Covid-19 Pandemic: A Survival Challenge to Humanity Unseen Thus Far or Déjà Vu Experience?

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What is more dangerous: SARS-CoV-2 betacoronavirus or all great infectious diseases of the past? What is more dangerous: SARS-CoV-2 betacoronavirus or media viruses exploiting it?

ABSTRACT

Konstantin S. Sharov. Covid-19 Pandemic: A Survival Challenge to Humanity Unseen Thus Far or Déjà Vu Experience? Despite SARS-CoV-2 being a closest genetic relation of SARS-CoV that caused SARS 2002-2004 pandemic, its spread was not managed to contain at the very beginning in China, as it was done with SARS-CoV. Worldwide dissemination of SARS-CoV-2 ensued and gave rise to the current media and political infodemic. The virus is mainly thought of as a something novel, unseen thus far by humanity. Our brief note reveals the real situation and debunks this myth. A concise comparative ecological and epidemiological analysis is performed, where COVID-19 pandemic is opposed to eleven major pandemics the humanity survived, with the major epidemiological characteristics are taken into account. SARS-CoV-2 is demonstrated to be one of the least dangerous viruses in terms of fatality and contagiousness. A hypothesis is proposed that rapid spread of the virus around the world and high percentage of the infected persons, are mainly accounted for by purely social and demographic factors, not by epidemiological nor ecological ones.

Key words: COVID-19, SARS-CoV-2, coronavirus pandemic, media myths, Internet, infodemic, fake news, false news, informational panic, globalisation
РЕЗЮМЕ
Константинъ Сергеевичъ Шаровъ. Пандемія Ковида-19: невиданный до сихъ поръ вызовъ выживанію человѣчества или опытъ дежавю? Не-смотря на то, что SARS-CoV-2 является ближайшимъ генетическимъ родственникомъ SARS-CoV, вызвавшаго пандемію SARS 2002-2004 годовъ, его распространеніе не удалось сдержать въ самомъ началѣ въ Китаѣ, какъ это было сдѣлано съ SARS-CoV. Послѣдовало всемирное распространеніе SARS-CoV-2, что породило нынѣшнюю информационную и политическую инфодемію въ средствахъ массовой информаціи. Вирусъ въ ос-новномъ рассматривается какъ нѣчто новое, невиданное до сихъ поръ человѣчествомъ. Данный мини-обзоръ раскрываетъ реальную ситуацію и развѣчиваетъ этотъ мифъ. Проведенъ краткій сравнительный эколого-эпидеміологическій анализъ, въ которомъ пандеміи COVID-19 противопоставлены одиннадцать основныхъ пандемій, пережитыхъ человѣчествомъ, съ учетомъ основныхъ эпидеміологическіхъ характеристикъ. Показано, что SARS-CoV-2 является однимъ изъ наименѣе опасныхъ вирусовъ съ точки зрѣнія летальности и контагіозности. Выдвигается гипотеза о томъ, что быстрое распространеніе віруса по всему міру и высокій процентъ инфицированныхъ въ основномъ обусловлены чисто соціальными и демографическими факторами, а не эпидеміологическими или экологическими.

Ключевыя слова: COVID-19, SARS-CoV-2, коронавирусъ, медійныя вѣды, интернетъ, инфодемія, фейковыя новости, ложныя новости, информационная паника, глобализація

Hello, baby! Yes, it’s really me...
Oh!.. reconsider me!..
Oh, please, reconsider me!

Margaret Lewis, Mira Smith.
From the song “Reconsider me” (1969)

The rapid spread of coronavirus SARS-CoV-2 causing COVID-19 disease, instigated tremendous and unprecedented epidemiologic containment and prevention procedures on a scale of the whole world. A general reaction of the leading politicians, health organisations and mass media proved to be reduced to a message that “the humanity now witnesses the greatest survival challenge since the end of World War II.” Our brief note is aimed at providing a concise comparative ecological and epidemiological analysis of COVID-19 and most disastrous pandemics of the past. A comparative analysis explicitly and evidently shows that the humanity faced much more dangerous infections many times. A Table with an incomplete list of the pandemics may give a hint.

