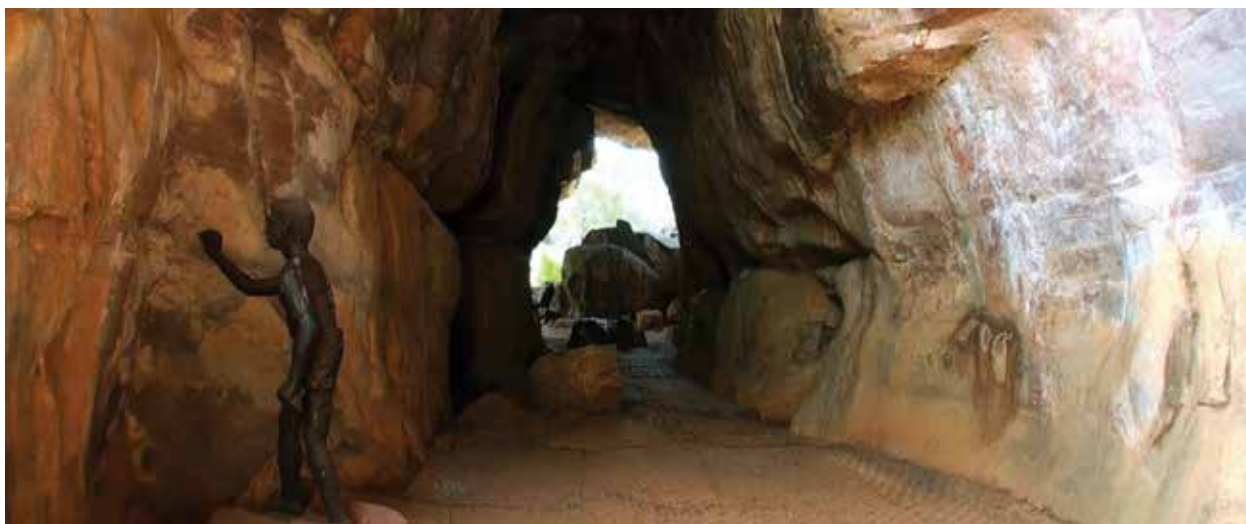
The houses were kept very clean and the inhabitants made sure to keep their houses renovated. The interior walls were plastered and had a smooth finish, and many decorative ornaments were found, which shows that the inhabitants were not impervious to some decorative touches.

By 4000 BCE, civilizations were formed in places such as Egypt and Mesopotamia; newer techniques were developed in building homes and more sophisticated methods used to form the basic structures of buildings. By following the history of how humans first considered shelters, which simply served as a place of protection, to a more nuanced understanding of having a home, one observes how human thought, and how human abilities have developed over the ages.

Nowadays our ways of living, especially in the urban centers of the world has completely shifted from the ways our ancestors used to lead their lives; it is always interesting to remember the very beginnings of things and appreciate how far we have come as a species.

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INDEED,  
NECESSITY

By: Moataz Abdelmegid

When Man felt hungry, he started hunting and gathering; the need for shelter led man to build huts and houses. The need for quick travel resulted in the invention of the fastest means of transport, transferring the world into one village. At the time of necessity, the human mind, creative and imaginative, thinks in a very quick manner.

In this age of science, unfortunately, deadly weapons are being manufactured due to necessity. The fear of enemies has forced the power-hungry countries to invent weapons. As new needs arise, fresh methods are devised to meet them; new plans are hatched to find solutions to different problems. Necessity makes us bold, zealous, and eager enough to fulfill our needs.

During World War II, British and French ships carried on a blockade of German ports. The supply of sugar, oil and many other essentials stopped; yet, German scientists discovered substitutes and synthetic products to tide over the difficulty.

In the early 1960s, computer scientists in the United States recognized the need for the interconnection of their computers, and the Government had the resources and foresight to fund the research and development that led to today's Internet.

This, of course, is obvious. When Man feels the pinching need of anything, he begins to think how he can satisfy it; he then sets his mind to the task of invention. Necessity gives the first impulse; the rest is the work of the intellect.

Mere necessity would not help us much if we are not moved by thought. Animals have their needs but because they lack the



power of thinking and ingenuity, they cannot invent anything; they act on instinct and follow a beaten track. Hence, the correct formula should be necessity is the mother of invention but only when it is supported by the power of thinking.

In primitive times, Man lived by hunting. It became necessary to shoot and bring down the bird flying or the beast running beyond the reach of man; hence, the bow and the arrow were invented. Clothes were devised as protection against cold, houses for shelter; implements were invented for production of food. In this way, various instruments were made to secure a better standard of living.

Man is something more than a mere slave of his needs. He creates new needs, not always because they are necessary but because they are good or beautiful symbols of status. Culinary skill has been invented to please the palate; ornaments were invented to add to female beauty.

Man has spent millions trying to invent guided locomotives to the Moon and other planets as Mars, not because there is any crying need for the same, but because it gives the thrill of doing the outwardly impossible.

What needs to be understood is that in creativity there is no such a thing as mistakes; mistakes are made only in comparison to something else. If we are looking for the most effective solution to our unique problem, there are only learning

It has been truly said that necessity is the mother of invention, as most of the inventions and discoveries owe their successful birth to it. We invent what we need; unless we feel the pressure of needs, we are not likely to invent anything.

experiences and no mistakes. We are simply learning what is or is not effective, taking the most effective as the solution. To learn what is effective you need to allow yourself to experiment.

Another way to look at this issue is that in the modern world nowadays, one may often employ this principle exactly in reverse: invention is the mother of necessity. For example, before we had cellphones, we survived without being able to call from anywhere to anywhere at any time.

Phone calls were only when we were at home, or in the office, or from phone booths. Amazingly enough, we all survived; yet today, we cannot live without cellphones. Try leaving yours at home or in the office, and getting through your day without it. This is when you realize that the invention has developed to become an immediate necessity.

The same is true for Email, SMS text messaging, even the Web connection. It is a difficult thought to think of being cut off from the Web for a few hours, let alone a day or longer. Yet, again, amazingly enough, back in the 1980s and earlier we survived without the Internet. This could be evidence that Man is capable of inventing something and then willingly force it to become a necessity of his life.

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By: Moataz Abdelmegid

# LUXURIES Turned NECESSITIES

For example, a detailed American study showed that the percentage of average adults who describe microwave ovens as a necessity rather than a luxury has more than doubled in the past decade, to reach 68%. Home air conditioning is now considered a necessity by seven-in-ten adults, up from half (51%) in 1996. More than eight-in-ten (83%) now think of a clothes dryer as a necessity, up from six-in-ten (62%) who said the same a decade ago.

The survey asked the “Luxury or Necessity?” question about 14 different consumer products designed to help make everyday life more productive, more convenient, more comfortable, more efficient or more entertaining. It was conducted 18 October – 9 November 2006, among a randomly-selected nationally-representative sample of 2000 adults.

Survey respondents placed the 14 items on a very broad range along the “necessity” scale with a high of 91% describing a car as a necessity and a low of 3% saying the same about an iPod. Of course, if a similar study was conducted in Egypt, the numbers and ratios will obviously be lower than in the US due to the huge gap in the average standard of living. Yet, it

will be surprising enough to find out the percentage of Egyptians who take the air-conditioner as a necessity of life, for instance.

People of different ages often make these luxury-or-necessity calculations through different lenses, but the pattern varies. For some items, mainly information era technologies, it is the younger respondents who are more prone to see a necessity. In other cases, mainly home appliances that offer convenience, comfort and entertainment, it is the older respondents more inclined to see a necessity.

Moreover, more younger than older adults say that cellphones are a necessity. On the other hand, more older adults than younger adults consider home and car air conditioning, dishwashers, and clothes washers and dryers to be a necessity. The same holds for television sets and for cable or satellite television services; older adults are more prone to see these, too, as necessities.

When it comes to income levels, the story is different. Here, the pattern tends to play out in one direction only; the more income a person has, the more likely he/she is to view goods and gadgets as necessities rather

than luxuries. However, the degree of variance varies. For some items, it is fairly significant and for others it is minor or non-existent. Income makes a big difference when it comes to three information era items: home computers, high-speed Internet access, and cellphones.

It also has an effect on attitudes toward one old warhorse of a home appliance, for example, the dishwasher; and on one comfort, for example, the car air conditioner. It makes a smaller difference for cars and for clothes washers and dryers. It makes virtually no difference for a mixed bag of items, including home air conditioning, a microwave, and a battery of entertainment products, including a television, high definition television, satellite and cable TV services, and an iPod.

When the full survey responses by a broad range of demographic traits—including gender, region, marital and parenting status, race and ethnicity—was analyzed, no other characteristics were found that were as strong as age or income in predicting how people would respond.

