Denying the Curve

Alternative mathematics in the Coronavirus-skeptic discourse in Israel

Edo Amin

About the authors

Edo Amin is a communication arts professional, creating illustrations, infographics, presentations and videos for researchers, NGOs and corporations. His explainer video on the scale of Israel's natural gas reserves won first prize in the Israeli Film and TV Producer Association's Made for Web competition sponsored by YouTube. (2013). A former journalist (Haaretz), he is interested in the infodemic aspect of the corona crisis, and is documenting celebrity experts in Israel since the first wave. Some of his infographics are featured in COVID-19 reports submitted to government, others are on Twitter.

https://reliable-productions.com/

Contact: edo.amin@gmail.com

Typeset by David Adler

About the CWPS

The DiscourseNet Collaborative Working Paper Series (CWPS) reflects ongoing research activity at the intersection of language and society in an interdisciplinary field of discourse studies. Prolonging the activities and publications of DiscourseNet, it welcomes contributions which actively engage in a dialogue across different theories of discourse, disciplines, topics, methods and methodologies.

All contributions to the CWPS are work in progress. The CWPS offers an environment for an open discussion of the drafts, reports or presentations. Authors are provided with two expert commentaries for their paper and more extensive discussions of their ideas in the context of Discourse-Net Conferences.

The CWPS seeks to provide support for the advancement and publication of the presented works. It does not inhibit further publication of the revised contribution.

For further information on the CWPS visit:

https://discourseanalysis.net/dncwps

About the Special Issue:
Discourse Studies Essays on the
Corona Crisis

Edited by Jens Maeße, David Adler & Elena Psyllakou

This special issue seeks to collect ideas, reflections and discussions on the multiple aspects of the ongoing corona crisis from a discourse analytical and discourse theoretical point of view. We publish short work-in-progress papers (approx. 1000—3000 words) that take empirical, ethical, psychoanalytical, economic, political and everyday aspects as starting point for developing discourse analytical research ideas and reflections which can be further developed into full research papers at a later time.

Denying the Curve

Alternative mathematics in the Coronavirus-skeptic discourse in Israel

Edo Amin

In early stages of the COVID-19 pandemic, celebrity experts rushed to predict its outcome in Israeli media. Their predictions undershot the real spread of the pandemic by one or two orders of magnitude. Media seems to be lenient towards assertions of celebrity experts even if they fly in the face of reality, which raises two observations. First, statements from celebrity experts seem bold and controversial yet typically contain only few provable or refutable hypotheses. Second (and perhaps more significant), apparent errors of celebrity experts could be seen as emanating from values of an alternative worldview. If, in such alternative worldview, their assertions hold ground, it justifies defining them as an alternative mathematics. Consequently, criticism of statements by celebrity experts could be more effective if it ventures beyond numbers and touches on values and worldviews.

> The juice of a carrot, the smile of the parrot
> A little drop of claret, anything that rocks
> Elvis and Scotty, days when I ain't spotty
> Sitting on the potty, **curing smallpox**[1]

The spread of COVID-19 forced the world to take policy decisions of unusual scope and urgency. Around the world, various institutions and conflicting interests made themselves heard: party politicians, policy makers, managers of national and international public health and disease-control agencies, hospital managers, medical experts, economists, business owners, etc. Several countries saw the appearance of celebrity experts – experts who gained rapid and significant media exposure as proponents of an alternative COVID-19 discourse. In Israel, out of several experts expressing a position antagonistic to the government's first-wave lockdown measures, two quickly acquired that celebrity status, Michael Levitt and Yoram Lass. While the official COVID-19 narrative called for restrictive measures to curb the exponential growth of infections and deaths, Levitt and Lass disputed the exponential character of COVID-19, and predicted an alternative, much lower death toll, challenging the necessity of closures and lockdowns and attracting a wave of media attention. Levitt and Lass faced some criticism after the failure of their numerical assertions and predictions, the media tolerated their apparent mathematical/factual errors nevertheless. Why did apparent errors in their over-optimistic predictions not fatally tarnish the experts' media status? To what extent are their errors not real errors, but fit Bloor's definition of "alternative mathematics" (Bloor, 1991 [1976], p. 107)? With these questions in mind, I examine the timeline and dynamics of relationship between media, experts, government representatives and COVID-19 data. I will define what are "celebrity experts", give a background summary of the first wave of COVID-19 in Israel and its exponential aspect, discuss the discourse of two celebrity experts who opposed the lockdown (Yoram Lass and Michael Levitt), review the media's reaction to the failure of their predic-