As we see in the Table, since the fourteenth century, humanity survived the times of truly catastrophic pandemics that are incomparable with the current SARS-CoV-2 outbreak in many aspects.
**Incomparable fatality rate.** *COVID-19 vs Plague.* Exceptional COVID-19 death toll rates determined for Italy, Spain and New York state (as of the beginning of April 2020), should not draw our attention away from the fact that plague (both bubonic and pneumonic) remains a pandemic that eradicated the largest number of human beings from the planet thus far. During the Black Death of the 14th century, European civilisation may have vanished from the Earth completely: little villages got empty, and such large cities as London counted 1 human of 10 after the end of the pandemic. The fatality rate of pneumonic plague (50-70%) may seem 1-1.2 orders higher than the world average mortality rate of COVID-19 (5%) even at the first glance. Moreover, Far East plague outbreak of 1910-1911 is unique in its fatality rate being 100 per cent. That means no infected person survived during that pandemic, and no other epidemic in the world ever had such lethality.

Spanish influenza H1N1 was so disastrous, even fatal, for the humanity already devastated by the World War I atrocities, that some regions of the Earth counted losses of one third of their total population (Madhav et al., 2017, chap. 17).

However, an additional remark is required here. In case of plague, we operate with historical statistics of total fatality rate, which considers the whole population, whereas World Health Organisation (WHO) regularly reports case mortality rate for COVID-19. The inequality \( DR_{\text{case mortality}} > DR_{\text{true fatality}} > DR_{\text{total fatality}} \) (\( DR = \) death toll rate) should be always remembered. WHO online metric does not at all reflect the real number of the infected people. A simple projection of H1N1 swine flu 2009 epidemiologic statistical discrepancy situation allows us to suggest that COVID-19 fatality rate in regard to all infected persons may give at least ten-fold lower figures than the reported case mortality rate. E.g. for Italy it may end up with 1-1.2 per cent fatality. Besides, that makes incomparability of fatality rates for plague and COVID-19 even more salient.

*COVID-19 vs contemporary virus-caused diseases.* Turning to the twenty-first century epidemics with the figures more appropriate for the direct comparison with COVID-19 mortality rate, we have to pay attention to at least Ebola haemorrhagic fever and H5N1 avian flu with extremely high fatality rates. Of twelve pandemics covered in the Table, only H1N1 “swine flu” has lower mortality rate than COVID-19. It makes SARS-CoV-2 a medium pathogenic virus (whereas H5N1 is a high pathogenic virus).

**Incomparable contagiousness.** *COVID-19 vs highly contagious diseases.* Contagiousness measured as \( r_0 \) (zero-patient potential) provided by almost all health organisations including Health Department of Moscow, is a very indistinct and ambiguous indicator for any diseases with additional transmission paths to the direct contact / droplet route. For H5N1 and Yellow fever, that metric loses its sense at all (Blake, Garcia-Blanco, 2014). Such diseases as SARS, COVID-19, H1N1 (both Spanish influenza and swine flu) include also the surface transmission (through touches). But surfaces move, change, remain inconstant, and \( r_0 \) value distribution becomes comparable with the \( r_0 \) value itself (2.5-5 range for SARS and COVID-19 is equal to the lower limit 2.5). Statistically, it means that the numbers provided by many health organisations on SARS-CoV-2 contagiousness, are mainly unreliable (Peeri et al., 2020).
Another approach to contagiousness measurement is to use contagiousness coefficient. Some authors indicate that the contagiousness coefficient for COVID-19 may be estimated as 0.3 (nearly 3 of 10 persons directly contacting an infected individual of surfaces, will be infected by SARS-CoV-2 virus). That enables us to classify COVID-19 as a medium contagious disease. Spanish flu and cholera are at least 1.5 times more contagious, while pneumatic plague and measles 2 times more and chicken pox (the most contagious droplet-transmitted disease known thus far) 3 to 6 times more. Surface (touches) transmission route is reported to be the most important way of SARS-CoV-2 spread (Chen et al., 2020). Were it not for this path, there are all reasons to believe that COVID-19 would be a local outbreak, not pandemic. Surface transmission is crucial, therefore, unavoidable contacts in supermarkets, public transport, petrol stations etc. are equally important with the droplet transmission route. Reducing predominantly “social contacts” by self-isolation public policy measures is, therefore, rather ineffective (from the private scientific correspondence with Dr-Ing Wolfgang Sassin).

