Photo Credit: Rocco Rorandelli

Nothing brings more evidence to human resources and human misery than a moment of crisis. The COVID-19 pandemic is an opportunity to reflect on human nature through the microscopic lens of a virus. This unexpected event has shattered our conviction that complexity is a key to success. We have thought our strength is our versatile mind, the pinnacle of sophistication on the evolutionary scale that has enabled us to conquer the world and transform it to our needs. Well, a brainless primitive germ can do the same much faster and more efficiently. This imposes a re-consideration of our notions of natural power and human power.

We quantify the power of the virus in contagion cases, casualties, number of countries affected by it, financial and job losses. The principle of quantity as a standard measure for power is familiar. It spans from archaic times down to our day and we have applied it both to the natural and to the human sphere. Defeating mammoths, lions, wild bulls, capturing whales meant having an advantage over

Nature. Massive palaces, tall towers, vast land properties, large amounts of money, huge armies, gigantic bombs mean having an advantage over other humans. When the natural agent of power was not visible but its effects were quantifiable, humans attributed them to gods, spirits, daemons, angels, God. Diseases were explained at the popular level as divine punishment, while in early modernity natural philosophers connected them to astral influence, conceived as a visible manifestation of the same divine power. Respiratory contagious viral infections came thus to be called *influenza*, or later in English *flu*. How naïve of us to think the flu comes from the giant distant planets, when its cause hides in our bodies in the form of viruses that weigh each approximately less than a millionth of a trillionth of a gram!

Until the first living cells were observed with a microscope around 1670, it never dawned upon us that there is a minute living world that eludes our eyes and concentrates enormous global power, able to damage us more than earth quakes, volcanoes or tsunamis, that have mostly local effects. On the invisible side Nature seems to have a double advantage over us: the super-power of its diminutive beings and the inscrutable conditions under which she triggers her secret weapons. In our confrontation with this virus we have discovered that Nature closes the circle by making the most complex form of life vulnerable to the simplest one. It is humbling for us humans, but this levelling of life forms reveals on one hand the unity of the natural world and on the other the subtle ways nature uses to re-balance its powers. In an ironic turn of things, the most recent studies on how neurons pass information to each other show that “a gene crucial for learning, called Arc, can send its genetic material from one neuron to another by employing a strategy commonly used by viruses” (NIH, citing Pastuzyn and Ashley).

This inspires thoughts about behavioural models of viruses and humans. According to scientific definitions available to the wide public, viruses are “molecular machines with sizes on the nanometre scale, equipped to invade the cells of other organisms and hijack them to reproduce themselves”. They are “like predators with a specific prey they can recognise and attack.” (the conversation.com). They can attack individually, but are able to cooperate in attacking bacteria, for instance, according to current research (sciencedaily).

Like viruses, humans rely on other living organisms for their survival and thriving. We too act like predators versus plants and animals, yet we have an extra feature that viruses seem to lack. They attack bacteria, plants, animals, humans, but do not seem to attack their own kind of virus. Well, humans have taken the predator instinct to a higher level: they have turned other humans into prey

and have been using their cooperation capacities to cannibalize, enslave or destroy other humans. And just because we are rational animals, as Aristotle defined us, we have used reason to create narratives, social and political rituals, philosophical and scientific theories to justify all these types of behaviours. The masterpiece of our prey drive is hijacking other humans' minds by subtle manipulation tactics in order to control them.

Viruses are very quick at sensing the environment and adapting to it. They can easily mutate or even combine with other viruses to ensure survival and expansion. By comparison we are very slow. It took us thousands of years to adapt to every type of habitat on Earth. Even after discovering the bustling realm of germs we needed time to connect diseases to them and realize that hygiene could be a defence-weapon. This pandemic has showed that when we have to act fast for our survival, we are impaired by our own creations – power hierarchies, bureaucracy, misinformation -, and our mental attitudes: inertia, ignorance, delusional optimism. The paradox is that today we want things to run fast, but our mind lags behind, affectionate to traditional ways of reasoning and ideas formulated a long time ago. In other words, a virus mutates much quicker than we are able to change our ideas. In some Western democracies, the conundrum of reconciling the constitutional right of individual freedom with survival necessities delayed the implementation of a strict lockdown and in spite of the urgency of the moment, some people even protested, pretending they have a right to get sick. No constitution includes this right, nor do many constitutions mention the right to health, as the Italian one does. During this pandemic the right to freedom and the right to health clashed, and the protesters did not seem to understand that under new conditions we need to think anew.

