Title: **Explaining viral pandemics with help from Theology and Physics - Alternative Hypotheses.**

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Abstract

Pathogens have been plaguing humans since time immemorial. One characteristic feature is repetition of pandemics by the same pathogen(s) resulting in devastation. However, starting CE 1880, the offending pathogens have been different with every episode. Borrowing concepts from theology and physics, this article tries to proffer answers to some aspects observed regarding Viruses, Vectors, and Humans, and thereby tries to redefine our thinking on the concepts of viral infections. These aspects being: how pandemics occur in the first instance, the rapid global spread of the current Covid-19 Pandemic and will the humanity be able to control such pandemics in future.

Keywords: Physics, Virus-Host Interactions, Virus-Vector Interactions, Viral Epidemics, Parallel Theory

Subject classification codes: Religion and Science

No. of Tables: Two

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Table 1. Table showing a list of human epidemics and pandemics.

Table 2. Cumulative list of various dimensions identified and accepted by the present-day Physicists.

Explaining viral pandemics with help from Theology and Physics - Alternative Hypotheses.

Humans have been affected with various pathogens since time immemorial. Whenever there is an epidemic, early humans believed it to be acts of God(s) or the Satan. In due course of time, people thought it prudent to record these episodes of epidemics wherein there is human loss in large numbers. Perhaps the first such recording of epidemics wherein there is massive human loss was sometime in the year 1350 BCE (see Table 1). Thus, despite the reasons proffered by the then mystics or theists, religion and religious people formed the first science and scientists respectively, albeit informally.

Table 1 here

Starting CE 100, Table 1 lists only those epidemics/pandemics that consumed more than a million lives. However, no conclusion can be made about periodicity of these epidemics. But then the drawback with regard Table 1 is that it tracks multiple pathogens and not necessarily viral epidemics/pandemics alone. Both these two arguments debunk the message that went 'viral' in various social media during the early stages of the current Covid-19 pandemic that every 100 years there will be a pandemic that will decimate the population thereby controlling the size of the human population naturally. Whatever might be the case, the world is presently reeling under the impact of two viral pandemics: the first one started in year CE 1981 by the HIV and the second one more recently in the year AD 2019 by the novel SARS-CoV-2 virus.

In the present communication, the author tries to investigate various aspects of the virus-vector-host interactions with a metaphysical and theological perspective. Such an exercise provides in-part an answer to why epidemics/pandemics occur in the first instance, the rapid global spread of the current Covid-19 Pandemic and gives an explanation as to whether the humanity will be able to control such pandemics in future.

Towards achieving this aim, various available internet blogs were accessed to essentially understand the concepts of various dimensions in physics and to simplify the arguments. The relevant information was sourced, collated, and summarized as Table 2 (Minkowski 1909; Hewett and Spiropulu 2002; Hawking and Mlodinow 2010; 2010; Melbus and Ohlsson 2012). For accessing full text documents, when necessary, the services of British Council Digital Library, India, was utilized using author's personal membership and credentials. Also, some of the publications were accessed through Google/Bing searches, PubMed or through Google Scholar.

Multiple Universes (Multiverses), Multiple Dimensions and Magnetoreceptors.

Prior to CE 1900, Scientists believed life existed in three dimensions, and everything was found to be existing in multiples of three. By CE 1909, Minkowski Spacetime became a reality and thence the existence of a fourth dimension (Minkowski 1909). Subsequent scientists working on gravity and supergravity took the number of dimensions in physics to about 11 (Minkowski 1909; Hewett and Spiropulu 2002; Hawking and Mlodinow 2010; Melbus and Ohlsson 2012). Nevertheless, present day physicists are comfortable with 11 or 12 dimensions (if you count the zeroth dimension) (Table 2). Put simply, the Universe is multi-dimensional. Scientists are only recently learning to try to control the first three-dimensions, if the developments in 3-D printing are any indication. Controlling the dimensions from the fourth (Time) is beyond the scope of humanity at present. Further, it is well-understood that starting with the fifth dimension, humans are unable to even perceive the existence of the same. Despite this, humans have achieved the capability to measure artificially some aspects of various dimensions in everyday life. For example, clocks and calendars are used to measure and keep oneself up to date regarding time. Magnetic compasses are used for direction finding which take advantage of geomagnetism, etc. Scientific and Medical labs use advanced

instruments like electron microscopes, nuclear magnetic resonance (NMR), Magnetic Resonance Imaging (MRI), laser scanning microscopes to Large Hadron Collider (LHC) and many more techniques for studying various aspects of Quantum physics and for mapping the human body.