Of all pandemics of the recent past, highly pathogenic H5N1 avian flu, Nipah disease and Ebola haemorrhagic fever remain extremely dangerous in epidemiological aspect. Health organisations in China, South and Southeast Asia managed to control the natural reservoirs of the first two so far, while Russia contrived to do almost impossible in the development of the most effective anti-Ebola vaccine in the world just in eighteen months. A comprehensive systems approach would have combined international capacities to develop a vaccine and to produce in sufficient quantities, instead of focussing on “financial cooperation“ in order to dampen the economic consequences of uncoordinated lockdowns. The history of the political and economic reactions to COVID-19 just demonstrates how utopian the idea of an “organised humanity“ is. The necessity to “tame the information space“, that emerged during the past twenty years is reflected in Dr Sassin’s work (2020). Humanity is safe thus far from fatal consequences of avian flu, Nipah and Ebola pandemics mainly because of their unusual transmission ways, i.e. contacts with birds, bats or infected human/animal bodily liquid/tissues.

Direct genetic and epidemiologic relations. Mass media and political informational panic in January-March 2020, exploiting the idea of the virus “novelty” and “utmost hazard,” has hardly any grounds to be acquitted and recognised as feasible (Bhakdi 2020). Genome analyses of SARS-CoV-2 revealed its nearly 80 per cent genetic identity with SARS-CoV that caused 2002-2004 atypical pneumonia pandemic (Wilder-Smith et al., 2020). In addition to similarities in viruses structure, origin, spread paths, even transmissibility (similar $r_0$ and contagiousness coefficient), both viruses attack the same human cell receptors (Ibid). Taking into account all this, what can be the most probable reasons of different epidemiological situation of SARS and COVID-19?

We may advance several possible explanations:
1. SARS-CoV incubation period is at least two times less than that of SARS-CoV-2, so potentially the latter virus may infect twice as more people before any symptoms of a carrier are clear. We believe it is this ability of a SARS-CoV-2 carrier to be contagious during early incubation period that is presumably a more important factor for COVID-19’s larger infection rate rather than a “chain reaction” consideration. SARS asymptomatic and mild symptomatic patients are not proven to be contagious thus far (Knobler et al., 2004). Conversely, the main epidemiologic problem with SARS-CoV-2 is that latent patients are already contagious (Salehi et al., 2020).

2. In case of SARS pandemic of 2002-2004, public healthcare measures such as rapid locating and isolating the disease sources, were a lot more successful than now. Wuhan is a vastly populated city whose healthcare system was initially paralysed by a sudden growth of COVID-19 serious symptomatic patients with atypical pneumonia. In its turn, the positive-relation loop caused additional growth of COVID-19-infected people (Li et al., 2020).

3. However, the most feasible explanation seems to be purely social, not ecological or biological. During eighteen years that passed since the SARS pandemic, the humanity dramatically changed:
   1) almost two additional billion people appeared on Earth since 2020 (7.8 bln vs 6.1 bln),
   2) the mobility of humanity prodigiously increased, and
   3) the electronic network connections reached an unseen level, and that led to the appearance of permanent global tourism phenomenon based on the huge mobility and psychological necessity in the network-located recognisability and fame (network rankings, “views,” “likes,” dangerous videos uploads, the numbers of “followers” and “friends”, etc.).

   Humanity became the truly global network society without borders and limiting factors. That was not the case for the times of SARS. Rephrasing politicians, financiers and media sources that now spread COVID-19 infodemic, not the disease should be regarded as “unseen thus far,” but the network unity of human beings has to be treated as unprecedented. This networked humanity state may shed some light on the uneven distribution of COVID-19 main locations.

All considerations mentioned above lead us to the appropriateness of comparing COVID-19 with Spanish influenza of 1918-1920 in addition to its comparison with SARS. While SARS-CoV remains the closest genetic relative of SARS-CoV-2, H1N1 virus exhibited similar spread and transmission patterns one hundred years ago, after the end of World War I.

