

Speed, human reality, and the ribovirocell of human existence in the COVID19 and post-COVID19 space-time.

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Abstract

In this follow up paper, the ribovirocell concept from the first part of the study is linked to the ontological realm of human reality before, during and in the aftermath of COVID19. During this fluid space-time, human reality is multi-faceted and often very complicated. The authors present a division of the reality into fundamental reality and situational reality. Fundamental reality is based on the (physical) laws of nature such as the speed of light as a fundamental physical constant. This reality spans beyond the course of time as perceived by humans, which is beyond the duration of a single or multiple human lifespans and beyond the duration of the COVID19 pandemic. Next to fundamental reality and overlapping with it, exists the situational reality, which humans experience directly themselves during their lifetime(s). Actions of humanity and of individual human beings contribute to the shaping of the situational reality. Examples of the situational reality can be e.g. experiencing atrocities that humanity has committed, humanity's actions to prevent such atrocities in the future, as well as human progress in eliminating poverty/inequality in the world. At least, some aspects of human lives take place at the boundary between the fundamental and situational reality. The COVID19 pandemic is linked to the concepts and the boundary between the fundamental and situational reality that human's experiences, such as speed of pandemic impact and shifting nature of reality. The ribovirocell state of one's self is linked to the way to apply the speed as a threshold concept for resilience in the coronavirus space-time and the post-COVID19 world.

Keywords: threshold concepts; ontology; causality; resilience.

Introduction

In the previous paper by the author team (Iheanetu et al., 2023), the simile between the ribovirocell stage of the SARS-CoV-2 virus lifecycle and the understanding of the human self was presented in the COVID19 space-time (based on the authors' interpretation of Erden, 2012). To start the discussion and analysis in this paper, the ribovirocell state of one's self is summarised first, based on the virocell theory or depiction of a virus lifecycle (Forterre, 2013). A virus has two stages in its lifecycle, namely virion and the virocell. Virion is a passive stage where the virus behaves as a non-living entity. Once inside the host's cell the virion transforms the cellular and sub-cellular machinery of the host's cell to facilitate its own replication or new virion production. The host's cell identity as an individual living organism, as (part of) an independent organism is altered, and it enters one of two states of existence. The first one can be a virocell, where the virus takes over control of the cellular machinery of the host cell and suppresses the normal functioning of this ribocell (a state of host's cell where its biochemical processes and overall functioning is directed towards production of host cell proteins; Forterre, 2013). The second post-infection state of existence of the host cell is the ribovirocell one, where the host cell can maintain the ability to divide and continue to function in a semi-normal fashion in spite of the virus presence inside it (Forterre, 2013). Fight/existence as the ribovirocell, or as the virocell, will depend on the 'fight' between the metapopulation of the virus and the defence mechanism of the host cell. From a space-time perspective, the host's cell can experience duality of existence similar to that of the COVID19 duality of one's self. Before the COVID19 pandemic, most of the humans on this planet were masters of our space-time, ourselves could travel freely in physical sense and in cyberspace...we could spread the presence of our self across the world practically at will, at least to some extent our 'Community of I' was not limited with space-time constraints (Iheanetu et al., 2023). Our selves were in a state similar to the ribocell. After the onset of the pandemic, each human under manifestations of COVID19 duality has either entered a state similar to that of a virocell or that of a ribovirocell.

The ribovirocell state of self is necessary to maintain the forward and positive fluidity of one's self, it is important for the maintenance of the existence of the continuum of *Homo sapiens* in the post-COVID19 space-time. The state of the ribovirocell is required to allow for the continuous education of humanity in the aftermath of the coronavirus pandemic. COVID19 is a disaster. It is an infectious disease which is likely to have jumped from the original animal hosts to humans, as described recently in the paper on the circulation model of the pandemic's origin (Frutos et al., 2021). The coronavirus has caused disruptions to the normal functioning of the existence on the level of a single human being and on the level of humanity as a species. Todman et al. (2016) defined

two important terms that are important to mention here, namely disturbance and perturbation. The exact definitions are as follows:

...“disturbance as a sudden shock imposed on the system by a change in conditions external to the system (e.g. a sudden increase in ambient temperature) and perturbation as the change in the level of function of a system due to such a disturbance”.

The onset of the COVID19 pandemic was thus an outside change in the environmental conditions that each human is exposed to and that were imposed on them by nature. At the same time, one's self and the continuum of *Homo sapiens* needed to change the way that they function on a daily basis, e.g. in response to cordone sanitaires (Bagrath et al., 2020). Even some of the authors have to report here that the understanding of the COVID19 origin has changed since 2020, e.g. since the paper by Bagrath et al. (2020) who summarised literature indicating a different origin of the coronavirus and the significance of an intermediate host during the SARS-CoV-2 evolution. This is contrary to the circulation model since then proposed by Frutos et al. (2021). Such changes in human understanding are a symptom of the changes to reality of everyday life of one's self under the conditions of the COVID19 space-time. It is fluid and highly altered compared to the pre-COVID19 space-time. The disruption, caused by the pandemic, has led to the perturbations in the functioning of everyday life of a single human and the continuum of *Homo sapiens*.

The fluidity of one's self, the need for continuous education of one's 'Community of I' (Iheanetu et al., 2023) and the continuous and possible future disruptions are features which humans are not going to escape in the post-COVID19 space-time. In this context, the maintenance of the ribovirocell state of one's self, one's 'Community of I' is a manifestation of resilience, in the authors' opinion, a perturbation to maintain a positive forward fluidity of one's self in the post-COVID19 space-time. The relevant definition of resilience is the one of Todman et al. (2016), who states that

...“resilience should be viewed as a property of the dynamics of the response, rather than a property of the system itself”.