Table 2 here

Presently, it is widely believed that Quantum Physics operates at nanoscale levels and describes the properties of sub-atomic particles (Marais *et al.*, 2018). While humans are yet to perceive the impact of all the listed dimensions in their daily life, Avian Magnetoreceptors, wherein the magnetic sense of the birds acts as compass, is one widely researched aspect of Quantum Biology since the past four or five decades, having been established both by theoretical and experimental investigations (Marais *et al.*, 2018). Here the fact that birds depend on magnetoreceptors for migration is a clear indication that they can perceive naturally and, in the process, take advantage of at least one higher dimension, the fifth dimension, in comparison to humans. In humans there are otolithic organs (in the non-auditory portion of the inner ear) which are sensitive to gravity (Fox 2020). Anything that happens to the inner ear affects the persons' stability leading to disorders like vertigo.

From Table 2, we learn that the fifth dimension involves geomagnetism or gravitation. Several marine organisms also depend on gravitation for balancing themselves. Apart from birds and humans, snails, crustaceans, insects, cartilaginous fish, bony fish, amphibians, reptiles, and other mammals all are known to use at least one type of compass – either inclination (in birds) or polarity (other animals) or both (Salamanders) (Johnsen and Lohmann 2005; Wiltschko and Wiltschko 2005; Marias *et al.*, 2018). Also, at least one hypothesis exists in the scientific literature which says that geomagnetic pole reversals (gravitation being part of the fifth dimension) is one cause of Dinosaur

extinction (Poduri 2010). Experiments involving altering the different components of the magnetic fields did affect the behavior of various animals studied in the laboratory settings (Wiltchko and Wiltchko 2005). The magnetoreceptors in the animals studied are demonstrated to be of the ‘inclination compass’ type. Thus, attributes of the 5th dimension are of vital importance to all life forms on Earth.

All of this leads to the obvious question: ***If Earth’s gravitation impacts life forms on this planet, do gravitational forces from Stars and other Planetary bodies have an influence on life on this planet?*** Yes. The simplest example is the tidal movements of the various water bodies on Earth as a direct consequence of Moons’ gravitational pull. The present day (so-called pseudo) science of Astrology does indeed believe that Stars and Planets do significantly impact life which includes humans. By now it might be clear to the reader that any sciences involving the prefix ‘Astro-’ are more than science and are currently mostly theoretical and discussion oriented. However, a discussion on nuances in this direction is beyond the scope of this article for the present.

But, when we talk about influence of Stars and Planets, we have subconsciously invoked the dimensions starting from the fifth. It may be noted that starting from dimension number 5, Scientific community presently believes that each of these higher dimensions (or theories involving them at least) are independent of each other. Nevertheless, as noted in the Table 2, one must keep in mind that when we are referring to each successive dimension, it by default includes the earlier mentioned dimensions. In simple terms, when we refer to dimension number 11, it includes one dimension of time and the remaining 10 (or 11 if zeroth is counted). Similarly, the fourth dimension would by default involve the earlier three (or four) including itself. The present author is of the belief that the higher dimensions (starting from the fifth) might not be independent of each other but are capable of independent existence wherein they can behave

independently but within the realm of the other dimensions, and thereby obeying the Rules of Nature or the Thumb Rules (putting it in the Hawking Terminology) (Hawking and Mlodinow 2010).

Also, now, the discussion presupposes that when we transcend from a lower dimension to higher dimension, we are including all the previous dimensions. And when we descend the dimensions from a higher one to a lower one sequentially, we keep giving up/releasing the previous higher dimension, and so on and so forth. Thus, theoretically, we keep oscillating among the dimensions either from lower to higher or *vice versa*. Simultaneously, we swing between microscopic (Universes) and macroscopic (Universes) life forms.

Nevertheless, the examples of various animals including humans and dinosaur, mentioned earlier, represent macroscopic life forms on Earth. Given the fact that Physicists have demonstrated Quantum Physics to be active at a sub-atomic level (as evidenced by numerous publications in this direction), it makes sense to take the discussion to microscopic levels. This is what the next section tries to do.

Redefining our thinking in Virology?

Aham Brahma Asmi [Sanskrit; Translation: I am Universe (Keerthi 2017)].