tions, and evaluate the justification for viewing their opposition as "alternative mathematics" – such that can survive a conflict with ordinary mathematics. To the extent that this definition holds for Corona-skeptics, their position should be criticised as a worldview, not just as a mathematical or data error.

Celebrity Experts – the term

The term celebrity experts has a modest past signifying, for example, celebrities-for-hire, "highly talented individuals who will add a touch of class to any corporate or private function. They come from a wealth of backgrounds [...] from weather forecasting to property renovation and design"[2]. Its use is here is referring to the celebrity logics of COVID-19 experts (Angermuller & Reinecke, 2020), experts who quickly gained exposure during the onset of COVID-19, expressing a populistic, controversial viewpoint that challenged the official narrative, by arguing that the concern around COVID-19 is exaggerated. Several arguments downplay the risks; the virus is not universally dangerous, it will wind down by itself, lockdowns are more

dangerous than helpful, existing treatment can help, the data on infection rates and the death toll are flawed.

Such celebrity experts who appeared during the COVID-19 crisis in different countries are, for example: Prof. Didier Raoult (France), Dr. Wolfgang Wodarg (Germany)[3], Prof. Hendrik Streeck (Germany), Prof. Richard A. Epstein (US), Prof. Karol Sikora (UK), Prof. Michael Levitt (US/Israel), and Prof. Yoram Lass (Israel). They all share a privileged socioeconomic profile: male, Caucasian, with impressive academic degrees (in relevant or less relevant fields), with political and/or media credentials. However, it is not due to their inclusion into circles of decision-makers, but rather due to their vehement opposition to those decision-makers that they gained wide media exposure across the full spectrum of media channels – print, TV, digital and social, from mainstream to fringe.

Celebrity experts make bold, even outrageous assertions denying some aspect of the official narrative – "it's already declining" runs in the face of "it's on the rise", "it's just a flu" runs in the face of comparison to historical epidemics (including the original influenza), "Nobody died of COVID-19" is a denial of worrisome statistics, "COVID-19 is never exponential" is a counter-argument to worries about the
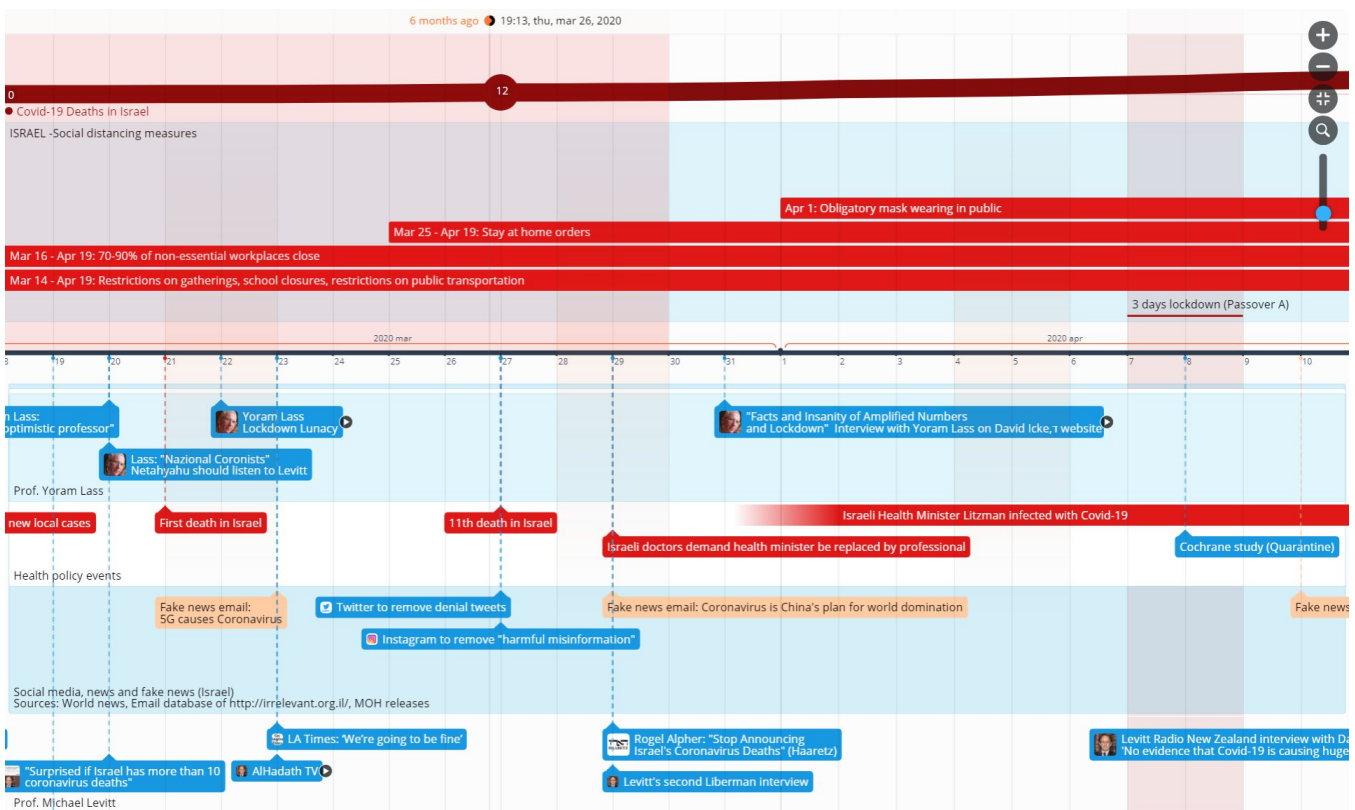