Thus the ribovirocell concept of one's self could be equated as a parallel case of resilience. This is based on the reasoning that the ribovirocell state of one's self reflects the fluidity of the COVID19 space-time. It stands for a dynamic expression, a dynamic representation, a mechanism of the need for continuous education and positive forward fluidity of the single human being and the continuum of *Homo sapiens* towards survival and prosperity in the post-COVID19 space-time of human existence. Such a dynamic and fluid nature is necessary for the survival of humanity. It is part of humanity's survival resilience. Thus the ribovirocell state is a continuously maintained or aimed to be maintained by the 'Community of I' of each member of the species of *Homo sapiens*. To sum up this reasoning, there is a simile that can be presented

with resilience on one side and with the ribovirocell state of one's self on the other side. Based on this, elements or aspects of the resilience can in turn be extended to the ribovirocell state of the 'Community of I' of each member of *Homo sapiens* in the COVID19 space-time and the post-coronavirus era.

Todman et al. (2016) further define four elements of resilience and the first element is the degree of return, which can be defined as

...“a measure of the extent to which the observed function comes back to a prescribed reference level”.

Reference level would be the return to pre-COVID19 nature of human reality and space-time. This would mean that the ribovirocell state of one's 'Community of I' is maintained on a continuous basis, and it reaches the equivalent state to that of pre-COVID19 ribocell. However, it is not possible to return to the pre-coronavirus levels of normalcy. Rather, it is likely that functioning of human society, the continuum of *Homo sapiens*, could be achieved to a level of normalcy just below, or just outside, the pre-COVID19 levels/intervals would be more achievable. The circulation model of the coronavirus origin (Frutos et al., 2021) should be used to adopt humanity's existence in an environment with increased risk from viral infections (Cowan et al., 2021).

The second element of resilience by Todman et al. (2016) is the return time, which can be defined

...“as the time taken for the system to return to an equilibrium level of function, even if the new equilibrium level is different and as such, even if an ecological resilience threshold is passed. This characteristic therefore quantifies the length of the transient response period of the observed function”.

The transient period could be seen as the length of time it will take one's 'Community of I' to reach the state of ribovirocell and a new normalcy post-level, as close to that of the pre-COVID19 normalcy as possible. This will be achieved through maintaining a positive forward fluidity of one's self and the drive of the humanity to educate one own self and themselves to exist in the COVID19 space-time and the post-pandemic space-time. The learning and positive forward fluidity of one's self for all individual human beings, as well as the inter-linked perturbations to the functioning of one's 'Community of I', will likely indicate a forward-leaning and positive essence of personal existence in the unpredictable COVID19 space-time and its aftermath. This will be the ecological resilience of one's self and of the continuum of humanity.

The third element of resilience, as defined by Todman et al. (2016), is the rate of return which is defined as

...“in effect, a combined measure of the return time and the magnitude of the perturbation of the function during the transient response”.

If resilience is a dynamic process, if the ribovirocell is a state of fluidity of self, a constantly fluid state of the 'Community of I', and if the magnitude of deviation from the pre-COVID19 normalcy during the coronavirus space-time, then the measure of the rate of return as an elements of one's resilience, as well as of the resilience of the 'Community of I', will be present in the ribovirocell state as the rate at which this state can be established after the onset of the COVID19 disruptions. At the same time, the rate of return will be the rate at which minor disruptions are converted into positive perturbations towards maintenance of the ribovirocell state of one's "Community of I" in the COVID19 and post-COVID19 space-time.

The fourth and final element of resilience which is resistance, according to Todman et al. (2016), could be interpreted here as the shifts from the ribovirocell, or away from the positive forward fluidity of one's self in the coronavirus pandemic space-time. Strength of one's 'Community of I' and the collective resilience of *Homo sapiens* in the COVID19 space-time and beyond, will depend on the individual and collective ability to maintain the state of ribovirocell and to quickly re-establish it after a disturbance. This will be inherently linked to the speed of the maintenance of the positive forward fluidity at the individual ontological level and by extension at the level of all humanity. In the authors' opinion, this is fundamentally linked to the essence of human reality and the speed with which human can adopt positive perturbations in their 'Community of I' in response to the COVID19 disturbances and the post-coronavirus disturbances. The principle of simile is applied, in this context, just like in part one of the study. The resilience definition of Todman et al. (2016) was originally suggested and devised as a model for the response of the soil microbial communities to disruptions in their ecosystem. Authors use it here, based on the parameters of the Todman et al. (2016) and the possibility to use it as a descriptive paradigm for the resilience of one's 'Community of I' in the ribovirocell state. The simile is based on the similar complexity of both the ribovirocell state of the 'Community of I' and the complexity of the soil ecosystems. The speed and the size of the COVID19 disturbance and the nature of human reality are analysed below to make this case and to unpack the related nature of resilience in the continuum of *Homo sapiens*.

Methodology

Based on the argument so far in this article and the reasoning in the first part of this study, it is clear that the authors posit that the maintenance of one's self in the state of ribovirocell is necessary for the positive forward fluidity of one's 'Community of I' in the COVID19 space-time and in the post-coronavirus world. To further the argument here, the authors make the argument in the remainder of this article, that the maintenance of this state of ribovirocell of one's self will be a function of two major factors, two

states of reality. The first one is the fundamental reality, which is governed by the physical and fundamental laws of nature. The second reality is the situational reality, which is the reality experienced by individual humans on a daily basis and during their lifetime...before, during and after the onset of the COVID19 pandemic. The fundamental reality governs the environment and long-term nature of the ontological realm of human existence. However, it has rarely been directly experienced by human in their daily life. Fundamental reality of nature and by extension of the human existence cannot not easily or directly be influenced or perceived to be influenced by one's 'Community of I' or the continuum of *Homo sapiens*. On the other hand, situational reality is experienced by humans, as visual and sensory perceptions, as memories and mental constructs that help us understand situational reality and exist in the daily reality of our existence. The situational reality is perceived, experienced, and reacted to by individual members of *Homo sapiens*, as the immediate manifestation of the space-time of our everyday existence. At the same time, humans do perceive and practically even have some control over the parameters of their situational reality. Are such manifestations applicable to the COVID19 space-time?