Consider for the sake of argument the ninth dimension (Table 2). The reason for choosing ninth dimension is in the observation that while several Physicists, including the late Stephen Hawking, have acknowledged the existence of a Superior Intelligence (henceforth SupInt) to human intelligence (HumInt) (Hawking and Mlodinow 2010; Poduri 2017). Religious people call such SupInt as God. The present author also prefers to use the term God for the simple reason that from a computing perspective the spelling of God takes up only three characters while SupInt takes six (twice God), thereby saving on space. But none of the Physicists know exactly who the God is nor his/her location.

Hence it makes sense to stick to what is within the realm of human intelligence (HumInt). A manuscript comparing the description of God in various religions (12 in number) with the concept of SupInt in metaphysics by the present author has been submitted elsewhere at the time of communicating this manuscript. Both the papers share the information presented in Table 2, albeit in different form.

In the ninth dimension, multiple Universes (henceforth multiverses) exist simultaneously at the same place and at the same time. But (perhaps) they cannot perceive each other. Now again for the sake of argument we borrow the concept of *Brahma* from Indian Vedic Philosophy (Keerthi 2017). We consider each individual life form as an independent ‘Universe’. This is consistent with the concept of the Ninth dimension: Multiverses exist at the same place, and time without perceiving each other. This is what exactly is happening in simultaneous infections.

Consider Chikungunya (ChikV), Dengue (DenV) and Zika (ZikV) viruses which share transmission ecology (*i.e.*, they are transmitted by the mosquito *Aedes* sp.) and have the same host (vertebrates) but cause different symptoms (Magalhaes *et al.*, 2017; Rückert *et al.*, 2017; Azeredo *et al.*, 2018). These three viruses represent three independent Universes that are capable of independently infecting another Universe (humans) with the help of, yet another Universe (Mosquito), yet do not perceive each other. Thus, this example involves at least five (interacting) Universes. Also, the reason for mentioning that the three viruses (and hence their Universes) cannot perceive each other is in the observation that there are no reports so far to conclusively say that a naturally occurring recombinant/hybrid virus of any two or all three viruses exists, one major reason to consider the three viruses as different universes for the present. Another reason being in the observation that they cause different symptoms (Magalhaes *et al.*, 2017; Rückert *et*

al., 2017; Azeredo *et al.*, 2018). ***Also, at this stage, viruses are considered as one of the life forms.***

The fact that these three viruses can be acquired by the mosquito for transmission to infect humans is an indication that Universes are moving freely and perhaps interacting with each other. Thereby, the arguments presented here are consistent with the concept of ninth dimension. This mosquito (*Aedes sp.*) represents a plane in which the viruses can interact with each other and with the humans. A human infection represents the fact that there is an interaction among the multiverses, whence the consequences are the observable symptoms. Several scientific articles have clearly documented infections with any one of these viruses or any of two or all three of the viruses in humans.

What is the significance of presenting the arguments in this manner? When we start examining the virus-vector-host interactions with this approach, the present author sincerely believes that it becomes easier to apply Quantum Physics, if not the concepts therein. But for the present, eliminating the mosquito (Universe) will stop all human viral infections (protozoan as well) transmitted by the Mosquito Universe. This is what humanity has been trying to do since time immemorial without any success. Development of insecticides like Dichlorodiphenyltrichloroethane (DDT) and exerting biological control through programmed release of sterile male mosquitoes did not meet with much success. On the contrary, the mosquito (Universe) kept evolving resistance towards the chemicals used. Note that Protozoan parasites like *Plasmodium sp.*, which causes malaria is transmitted by *Anopheles sp.*, of mosquitoes. [Both *Aedes sp.*, and *Anopheles sp.*, although different, are a nuisance to humans by their habit of feeding on human blood by biting. Thus, from a human perspective, they represent only one universe. On the contrary, ChikV, DenV and ZikV cause different symptoms and hence represent three

different universes from a human perspective. From a mosquito perspective, these three viruses represent only one universe].

What could be the reasons for the failure of humanity to eliminate the mosquito (Universe)? The reasons are many and varied. A few (but not all) are listed here:

(1) Mosquitoes also contain DNA, RNA and Proteins of their own. Evolution is an inherent property of these biomolecules (Poduri 2016). Thereby they confer a protective advantage to the mosquito as its Universe is much smaller and less complex than the human universe.