Figure 1: Policy and media events during Israel's first lockdown are shown in this detail from an interactive timetable of events, publications and broadcasts. The timetable was created as part of the research for this article. A brown graph of COVID-19 deaths is on top (note the day with the 12th death in this screenshot), restrictive measures are red stripes, and most other items are media events (many containing links to mentioned articles/videos). The timetable can be viewed on https://time.graphics/line/384328. Please make sure to activate full-screen mode by clicking the full-screen icon (third button on top right). Source for COVID-19 data: the Johns Hopkins data repository (https://github.com/CSSEGISandData/COVID-19) retrieved from http://time.graphics 03/07/2020. Source for fake news emails cited (beige color): irrelavant.org.il, retrieved 01/07/2020. Chart designer: Edo Amin.

growth rate of the pandemic. Some of these statements are outright offensive: "Coronazis" (Lass), "Three Chinese are dying and this is a global alert" (Raoult).

Few statements are also *verifiable claims* in the scientific sense (e. g., Levitt claimed that number of COVID-19 deaths in Israel will not exceed 10). That could attract media attention, but what if the curve continues its rise to 100, as it quickly did (before surpassing 1000)? When Israel had approximately 250 COVID-19 deaths, Lass said it's a smaller risk than the flu, which (he says) takes 1000 lives annually. What happens when COVID-19 deaths surpass 1000? When Levitt and Lass, the two leading Israeli celebrity experts were confronted with contradictions between their hypotheses and actual developments, they continued to defend their position, and what at first has appeared as an error later became closer to Bloor's description of "alternative mathematics":

> "Although an alternative mathematics would look like error, not any mistakes would constitute an alternative mathematics. Some error is best seen as a minor deviation from a clear direction of development. The idiosyncrasy of contemporary schoolboy mathematics does not constitute an alternative. So something more than error is required.

> The 'errors' in an alternative mathematics would have to be systematic, stubborn and basic. Those features which we deem error would perhaps all be seen to cohere and meaningfully relate to one another by the practitioners of the alternative mathematics. They would agree with one another about how to respond to them; about how to develop them; about how to interpret them; and how to transmit their style of thinking to subsequent generations. The practitioners would have to proceed in what was, to them, a natural and compelling way" (Bloor, 1991 [1976], p. 108).