The argument is made below by the authors that the fundamental and situational reality constitutes parallel cases from the viewpoint of a single human being and their 'Community of I'. Only some manifestations of the fundamental reality might be perceived/experienced by a single 'Community of I' on a daily basis, when they bleed into the situational reality of one's own existence. The parallel cases of the fundamental and situational reality are independent in theory, but they both are starting to manifest with direct impact on the lives of individual members of *Homo sapiens*, they impact the 'Community of I' for most of humanity and such a community can perceive it. This line of reasoning is based on the fact that the COVID19 pandemic is taking place during the Age of Anthropocene (Crutzen and Stoermer, 2000). Therefore, the pandemic could be seen, as an outcome of the fact that humanity has reached a point where its agency is having a direct impact on the global ecosystem. This can be demonstrated by the circulation model of the COVID19 pandemic origin was proposed by Frutos et al. (2021), increased mobility of humanity across the globe and the increased likelihood of contact with the SARS-CoV-2 viral predecessors (Iheanetu et al., 2023). The nature of the space-time and the human freedom to move around, before the onset of the COVID19 pandemic, has resulted in the acceleration in the changes that one's 'Community of I' needs to adjust to.

From the viewpoint of a single human being, from the collective perspective of one 'Community of I', fundamental and situational reality impact them and the continuum of *Homo sapiens*. Therefore the current second part of the study is aimed at presenting the fundamental reality, and human understanding of it, as a parallel case to the situational reality. The impact of the COVID19 pandemic is then presented as the

boundary condition, as an overlap between the situational and fundamental reality. This overlap or boundary condition is linked to the speed of the changes and the size of the pandemic impacts on the people's 'Community of I' and on all humanity. The continuum of *Homo sapiens* requires that human understanding of speed and size of pandemic impact be understood as threshold concepts of the post-COVID19 space-time of the existence of one's 'Community of I'. This is discussed as a way to educate humanity and to maintain a positive forward fluidity of one's self, to maintain one's self in the state of the ribovirocell.

Results and Discussion

Fundamental and situational human reality

Humanity's existence is based on the interaction between humans and their environment, and between humans amongst each other. We as humans probe the space-time in which we exist and continuously try to improve the human condition. As a result of this human drive, the reality around us and within humanity has been changing globally and human society is playing catch up. Deduction and induction of 19th and 20th century, the methodical testing and learning about the nature of space-time of each human generation have been integral part of each human life. Scientific achievements in the last several centuries have led to substantially improved human understanding of the reality of *Homo sapiens*. Examples can be found in the field of physics and include the model of leptons which was proposed originally by Weinberg (1967). That paper contributed to the development/codification of the Standard Model, as a model to fundamentally understand human reality and the world of particle/quantum physics. Since 1967, the Standard model has been tweaked along the way to address some philosophical/mathematical inconsistencies and necessary extensions to accommodate new discoveries (MacKinnon, 2008). One of these 'adjustments' was the introduction of the colour quantum number by Matveev and Tavkhelidze (2005). There were also changes caused by the "reliance on the flavor quantum number as the basis for exchange forces led to inconsistencies with the Pauli's exclusion principle" (Margenau, 1944; MacKinnon, 2008). Overall, the Standard model had stood the test of time, as one of the most fundamental models describing the essence or basis of the reality humans exist in (Siegel, 2021). Some other scientific theories have been proposed in the 19th century, but recently have been debunked. An example could be the proposed translation-rotation coupling in the movement of an isotropic helicoid through liquids, as proposed by Lord Kelvin's in 19th century (Collins, et al., 2020). This was recently disproved at low Reynold's number in silicon oil for a 3D printed version of the object (Collins, et al., 2020). Thus humanity has made significant progress towards understanding the fundamental aspects of the ontological realm in which it has been existing as a species.

The above snapshot of the human scientific discoveries was driven by use of instrumental means and experimentation, testing and acceptance or disproof of hypotheses. Humanity has, however, gone through experiences and events which had stained the human history and the fabric of human societies. In the 20th century, the use of chemical weapons during World War I led to the limitation and later ban being put on the use of these armaments and biological agents (UNODA, undated). The horrors of World War II and the Holocaust led to the prosecution of the Nazi war criminals, the Nuremberg trials, and the Universal Declaration of Human Rights (UN, 1948-2021). Although not perfect, such results of visual and sensual perception by humans in the aftermath of the terrible crimes by humanity against itself, the subsequent human actions to prevent such crimes from happening again, demonstrate that humanity's been learning. That learning has contributed to and resulted from the ongoing shifts in humanity's understanding of the nature of reality. The overall standards of humanity's conduct inside the continuum of *Homo sapiens* were based on the overall suffering and meaning existence of humanity, on humanity learning from those perceptions and often preventing such horrors in the future. Personal stories of human beings also provided important data input here and qualitative and quantitative proof of the human learning in the ontological realm of its existence. It can further be documented on the case of poverty alleviation in the last several decades. Human development has been accelerated since the last decade of the 20th century, as 1.2 billion people have been lifted out of extreme poverty (World Vision, 2021).