(2) Mosquito is an arthropod which means it has an exoskeleton contrary to the human's endoskeleton. Note that from this perspective (of skeleton), mosquito's Universe is inverse of the humans. So, it appears that mosquitoes are naturally protected against the human (if not external) interventions.

(3) Expecting to eliminate the mosquito (Universe) is amateurish for the simple reason as it will create a 'void' in the Universe of multiverses. 'Void' is equated with space for the present.

From a Physics point of view, Void, in the Universe, is never empty (Hawking and Mlodinow 2010; Poduri 2017). Even in biological systems, when a cell dies, the 'void' thus created is immediately occupied by the remaining cells either by moving into the 'void' or filling the 'void' with new cells or filling the 'void' with body fluids. Based on these arguments, if humans try to eliminate the Universe of Mosquitoes from the Universe of multiverses, some other Universe will occupy the 'void' created by the absence of Mosquito Universe. What this new Universe will do to the Universe of humans is beyond the realm of anybody's imagination.

Therefore, a solution, in part to this situation, would be in answering few fundamental questions in the field of virology: ***Why would an otherwise inanimate***

particle like 'virus' want to invade other Universes, acquire a life of its own and increase in numbers? Why cannot an inanimate 'Virus' remain like other inanimate objects like rocks, stones, and the similar objects, without trying to invade other Universes (of vectors and hosts) just to increase their numbers? These questions arise because viruses are just particles. On their own viruses lack the capability to synthesize, assemble and replicate like any other living Universes which have this capability. At this stage, we consider the viruses to be non-living particles, thereby instantaneously collapsing the nine dimensions to the zero dimension.

Separately and outside the Universe of its hosts, a virus is just a concoction of nucleotides and amino acids. In some circumstances, as in enveloped viruses, we have the additional components of carbohydrates coming into picture. People of religion would immediately want to say that everything in this vast creation has an '*atma*' (soul), of its own, and hence such particles would want to acquire a life of their own. A partial scientific answer to these complex fundamental questions in virology is attempted at in the next section.

The Crescendo.

Inanimate particles, referred to as Fomites, containing the virus contagion, are part of the air (atmosphere) or water (hydrosphere) we live in. Air, Water, and their constituents by default exhibit the now well-established Brownian motions (representing chaos for the present) (Perrin 1926). Viruses being part of the air and water, to a certain extent, also by default become part of these Brownian movements. During these Brownian motions, viruses (Universe) encounter the Mosquito (Universe) purely by chance. Some types of Mosquitoes (Universe) although to a certain extent capable of independent existence, are dependent on the vertebrate (Universe) blood for their multiplication and the subsequent increase in their numbers. Thus, while Mosquito

(Universe) represents the interacting plane wherein the Universes of Viruses and humans meet, this interaction of Virus-laden-Mosquito-Human Multiverses is not by chance. It is determined, as per the current scientific knowledge, on 'time'. Female mosquitoes are reported widely to seek blood of vertebrates mostly during reproduction 'time', if not during egg laying, to increase their protein content drastically (McBride *et al.*, 2014). Only the act of acquisition of viruses (ChikV, DenV, ZikV) by mosquitoes is 'pure chance'. The rest is determined by the requirements of the Mosquito Universe. Humans have no requirement whatsoever regarding Mosquitoes.

Thus, the Mosquito Universe (at least) commands the activities of humans towards itself to a certain extent. This argument arises as the interaction of mosquito with humans is a nuisance to humans. Significance of this situation is not yet clear, in the sense what advantage is conferred to the mosquito (Universe) by directing actions of another Universe (humans in the present case) towards itself? Can't they survive on animal blood alone for their reproductive requirements? Animals don't kill the mosquito when the later bites them. They just try to drive the mosquitoes with their tails. On the contrary, humans try to kill the mosquitoes when bitten. Note that *Aedes sp.*, of mosquitoes that feed exclusively on animal blood coexist with mosquitoes which feed on human blood in Kenya (McBride *et al.*, 2014).

Perhaps, the actions of mosquitoes towards humans might be one driving force for evolution so that their (Mosquito) Universe is better adapted to the changes in other Universes (external forces). A simple simile here would be like we upgrade the software in our mobiles/computers on a regular basis. But when there is an overall change in the technology (like the service provider upgrading from 4G technology to 5G technology, which represents an external factor), we end up changing either our mobile handset or computer altogether, and in the process inflict damage to ourselves (empty purses to

purchase a new equipment). Also, maybe the animal (universe) numbers are dwindling in comparison human universes (which is increasing and consequently expanding). Put simply, instant availability of human blood makes the mosquito alter its diet preferences. Simple '*upgrading with changing times*' or '*evolving*' or '*an intelligent strategy*', the choice of terminology here is left to the reader.