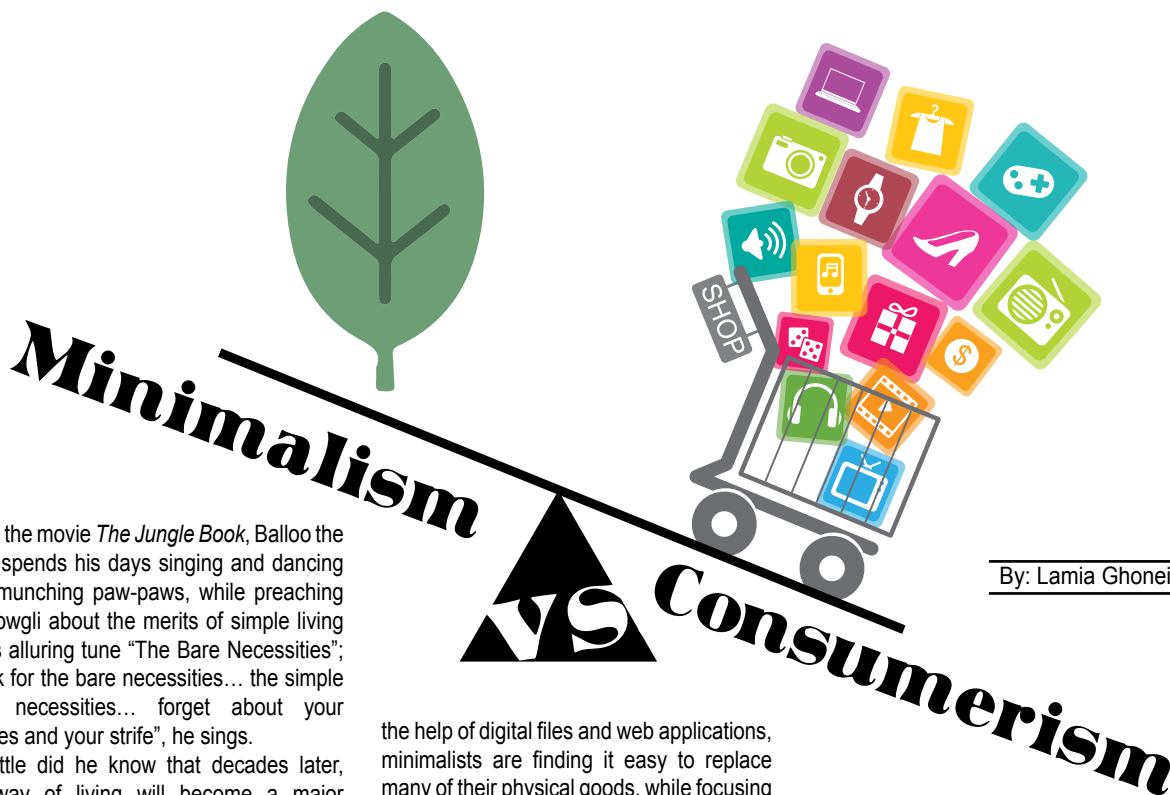
Generally, we can safely assume that men are slightly more inclined than women to view the two kitchen appliances on the list—microwave and dishwasher—as necessities. Women are slightly more inclined than men to see car air conditioning as a necessity. Other than that, there are no sizeable gender differences on this battery of questions.

On the other hand, the more years of schooling a person has had, the more likely he/she is to view a home computer and a high-speed Internet connection as a necessity. Also, as expected, being an Internet user correlates very strongly with considering these items a necessity. It is also important to highlight that necessity can line up with ownership; having something can sometimes be a proxy for needing something.

The survey findings also proclaim the fact “necessity is the mother of invention”. These findings serve as a reminder that the opposite is also true: invention is the mother of necessity. Throughout human history, from the wheel to the computer, previously unimaginable inventions have created their own demand, and eventually their own need.

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By: Lamia Ghoneim

In the movie *The Jungle Book*, Balloo the bear spends his days singing and dancing and munching paw-paws, while preaching to Mowgli about the merits of simple living in his alluring tune “The Bare Necessities”; “Look for the bare necessities... the simple bare necessities... forget about your worries and your strife”, he sings.

Little did he know that decades later, his way of living will become a major lifestyle movement that has been gaining momentum for a few years now, as a sort of antidote to consumerism.

Minimalism—not to be confused with the home design style, also holding the same name—is a trendy movement that preaches voluntary ridding yourself of all but your most necessary possessions and living space; in other words making do with just “the bare necessities”.

The movement is currently all the rage and has been adopted by famous people all over the world; minimalists who argue for the merits of a simpler, less materialist life as opposed to the excessive consumerism in our culture today.

Those minimalists claim to have been awakened to the “evils” of advertising, mass media, and consumerism, and have found happiness in ridding themselves of material possessions, which they say has been weighing them down, and distracting them from what is important in their lives.

Minimalism experts believe in freeing yourself from modern “possession mania” and prioritizing experiences and personal growth over objects. This often means selling all of your DVDs, getting rid of most of your clothes, downsizing your home, and generally clearing your life of unnecessary clutter.

Some of the more extreme proponents of minimalism advocate for is to trim down your belongings to a mere 100 things. With

the help of digital files and web applications, minimalists are finding it easy to replace many of their physical goods, while focusing on owning the most durable and highest quality of items.

The minimalist lifestyle sounds promising in terms of sustainability; after all, the Earth has only a limited supply of resources that cannot possibly sustain the unhealthy level of consumerism in the world today. It might also help reduce the gap of global consumption inequality.

Viewing latest figures available, in 2005, the wealthiest 20% of the world accounted for 76.6% of total private consumption, while the poorest fifth just a mere 1.5%. Basically, while a few of us have been busy accumulating goods that they do not need, many of the poor people have not been finding the essential goods that they really do need to survive.

### Is Minimalism the Answer for Sustainability?

As promising as it may seem on the surface, an anti-consumerism lifestyle if adopted by the wealthiest people of the world is hardly sustainable in my opinion.

While consumerism has depleted resources, it has also created jobs. Despite the huge differences in pay and conditions around the world, the consumer lifestyle has created a vast market for growing economies. It has also contributed to the world’s prosperity; the power of consumer demand has encouraged more efficient manufacturing, better technology, developments in health care and more.

The question now is, if everyone suddenly became a minimalist, how will economies survive? For another reason, minimalism can prove to be expensive, a lifestyle reserved for only the wealthiest of the wealthiest.

It is easy to throw away your things when you know for a fact you can replace them anytime you like; it is also easy not to accumulate many physical goods when you have unlimited access to technology and the latest gadgets.

Less wealthy people do not have clutter because they do not consider the virtue of living simply; they have it to reduce risk of going without things they need. So, as trendy as minimalism may be in today’s world, it probably does not work for the vast majority of us.

That is not by any means an excuse to brush off the minimalism movement completely and continue with the level of conspicuous consumption and waste production that some of us engage in. Being conscious of the consuming choices we make, their impact on our lives and on the environment and its sustainability is essential. A bit of minimalism—or *Zuhd* as we used to call it—will surely benefit us all.

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# Modern Life Necessities Top Ten

By: Lamia Ghoneim

According to a British study, a fast Internet connection, a high definition TV, an occasional cuddle, and a trustworthy best friend topped the list of bare necessities of modern life.

Researchers compiled the list following a study carried out among 2000 adults aged between 18 and 65 years. A daily shower, central heating, and a cup of tea came next on the list, followed by an "I love you" every now and then, a car, spectacles, and a solid marriage.

My respect to all 2000 people who think a fast Internet connection is more important than showering, but I beg to differ. In fact, I would like to take this opportunity to compile a top ten list of modern life bare necessities, which in my opinion are second only to the original bare necessities of life.

So as not to confuse things, I will stick to general commodities necessary for the survival of the modern human race, while leaving family, love, and emotional well-being for another list.

**1) Electricity:** Tapping into the power grid is obviously a modern life necessity, highlighted every time there is a power disruption. It is the lifeline that powers the machines keeping our homes, businesses, schools, and hospitals safe, comfortable and convenient. It also powers the factories and machines that produce for us the other modern life necessities that follow down the list, so it is only logic that it comes as number one.

**2) Healthcare and Vaccines:** Without modern medicine, healthcare, antibiotics and vaccines, human beings would never live to be a hundred, nor will they be able to stay healthy and fit enough to work, provide and produce other necessary commodities. Vaccines alone have saved hundreds of millions of lives and allowed the world to become as civilized as it is today.

**3) Fuel:** Although fuel is not very "modern"—cavemen used wood and fire for fuel more than a million years ago—modern fossil fuel or oil has become a basic life necessity. Without fuel, there is no other sufficient method to power our machines, produce electricity, cook our food, and maintain our current lives.