The above-mentioned human endeavours are the outcomes of the visual signals, other sensory signals that humans process, are amended by quantitative signals of reality, e.g. information from mass media and scientific sources. Inputs from our senses and our investigation of the ontological realm of humanity, our perceptions, related interpretations of it are internalised and lead to the development of quantitative understanding of the space-time in which humans exist. The treaties and the results and responses by humans to some horrors in the past and space-time that humanity occupies, could be seen as a reductionist in nature, i.e. writing down general and unifying rules for the management of complex international phenomena. One could argue that, for example the Geneva protocol was the bare minimum the humanity could agree on at the time. That treaty outcome of the human interpretation of a complex phenomenon and the nature of human reality was not perfect and needed amending in the later years. However, it also set human on a trajectory to prevent further disasters in human space-time (e.g. the Biological Weapon Convention of 1972 and its further development; Sims, 2016).

Glimpse of human endeavour discussed so far and the continuous learning by humanity indicate that the nature of human understanding of the reality is continuously changing, in both the perceived space in which humans live and in the

very fundamental nature of the Earth and the environment. In the 19th and 20th century, infectious diseases were still important in the public health, but were decreasing in significance (Shaw-Taylor, 2020). Novel tools have started being utilised to gain the understanding about the role of microorganisms in infectious diseases (Evans, 1976), discovery of antimicrobial agents such as penicillin (ACS, 2021), and the Henle-Koch postulates, as well as their further updates, about the causative agents of the infectious diseases (Evans, 1976). Microscopy, cultivation techniques and later immunological/genetics/molecular biology techniques contributed to the human wisdom about infectious diseases. Knowledge about transmission and sources of infectious diseases and application of this knowledge in the public health has led to substantial drop in the pandemic and epidemic frequency (McKeown, 2009). Vaccinations and monitoring tools have decreased the impact of the infectious diseases into the numbers of *Homo sapiens*. The learning process of humanity can be stated to be composed of gnawing away and improving understanding of the fundamental nature of human reality, such as the fundamental physical laws and discoveries in biomedical sciences. Both biomedical science and physics study a large number of processes that might be dynamic and fluid across space-time, but their dynamic and fluidity remain ontological constants for a long period of time, i.e. their essence doesn't change over the course of human life/lives. At the same time, members of *Homo sapiens* act on their understanding of the 'situational aspects' of human reality. These 'situational aspects' are the results of human action in a short span of the lives of humanity, e.g. the atrocities that humanity has committed, admitted to itself and acted to prevent them in the near future. So the authors posit here that human reality can be fundamental and/or situational.

The fundamental reality is based on the physical laws, i.e. it transcends a single human lifespan or many lifespans. To put it another way, actions of individual humans are generally irrelevant to the nature and validity of this reality. This reality governs the most general dimensions and boundaries of the space-time in which humans exist as a species of *Homo sapiens*, i.e. millennia and eons of human development and evolution. Parameters of the fundamental reality are determined based on the most fundamental aspects of nature, i.e. the fundamental physical constants, such as the speed of light and the gravity acceleration constant. Through scientific inquiry and collection of data, humans slowly and painstakingly uncover minute fragments of the fundamental reality. One could say that the fundamental reality is discovered based on the nature of constructive empiricism (Marbaniang, 2009). In other words, humans use ever-improving scientific methods and testing of hypotheses to discover some aspects or fragments of the fundamental reality but not all of it. Through a continuous collection of data, its analysis and interpretation, a partial picture of the fundamental reality is put together by humanity.

The situational reality, on the other hand, is the one that each human experiences directly, or that large number of members of *Homo sapiens* experience throughout their lifetimes. This reality can mostly be experienced, to at least some extent, through visual and sensory perceptions. This reality is composed and generated from the elements that are contained in personal experiences of the individual humans or captured in records of human existence, such as treaties, tools of law and history books. Scientific data and knowledge generated about the fundamental reality do overlap with aspects of situational reality, e.g. personal suffering, and morbidities that individual humans or strata of a society throughout their lifetime from infectious or non-communicable diseases that have been around for a long time. Those can be impacted by the understanding of the nature of the fundamental reality, e.g. the latest biomedical knowledge about the principles of disease causation (Evans, 1976; Barreto, 2005). Disease causation has been becoming ever-more complex and new approaches to study disease causation are needed (Barreto, 2005), along with processes needed to gain more understanding about the natural history of infectious and other diseases. There are long-term aspects of situational reality that are important, as they dictate human discourse, addressing of the most pressing problems of a lifetime/lifespan of an individual or a large number of members of *Homo sapiens*. Fundamental and situational reality overlap in the lifespan of each human, more precisely each human being experiences situational reality and is generally indirectly affected by the fundamental reality of human existence. One could say that a human's life takes place at the interface between the fundamental and situational reality, i.e. human life is then a manifestation of various combinations of the fundamental and situational realities. If a human is a scientist, then their 'Community of I' will be examining the fundamental reality in the scientific fields, such as physics or biomedical sciences. They will have a broader understanding of the fundamental reality, while the majority of the continuum of *Homo sapiens* will be mostly familiar with the situational reality. So the question to ask next is: 'What are the manifestations of the fundamental and situational reality overlapping? Let's consider the answer in the next section.