The above situation is not the same with air-borne viruses like the recent Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2) responsible for the COVID-19 pandemic. Here owing to the Brownian movements, human (Universe) ends up spreading, if not acquiring, the pathogen purely by chance. So do Bats perhaps. [Any other vector transmitting the SARS-CoV-2 virus, like mosquitoes, fleas, *etc.*, will alter the dynamics of this argument, a limiting factor of this study]. Such epidemics which involve 'chance encounters' will end up eliminating large numbers of the population during their first episode of interaction (Mims 1991; 1995). Subsequently, humans end up taking precautions to prevent a recurrence of similar episodes by the same (pathogen) Universe. The repeat episodes of earlier pandemics involving more complex pathogens shown in Table 1, like the plague (Sl. No. 5, 7, 11, 12, 13 & 15) or Smallpox/Measles (Sl. No. 4, 6, 8) or Cocoliztli (meaning Pest in Nahuatl, the Aztec language) (Acuna-Soto *et al.*, 2002) (Sl. No. 9, 10) is not by chance but rather due to limited ability of the then humans to control other Universes (be it the pathogen *per se*, or the vector, *i.e.*, the flea infested rats and animals). It may be noted that the measles and Cocoliztli epidemics of the 1500s has resulted in the complete collapse of Aztec Civilization (Acuna-Soto *et al.*, 2002; Callaway 2017). Since CE 1900s when the human community is slightly more technologically advanced, the offending organisms kept changing, although the pathogens are viruses but different (Influenza, HIV and presently SARS-CoV-2).

As far as multiple episodes of Influenza since CE 1880 are concerned, they represent different strains of Influenza (H1N1/H2N2/H3N2), thereby in practice representing different pathogens. The same pathogen appearing in different forms/strains, as is seen with Influenza in the past and presently with SARS-CoV-2 [variants of concern (VoC) α , β , γ , δ , $\omicron$] represent '*shape-shifting*' of the offending pathogen, an attribute of the entities in the 6th dimension (see Table 2). If we were to apply the concepts of Physics, all these variants probably had the same beginning or evolved at the same time. The acquisition of the pathogen by humans had to wait for the chance encounters to occur. Only this argument at present best explains the simultaneous appearance of VoC (α , β , γ , δ , $\omicron$), in AD 2020, at different geographic locations simultaneously (see cov-lineages.org for details on first reports of VoCs and their geographic locations). Of course, international travel by humans is also a contributing factor. Note that both Influenza and SARS-CoV-2 exist in nature either as fomites or as aerosols. Acquisition of SARS-CoV-2 through improperly cooked meat is just an extension of the argument meaning the diseased animals also acquired the pathogen purely by chance, assuming no other vector-based mode of transmission occurs. Sincere Biologists/Virologists may have a different opinion. The Quasispecies and multiple strains observed with human immunodeficiency virus (HIV) (pandemic started in 1981) and hepatitis C virus (HCV) are also examples of '*shape-shifting*' of the offending pathogens as per the current arguments.

The other equally devastating repeat episodes in Table 1 were the Typhus epidemics (Sl. No. 2 & 18). But then the exact details of the Plague of Athens (429 – 426 BCE) are a bit obscure with at least six different pathogens being believed to be involved in that episode (Cunha 2004). The Russian Typhus Epidemic (AD 1918 – 1922) is more modern and represents an altogether different scenario in the sense that the Rickettsia

infection (*Rickettsia prowazekii*) is fatal to both the vector, bed/cloth louse (*Pediculus humanus*) and humans (Patterson 1993). A discussion in this direction wherein both the vector and host are damaged by the pathogen is presently beyond the scope of this article. Needless-to-say, the pathogen causing typhus (*Rickettsia prowazekii*) was discovered and described only in 1916 (Patterson 1993).