**5) Chemical Industry:** Almost everything we use today needs chemical products to be manufactured or to function. Without the large scale chemical industry, commodities such as soap, detergents, medicine and vaccines would consist of a bunch of crushed herbs. Not to mention all our modern gadgets and appliances made of polymers and/or stainless steel, both products of chemical industries.

**6) Education:** Schools and learning commodities such as books, the printing press, and ink maintain the existence of society by means of renewal. If knowledge cannot be transferred from the older to the younger through education, it will cease to exist.

**7) Money:** They say money cannot buy you happiness. That may be true, but money, or the international monetary system is what separates us from the Stone Age, back when bartering and/or self-sustenance was the norm. While it may have worked in Ancient Times, the barter system had its disadvantages. Difficulty in storing extra goods and a lack of double coincidence of wants were a few.

**9) Computers:** Now an integral part of our lives, shaping virtually everything from the objects around us to the ways in which we communicate, travel, work, and play; it is hard to imagine a world without computers. Present in almost every gadget we use and part of almost every business and industry, they deserve a place on the list of modern life necessities.

**10) Telecommunication:** While I would not put the Internet at the top of my list, it does earn its place at the bottom, along with all other important communication technologies such as our beloved mobile phones, landlines and satellites. Together they play a significant social, cultural, and economic role in our modern society and are considered by most a necessity of modern life.

**4) Indoor Plumbing:** Water supply, showers, indoor toilets, and a proper sewage system. Need I say more?



**8) Modern Transportation:** It goes without saying that we need to go places, and without modern transportation—cars, ships, trains, planes, and anything that moves fast—it would take us ages to reach from one point to another. Precious time will be wasted, goods will be ruined, and life would not be the same.



It is obvious that our life necessities vary from time to time, and from one person to another. What we see important may be minor to others. Sometimes, it is the need that makes us consider something a necessity or not.

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By: Ahmed Khaled

# A WORLD Without INTERNET

Nowadays, almost nothing gets done without the Internet from working, researching, studying, to making videos, recording music, and creating an endless variety of entertainments. The more we rely on it, the more it seems impossible to live without it; however, could this blind dependence be a threat? Could this huge machine we call the Internet be something transient in human history? Is it possible that somehow it may not be around in the near future?

Most people go about their daily lives as if the Internet has always been here and always will be. Those born in the 20<sup>th</sup> century witnessed the evolution of technology and the Internet, and thus know well the life with and without it, and could probably, though reluctantly, cope with not having it. However, younger generations depend on it on a daily basis, especially for social networking. It is evident that it is so reliable; yet at the same time it is so vulnerable.

The Internet can be damaged in different ways; if the damage is not physical, it could be virtual. Cyber-terrorism is not a fictional concept; because the Internet owns every bit, and because every datum is connected to one single organism, the whole thing is at the risk of disappearing in bulk and at once.

Normal PC users suffer from viruses, malwares, and bad sectors of storage that affect the stored data; so what about thinking of new single virus that might have the potential of damaging every bit connected to the gigantic web?

In some places, the Internet goes offline; in fact, this happens all the time. Whether it is a particular server that crashes and needs to be rebooted or replaced, or a cable under the ocean gets snagged by an anchor, the world has already experienced that and almost each country has evidence on that.

However, for the Internet to experience a global collapse, either the protocols that allow machines to communicate would have to stop working for some reason, or the infrastructure itself would have to suffer massive damage.

Another critical point is mobile communication systems and landlines that depend mainly on the Internet to manage, control, and cover areas with cellphone services, in order to initiate calls or Internet sessions as the infrastructure for these services is a part of the Internet infrastructure.

Transferring files between computers through cloud computing services would also fail and the information you store on those services could become inaccessible and all the stored data would be lost.

It is thus time to kill the dependency on the Internet before it kills us. There is one primary reason that we are not content with our productivity; we could do more meaningful things than spending time on the Internet, such as: writing, exercising, establishing connections with new people, strengthening existing relationships, or storing data on compact discs as a backup.

This does not mean that the Internet is evil or bad or wrong; obviously it is not. The Internet is an amazing tool, one that has changed our life for the better; for example, candy is not evil, but if your entire diet consists of candy, you get sick and fat fairly quickly.

Trials have been made before to deliberate our use of Internet and have come out with spectacular results. Take your modem out of the house for 30 days, making sure you do not have access to it; try not to make your life fully dependent on the Internet.

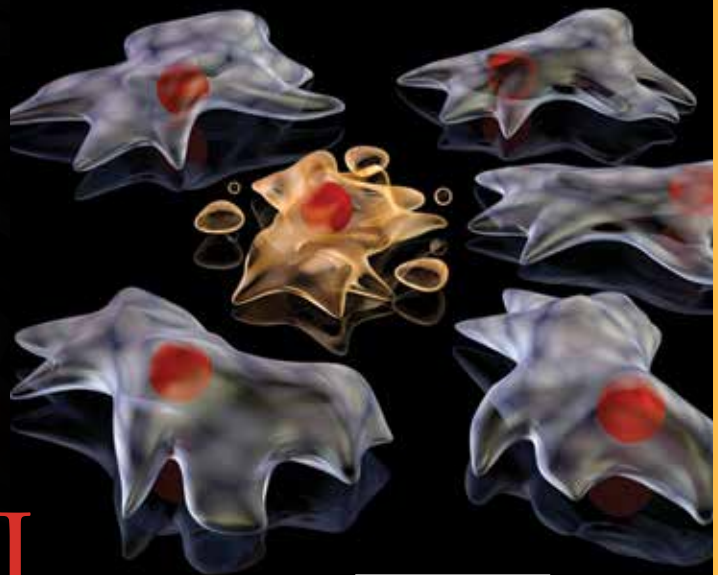
You will want to get online to do something "stupid" and you will not be able to; then you will want to get online to do something "important" but you will not be able to do that either. It is just like quitting smoking, you will have a craving to get on the web, and it will take a while to get rid of that craving.

You will be frustrated at first but you will live, and your life will be better without it; you will be able to do more meaningful things, and you will remove some of the discontent from your life. You will feel relaxed as the anxiety of not knowing something important that has just emerged on the Web will vanish.

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# When Death is Essential



By: Esraa Ali

Many people think of death as a dreaded enemy; they tend to define death as the end of life, and indeed, for every individual, it is. However, there is not just one type of death; it has different forms. Besides the death of our bodies as large multicellular organisms, there are also a lot of death forms inside our bodies as we live. This death, on the cellular level, is essential for life!

There are two ways in which the cells die: necrosis and apoptosis. Necrosis means the death of a certain area of plant or animal tissue as a result of an external force, such as injuries, both physical: cuts, burns, and bruises; and biological: effects of disease-causing agents. The sign of necrosis is called a lesion; it is often of diagnostic value. Necrosis is brought about by intracellular enzymes that are activated upon injury and proceed to destroy damaged cells.

Apoptosis, on the other hand, is a process in which cells commit suicide, if they are no longer needed, through a programmed process of cellular self-destruction. As you read this, millions of your cells are dying; do not panic, you will not lose them. Most of these dying cells are either unneeded or potentially harmful, so you are better off without them.

The word apoptosis is a Greek word used to describe the act of dropping off or falling off of petals from flowers, or leaves from trees. Even though apoptosis involves cell death, it serves a healthy and protective role in our bodies. Apoptosis helps in shaping our physical features and organs before birth and rids our bodies of unneeded or

potentially harmful cells. Without apoptosis, you would not have your fingers and toes or the proper brain cell connections to be able to read or understand the words in this article.

Apoptosis differs from necrosis in that it is essential to human development. For example, in the womb, our fingers and toes are connected to one another by a sort of webbing, which apoptosis causes to disappear, leaving us with ten separate digits. As our brains develop, the body creates millions more cells than it needs; the ones that do not form synaptic connections undergo apoptosis so that the remaining cells function well.

During apoptosis, the cell shrinks and pulls away from its neighbors. Then the surface of the cell appears to boil, with fragments breaking away and escaping like bubbles from a pot of hot water. The DNA in the cell's nucleus condenses and breaks into evenly sized fragments. The cell shrinks and sends out distress signals, which are answered by vacuum cleaners arriving on the scene to mop up the remains, so these cells have no chance to cause damage.

In opposition to necrosis, cells that go through apoptosis die in response to signals within the body not due to outer agents. When cells recognize viruses and gene transformations, they may induce death to prevent the damage from spreading. Apoptosis can occur also when cells are under stress, as may happen when a person undergoes radiation.

This does not mean that apoptosis is a perfect process. There are also signals within the body that convey a message that a cell should continue living. All cells have a varying level of sensitivity to the positive and negative triggers, so sometimes the wrong cells live or die.