Science, two realities and the boundary

Anthropocentric view of reality puts the human at the centre of the importance in the world and in all human-related activities. Humans often do not accept something as fact until it has been proven to them through personal experiences and through their own senses. Use of human senses as scientific instruments goes long way back. The logic of visual observations is and still continues to define the basis of much of human knowledge. The visual examination has been amended with measurements made with scientific instruments and the rate of the amendment has accelerated since the onset of the industrial revolution (Crutzen et al., 2000; Steffen and Crutzen, 2007). The combination of human senses and scientific instruments has been aimed at gaining a

more detailed insight and understanding of the human reality and the world reality in general. Let's consider the following example to demonstrate practically that combination. If a human throws a rock into a body of water, then the entry of the rock into the water column will cause the rock to sink to the bottom of the water column. In addition, waves do form and propagate throughout (the surface of) the water body in question, i.e. mechanical waves form and propagate through the liquid medium. If the same rock is thrown into a stream of flowing water and the resulting waves propagate perpendicularly to the direction of the flow of the stream, then the waves will again propagate throughout the liquid, but there will be a distortion in the plume due to the parabolic profile of the velocities in the flowing water front. The waves are visually visible in the water, but speed and parabolic velocity profile can also be measured, if the water flow is laminar (Kolin, 1953). What would happen if light travels through the vacuum of space or through the ambient environment? Will it also propagate and interact with some sort of medium, a liquid analogue?

During the 19th century, the combination of the detection of many phenomena and collection of results of physics experiments was done visually and/or with amendment through scientific equipment. That was the standard approach to answer some of the humanity's questions related to the fundamental reality. One of those fundamental questions was the presence of a medium through which light and electromagnetic radiation could propagate as waves. That medium was hypothesised to exist, and it was called luminiferous ether (Britannica, 2021). If the throwing-of-a-rock-into-the-stream analogy is applied here, and light could be imagined moving through the luminiferous ether in a perpendicular direction to the flow of the luminiferous ether. Based on the essence of the analogy, an equivalent to the distorting plume could be applied and result in the so-called 'ether wind' (Britannica, 2021). This hypothesis was tested in the famous Michelson-Morley experiment, where human senses were augmented with the use of an interferometer (Britannica, 2021). Very simplified interpretation of this experiment could be stated as follows. If the luminiferous ether existed, then the light or electromagnetic radiation would move through the luminiferous ether at different speeds in different directions. That directionality would likely give rise to 'ether wind' and probably also imply that speed of light through the vacuum or luminiferous ether was not constant but would be a function of the physical location in the volume of 'luminiferous ether'. Results of the Michelson-Morley experiment were indicative of a complete lack of existence of luminiferous ether or the 'ether wind' (Britannica, 2021). This led to the designation of the Michelson-Morley experiment, as the most famous failed experiment in the history of science (SSEC, 2021).

Luminiferous ether was debunked as a 'scientific medium' for the propagation of the waves of electromagnetic radiation. Even though a complete failure in terms of the original tested hypothesis, the Michelson-Morley experiment led to several major

developments in 20th century understanding of human reality. Michelson continued to work on the spinning mirrors, interferometers, and related instruments from the Michelson-Morley experiment, culminating in him being awarded the 1907 Nobel Prize for Physics (The Noble Prize, 2021). Further in 1926, Michelson used an eight-sided rotating mirror to measure time; it took a beam of light to travel a distance of about 70 km, in both directions between two mountain tops and returning after bouncing back of a curved mirror (Shivalingaswamy and Rashmi, 2014). This experiment led to an accurate measurement of the speed of light at $2.99797 \times 10^8 \text{ ms}^{-1}$ (c ; Shivalingaswamy and Rashmi, 2014). The c value and the Michelson method are still used as the 'standards of c ' today, and they also form the basis for the SI definition of 1 meter (BIPM.org, undated). The Michelson-Morley experiment and the failure to prove the existence of the 'ether wind' was soon followed by Planck's derivation/publication of an equation to describe the thermal radiation of a perfectly black geometric object (Klein, 1962). Next, there came the most famous two theories of Einstein's, namely the Special and General Theory of Relativity. Finally on this point, the interferometer principles and design were used to construct one of the most expensive scientific instruments of all time, the LIGO project which was used to prove the existence of gravitational waves (LIGO Caltech, undated). Detection of the gravitational waves proved the validity of a prediction by Einstein's theories of relativity.

Speed of light here could be a phenomenon or a constant that was accurately quantified at the boundary between the fundamental and situations reality. The observations and meticulous work of Michelson and his collaborators throughout their lives occurred in a span of several decades. The measurements using interferometers, the spinning mirrors, the telescope, and the human observations of the passing light were done over the course of about 40 years. Those were elements of the situational reality throughout one lifespan, namely Michelson's and his collaborators. These efforts, however, led to the understanding of the nature of electromagnetic radiation, vacuum, and the determination of one of the most fundamental constants of the known universe, i.e. the speed of light. In addition, the definition and the accurate measurements of 1 metre was also a side-effect of the c value measurement. Other scientists build on and expanded his work of Michelson's to discover the fundamental theories and their proofs of special and general relativity, quantum mechanics and so on. Those observations and theories, those scientific discoveries helped humanity to uncover several aspects of fundamental reality of the ontological realm of *Homo sapiens*. These aspects go beyond a lifespan of one human, or a generation of humans, thus is a characteristics of fundamental reality.