Finally, there comes a time when all the three pathogens (ChikV, DenV and ZikV) will flare-up simultaneously in the human population. Such a scenario is determined by the following factors:

(1) Whether the three viruses (Universes) confer cross-protection and thereby exert control on each other. An example in context here is the absence of Yellow Fever Virus (YFV) (a Universe in itself) in geographic locations wherein Dengue Virus (DenV) (another Universe) infections were seen, particularly in Asian countries (Rogers *et al.*, 2006; Monath 2007). (This argument holds true because there is no proof, at present, to show that SARS-CoV-2 is an artificial virus).

(2) Presence of ideal conditions — With increasing urbanizations in the recent times all over the world, pollution will be one additional contributing factor. Increasing pollution actually represents ‘*tampering with the rules of nature or the thumb rules*’ (either consciously or sub-consciously) by the humans. And in the process tinker with the powers of the Universes in the 10th dimension, *i.e.*, the God(s) [or SupInt(s)].

(3) And most importantly - Time, *i.e.*, when this kind of a flare-up will happen is something perhaps no one can predict at present. On the contrary, for the reason mentioned in the first point above, it might not even flare up.

Concluding Remarks.

The (perhaps) aggressive and primitive arguments presented here make for a case for bringing in the concepts of (Meta)physics into Viral Epidemiology, at least

in-terms of multiverses (having their own independent existence) and dimensions. More importantly, the scientific community should start thinking in terms of applying theology and physics to both microscopic and macroscopic entities simultaneously. This is indeed a huge task. Such an effort will lead to an increased understanding of at least viral epidemics and pandemics, in general. Despite this, unfortunately, the scientific community is still in its infancy regarding understanding the behaviors of multiverses and dimensions. More importantly, we need to acquire the capability to somehow perceive the higher dimensions, if not naturally at least artificially. Here again humans are limited (or are they ‘psychologically’ bound?) by the mutually exclusive Heisenberg’s Uncertainty Principle (Hilgevoord and Uffink 2016). While the purists are still debating about the Heisenberg’s Uncertainty Principle, several technologies at present permit simultaneous monitoring of multiple pathogens thereby, partially, empowering the humans at least to monitor other Universes. These include technologies that involve using quantum dots, biosensors, and similar technologies.

Given the observation that the viruses are ‘*alive*’ inside a host body and ‘*inanimate*’ (read as dead) outside the host body, it is tempting to apply the ‘thought-experiment’ of Schrodinger’s Cat (Mann 2020). The readers must note that one conclusion from the experiment is that the event (whether the cat is dead or alive) occurs only if we look. But then the Cat should always be ‘*dead*’ in a blind person’s world. And even when we are unable to see or perceive the higher dimensions, they exist just as God (or SupInt). Roger that!

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List of Abbreviations used in the text:

α — Alpha; β — Beta; **BCE** — Before Common Era; **CE** — Common Era; **ChikV** — Chikungunya Virus; δ — Delta; **DDT** — Dichlorodiphenyltrichloroethane; **DenV** — Dengue Virus; γ — Gamma; **HCV** — Hepatitis C Virus; **HIV** — Human Immunodeficiency Virus; **HumInt** — Human Intelligence; **LHC** — Large Hadron Collider; **MRI** — Magnetic Resonance Imaging; **NMR** — Nuclear Magnetic Resonance; $\omicron$ — Omicron; **SARS-CoV-2** — Severe Acute Respiratory Syndrome Corona Virus 2; **Sl. N^o.** — Serial Number; *sp.* — Species; **SupInt** — Superior Intelligence; **VoC** — Variant of Concern; **ZikV** — Zika Virus. Other abbreviations carry their usual significance.

List of Tables:

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Table 1. Table showing a list of human epidemics and pandemics.