Many diseases and disorders are linked with the life and death of cells. Increased apoptosis is a characteristic of AIDS, Alzheimer's and Parkinson's diseases, while decreased apoptosis can signal lupus or cancer. That is why scientists are trying to learn how they can control which cells live and which undergo Programmed Cell Death (PCD). Anti-cancer drugs and radiation, for example, work by triggering apoptosis in diseased cells.

Cell death is an area in which scientists have made great leaps in understanding in recent years. Thus, understanding how to regulate apoptosis could be the first step to treating these conditions.

The role of death in nature and in our bodies is indispensable. Hence, the next time when you hear the word death, give it a second thought. Even though at first this word may sound dreadful, remember that death is essential to life.



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# PERSONAL HYGIENE: Your Gateway to Better Health

By: Jailane Salem

Maintaining proper hygiene is essential for preserving one's health, and this has been a known fact since Prehistoric Times. Our early ancestors usually strove to live near a source of water, knowing the importance of it, not only for survival but for keeping one clean as well.

If we are not careful about upholding our hygiene, then we risk getting sick. By taking regular showers and making sure we are clean, we ward off the unwanted attention of bacteria and germs, that otherwise could cause us great harm.

The word hygiene actually comes from the name of the Greek goddess Hygieia, who was the goddess of health and cleanliness. She was worshipped in Ancient Greece as the deity who can prevent sickness and can bless you with the continuation of having good health.

Nowadays, hygiene is a term that encompasses everything that has to do with sanitation, the preservation of health, and the practices that help in preventing the spread of disease. With the eruption of virus epidemics every other year, hygiene has been receiving a lot of attention, especially in places where there is a large gathering of people, you will find many posters reminding people to wash their hands, cover their mouths when they sneeze, and such other advice.

Hygiene practices date far back to prehistoric times, even though we have no written record of that time, we have evidence in artifacts to help us better understand our ancestors. Besides erecting settlements near sources of water, prehistoric people also used different tools to help in personal appearance; they used tweezers made from seashells to help pluck hair, and they also used combs to brush hair and make sure nothing untoward is stuck in it.

Washing your hands helps in the removal of infectious microbes as well as dirt and other unwanted elements, and taking regular baths is important in maintaining a clean body. Many religions encourage its followers to always stay clean

and to wash regularly, and warn against the dangers of not taking care of one's personal hygiene.

Many ancient civilizations also used to have quite a strong culture of bathing, where bath houses were quite common and even provided a space for social interaction. These bath houses could not function without water, and so different systems were created in order to facilitate the delivery of water to these establishments.

Besides bath houses, drainage, and toilet structures were also important and some have been found in the Indus Valley that date back to 3000 BCE. This system was quite an advanced network of sewers that helped in getting rid of human waste.

One of the most advanced systems of toilets and sewers in the Ancient World was found in Mohenjo-Daro site, which is located in today's Pakistan. This urban settlement was built around 2600 BCE, and had houses with lavatories outside them. The waste would go down a vertical chute into covered waste drains, which would then be washed away by water channeled through them.

Having proper toilets is the key to having proper sanitation to avoid outbreaks of diseases such as Cholera. Cholera is caused by consuming water or food that

has been contaminated by waste of an infected person, and this happens when there is no proper sewage system and a lack of clean toilets.

It is unfortunate that even though human civilizations have long ago understood the importance of having clean toilets in order to lead a hygienic life, until today a large part of the human population has no access to toilets or clean water. These two are synonymous with healthy living and proper sanitation and until now six out of every ten people on Earth still do not have access to flush toilets or other adequate sanitation that protects the user and the surrounding community from harmful health effects.

This is a crucial issue that needs to be addressed and fixed in order to lower people's susceptibility to disease that could easily be avoided. Those in charge of improving their nation's well-being need to make it their top priority to provide their people with a healthy environment, which is key to a good life.

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By: Omar Raafat

# WATER ALSO KILLS!

Around the world, millions of the poor hope to have a clean glass of water. This seems impossible as the problem of water sanitation increases especially in poor countries.

According to the World Health Organization (WHO), around 1.1 billion people globally do not have access to improved water supply sources, whereas 2.4 billion people do not have access to any type of improved sanitation facility. About 2 million people die every year due to diarrheal diseases; most of them are children aged less than 5 years old.

The most affected are the populations in developing countries, living in extreme conditions of poverty, normally peri-urban dwellers or rural inhabitants. People who drink this kind of water or people who do not have access to any type of improved sanitation facility, suffer from various diseases, such as Diarrhea, Arsenicosis, Schistosomiasis, Cholera, Intestinal worms, Typhoid and Trachoma.

These diseases occur due to the lack of attention given to the sector, lack of financial resources, lack of sustainability of water supply and sanitation services, poor hygiene behaviors, and inadequate sanitation in public places including hospitals, health centers and schools.

Providing access to sufficient quantities of safe water, the provision of facilities for a sanitary disposal of excreta, and introducing hygiene behaviors are of capital importance to reduce the burden of disease caused by these risk factors.

## Diarrhea

Diarrhea is having frequent, loose, watery stool. You may get diarrhea after being in contact with someone else who has it, or you may get it from food poisoning—after eating contaminated food or drinking contaminated water.

Almost everyone has diarrhea at some point in his/her life, including a holiday abroad, called traveler's diarrhea.

## Arsenicosis

Drinking water rich in arsenic over a long period leads to arsenic poisoning or arsenicosis. Many waters contain some arsenic, and excessive concentrations are known to naturally occur in some areas. The health effects are generally delayed and the most effective preventive measure is supply of drinking water low in arsenic concentration.

## Cholera

Cholera is an acute infectious disease caused by a bacterium, *Vibrio cholerae* (*V. cholerae*), which results in a painless, watery diarrhea in humans. Some affected individuals have copious amounts of diarrhea and develop dehydration so severe that can lead to death.

Most people who get the disease ingest the organisms through food or water sources contaminated with *V. cholerae*. Symptoms of cholera can begin as soon as a few hours or as long as five days after infection, the symptoms are often mild. However, sometimes they are very serious.

About one in twenty people infected have severe watery diarrhea accompanied by vomiting, which can quickly lead to

dehydration. Although many infected people may have minimal or no symptoms, they still can spread the infection.

## Typhoid

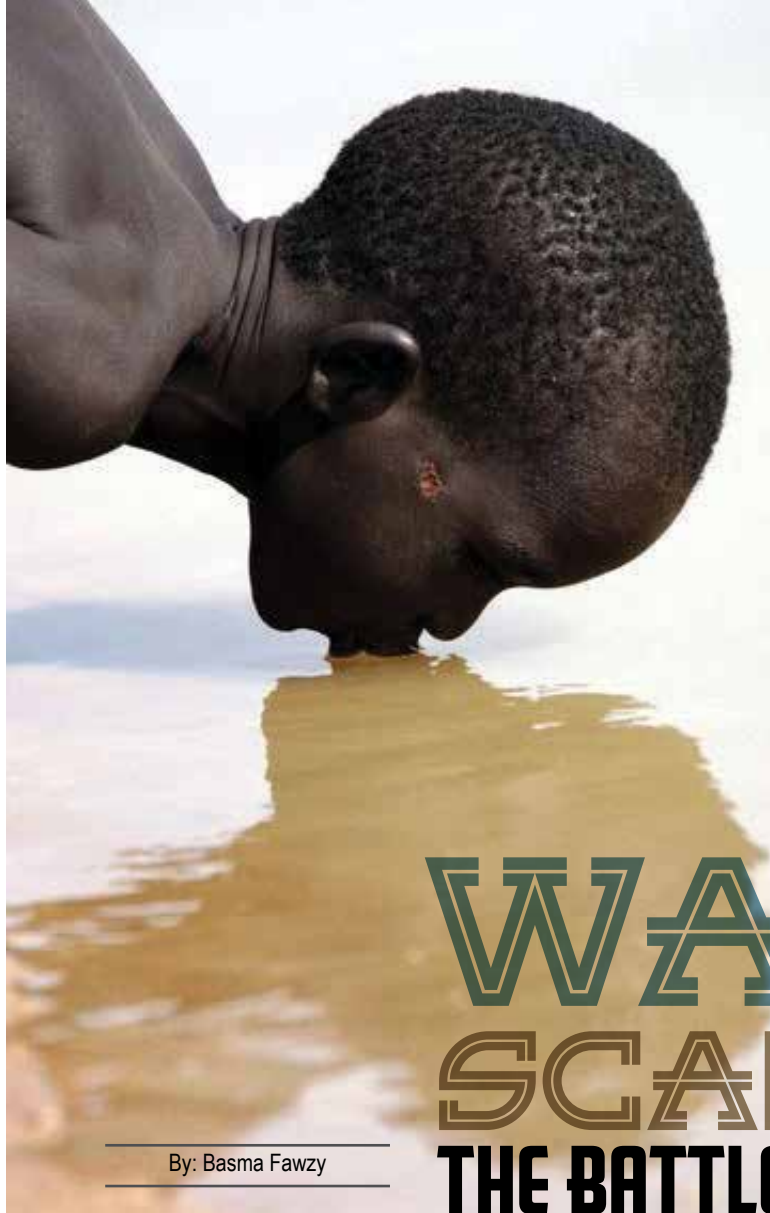
Typhoid fever is an acute illness associated with fever caused by the *Salmonella typhi* bacteria. It can also be caused by *Salmonella paratyphi*, a related bacterium that usually causes a less severe illness. The bacteria are deposited in water or food by a human carrier and are then spread to other people in the area.