It is hardly a mere coincidence. Spanish flu whose death toll is still unknown and can be only roughly estimated (50,000,000 to 150,000,000 with nearly 400,000,000-500,000,000...
infected), was a truly new challenge to humanity. It was the first pandemic on a global scale in the history of humanity. Black Death, cholera, Yellow fever, all of them were local pandemics due to impregnable geographic and political borders that delineated the division of human society. World War I removed such boundaries. The war required unprecedented relocation and mobility of people across the world. Australian and New Zealand troops were fighting on European frontlines; Papua nationals were relocated to German colonies in China; the Indians were giving their lives in Africa; African soldiers moved to US and Europe – all that makes the situation of 1918 very similar to the modern day. We should not be surprised that the epidemiological and ecological situation of COVID-19 looks more like Spanish flu than SARS that was contained at the level of a “local” pandemic. A dangerous observation is that, one hundred years ago, Spanish influenza situation was extraordinary. The current situation of the global networked humanity open to any serious epidemic, is falsely becoming a common thing and ecological status quo.

Uneven geographical and national distribution of COVID-19. Even assuming that WHO metric of “Confirmed cases” may be fully misleading and reflect not the SARS-CoV-2 spread velocity in different countries, but the rate of setting up new RT-PCR test systems, the death toll rates difference is striking, from 0.2% in Germany to 10-12% in Italy, Spain and New York City. Some fraction of the difference in question may be allegedly accounted for by different death toll calculation procedures in the health systems of different countries (Dey et al., 2020; Lai et al., 2020). The remainder, however, is still very big to disregard.

Returning to social factors, supplementing biological ones, we may endeavour to explain great unevenness in COVID-19 geographical and national distribution. We advance a hypothesis that the two major factors that may have boosted COVID-19 spread in the certain areas of the Earth, are purely social and demographic, i.e. they are global tourism and migration.

Italy, Spain and New York are the most notable places of the Earth for sightseeing. Global human mobility and turnover in these places are now huge and incomparable with 2002 when SARS was detected.

Additionally, migrant and refugee problems may also contribute to the possible social explanation. Italy and Spain (especially the former) are the funnels for migrants from Near East, Middle East and Mediterranean to Europe. Through these funnels, migrants are moving forward to Germany and France. The “German” route includes Austria as refugees’ intermediate stop that already became habitual and traditional. This may well explain COVID-19 statistics for Germany, Austria and neighbouring Hungary where the number of reported coronavirus cases is twenty times less than in Austria (as of 1 April 2020). Migrants to Western Europe showed little level of social responsibility regarding COVID-19 public health measures thus far and proved to be one of the important threats to healthcare systems of European countries most seriously affected by both COVID-19 and migration processes (Sassin, 2019).

Prospects. Whatever quarantine or self-isolation public measures might be in different countries and legal systems, they will not contain the virus transmitted by droplets from
human to human – it is theoretically and practically impossible. The virus was not isolated at the very beginning, as SARS-CoV was in 2004. Therefore, the only solution is time. The reasonability of the healthcare prevention and containment measures consists in the fact that, for some time, COVID-19 disease will generate a definite number of patients with serious atypical pneumonia symptomatic picture, and they will need ventilator hospital treatment. The healthcare system of any country should be quickly reorganised in such a way to possess additional capacity to accommodate all such patients.

Mass media that make all the efforts to spread panic throughout the general public, as well as many politicians tending to enclose and fence districts, cities, regions or even the whole countries, compel them to “lockdowns,” generally do not understand the real healthcare-motivated reasons for building barriers and blocking the roads that were described above. They believe or seem to believe – at least they continue to repeat in their public performances – that “we need to completely break the chain of virus transmission.” Many Russian federal territories are closing for an uncertain time interval, some introduce martial law regime (e.g. Chechnya), the other initiate total digital control of citizens.

That self-delusion may cost a lot after the whole world has heard and finally realised the words of epidemiologists: no virus with droplet transmission and contagiousness comparable with that of a seasonal flu (it is precisely the case for COVID-19), may be curbed once its spread has become global. Disassembling the whole countries to pieces will require their future reconstruction that will cost billions of currency units, no matter US dollars, Euros, British pounds, Russian roubles or any other.