Sl. N ^o .	Epidemic/Pandemic – Disease	Year(s) active	Geographic Location
1	Plague of Megiddo – Recorded as being consumed by death, plague, and dust	1350 BCE.	Megiddo, Israel
2	Plague of Athens - Unknown, possibly typhus, typhoid fever, or viral haemorrhagic fever	429–426 BCE.	Greece, Libya, Egypt, Ethiopia
3	Graeco-Roman epidemic - Unknown, possibly influenza	412 BCE	Greece/Roman Empire
4	Antonine Plague -Smallpox or measles (•)	CE 165 – 90	Roman Empire
5	Plague of Justinian - Bubonic plague	CE 541 – 49	Europe and West Asia
6	Japanese smallpox epidemic – Smallpox (•)	CE 735 – 37	Japan
7	Black Death - Bubonic plague	CE 1346 – 53	Europe, Asia, and North Africa
8	Mexico smallpox epidemic – Smallpox (•)	CE 1519 – 20	Mexico
9	Cocoliztli epidemic of (••)	CE 1545 – 48	Mexico
10	Cocoliztli epidemic of 1576 – Cocoliztli (••)	CE 1576 – 80	Mexico
11	Italian plague - Bubonic plague	CE 1629 – 31	Italy
12	Naples Plague – Plague	CE 1656 – 58	Southern Italy
13	Persian Plague - Bubonic plague	CE 1772 – 73	Persia
14	Cholera pandemic – Cholera	CE 1846 – 60	Worldwide
15	Third plague pandemic - Bubonic plague	CE 1855 – 60	Worldwide
16	Flu pandemic – Influenza (•)	CE 1889 – 90	Worldwide
17	Spanish flu - Influenza A/H1N1 (•)	CE 1918 – 20	Worldwide
18	Russia typhus epidemic – Typhus	CE 1918 – 22	Russia
19	Influenza pandemic - Influenza A/H2N2 (•)	CE 1957 – 58	Worldwide
20	Hong Kong flu - Influenza A/H3N2 (•)	CE 1968 – 69	Worldwide
21	HIV/AIDS global epidemic - HIV/AIDS (•)	CE 1981 – present	Worldwide
22	COVID-19 pandemic – SARS-CoV-2 (•)	CE 2019 – present	Worldwide

Notes: On-going Epidemics/Pandemics in bold. Starting CE 100 (from Sl. N^o. 4), only those epidemics/pandemics which consumed at least 1 million people were included in this table. (•) indicates viral pathogen; (••) approximately six different pathogens are believed to be involved. Other abbreviations and symbols carry their usual significance.

Source: This table has been collated from the information presented in ‘List of epidemics – Wikipedia’ (Anonymous 2021).

Table 2. Cumulative list of various dimensions identified and accepted by the present-day Physicists.

Sl. N ^o .	Dimension	Dimension Name	Symbol	Remarks	Example(s)
1	Zero	Point	•	No length, No width, No breadth, No weight	A Point/particle/photon
2	First	Length	x	Can be controlled by humans	A Line
3	Second	Width	y		A Square
4	Third	Height	z		A Cube or Sphere
5	Fourth	(Space) Time	t	• Beyond human control	Date/Hour/Minute
6	Fifth	Kaluza–Klein	w_1	• Combination of gravitational and electromagnetism	Entities living in 5 dimensions may move in time. Time travels maybe possible.
7	Sixth	Calabi-Yau space	w_2	Parallel Multi-Universes and Shape-shifting possible(?), but all multi-universes have the same beginning – The Big Bang.	
8	Seventh	String Theories (independent theories)	w_3	Infinite number of Universes with all the universes having different start points	
9	Eighth		w_4	Infinite number of universes that stretch to infinity	
10	Nineth		w_5	Multiple civilization/universes exist at the same time and at the same place without perceiving each other.	
11	Tenth		w_6	Entities living in this dimension have infinite control on space-time and have infinite powers exerting control on infinite universes, akin to God or Hawking’s SupInt	
12	Eleventh	Master (M) Theory	w_7	Everything imaginable and unimaginable is possible	

Perceivable by humans

Higher Dimensional Space. All these theories are commonly known as (independent) String Theories.
Beyond human control and perception.

Notes:

- i. Table collated from the information presented at various references and sites (Minkowski 1909; Hewett and Spiropulu 2002; Argentum 2008; Vincent 2009; Hawking and Mlodinow 2010; Melbéus and Ohlsson 2012; Williams 2014; Pershing 2015; Vashishtha 2020).
 - ii. Present day technology does not permit measurement of dimensions from Fifth to Eleventh, as humans many-a-time cannot perceive them. These dimensions are believed to exist at a sub-atomic level.
 - iii. Each dimension, by default, includes the previous dimension(s). For example, the 11th dimension has one time dimension and ten other spatial coordinates.
 - iv. SupInt = abbreviation for Superior Intelligence [Intelligence that is superior to human intelligence (HumInt)].
 - v. Current scientific belief is that the 11th dimension might be working at sizes around 10^{-33} cm. Viral particles like the Zika virus is 45×10^{-7} cm in size (Marais *et al.*, 2018; Ang 2020). Despite the size differences, it makes sense to bring the concepts of quantum physics into virology.
 - vi. All abbreviations and symbols carry their usual significance.
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