Typhoid fever is contracted by drinking or eating the bacteria in contaminated food or water. People with acute illness can contaminate the surrounding water supply through stool, which contains a high concentration of the bacteria. Contamination of the water supply can, in turn, taint the food supply. The bacteria can survive for weeks in water or dried sewage.

Governments should provide more attention to populations living in areas suffering from water sanitation problems and its borne diseases. The human right to a clean glass of water and leading a healthy life are fundamental to the realization of all human rights.

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By: Basma Fawzy

# WATER SCARCITY: THE BATTLE OF THE FUTURE

**W**ater has always been taken for granted—it makes 70% of the Earth's surface—however, it is scarce. Most of the Earth's fresh water is imprisoned as glaciers and subsequently hard to get hold of; only 2.5% out of the 70% available water on Earth is fresh.

Water has always been taken for granted—it makes 70% of the Earth's surface—however, it is scarce. Most of the Earth's fresh water is imprisoned as glaciers and subsequently hard to get hold of; only 2.5% out of the 70% available water on Earth is fresh.

Recently, the problem of water scarcity finally received proper attention; over the years, the quantity of water has not changed but the Earth's population has increased significantly. The increasing numbers of people drains Earth out of its resources as the demand on water and food increases.

The most apparent usage of water is domestic usage, which includes drinking and personal hygiene; agriculture uses approximately 70% of the world's fresh water, while hydroelectric power uses the rest in generating electricity.

Hydroelectric power uses flowing water to create energy; for example, dams. The flow of water goes through turbines, forcing

them to rotate and electricity is generated. All industries use water; in some industries, water is "hidden" though. For example, in order to make 0.5 kg of plastic, 91 liters of water are used.

The growing number of people, the advances in science and technology, and the sophisticated lifestyle make supplying water more challenging. In spite of all that, it is worth mentioning that the water scarcity problem has not plagued all countries yet.

This has to do with how water is distributed, whether it is easy to access or not, and whether the country is advanced or rich enough to be able to obtain it. Freshwater, unfortunately, cannot only be found in rivers, lakes, ponds, and streams; most of it is frozen in glaciers, and the rest is trapped underground, so of all fresh water on Earth, only 0.3% is surface water.

There are two kinds of water scarcity: physical water scarcity and economic scarcity. The physical scarcity happens

when a country's demand exceeds the amount of water available, while the economic scarcity is when the water is enough but the population cannot obtain it due to lack of investments and proper management.

Water scarcity is not only affected by population growth, it is also affected by pollution. Pollution causes global warming, and global warming directly affects water cycle. Rising temperatures causes water to evaporate and increases the atmosphere's ability to store water, thus drought replaces rainfall. When the air cools, the large amount of water stored in the atmosphere is released causing floods. The speed of water makes it difficult for people to store it and hence it is lost.

As stated earlier, most of the fresh water is stored in glaciers; the rising temperature will make these glaciers melt. Some areas depend mainly on glaciers, and once those glaciers melt, there is nothing to be done to



reclaim them and the inhabitants of those areas will suffer from water shortage.

In addition to being afflicted with global warming that tampers with water cycle, human beings add insult to injury by ruining their few water resources. Unfortunately, some factories dump their waste products into water, insecticides that farmers use for the crops stay in the soil and rain pushes them into the river.

Dumping sewage in rivers is one of the most destructive things that human beings do to their water resources. Sewage does not only contain human waste; people use cleaning products and chemicals and those reach the river through sewage. Pollution has a tremendous effect on health; people who drink contaminated water suffer from waterborne diseases such as Typhoid fever and Malaria.

Some water resources are polluted beyond repair, one of them is Lake Karachay in Russia, which is considered one of the most polluted places in the world. In the 1950s, nuclear waste was dumped into it; during the 1960s, the Lake dried up and wind forced dust that is contaminated by nuclear material to move and kill a lot of people. Now the Lake is covered in stone to prevent nuclear dust from spreading. Ganges River is another example of misusing water resources; it is a holy river in Hinduism, millions bathe in this River every year to purify themselves of their sins.

Pollution, growing population, and the rising demands are likely to cause conflict, if not wars. Oil was and still is one of the main reasons for waging wars because the modern way of life cannot be maintained without it. As engines every day ferociously devour it, human beings—realizing that it is a non-renewable resource—make haste to have as much of it as they can. Obsessed as they are with oil and the blessings it bestows upon them, they forget about water, the essence of their existence.

Water, nowadays, is known as “the new oil” as a result; wars of the future are bound to take a different direction.

The case of Egypt and Ethiopia acted as a warning to what might happen in the future. No war was waged; however, there has been quite some tension as the interests of the two countries clashed, as the two countries share the same water resource. The Ethiopians are constructing Grand Ethiopian Renaissance Dam (GERD) and that Dam, Egyptians complain, will reduce their quota (share) of water.

It is worth mentioning that Egypt depends mainly on River Nile, 94% of the water Egyptians use comes from that River. Unless the two countries reach an agreement and work together on what should be done, it is definitely going to be more than “some” tension.

Difficulty to access clean water has a lot of undesirable outcomes. People either die or travel for long distances to get water from other areas. Sometimes, people are forced to drink contaminated water and the health problems are, of course, numerous.

Surprisingly, shortage of water affects education as young boys or girls living in areas with no water are forced to travel every day in order to supply their families with water, and thus have no time to go to school. As water is used for growing crops, hunger is another outcome to water shortage.

There is no use crying over spilt milk; the easiest and most logical solution to this problem is, of course, not wasting water. Old leaking pipes slightly add to this problem; in America, for example, 227,124,707,040 liters of water are lost every day due to leaking pipes, so changing those pipes can help. Also, as pollution has a large impact on water problem, it should be addressed.

As a start, governments should stop factories from dumping waste material into the water. Unfortunately, unlike oil, water does not have an alternative; however, some countries,

nowadays, desalinate sea water. Desalination is the process of removing salt from water; easy as it may sound, desalination is very expensive. The high costs of it discourage countries from applying it.

Human beings should take a stance and do something to reduce global warming and pollution; if not for the welfare of the planet and the environment, then for themselves and for the preservation of water, the elixir of life. Inseparable as they are from whatever is happening in the planet, they should take heed and fight together water scarcity instead of fighting against each other, not only to maintain their modern way of life but also to maintain their survival.



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**F**ood is a life necessity and a right for every person on Earth; we cannot survive without it. From food our body gets the nutrients it needs to grow and do its vital processes. According to the UN World Food Programme, 925 million people in the world do not have enough to eat.

Food security as defined by the World Food Summit is “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”. Lack of food leads to malnutrition because the body does not receive adequate nutrients from its diet; this causes damage to the vital organs and functions of the body, and it is common in the poorer and developing countries.

Sometimes, it is not only the lack of food or the inefficient diet that causes malnutrition; some people become malnourished because of certain diseases or conditions that prevent them from digesting or absorbing their food. For example, people who suffer from celiac disease have intestinal problems that are triggered by a protein called gluten found in wheat, rye, and barley. Celiac disease can interfere with the intestine’s ability to absorb nutrients, which may result in nutritional deficiencies.

Irregular intake of food is one of the main causes of malnutrition. The timings for breakfast, lunch, and dinner must be fixed; indiscipline in this matter is very bad. This bad habit of taking irregular meals causes indigestion and finally results in malnutrition.

In addition to these food-related causes of malnutrition, there are some general causes such as unclean environments, bodily diseases, heavy work and lack of exercising, lack of fresh and pure air, lack of sunlight, etc.

It is worth mentioning that despite the nations’ efforts to solve the food insecurity problem, which is one of the reasons that lead to malnutrition, Africa’s food security and nutrition situation is growing worse. Africa has been experiencing several episodes of acute food insecurity causing an immense loss of life and livelihoods over the past decades.

African countries have collectively made the least progress towards achieving the Millennium Development Goal of reducing hunger by 2015, and currently nearly one-third of its population lives in chronic hunger. Twenty-three million people in 11 countries in the African regions are affected by acute food insecurity and are facing malnutrition.