Viruses can exist individually, as they can easily replicate themselves and produce an entire population of viruses, while we need an articulated society to survive. Rich people who build well-furnished bunkers with the conviction that in case of a nuclear holocaust or any other catastrophe they are safe and the world turned into a wasteland goes on with them, make us question their sense of realism. In the face of some nasty examples of selfishness, this pandemic has proved that cooperation and altruism are the solution, even if Richard Dawkins found a biological justification for individualism in *The Selfish Gene* (note 1). In the natural world we are not the only ones who benefit from this virtuous circle: individual sacrifice serves the common good, and the common good reflects back on the individuals of the species.

Viruses colonize the body of their prey and can multiply until they kill it, but they can survive in the environment as independent particles remaining structurally intact, until they find a new suitable

organism to attack (theconversation.com). At that point their genetic memory reactivates itself and they start to replicate in the host cells following their typical behaviour. We have genetic memory too, but more importantly, we have a shared cultural and historical legacy from previous generations we consider essential to our personal, group or species identity. We try to keep this memory alive by teaching historical disciplines in our systems of education on two main rationales: it helps us to know who we are, and it may prevent repeating past errors in the future. Yet when it comes to action, it turns out we have not learned the lesson. The pandemics prove it.

An exemplary account of a pandemic from antiquity is Thucydides' description of the Athenian plague during the Peloponnesian war (430-426 BCE). The Greek historian tells us the disease allegedly originated "in Ethiopia in upper Egypt, and spread from there into Egypt itself and Libya and much of the territory of the King of Persia" (Thucydides, 152). It took the Athenians by surprise, and doctors had no idea what caused it and no cure available. Because of the war Pericles moved people from the country into the city in order to protect them, but this only made things worse as they had no proper place to stay and the hygiene became very scarce. Many people died, irrespective of age, physical constitution, gender, social class. Pericles himself died of the plague in 429 BCE. The chronicler details both the symptoms and the changes the disease brought to the city life. For fear of contagion people abandoned the sick, funeral ceremonies were disorganized, order and law were no longer respected. "As for the gods, it seemed to be the same thing whether one worshipped them or not, when one saw the good and the bad dying indiscriminately "(155).

Over the coming two millennia other pandemics have been described by historians, eye witnesses, doctors and writers, but the patterns we find in Thucydides are the same: germs circulate over huge areas, careless about the frontiers traced by humans to divide land, they infest densely populated areas like cities, and reappear in coincidence with wars that involve displacements of population and poor hygiene (note 2). An epiphenomenon of all pandemics is that the systems humans have created over the basic flow of life, – production and financial networks, laws, religious and social practices, – fall apart when Nature's power reduces men to just a fragile form of life.

What does the world look like two millennia and a half after the Athenian plague? Intensive urbanization has attracted more than half of the world population to live packed together in cities and consume goods coming from every corner of the world. Many people travel long distances for business or holidays. Under normal conditions planes move each day almost 3 million passengers from one place to another. The ongoing wars cause destruction and unrest, forcing millions of

refugees to move across borders under precarious hygiene. In other words, we have created the conditions for the outbreak and spread of epidemics.

The viruses' behaviour is consistent with the objective of self-preservation and they do not seem to miss the target. How do humans deal with their survival which depends on peace and a healthy Nature, including a healthy humanity? By doing the contrary: investing in weapons, polluting the environment, and caring more about making money than about health. One would expect scientists, environmentalists, doctors and educators to be the best-paid categories, as protectors of our survival, but this is not so. An influencer, whose expertise is vague or null, is much more rewarded. Why are we not able to understand our priorities? Maybe the answer lies in our faculty of comprehension.