The visual analogy with the waves and their propagation in the water had been used to develop a theory about the propagation of the electromagnetic radiation through the vacuum. This visually-based theory proved to be false but chasing the proof of

this 'visually-based fallacy' led to the ascertaining of the one of the most important constants of human fundamental reality, i.e. the c value. The speed of light is the mathematical and wider link between energy of particles, Michelson's measurement of the c value and Einstein's theory of relativity led to the development of modern conveniences such as the GPS system (NASA, 2020). Combination of scientific instruments, and the original 'visually-based fallacy' of 'ether wind', resulted in the development of theories and determination of the accurate c value. That in turn allowed humans to gain some understanding about their fundamental reality. At the same time, we can today see the benefits of the 'ether wind' driven research, e.g. by looking at a cell phone screening to follow the Google maps and similar apps to our destinations. The origin of the visual basis for human, for anthropocentric understanding of reality, has come back full circle as the outcome of the measurements by humans. Those measurements allowed humans to ascertain some elements of the scientific nature of the reality of the Earth and the cosmos, of the space beyond and of the reality humanity is part of. Human involvement in that endeavour, which had started a derivation from a 'visually-based fallacy', proved to lead to significant contribution of the human element in the derivation of the c value. This can be seen as a manifestation of the boundary between fundamental and situational reality that humans exist in. The 'side-effects' or practical outcomes of the theory of relativity are based on the fundamental reality aspects but are experienced by humanity in a single or over several lifetimes, i.e. they can be seen as the long-term aspects of the situational reality of humanity. The fundamental and situational reality thus overlaps in relation to a single human being or to a few human beings, to a 'Community of I' as the researchers never work alone but in teams. So there is only one more question to ask: is there another way to perceive, to measure, to anthropocentrically experience a constant of the fundamental reality, e.g. the speed of light? Is there a possibility for a human being to experience speed of light as a 'visually-based fallacy', to survive and live through it?

Speed of an object is defined in physics, as the distance divided by time. That definition was also the basis for the Michelson "null method" of spinning mirrors, when the time to travel 70 km is used as the basis to determine the value of c (Shivalingaswamy and Rashmi, 2014). In other words, it can be said that Michelson measured the c value based on the manifestation of the physics definition of speed. Speed is an expression of how much time it takes an object or a fundamental particle to move from one point to another in space, i.e. a simple notion to imagine, measure and to grasp. The rate at which we reach our destination from a given origin of a journey over a given path, the speed with which any object moves from an origin to a terminus over a trajectory is the reality of the distance divided by time. The speed of movement is a function of several variables. To take the argument further here, let's go back to the example of the rock being dropped into a body of water. The speed of movement of the rock and the waves through the water body/column will be dependent on the properties of the moving

object and the properties of the environment it is moving through. Stokes law can be used to describe the rate of the rock's sinking to the bottom of the water column and the resistance of the water to the descending motion plays an important role here (Dey et al., 2019). Thus the speed of movement of the rock will depend on the resistance of the environment to an object's movement through it and the chemical composition, as well as physical properties of the object and the environment. A human being has a chemical composition and out bodies have physical properties. We can experience the drag/resistance of the environment we move through, e.g. when we ride a bicycle through the ambient surroundings of out a place of residence to a destination. As we peddle on the bicycle forward, there is a resistance of the air against our movement.

In this context, physics is 'present in our reality, it governs parts of our existence'. So, what are the consequences of this human overlap with the speed and space-time it represents? What will be the correct tools or methods by which speed can be measured in human terms, e.g. when a human rides a bicycle? The answer will depend on the resources we have at our disposal and several other factors. It can be a combination of human perception of the speed or the instrument such as speedometer, which can be attached to the bicycle after calibration and used to measure the speed at which we travel. However, there will be in reality a reference scale for speed measurement, and we can see it as an embodiment of our interpretation of the definition of speed, i.e. our own personal definition of speed. As a result, the measurement of speed by a single human being can be absolute or relative. Let's consider a simple example to demonstrate this absolute or relative scale of reference. We return to the question posed a few paragraphs ago, namely can a human being to experience, can they survive movement at the speed of light? In other words, is it physically possible for a human being to reach and exist at the speed of light? Einstein said yes under certain conditions, but let's assume that we are concerned with experiencing speed light during a lifetime of a single human being, during our situational reality and using the current level of technology. Qualitatively speaking, the answer to the question about a single human experiencing speed of light is yes, if the logic below is used.

Consider two humans and a bicycle. One human gets on the bicycle and is riding down a road or a street, i.e. they are the rider. The other human is watching them as a spectator from the side of a road, i.e. they are the spectator. The rider sits on a bicycle which has a dynamo attached to the front wheel, and the dynamo is in turn linked to a bicycle light. When the rider on the bicycle starts peddling and the spectator is watching, the bicycle rider moves down the road. After a short while, the bicycle light will light up. Using a partially qualitative reference scale, the speed of light can be defined as the speed that the bicycle needs to reach so, that the bicycle light goes on and both the rider and spectator register the light on visually. Therefore

the speed of light is defined here based on the perception of the human riding the bicycle or their spectator. If light goes on, then the human riding the bicycle exists at the, they are moving through their ambient environment at the speed of light. If there is a calibrated speedometer on the bicycle, then the 'speed of light' could also be measured quantitatively. Both the rider and the spectator can see the light go on and it being attached the moving bicycle, i.e. they have both reached and survived, or experienced the 'speed of light'. The 'speed of light' is the result of human effort of peddling and relative reference scale or alternate definition of the 'speed of light'. The rider and the bicycle have travelled a measurable distance over a measurable period of time, i.e. the speed of light reached, and it meets the physical definition of the speed. The speed of light in the rider-bicycle-spectator system demonstrates the principles of energy and the potential for the human understanding of speed as a ratio of distance divided by time. Is this speed of light a 'visually-based fallacy' or a scientific truth?