Among the factors that lead to this situation include exceptionally high

# MALNUTRITION



By: Shahenda Ayman

## A GROWING THREAT

population growth rates, political conflicts, climate changes, and the endemic poverty in some regions.

Poverty and food shortage are the main reasons behind the food insecurities and malnutrition problems in Africa. In 2004, 121 million sub-Saharan Africans lived on less than a meagre USD 0.50 a day. People living on less than USD 1.00 per day are unable to pay the prices they would need to buy all of the food they require; meat and fish consumption for the many poor Africans is a luxury.

In addition, over the past 30 years, Africa has become subject to erratic weather patterns and is often plagued by prolonged droughts followed by floods. These natural shocks trigger adverse consequences, including widespread food insecurity. Since most of the region’s inhabitants depend on rain-fed agriculture for their livelihoods, only 4% of cropland in sub-Saharan Africans is irrigated. Furthermore, the rural farming populations are the most affected because of their extremely low adaptive capacity, which is linked to acute poverty levels.

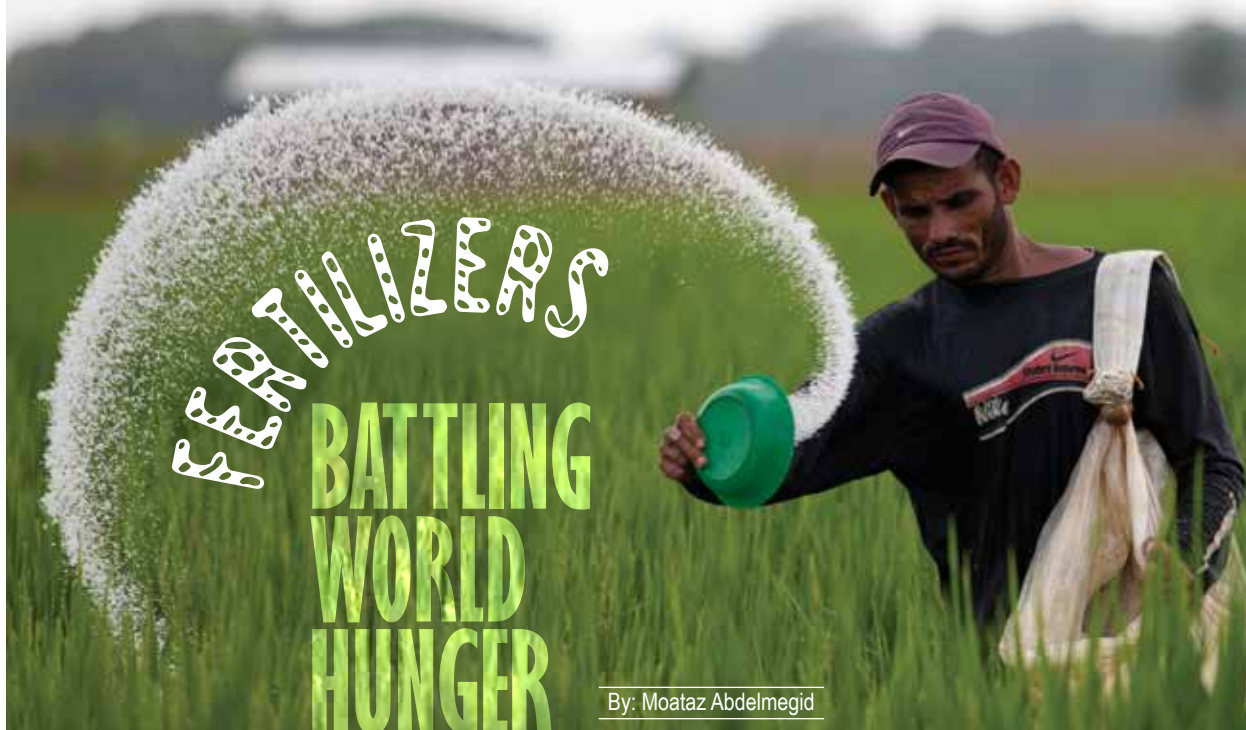
Malnutrition has many consequences for health and development, with mothers

and children most vulnerable to the devastating effects. Malnourished mothers are at a greater risk of dying in childbirth and of delivering low-birth-weight babies who fail to survive infancy. Children also suffer from the malnutrition consequences because of their physiology and high calorie needs for growth and development. Malnutrition is the underlying cause of death of more than 2.6 million children each year.

Malnutrition should be seen as a global problem with severe consequences. The fight to combat food insecurity is a tough but not an insurmountable one. Future efforts will require active governments; and multilateral and bilateral donors pledging long-term funding to commit to national efforts to end famine and food insecurity at a level that is commensurate with the scale of the problem. Only then, we can overcome malnutrition problems.

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By: Moataz Abdelmegid

Fertilizer is a material of natural or synthetic origin applied to soils to supply more plant nutrients essential to plant growth. Conservative estimates report that 30% to 50% of crop yields are attributed to natural or synthetic commercial fertilizer.

Generally speaking, fertilizers enhance the growth of plants. This goal is met in two broad ways; the traditional one being additives that provide nutrients. The second mode by which some fertilizers act is to enhance the effectiveness of the soil by modifying its water retention and aeration.

Crop yields vary greatly from one nation to another; developed nations generally have much higher crop yields than developing nations. Many factors are responsible for this disparity; one of the principal factors is fertilizers.

A vast quantity of fertilizer arable land, currently being used to grow food for the world, is unfertilized and therefore much less productive than it could be. A number of fertilizer studies have shown that simply adding a basic Nitrogen–Phosphorous–Potassium (N-P-K) fertilizer to a formerly-unfertilized field would more than double the yields.

In the developed world, using fertilizer is the norm; in the developing world, however, much of the agricultural land does not use fertilizer at all. Sometimes, the farmer applies a technique of leaving the land fallow for a time. Another approach is to use manure as a natural fertilizer. However, manure is not nearly as effective as N-P-K fertilizer.

All nitrogen fertilizers are made from ammonia ( $\text{NH}_3$ ), produced by the Haber-Bosch process<sup>(1)</sup>. In this energy-intensive process, natural gas ( $\text{CH}_4$ ) supplies the hydrogen and the nitrogen ( $\text{N}_2$ ) is derived from the air. This ammonia is used as a

feedstock for all other nitrogen fertilizers, such as anhydrous ammonium nitrate ( $\text{NH}_4\text{NO}_3$ ) and urea  $\text{CO}(\text{NH}_2)_2$ .

All phosphates are obtained by extraction from minerals containing the anion  $\text{PO}_4$ . In rare cases, fields are treated with the crushed mineral, but most often more soluble salts are produced by chemical treatment of phosphate minerals. The most popular phosphate-containing minerals are referred to collectively as phosphate rock. The main minerals are fluorapatite  $\text{Ca}_5(\text{PO}_4)_3\text{F}$  (CFA) and hydroxyapatite  $\text{Ca}_5(\text{PO}_4)_3\text{OH}$ . These minerals are converted to water-soluble phosphate salts by treatment with sulfuric or phosphoric acids.

As for potassium fertilizers, they are made of Potash which is a mixture of potassium mineral compounds. Potash is soluble in water, so the main effort in producing this nutrient from the ore involves some purification steps, for example, to remove sodium chloride ( $\text{NaCl}$ ), common salt. Sometimes Potash is referred to as  $\text{K}_2\text{O}$ , as a matter of convenience to those describing the potassium content; in fact, Potash fertilizers are usually potassium chloride, potassium sulfate, potassium carbonate, or potassium nitrate.

In contrast with chemical fertilizers, organic fertilizers are fertilizers derived from animal matter or vegetable matter, such as compost and manure; as opposed to the majority of chemical fertilizers which are extracted from minerals, such as phosphate rock or produced industrially, like ammonia. Organic fertilizers include naturally occurring organic matter as animal wastes from meat processing, peat, manure, slurry, and guano.

The impact of fertilizers industry on environment has always been a subject of argument. The issue is that we tend to use

too much fertilizer in the soil because they have to cater to the global demand of food. As mentioned, a huge ratio of the total yield production is out of synthetic or inorganic fertilizers, which contain components such as nitrogen and potassium. These chemicals and minerals, although help in boosting the growth of plants; they also have their drastic side effects in the long run.

The environmental effect varies according to the chemical components of the fertilizer, the method and rate of application, and the frequency of usage. Basically, the problems faced revolve around depletion the quality of the soil, altering the biology of water bodies, generally affecting human health, and other impacts related to environmental equilibrium and climate change.

Yet, we cannot deny artificial commercial fertilizer to the developing world merely out of a concern for the environment. Organic food production may result in healthier food and lower impact on the environment, but the needs of the hungry outweigh those values.

We cannot suddenly decide to stop using chemical fertilizers due to their environmental impacts. What we can do is to work on developing more organic fertilizers with higher quality and lower price that can compete with chemical fertilizers to help us shape alternative scenarios for the future of fertilizers industry.