In antiquity there was full awareness of the limitations of human reason. It is enough to mention the references to fools and foolishness in the biblical *Proverbs*, or Socrates' commitment against lazy thinking. The satire and the comedy responded to the need of exposing inanities. This trend continued through the Middle Ages and early modernity, when a lucid mind like Erasmus wrote *The Praise of Folly* (1509-11), turning Folly into a character that presents human beings as having delusional and confused ideas about who they are and what they should do in this world (note 3).

During the Enlightenment reason became the main instrument in an ambitious project of human emancipation. In 1784 Kant explained the essence of this new orientation in these words: "Enlightenment is man's emergence from his self-imposed immaturity. Immaturity is the inability to use one's understanding without guidance from another. This immaturity is *self-imposed* when its cause lies not in lack of understanding, but in lack of resolve and courage to use it without guidance from another. *Sapere Aude*! <Have courage to use your own understanding!> – that is the motto of enlightenment" (Kant, 42). The problem for Kant was our lack of courage, rather than the intrinsic limitations of human reason.

When Linnaeus coined the name *homo sapiens* in 1758 he assigned our species intelligence and discernment, sharing the trust of the Enlightenment in our rational capacities. For the following two centuries and a half Western civilization lived in the myth of the dominion of reason, and experienced an unprecedented industrial, scientific and technological revolution, meanwhile engaging in irrational enterprises of vast proportions like destroying populations and drying out resources in the colonial adventure, igniting two world wars and the holocaust, exterminating animal species and ruining eco-

systems.

In recent times the singularity of our rational capacity is being re-dimensioned. The recurrent traits of human intelligence that appear in a survey of definitions compiled by Hutter and Legg are the ability to understand, solve problems and adapt successfully to new situations. Life sciences are telling us that these features actually apply to any living being, including viruses, as each of them has the ability to analyse stimuli, discern between them and react accordingly. We have an elaborate way of communicating through language, gestures, and symbols and have created the devices to communicate at a distance, which renders us unique. Yet, thanks to bio-chemistry we learn that communication *per se* is typical to every living organism, including viruses, albeit its modalities consist in chemical signals.

How much do we care about our reasoning capacities? At a quick glance, the way humans look after their brain, their life coordinator, is not particularly encouraging. Some indeed cultivate it, and try to expand both their ability to comprehend and their creativity. Others do not disturb it too much, maybe for fear of overuse. Others still work hard to make it functionless by becoming objects of various addictions that nullify their capacity of judgment. To respond to this tendency other humans have promptly expanded the offer of drinks and drugs.

We use reason, but most of us do not really know how it works. The efforts of cognitive scientists, philosophers and psychologists to decipher the intricate mechanisms of human reason are taking new directions. A recent proposal is *The Enigma of Reason – A new Theory of Human Understanding* (2017) by H. Mercier and D. Sperber that deals with the functions of reason, its capacities and flaws. They consider reason an individual-level adaptation that evolved in social interaction to produce justifications in order to optimize human cooperation and to solve problems of communication by generating persuasive arguments (III, 10), including ones that allow us to act immorally (V, 17). According to the authors reason works with cognitive modules, which can explain some of its limits and the strength of specialization. It functions better in a group, rather than individually, even though it benefits the individual in the end, and the consequence of its interactionist functions is that it is inherently biased. This accounts for our lack of flexibility, in particular in domains we are very keen on. The last chapter tells us that scientists, closer to objective answers than other professions, are partial too.

We will definitely find out more about our cognitive potential with the advancement of science. For the time being we know that individual reason is biased, it cannot cover all the domains of human knowledge and it does not function independently of one's emotions and cultural background. But we have created an allegedly unbiased counterpart, deprived of emotions and a personal history, which is artificial intelligence and as soon as we created it, we realized that computer programs can self-replicate like viruses, so in a mock imitation of Nature we produced viruses that can attack our computers and now we can boast a new branch of knowledge called computer virology.