Another important question is concerned with the time appropriate enough to lift the quarantine bars, lockdowns and other social and infrastructure blocks. If the politicians wait till the daily death toll decreases to “natural” rates, it is one thing. But if they wait till “no more persons get infected on a daily basis,” we will probably have to wait no less than several years. In the end, as H1N1 experience evidently proves (be it atrocious Spanish influenza or moderate swine flu), only forming population-based (also called herd, group or block) immunity will transform SARS-CoV-2 virus from a threat to humanity to a future part of human genome. Typically, no less than two years since the first case report, are necessary for creating population block immunity when nearly two thirds of the population have become carriers of a virus. In SARS-CoV-2 case, it will not be any different. Public policy of total worldwide lockdown cannot last so long, if we do not wish to see our world order in total disarray, possibly in shatters.

A positive observation cannot be ignored, after all. COVID-19 is in no way a new epidemiologic threat that humanity supposedly never faced. SARS-CoV-2 is by no means a “terrible” virus that “kills everything breathing in an instant.” This consideration almost puts an end to speculations about a possible biological weapon.

What would we do if the current pandemic virus, along with its human-to-human direct transmission, had fatality rate of Ebola (nearly nine of ten patients are dead), fastness of Nipah (1-3 days between the first symptoms and death), contagiousness of chicken pox (nearly 30 humans around a carrier within 10-metre range are getting infected with 100 per
cent probability), and almost zero-chance asymptomatic course of disease? Purely healthcare measures, even at a global level, will not save the humanity. If such a virus appears, even if WHO provides several dozen million hospital beds and ventilators for all potential infected, this imaginable virus may exterminate the humanity as it is now, making remaining world population rate lower than after Black Death in the fourteenth century.

We may pay very high price for proud being parts of one global humanity, one organism, in terms of ecology. Without physical and mental borders, without clearly seeing what makes us different and not identical to each other, without paying heed to dangers of the real globalisation, a next virus – definitely not SARS-CoV-2 – can completely reformulate what humanity is now and will be in the nearest future.

With the example of atypical pneumonia COVID-19, real networked globalisation demonstrates us one simple truth. If humanity wants to survive with several additional billion people expected by 2050, it must cease to be global. Despite all ideological calls to altruist brotherhood of everybody with everybody in the contemporary world – it is difficult not to recall Friedrich Schiller and Ludwig van Beethoven’s verse from An die Freude poem and Symphony 9, Seid umschlungen, Millionen! Diesen Kuß der ganzen Welt! – none of us should forget that overcrowded, constantly moving population of homo sapiens may fall victim to a more or less dangerous virus that will break out from its natural reservoir in any place of the world. In the modern times, mountains and oceans will not protect us. Yesterday Wuhan, today New York, Milan and London.

Artificial boundaries must be established and kept, be they physical, mental, digital, national, religious or any other. If even such low-hazardous virus as SARS-CoV-2 is now shaking the whole world, threatening the sustainability of almost every society and social system, then the time is definitely come to reconsider future routes of humanity development.

Otherwise, a next virus may reconsider us.

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Table. Some statistical information on great pandemics of the past in comparison with COVID-19 pandemic.