### Glossary

1. **The Haber–Bosch** process is the industrial implementation of the reaction of nitrogen and hydrogen to produce ammonia; it was invented by German Chemist Fritz Haber.

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By: Dr. Mohamed Soliman  
Director, Manuscripts Museum

In that vast wilderness that occupies the largest area of the Arabian Peninsula, it was necessary for the Arabs to find what could guide them through it; otherwise, they would have been lost and faced death. People of the desert are in the habit of moving and traveling, looking for water, food, and grass; thus, finding a way to observe and identify locations was a necessity.

With the dawn of Islam and the commandment of prayer and fasting, it became also a necessity to determine the directions to face Al-Aqsa Mosque, and later the Ka'aba, at five specific times daily; as well as identifying the months of the Hijri Calendar—lunar calendar—and determining the new moons as festivals and fasting of Muslims depend totally on the sightings of the Moon and its phases.

Stellar guidance was mentioned in the Qur'an, where Allah says in *Surat Al-An'am (The Cattle)*, verse 97: "And it is He who placed for you the stars that you may be guided by them through the darkneses of the land and sea. We have detailed the signs for a people who know." Moreover, there are other Qur'anic verses that call for meditation and observation of the Universe's creation.

Even before Islam, some old religions that emerged in the Arabian Peninsula took on the worship of planets and stars instead of idols, such as Sabianism, where celestial bodies such as the Moon, Venus, and Mercury, had great stature.

All these introductions and reasons made astronomy one of the necessities for survival among the Arabs, and urged them to dig deep in observation, analysis, establishment of theories, and the invention

of astronomical instruments to monitor the sky day and night.

There is no doubt that the contributions of the Arabs in astronomy in the Middle Ages or the Golden Age of the Arab Civilization are well known everywhere. It is enough to know that the names used to this day for the stars and planets discovered by the Arabs 1,500 years ago are Arabic names, as well as some astronomical terms; such as almucantar, azimuth, and alidade.

Perhaps one of the most important sources that reached us in the field of observational astronomy is the *Book of Fixed Stars* by Abd al-Rahman al-Sufi, who died in 376 AH/976 CE. The book described the planets in the sky, which amounted to forty-eight planets that were thoroughly illustrated as imagined by the Arabs then without the use of complex modern machines in our time. After al-Sufi's death, his daughter Arajjoza Bint al-Sufi resumed his observations, in addition to the development of observational and approximation instruments by scholars of the Islamic civilization of the time.

We can also only imagine how Ibn al-Haytham—who died in 430 AH/1040 CE—with the means available at his age, wrote a treatise entitled *The Trace on the Moon's face*—one of the Bibliotheca Alexandrina's collections—in which he addressed and scientifically analyzed the topography of the Moon and its volcanic craters.

Before al-Sufi and Ibn al-Haytham (aka Alhazen), there was Abu Abdullah al-Battani—born in 240 AH/854 CE. He was one of the most significant scientists in astronomy and observation in the world, prompting some people to call him Ptolemy of the Arabs. If you have studied trigonometry and trigonometric functions—sine, cosine, and tangent—for example,

you have to know that this man is credited for their existence.

If we go back to the second hijri century/ eighth century CE, we will find al-Khwarizmi (aka Algoritmi), whose name was linked with algebra for his great contributions, the effects of which resonated in astronomy and observation, where the first book was the *Astronomical Tables of Sind and Hind*, which became the turning point in Islamic observational astronomy.

The book observed the movement of the Sun, the Moon, and the five planets known at the time, where he entered concepts translated from Indian and taken from Ptolemy to the Arab astronomy, developed them, and from which he initiated new discoveries in astronomy.

We cannot talk about observational astronomy without mentioning Maragheh observatory, located in the west of Maragheh, in Azerbaijan, which was founded by astronomer, mathematician, chemist, physicist, philosopher, and physician Nasir al-Din Tusi in 657 AH/1259 CE.

Maragheh observatory was attended by many scholars, such as: Qutb al-Din al-Shirazi, Ibn al-Shater, Najm al-Din al-Qazwini, Ali Qushji, Abdul Ali al-Birjandi, and Shams al-Din al-Khafri, Muhyi al-Din al-Maghribi, Ibn al-Fuwati and many others. The Observatory contained more than 400,000 volumes, which made it the first academy for scientific research in the field of astronomy and observation that revolted against the principles and ideas of Ptolemy in astronomy.

On the other hand, al-Biruni (Abu Rayhan)—born in 362 AH/963 CE in the capital of the Khwarezmian Empire—was described as one of the greatest minds that the Islamic civilization has ever known; he excelled in astronomy and observation. His designs of astrolabes and observational instruments for sites, stars, and planets, and their development were groundbreaking for astronomy and observation, and preparatory for the invention of the mechanical clock. Al-Biruni was the first to invent the vertical astrolabe in the first decade of the eleventh century, and he was also the first to say that the Earth rotates around its own axis.

The list of scientists and contributions goes on and on as the manuscripts of astronomy and observational methods in the written Arab heritage mount to thousands that still need to be exposed or re-discovered. Indeed, astronomy was a necessity for survival of the Arab Muslims, and for the application of their holy religion; this article is thus but a drop in the ocean of the contributions of the Arab Civilization in that area.

# The Necessity of EXPRESSION

By: Maissa Azab



"The Scream" by Edvard Munch (1863–1944) - WebMuseum at ibiblio Page: <http://www.ibiblio.org/wm/paint/auth/munch/Image>

The Scream is the popular name given to each of four versions of a composition, created as both paintings and pastels, by Norwegian Expressionist Edvard Munch between 1893 and 1910. Der Schrei der Natur (The Scream of Nature) is the title Munch gave to these works, all of which show a figure with an agonized expression against a landscape with a tumultuous orange sky.

Throughout this issue, we have discussed several aspects of necessity; the actual bare necessities of life, the necessities of modern life from different points of view, etc. We must not forget other essential necessities such as education for example; education, however, is not just any necessity, so we dedicate our upcoming issue entirely to it.

Nevertheless, it is my point of view that we cannot consider an issue about the Bare Necessities of life conclusive enough without tapping into a core necessity such as that of self-expression.

What is self-expression you ask; well, it is the ability and act of setting forth one's thoughts, feelings, and opinions, may it be by speech or writing, or through one of an endless pool of art forms. Self-expression may also be through body language or mere appearances such as clothing, hairstyle, home decor, and more.

Self-expression is as vital to living as breathing; it is how we interact with others and the world. It can be supremely fulfilling or irritably frustrating. Sometimes we do not even think about how we

express our inner reality to those outside; it just happens naturally. At other times, we may strive to express something and disappointedly fall short of what we meant to get across.

Sometimes we cannot access inspiration or creativity to know what we want to express. Other times, we have an idea of what we want to communicate, but we do not know how to make it manifest. Some of us have difficulty communicating because we are shy, insecure, or just feel that our communication skills are lacking.

A way for self-expression is through the creative arts. No matter how scared you may feel to express yourself, remember that there are so many ways to engage.

From finger-painting to intricate landscapes, Lady Gaga to Chopin, art provokes spiritual wellness. Indeed, throughout history, people have used art to cultivate positive changes within themselves and relations with the outside world. Art generates personal exploration through self-expression or delving into one's spiritual agony with listening or seeing; channeling art solidifies how outside sources impact our life.

Difficult experiences develop our unique preferences and deeply connect us to people, images, and sounds, exuding a common struggle or hope. Creating artwork transforms inner rage, pain, or emotional baggage into something tangible. Hopes and fears—feelings that should not be ignored or suffocated—can be transcribed. Through art, these basic human feelings can be managed and celebrated; in this sense, self-expression serves as a healing process.

Even if we do not have the technical ability to write a poem or paint a self-portrait, most of us can use our senses to connect the emotion or content of a piece to our own struggle. We all know a song that reminds us of our childhood best friend; we all know an image that provokes happiness or guilt. After all, we are all connected through art despite our varied skill levels.

Art's facilitation of self-esteem and stress-reduction potentially allows everyone to work through any source of trauma. Starting and completing any task, and experiencing the finished product, produces an irreplaceable sense of productivity and worth. Likewise, after studying or creating a piece, we can enjoy the product and share it with loved ones.

Although art connects people, it can also administer a sense of independent thought and actions. Away from appointments, away from family stress, away from society's expectations, connecting with art puts the individual in control. No one can enforce what can be listened to, what colors are permitted, what should cultivate inspiration; the quest to spiritual wellness is an individual journey in this sense.

New depictions of the past, future, and even location, enable us to temporarily escape our social bubble. Entering alternate realms allows us to realize a world beyond our personal struggles. Art creates a safe space for anyone to temporarily escape from his/her own head into a meditative state where inner peace is possible.