The 'speed of light', based on the partially qualitative definition, in the rider-bicycle-spectator system will be true inside that system only and it becomes a 'visually-based fallacy' outside of it. The speed of light, as defined in the rider-bicycle-spectator system, is a sign of the situational reality. Outside this situational reality, the c value remains supreme as the only speed light in the context of the fundamental reality. However, the argument could be made that the pursuing of the rider-bicycle-spectator system provides an opportunity to ascertain a learning experience of the rider and the spectator. It facilitates the two humans to understand the concept of speed, the link between the energy movement and speed. They see that energy must be expanded to create light that human effort is needed to obtain empirical observations about the physical reality one finds themselves in. At the same time, the rider-bicycle-spectator system and the c value demonstrate that two ontological perspectives can co-exist in the human observations and perceptions of reality. The first is the overall scientific ontological perspective, which can be hard to grasp for non-scientists. Studying it is important to improve human understanding of fundamental reality and to achieve human progress, e.g. the GPS system development. The second ontological perspective is the rider-bicycle-spectator system, which can be seen as a microcosm of a single or of just a few human beings. It provides for a 'private universe' of a single human in which we can perceive our most immediate situational reality. Thus the epistemic significance of the rider and the spectator experiences about the speed of light can be used to engage them in the understanding of fundamental reality. Both ontological perspectives about c and the situational speed of light are important and complement each other. Characteristics of fundamental reality must be measured accurately to ensure justified human progress, e.g. by elimination of wasting grant resources on making and evaluating scientific observations. On the other hand, the personal perceptions and epistemic experiences of the situational reality are important, as they

can provide qualitative and personal/first-hand experiences of such reality. Speed, as defined and examined in this section, is an important property of the human reality in the COVID19 space-time. It is complex and understanding it, collection of data to understand it is a complex human endeavour which will require both the knowledge and engagement of both the scientific and non-scientific 'Communities of I'. This is discussed in the next section of the current study.

Application of speed to the concept of 'situational' reality during the COVID19 pandemic

One could say that many challenges in human life time can be solved easily and quickly, e.g. using the Occam's razor and so the simplest solution is the correct one. This could apply to everyday actions and choices of individuals, i.e. the aspects of situational reality. The reductionist view of some data from human senses can be misleading and lead to misinterpretation of human reality. Human senses and personal views must be seen in context of their creation to avoid the generalisation of 'visually-based fallacies' about constants of fundamental reality. At the same time, such as 'visually-based fallacy', could lead to a misunderstanding or misinterpretation could come from missing the origin of the qualitative/sensory signal, i.e. from misunderstanding of the situational reality in which the fallacy originated in. Constructive empiricism holds that we cannot discover or uncover the whole meaning of reality around us, but the methods of science can provide some indication, facilitate the understanding about parts of human reality (Marbaniang, 2009). Perception of reality, qualitative data is often reproduced and gathered as observations by multiple human observers. Generalisations of such data is then done by trying to perform more scientific measurements and so that quantitative data can be obtained. Interpretation of qualitative and quantitative data follows and some understanding of the meaning of the data and reality it represents can be obtained. This human understanding is temporary or rather tentative...the results are considered proven until a better hypothesis can be proven, until better methods can be developed and a new angle on reality discovered. However, human experiences cannot be dismissed, as they provide an important statement about the long-term and short-term nature of situational reality, about the essence of the human endeavours and data for further human improvement. They are sources of important human qualitative signals that ensure epistemic justice and prevent the occurrence of 'visually-based fallacies'.

Second part of the last paragraph is linked to the Popper's demarcation problem, i.e. the line in the sand between science and pseudoscience, can provide some guidance here (recently reviewed by Sfetcu, 2019). The 'line in the sand' drawn by Popper basically focuses on the fact that a valid scientific theory can be falsified, i.e. the pseudoscientific theory cannot be tested and disproved (Sfetcu, 2019). At the same time, the proving a theory right only suggest tentative acceptance at the time of testing (Sfetcu, 2019). Any accepted scientific theory can be disproved in the future, as an outcome of continued

exploration and scientific discovery (based on the authors' understanding of the paper by Sfetcu, 2019). In the 21st century, the probability of the correctness of reported scientific findings will be influenced by various factors. One of the most comprehensive and seminal examinations of this problem was the 2005 essay or theoretical analysis by Ioannidis (2005). The author provides examples through a simple mathematical exercise, as to what factors influence the accuracy of the results published in scientific literature (Ioannidis, 2005). Accuracy of the results suffered from research and experimental bias, size of the academic/research field, sample size, financial implications of the research conducted, the more (Ioannidis, 2005). This might imply that a scientist's 'Community of I', even when using the most advanced and most rigorous methods of scientific endeavour, can arrive at the wrong results about human reality, whether it is fundamental or situational.

The age of a scientific field, i.e. how new the field of study of academic endeavour is, also has been shown to have an effect on the results and on the coherence from study findings by different research groups, i.e. the so-called Proteus phenomenon (Ioannidis and Trikalinos, 2005). This phenomenon basically states that early studies in the field of the "case-control studies on genetic associations" generally indicate a particular finding, or a hot topic (Ioannidis and Trikalinos, 2005), early replications of the hot topic studies tend to disprove or contradict the initial result (Pfeiffer et al., 2011). Investigations of the negative results is a controversial topic but should be encouraged as way to improve certainty of scientific findings and the general direction an academic field can take (Mehta, 2019). In the context of the COVID19 pandemic, good clinical practice dictated that even no benefit of administration of hydroxychloroquine in clinical trials, the findings from early and small-scale medical investigations were published (Gautret et al., 2020). In some fields of scientific endeavour, the five or six sigma standard for proving new findings is accepted, i.e. nothing is considered true until the probability of the result being wrong is lower the one in 10^6 (MIT News, 2012). This line of argument follows the incremental improvement and additions of information and knowledge, which humanity bases its decisions on...how it reaches a decision about the nature of the situational or fundamental reality, can create dichotomies during the search for the most appropriate, the most scientifically correct answer. It could be argued based on the reasoning in the study so far, that the fundamental reality and the situational reality are intertwined during the coronavirus pandemic. The complicated nature and the ever-changing landscape of the pandemic space-time indicates that lives of single 'Community of I' and the entire continuum of *Homo sapiens* has changed. A new paradigm of scientific endeavour is needed, i.e. a new scientific field has been created and that is the human existence in the complicated and ever-changing world of the post-COVID19 space-time. Formulation of hypothesis and their testing is taking place under constantly shifting conditions of human situational reality. Speed, of change and of human life, is a manifestation of the

boundary of the situational and fundamental reality, as the actions of humans have contributed to the changes in the global ecosystem and the increased likelihood of contact between humans and the SARS-CoV-2 virus (Iheanetu et al., 2023).