To examine whether the apparent errors of celebrity experts could be seen as part of such alternative mathematics, I collected media items showing how mathematical concepts were handled in official policy communications on the one hand, and, on the other hand, how they were challenged by celebrity experts. What was the discourse medium (mainstream or social media), and how were prediction failures handled by the parties involved? To contextualize these media items, I place them over a timeline of the spread of the virus (Fig. 1). The timeline presented here also includes milestones such as major health/policy events and press releases, fake news emails, celebrity expert interviews, origin/release dates for key policy concepts, etc. all placed over/against a graph showing the number of cases and deaths. This includes links to most of the publications/videos mentioned in this article.

COVID-19 in Israel

The COVID-19 breakout caught Israel in a chaotic national election campaign, the third such election in a year, with no parliament and only an acting government headed by an acting prime-minister indicted on three criminal counts. In a live press meeting in January, the acting Minister of Health, Orthodox politician Litzman seemed to forget the name of the virus. In February, setting a parliamentary Coronavirus committee was suggested but postponed. March started with a national election (infected voters voted in special booths) and continued with an exponential increase in cases. On March 29, an open letter was penned to Prime Minister Benjamin Netanyahu and opposition leader Benny Gantz by many heads of hospital departments and senior doctors, as well as medical officials, lamenting years of neglect that left the country's health care system at its lowest point during the time of coronavirus outbreak, and urged that acting Minister of Health Litzman be replaced by a health care professional. Three days later, Litzman and his wife were tested positive for COVID-19, allegedly flouting social distancing guidelines after they tested positive.

As seen in Fig. 2, COVID-19 infections started to take off in Israel just before election day – exponentially. The initial exponential growth rate of an epidemic is a very fundamental concept in the field (Roberts & Heesterbeek, 2007; Ma, 2014). A virus typically doubles its population over a time period and will spread exponentially at first, if no artificial immunization is available. Counting from the first case on February 21, infections doubled quickly (every ~3 days) until March 29 (3619 cases), when the rate started to slowly decline.

When the process of exponential growth "is presented as is develops, in time, subjects underestimate the growth" (Wagenaar & Timmers, 1971). Scientists sometimes prefer to view the data related to such a process using a log scale Y axis (displaying 0,10,100, etc. Instead of 1,2,3...). This view mode is rarely seen in print media and TV, but is often found as a view option on COVID-19 data tracking websites. Such a semi-log grid (Y scale only) makes it easier to spot exponential functions because they plot as straight lines (see in Fig. 2). Using this view, it's easier to see that in our case, in the first week we have a single-digit number of COVID-19 cases, the next week we have tens of cases, the next week hundreds, and the next week thousands. Each week, COVID-19 cases make an order-of-magnitude jump. Now, viewing the same data in the linear scale common in the media (Fig. 3), the exact same picture is much less dramatic. Events have a different meaning: Election day is just a fine day, the school and workplace closures seem unwarranted, the first death seems like an accident, the rapid growth seems to come out of nowhere and the removal of restrictions seems premature.

The world is intuitively perceived by most like in Figure 3 – when we see a case turns to eight cases within a week, it's counter-intuitive to think that continuing this growth rate could result in 3619 in a month. As the late physicist Albert Bartlett used to conclude his argument in his lecture on exponential growth, given 1742 times: "The greatest

Cumulative confirmed COVID-19 cases (log scale)

The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.