We all interact with art on daily basis; however, few stop and think how these forms of expression not only look pretty or have a danceable beat, they also provide spiritual wellness. By meditating to a soulful piece of music or doodling the image of a loved one; art cultivates both independence and connection to others.

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# Exploring the Human Civilization Enigma



By: Dr. Omar Fikry  
Head, Planetarium Section  
Planetarium Science Center

Happiness overwhelms you as you hear the creatures offering to tell you their secrets voluntarily. The fattest said: "We have agreed now my friend to tell you our secret, but under one condition"; many questions pop up in your head when you hear this: Where did they come from? Why did they choose you specifically? Did they visit anyone before you? What is happening to me? What is their condition? What time is it now?

Your incessant confusion and anticipation come to an end when the tallest talks to the fattest saying: "Yes my friend, but this agreement is conditioned by his showing us a place where we can talk to the planet's inhabitants, which is our only condition". You return to your questions again and you address them saying: "I am now in a science fiction movie and I want it to come to an end now. Although we are in 2015, I am in my room, talking to aliens who have a weird request. For God's sake, who will believe me? Why do you want to talk to the planet's inhabitants?"

The fattest answers while leaning on the shortest back and looking at the tallest amazingly: "Did he say 2015? Did he say for God's sake?" The tallest shrugs his shoulders, answering in astonishment: "I think he said so". The shortest asks you: "Who said that we are in 2015? We are in 3115. And what is the meaning of 'for God's sake'? We do not know God".

An eerie silence prevails after the shortest speech; you cannot really fathom what he had said. After a while, you lift your hand to point towards the door, signaling them to leave your room; the three do the same and point the door the same way you did. So, they did not understand

your gesture and they did not understand its meaning. You state steadily: "Please, leave my room peacefully; I do not want to continue".

The tallest gets closer to you saying: "What has upset you like that? Why do you want us to leave? You have been so friendly and welcoming, and you are a good person; do you fear us now? You take a step back and answer: "Yes, especially after your friend stated that we are in 3115 and his denial of God's existence".

The shortest answers you: "We are really in 3115, and I did not deny the existence of the God you are talking about; I said that we do not know Him". He then turns to the fattest who continues: "Is it important to you that we know God? Is it important to agree on what year we are in, whether we are in 2015 as you said or 3115 as we said?"

You answer with determination: "You were about to answer me about your identity and the place where you came from, and you were also about to tell me your secret; but it seems that you do not understand life priorities and essentials on our planet. I hope that you understand something important; we here on this planet cannot live without some important things we have agreed upon and consider basics of life. Among these basics are knowing the date and time, and knowing the year we live in; so, when your friend say that we are not in 2015 I must feel afraid".

The fattest answers you quietly: "I understand now my friends; Earth's inhabitants according to what he said measure time in a different way than we do, so they are in 2015 now but we are in 3115". He then addresses you saying: "We are like you dear friend; we cannot live

without knowing the date and time, but we have come from a place where the date is 3115. Time is essential and important to us also. However, what is the importance of knowing God?"

You answer: "I cannot really answer this question for you. But let me tell you that among Earth's inhabitants there are some who do not know God and do not consider that a life necessity. However, the majority believes in His existence although we know Him here in different ways and we worship Him in dissimilar ways; among us you can find the Jewish, the Christians, and the Muslims. Those different ways are called 'religions' and the majority of people who believe in these religions consider the existence of God and worshipping Him a life necessity".

You look at them and they listen to you attentively; they show no expression on their faces, so you continue: "Life necessities on our planet differ from time to time. For example, in 2015 here and 3115 at your place, life necessities include electricity, the Internet, mobile phones, and other technological devices. However, in some parts of the planet, these things are unfortunately considered luxuries and not necessities. Moreover, science and knowledge are common factors throughout the ages; they are essential for getting basic life resources like food, water, air, health, preserving the environment, ..."

You stop talking suddenly then continue: "But what are your life necessities where you come from?" However, you do not see any expression, motion, or gesture from them and silence prevails.

See you next episode





The Planetarium Science Center (PSC), in collaboration with Intel Co. is organizing the Intel Bibliotheca Alexandrina Science and Engineering Fair (Intel BASEF) hosted by the Bibliotheca Alexandrina (BA) in March 2015 for the 8<sup>th</sup> year. Intel BASEF is affiliated to the Intel International Science and Engineering Fair (Intel ISEF); the largest world pre-college science competition.

Students from Alexandria and six other Governorates—Dakahlia, El Gharbeya, Kafr El Sheikh, Beheira, Damietta and Matrouh—can participate in Intel BASEF through Local Fairs or School Fairs. They can participate in Intel BASEF with an individual or a team project (maximum two students per group).

Intel BASEF organizes Affiliate Fairs in Alexandria to encourage schools' participation in science fairs; the fairs are expected to receive about 200 projects. The winning projects of both Affiliate School Fairs within Alexandria and Affiliate Local Fairs will qualify to compete in Intel BASEF finals 16-18 March 2015 at the BA. Intel BASEF top three winning projects will represent Egypt in the Intel ISEF competition that will take place this year in Pittsburgh, Pennsylvania, 10-15 May 2015.

Students can choose from among a variety of scientific themes, such as: animal sciences, behavioral and social sciences, biochemistry and microbiology, Earth and planetary sciences, electrical and mechanical engineering, energy and transportation, environmental management, medicine and health sciences, physics, mathematics, astronomy, or plant sciences.

## Planetarium

### Available Shows

#### Stars Show

45 min. Live Show by the PSC Resident Astronomer

#### Oasis in Space

25 min. Full-dome Show

#### Stars of the Pharaohs

35 min. Full-dome Show

#### Seven Wonders

30 min. Full-dome Show

#### The Life of Trees

33 min. Full-dome Show

#### Kaluoka'hina

35 min. Full-dome Show

#### Mystery of the Nile

45 min. IMAX Show

#### Cosmic Voyage

35 min. IMAX Show

#### Alexandria, The Cradle of Astronomy

22 min. Full-dome Show

### Visitors INFO

- For the Planetarium daily schedule and fees, please consult the Center's official website: [www.bibalex.org/psc](http://www.bibalex.org/psc)
- Kindly note that, for technical reasons, the Planetarium maintains the right to cancel or change shows at any time without prior notification.

## History of Science Museum

### Visitors INFO

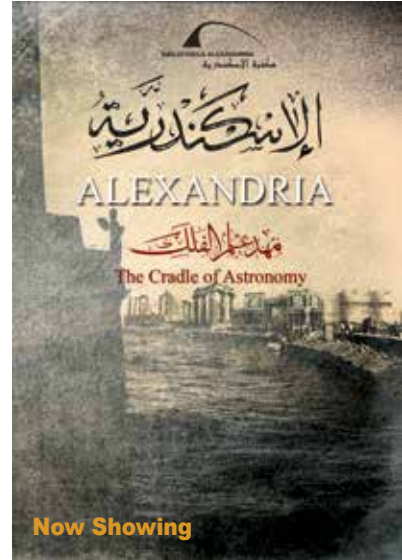
#### Opening Hours

Sunday – Thursday: [9:30-16:00]  
Saturday: [12:00-16:00]

#### Guided Tours Schedule

Sunday to Thursday:  
[10:30, 11:30, 12:30, 13:30, 14:30]

- Museum entry fees are included in all Planetarium shows tickets.
- For non-audience of the Planetarium, Museum entry fees are EGP 2.-
- Museum Tours are free for ticket holders.



Now Showing

## ALEXploratorium

### Visitors INFO

#### Discovery Zone

#### Opening Hours

Sunday to Thursday: [9:30-16:00]  
Saturday: [12:00-16:00]

#### Guided Tours Schedule

Sunday, Monday, Wednesday,  
Thursday: [9:30, 11:00, 12:30, 14:00]  
Saturday: [12:00, 14:00]  
Tuesday: [9:30, 11:00]

#### Entry Fees

Students: EGP 5.-  
Non-students: EGP 10.-

#### Listen and Discover

- For the list of shows available at the "Listen and Discover" and the schedule, please consult the Center's official website: [www.bibalex.org/psc](http://www.bibalex.org/psc).
- For reservation, please contact the PSC Administrator, at least one week before the desired date.

#### Show fees

DVD shows:  
Students: EGP 2.-  
Non-students: EGP 4.-  
3D shows:  
Students: EGP 5.-  
Non-students: EGP 10.-  
4D shows:  
Students: EGP 10.-  
Non-students: EGP 15.-

# Never too Old to Selfie



oh son, leave this phone and talk to me...

this piece of iron is driving you crazy.



What grandpa? Sorry,

I did not hear, what were you saying?



Illustrated by: Mohamed Khamis