The myth of the infallibility of human reason is gradually waning in front of artificial intelligence, and so is the unwavering trust in clever people as proves the popularity of David Robson's recent publication *The Intelligence Trap: Why Smart People make Dumb Mistakes* (2019), where individuals considered intelligent are shown capable of committing gross errors. The vacillating confidence that reason can find and profess the truth concurs with the relativization of truth itself, which has become irrelevant for some, as long as they have the upper hand. The disjunction of intelligence from truth results also in re-evaluating stupidity, that appears now in academic debates, and not always in a negative light. In 2012 Alvesson and Spicer launched the concept of functional stupidity, understood as the induced inhibition of critical thinking in the members of an organization to make it work smoothly. More than the few negative outcomes of this practice, like suppressing awareness of problems and demotivating learning, the authors point out its benefits. Once an organization sets functional stupidity in motion, the members apply self-censorship on their natural tendency to judge decisions and thus the management avoids controversies. Functional stupidity is just a new name for an old form of mind control, and it has long been practiced in history. Authoritarian leaders have always created systems of propaganda and control to blunt substantive thinking and keep their subjects obedient.

How can stupidity be defined? If intelligence is the ability to understand, solve problems and adapt successfully to new situations, stupidity is the opposite. Stupidity also means opacity to self-reflection and self-criticism hence it is often associated with arrogance. In nature the inability to adapt to new situations can lead to the extinction of the individual, in the human world, stupidity is not an impediment to social success and under harsh political regimes, pretending to be stupid can save one's life. Animals, plants and micro-organisms do not have a self-reflective gift; we humans do, yet nonetheless we can create situations that lead to our own downfall or physical destruction. As stupidity is typically human, one can say that like a *Janus bifrons*, *homo sapiens* is also *homo stultus*, a stupid man, in keeping with Latin taxonomy.

Are we being trapped in our intelligence, as Robson surmises, or rather in the inescapable duality of our mind, that can be smart and stupid at the same time? Nature has endowed us with a capacious brain, but it is a double-edged instrument that can work in our interest or against it. We are the only species that can notoriously harm itself. The scientific and technological progress does not seem to help us deal with stupidity, actually the internet has rendered its proportions visible. Returning to the topic of contagious diseases, all recent epidemics are spillovers of viruses from animals caused by us (The Guardian, April 8). They are biological weapons we have unmindfully created against ourselves. Like Goethe's *Sorcerer's Apprentice* (1797), better known from Disney's rendition in *Fantasia* (1940), we have stirred up Nature's hidden forces by interfering with wildlife and now we are at a loss to calm them down. *Homo stultus* is *homo sapiens* in the mirror of Nature and as we belong to Nature, we should get used to the idea that stupidity is bound to us as the shadow to anything under the sun.

Notes

1. "Be warned that if you wish, as I do, to build a society in which individuals cooperate generously and unselfishly towards a common good, you can expect little help from biological nature. Let us try to *teach* generosity and altruism, because we are born selfish. Let us understand what our own selfish genes are up to, because we may then at least have the chance to upset their designs, something that no other species has ever aspired to" (Richard Dawkins, *The Selfish Gene*, Oxford: OUP, 2006, 3).
2. The 'Antonine' plague connected to the war between Parthia and Rome, (161-166 CE); the Plague of Justinian caused by infested war provisions (541 and returned for another 2 hundred years), smallpox during the conquest of Central and South America (1519-1560), typhus during the Napoleonic conquests, cholera during the Crimean War (1853-6), the Spanish flu during World War I to cite only the best known (Roy K., Ray S. see bibliography).
3. Folly assumes a different meaning in the third part, where it refers to the goal of spirituality, as apparent folly but, in reality actual wisdom, following a biblical tradition and Plato's urge to dedicate oneself to philosophical contemplation.

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ABOUT THE AUTHOR

Gabriela Dragnea Horvath

Gabriela Dragnea Horvath, PhD, published essays, book reviews, translations of poetry and short stories in magazines and anthologies in Italy, Romania, USA, Canada, Great Britain, Australia, Switzerland. She also authored a monograph in Italian, *Shakespeare ermetismo, mistica, magia* Rome, 2003); has co-authored a book of fiction in Romanian (*Preludi epici Epic Preludes*, Bucharest, 1990), has co-translated with Stuart Friebert and Adriana Varga the volume *Hands Behind My Back*, by Marin Sorescu (Oberlin Translation Series, 1991) prefaced by Seamus Heaney. In 2017 her study *Theatre, Magic and Philosophy: William Shakespeare, John Dee and the Italian legacy* was published by Routledge. She taught for the Liberal Studies Program at NYU Florence.