Speed is a concept which demonstrates the aspects of fundamental and situational reality of human existence. The speed of light is a constant of clear fundamental importance. It is a characteristic of the fundamental human reality. However, the short and truncated story of the determination of the c value demonstrates the impact of constructive empiricism, as a tool to discover a combination of fundamental constants and the development of scientific instruments which have led to other significant scientific discoveries, e.g. LIGO (see above). The events triggered by the 'visual-based fallacy of the ether wind', the drive and perseverance of Michelson led to personal recognition of himself, but also to collaborative follow-ups, however indirect, by other scientists such as Einstein and Planck to name a few. Determination of c has had impacts on the continuum of *Homo sapiens*, i.e. the speed of light measurement provided the essence for the follow-ups of relativity theory and the derivation of the c value as a link between the energy of particles and their speed. It also contributed significantly to the development of technologies, such as GPS, which have a positive impact on the human daily existence, on their situational reality. Speed could provide, according to the authors' line of argument here, a link between the situational and fundamental reality in the COVID19 space-time. Is this the only significance of speed?

The rider-bicycle-spectator system is a form of 'Community of I' from either the rider or the spectator's point of view. It is a micro-assemblage of scientific exploration, and it has distributive agency in creating new knowledge about speed, about the link between energy and speed, and indirectly the situational reality of human perception and the fundamental reality of the c value. In the context of the speed of light and the qualitative reference scale, the rider-bicycle-spectator system can be used to bridge the simile notion of separation between the fundamental and situational reality of human existence. The 'visually-based fallacy' of the speed definition, which is based on the perceptions of the rider and the spectator inside that 'Community of I', can be utilised as a metaphor for the improvement of the human understanding of speed and its fundamental link to the nature of human reality. This metaphor can be extended, a new simile can be formulated...the speed can be used to improve human understanding of the existence in the space-time of the COVID19 pandemic.

The space-time of the coronavirus pandemic is compressed in physical sense, e.g. due to lockdowns and mobility restrictions. However, it is also expanding in terms of the amount of information which is available to a single 'Community of I' and which this micro-assemblage must process expeditiously to maintain positive forward fluidity of the human being at its centre. Speed at which the new knowledge is generated can be demonstrated by the ever-increasing number of health impacts which have ben

reported and continue to be discovered daily. The size of the impact on the normalcy of human existence by the coronavirus pandemic, the related restriction and the redefined nature of the human existence in the post-COVID19 space-time will be important to the understanding of the degree of return, the rate of return and the duration of the transient period, which is needed to readjust the 'Community of I' and to implement positive inside perturbations in it, to maintain the positive forward fluidity of one's self, to maintain a state of ribovirocell...in other words, a human being and continuum of *Homo sapiens* to resist the disturbances of the pandemic in the post-COVID19 space-time. The maintenance of existence of one 'Community of I' and the continuum of *Homo sapiens* will be based on the cumulative knowledge and the ribovirocell state of positive forward fluidity for all selves of humanity. Demarcation of pseudo-science and science is blurred, as all the information from scientific and personal experiences of 'Communities of I' will be important for the development of new knowledge and the understanding of the boundary between the fundamental and the situational reality in the COVID19 space-time. The nature of the reality in this space-time and beyond will depend on the novelty and continuous improvement, minutes gnawing away at the nature of the new academic discipline of human existence in the post-COVID19 space-time. In the authors' opinion, this will define the notions of speed and the burden of Salwén (2019) analysed the strengths and weaknesses of the theory of threshold concepts. A threshold concept deals with education, i.e. with the

"A threshold concept can be considered as akin to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress. As a consequence of comprehending a threshold concept there may thus be a transformed internal view of subject matter, subject landscape, or even world view. (Meyer and Land 2003,1)".

The speed with which the COVID19 disease reached global impact and the status of a pandemic where the concept of ontological reality of humanity must be grasped quickly by a single human being and the members of *Homo sapiens*. It is a concept that characterises our current situational reality. Speed is possible to be expressed in several ways. For example, one could be the rate of mutations and the development of new strains such the delta strain (reference required). The speed could also be seen as a constant and real-time shifts in the position of the front runner to maintain balance in the situational reality of everyday life of the continuum of *Homo sapiens*. Understanding the speed from the scientific and the non-scientific perspective from the 'Community of I' and from the viewpoint of the continuum of *Homo sapiens* will be critical in the definition of the new reality in the post-COVID19 space-time. It will define the elements of the resilience by Todman et al. (2016), it will be the threshold concept in maintaining a positive forward fluidity of the ribovirocell state of one's self,

of all 'Communities of I' in the continuum of *Homo sapiens* in the world of the core concept of the post-COVID19 space-time of humanity.

Conclusions

Concepts of fundamental and situational reality of human existence should be seen here, as the authors' attempt to approach the analysis of the ontological realm of the Age of Anthropocene and the related implications of the COVID19 pandemic, as a manifestation of direct impacts of both fundamental and situational reality on a single 'Community of I'. All humans and their 'Communities of I' are the source of knowledge and information, of scientific data collection which must be

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Conflict of interest

The authors declare no conflict of interest.

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