**Essay**

# Man, Virus, & Bacteria: Conscious or Unconscious Invasion?

Massimo Cocchi*, Fabio Gabrielli & Grazia Gulino

Research Institute for Quantitative & Quantum Dynamics of Living Organisms,
Center for Medicine, Mathematics & Philosophy Studies, Italy

**Abstract**

In this essay, we discuss a comparison between humans and microorganisms in the similarities that unite them as a result of a conscious and proto conscious condition. A reflection on the essential rules of nature in the survival of the species and in the eternal conflict of good and evil, of the desire for supremacy or in the fate of succumbing.

**Keywords:** Man, virus, bacteria, invasion, unconscious, conscious.

About three to four billion years ago, individual cells begin to organize themselves to form a real community: they grow, multiply, cooperate with each other. The modern man who was born about 200,000 years ago will do the same thing by organizing, building tools and moving all over the earth: an impressive similarity. We all understand human organization, less we understand bacterial and viral organization.

The human population consists of some billion people who commit their intelligence by directing it towards good or evil, in the multitude the individuals who exercise evil seem numerically inferior, as well as among the microorganisms, which are many billion more than the representatives of the human species, those who exercise "evil" are inferior. A parallel story that leads us to make some reflections.

Also from the socio-economic point of view, men and bacteria are similar. In danger, they both start aggregations and develop strategies for a dominant target, that of defending themselves. It is precisely in relation to this purpose that the concept of consciousness emerges, at least of proto consciousness.

Bacteria and Viruses - different in their vital attitude, the former, in fact, multiply on their own, the latter, however, live feeding on the material inside the cells - are constantly on alert, ready to "disembark" or attack ", just as sadly happens in situations of war among humans. Here both good and evil, both in the microscopic world and in the human world, exchange, contaminate each other, spread themselves according to articulated defensive strategies. Also in this case consciousness comes into play, oriented, in fact, to good or evil.

* Correspondence: Prof. Massimo Cocchi, Research Institute for Quantitative & Quantum Dynamics of Living Organisms, Center for Medicine, Mathematics & Philosophy Studies. Department of Veterinary Medical Sciences, University of Bologna, Italy.
E-mail: massimo.cocchi@unibo.it

In other words, to the legitimate conservation or usurpation of the conservation principle of others. Let's not forget that a few centuries ago, Spinoza affirmed that "existing" is equivalent to "power to exist", that is, living beings are pushed to exist by a *conatus*, a tension/effort, a vital energy, a power that increases itself, but as finite power, energy limited by other similar forms.
These brief considerations, however, do not want to enter into the rhetoric of good feelings, even less in a debate of a purely ethical nature, but aim to address the concept of the relationship between man and that bacterial multitude that inhabits our intestine, at least in its essential lines.
Billions of years will pass before man is fully aware that other organisms exist besides him - it was Van Leeuwenhoek who, in 1676, had the first perception of the existence of bacteria.
From that moment, the scientific history of bacteria and viruses begins, on which much has been debated and written.

A story, however, that begins with man's lack of awareness of their existence, directing his rudimentary knowledge towards a perception of "individuals" who can harm and cause disgust, precisely because they live in the animal organ considered the container of the most execrable material, where waste is produced.

It will still take many years, in practice until very recently, a microscopic time compared to the billions of years in which bacteria and viruses have organized themselves, to hypothesize and demonstrate that bacteria, even in that space, are well organized, are divided into "good" and "bad" and regulate functions essential to life, such as immunity and others, such as brain function, just the brain with which they, constantly, communicate.

It will also be understood how it is largely dependent on the human being that the army that lives in the intestine can attack us or not: for example, stress and anxiety can create alterations in the microbial organization of the intestine itself. Just like wars: they depend on us! Here, therefore, changes the perception that humans have of bacteria and viruses.

The problem that arises is anthropological: Are we sure we have well understood the function of microorganisms in humans? Can we venture that bacteria and viruses are provided with forms of proto consciousness?

Reddy & Pereira (Reddy & Pereira, 2017) write on microbial consciousness:

> ...Consciousness as proto-consciousness or sentience computed via primitive cytoskeletal structures substantiates as a driver for the intelligence observed in the microbial world during this period ranging from single-cellular to collective intelligence as a means to adapt and survive. The growth in complexity of intelligence, cytoskeletal system and adaptive behaviours are key to evolution, and thus supports the progression of the Lamarckian theory of evolution driven by quantum mediated proto-consciousness to consciousness…

The Cambridge Declaration on Conscience states:

> …The absence of a neocortex does not appear to preclude an organism from experiencing affective states. Convergent evidence indicates that nonhuman animals have the neuroanatomical, neurochemical, and neurophysiological substrates of conscious states along with the capacity to exhibit intentional behaviours. Consequently, the weight of evidence indicates that humans are not unique in possessing the neurological substrates that generate consciousness. Nonhuman animals, including all mammals and birds, and many other creatures, including octopuses, also possess these neurological substrates…

Reiterates the Trapani document on animal consciousness and the quantum function of the brain (Cocchi et al. 2017):

> A potential for generating consciousness can be expressed by any cell containing a cytoskeletal network, in any animal species, and this could represent the biological interface between physical and mental phenomena. A hidden animal consciousness probably uses tubulin and microtubules as substrates for the cognitive processes in order to self-determine a state of consciousness, limited to what is required to exist, without emotional expressions and with the development of a critical mass relationship between tubulin, synapses, cortex, and serotonin. Thus, we start leaning towards a growing neuro-correlated consciousness event (classic information) with expressions of a more complex and differentiated emotional consciousness. It is assumed that consciousness survives even with basic conditions and this assumption is proven, at the bio-molecular level, by the hypothesis according to which a Schrodinger protein (e.g. tubulin but possibly other proteins as well, especially ion channels) is the biological interface from quantum physics to classic computation, the basis of quantum/classic consciousness processes. It can also position itself at the crossroad of memory and learning skills.

Now, the problem that arises is that of understanding well the human-bacteria relationship in the completeness of their biochemical-physiological functions. To understand, whether the principle of essentiality, as well as for human life, depends on certain fatty acids and certain amino acids, depends also by bacteria.

Would it be possible for man to live in the absence of that bacterial patrimony with which he is endowed? Many studies show that it is not possible, because the completeness of the immune process would be lost and the cognitive process could not fully express the state of consciousness, each for its own species.

Let us read these lucid statements (Margulis &. Sagan, 1989):

> From the first current bacteria, myriads of organisms formed by symbiosis have lived and died. But the common microbial denominator remains essentially unchanged. Our DNA derives, along an uninterrupted sequence, from the same molecules that were present in the primordial cells, formed at the edges of the first warm and shallow

> oceans. Our bodies, like those of all living beings, retain within themselves the environment of a past Earth. We coexist with today's bacteria and host in us vestiges of other bacteria, symbiotically included in our cells. In this way, the microcosm lives in us and we in it.

In short, our wonderful epic, the anthropological elegance that connotes us, the majestic bulk of our frontal lobes, everything is of bacterial nature. We are children of proto ancestors of about three and a half billion years ago!

The most radical question then arises (Margulis, L, Sagan):

> Why humans must be considered more singular than elephants, penguins, beavers, camels, rattlesnakes, talking birds, moray eels that give the electric shock, insects that camouflage themselves on the leaves of giant sequoias, religious mantises, bats or deep fish that have a fluorescent lantern on their heads?

The answer: for its symbolic ability, causal reasoning, cooperation/relationship with other human beings: in a word, language.

But bacteria and viruses also organize themselves, organize themselves into groups, cooperate with each other. And all this, isn't it cooperation, communication, language? A bacterial and viral language that speaks within us, outside us, with us, with our organs, with the blood, tissues, muscles, flesh of which we are made. In fact, the microcosm lives in us and we live in it.

*Received March 19, 2020; Accepted April 7, 2020*

## References

Cocchi, M., Bernroider, G., Rasenick M., Tonello, L., Gabrielli F., and. Tuszynski, J. A. (2017): Document of Trapani on animal consciousness and quantum brain function: A hypothesis. Journal of Integrative Neuroscience 16 S99–S103.

Margulis, L, Sagan, D. (1989): Microcosmo. Dagli organismi primordiali all'uomo, un'evoluzione di quattro miliardi di anni, tr. it. Mondadori, Milano.

Pinker S. (1998) L'istinto del linguaggio. Come la mente crea il linguaggio, tr. it. Mondadori, Milano.

Reddy, J. S. K., & Pereira C. (2017): Understanding the emergence of microbial consciousness: From a perspective of the Subject–Object Model (SOM). Journal of Integrative Neuroscience 16 S27–S36.

The Cambridge Declaration on Consciousness, (2012) (The Cambridge Declaration on Consciousness was written by Philip Low and edited by Jaak Panksepp, Diana Reiss, David Edelman, Bruno Van Swinderen, Philip Low and Christof Koch. The Declaration was publicly proclaimed in Cambridge, UK, on July 7, 2012, at the Francis Crick Memorial Conference on Consciousness in Human and non-Human Animals, at Churchill College, University of Cambridge, by Low, Edelman and Koch. The Declaration was signed by the conference participants that very evening, in the presence of Stephen Hawking, in the Balfour Room at the Hotel du Vin in Cambridge, UK. The signing ceremony was memorialized by CBS 60 Minutes).