| Infection                      | Geography                | Causative agent                     | Transmission                                                                 | Calculated contagiousness | Basic reproductive number $r_0$ | Years               | Average estimated death toll, up to | Case fatality rate | Sources                                      |
|--------------------------------|--------------------------|-------------------------------------|--------------------------------------------------------------------------------|---------------------------|---------------------------------|---------------------|--------------------------------------|---------------------|------------------------------------------|
| Black Death                    | Europe                   | Plague bacillus (bacteria)          | Insect bites, droplets, contact with fluids and tissues                       | 0.8 or 1 flee bite        | 6-7                             | Mid-14th century         | 150,000,000                      | Up to 70%***         | (Benedictow, 2006; Kelly, 2005)          |
| Plague during and after Thirty Years’ War | Europe                   | Plague bacillus (bacteria)          | Insect bites, droplets, contact with fluids and tissues                       | 0.8 or 1 flee bite        | 6-7                             | Mid-17th century         | 3,000,000                          | Up to 50%***         | (Hays, 1998; 2005)                       |
| Cholera                        | India, China, Southeast Asia, Far East, North America, Europe | Vibrio cholerae (bacteria)          | Fecal-oral (through food and water)                                          | 0.6 or 10 mln vibrios   | –                               | 19th century          | 12,000,000                        | Up to 20%**          | (Byrne, 2008)                            |
| “Yellow Jack” (Yellow fever)   | USA (Southern states), Bermuda | Yellow fever virus                  | Insect bites only                                                             | 1 mosquito bite          | –                               | Mid-19th century         | 200,000                           | Up to 72.5%*          | (Blake, Garcia-Blanco, 2014)             |
| Far East plague pandemic       | Russia, Chinese Empire, Korea | Plague bacillus (bacteria)          | Insect bites, rats bites, droplets, contact with fluids and tissues           | 0.2 or 1 flee/rat bite, 1 touch of dead rats | 7-11                           | 1910-1911             | 80,000                             | 100%**               | (Gamsa, 2006; Kohn, 2008; Zhang et al., 2018) |
| Spanish influenza              | Worldwide                 | H1N1 flu virus                      | Droplets, direct contact, surface touches                                    | 0.6                      | 4-6                             | 1918-1920, after WWI     | 100,000,000                      | Up to 25%**          | (Honigsbaum, 2018; Kohn, 2008; Taubenberger, Morens, 2019) |
| SARS atypical pneumonia        | Worldwide                 | SARS-CoV                             | Droplets, direct contact, surface touches                                    | 0.4                      | 2.5-5                           | 2002-2004             | 800                                 | Up to 10%*           | (Knobler et al., 2004)                    |
| H5N1 avian flu                 | Mainly Asian countries   | H5N1 flu virus                      | Birds to human only                                                          | 1 direct contact with an infected bird | –                              | 2004-2008             | 300                                 | Up to 52%*           | (Sendor et al., 2020)                     |
| Disease                  | Region              | Agent               | Transmission Modes                                      | Incubation Period (days) | Duration (years) | Total Cases | Case Fatality Rate | Sources                      |
|-------------------------|---------------------|---------------------|---------------------------------------------------------|--------------------------|------------------|--------------|-------------------|------------------------------|
| H1N1 swine flu          | Worldwide           | H1N1 virus          | Droplets, direct contact, surface touches               | 0.6                      | 4-6              | 2009-2010    | 285,000           | Up to 1.1%*                    | (Yadav, Rawai, 2015)          |
| Ebola haemorrhagic fever| Western Africa      | Ebola virus         | Bodily fluids and tissues only                          | 0.75                     | 1.5-2.5          | 2013-2014    | 13,500            | Up to 90%*                     | (Jacob et al., 2020)          |
| Nipah virus infection   | Malaysia            | Nipah virus         | Direct human to human contact, bat to human contacts, bat bites | 0.2                      | 1                | 1999         | 500               | Up to 78%**                    | (Raina, 2020)                 |
| COVID-19                | Worldwide           | SARS-CoV-2          | Droplets, direct contact, surface touches               | 0.4                      | 2.5-5            | 2019-2020    | 182,000\(^1\)     | Up to 5%*                     | Multiple sources              |

* case mortality rate (in regard to reported cases)
** fatality rate (in regard to all infected or reasonably deemed to be infected)
*** total local fatality rate (in regard to all local population)
▼ 1 (100 per cent) is the largest reference contagiousness of chicken pox
▼▼ using r0 is highly dubious for SARS, COVID-19 and all the diseases with additional to direct contact/droplet transmission paths. The references are measles (~20) and chicken pox (~30)
\(^1\) average estimates by Centres for Disease Protection and Control. The value of estimated death toll is between 150,000 and 575,000
\(^2\) as of 2 April 2020

- It is difficult to judge about the exact COVID-19 lethality, since by the end of April 2020 many countries (e.g. Belgium, Italy, Spain, United Kingdom) switched to a new mode of death rate calculation. All suspicious cases that were not proven to be COVID-19 by RT-PCR or RT-LAMP testing, but that exhibited more or less comparable symptoms (e.g. pneumonia-like symptoms), are ascribed to SARS-CoV-2. That blurs the whole picture tremendously.