Source: European CDC – Situation Update Worldwide - Data last updated 29th Jun, 13:12 (GMT+03:00)   CC BY
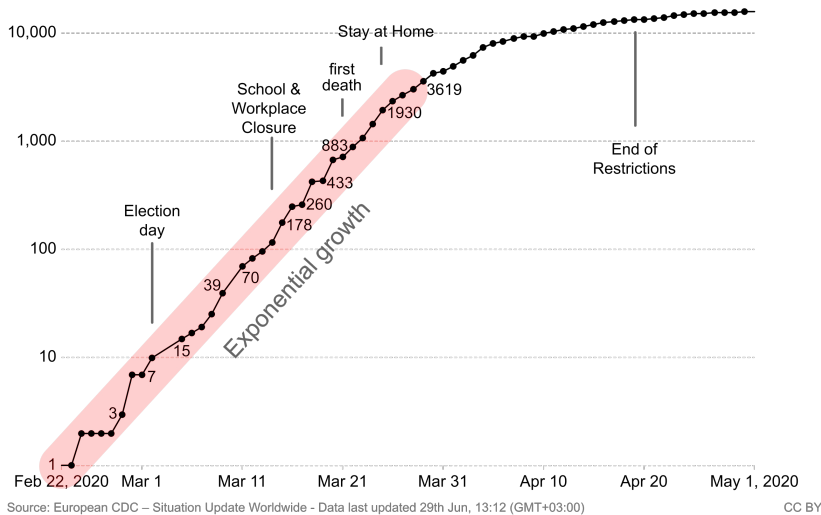
Figure 2: The Scientist's View. Israel's COVID-19 cases (cumulative) from the beginning of the first wave until end of the first lockdown, with marks for election day and dates of some restrictive measures. The chart is drawn in logarithmic scale, used by scientists). On semi-log grid such as the one used in the chart, exponential functions plot as straight lines. Source for infection data: European CDC (updated 29th June, 2020) via OurWorldInData.org. Chart design: Edo Amin.

Cumulative confirmed COVID-19 cases (linear scale)

The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.

Source: European CDC – Situation Update Worldwide – Last updated 30 September, 10:05 (London time)   CC BY
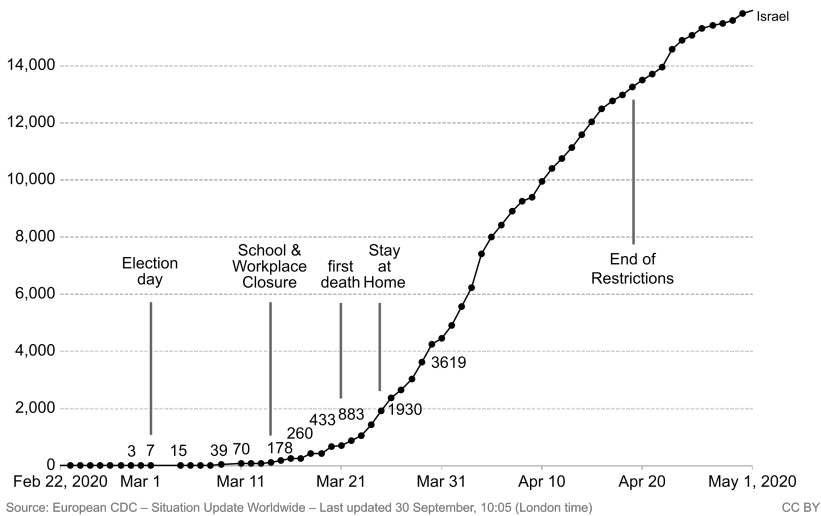
Figure 3: The Media View. This chart displays the same data values as in Fig. 2, but in linear scale, used in popular media. Source for the infection data points: European CDC (updated 30th June, 2020) via OurWorldInData.org. Chart design: Edo Amin.

shortcoming of the human race is our inability to understand the exponential function" (Bartlett, Fuller, Plano Clark, & Rogers, 2004).

Epidemiologists are familiar with exponential growth. In early March, epidemiologists saw the trend and were alarmed. But their alarm bells sounded, in the ears of the lay public, counter-intuitive, even panicky. This is when

celebrity experts countered the establishment's alarm with a message of optimism, denying exponential growth: Michael Levitt and Yoram Lass.

Case 1: Yoram Lass

The first COVID-19 celebrity expert in Israel was professor Yoram Lass. A former anchor of a popular TV science program in the 1980s, briefly a Director General of the Ministry of Health, later a Member of Knesset for the Labour party, he teaches at Tel Aviv university. But nothing in his background, wrote Haaretz's Moran Sharir[4], "could give us a hint that Yoram Lass is to be the hero of the day".

The occasion of his first radio interview on March 6 was the government's decision to limit flights to Israel. Lass expanded on the local issue, railed against "global hysteria", quoted US numbers and echoed Trump's March 5 flu reference.

"In the US flu season", Lass said, "30,000 people died in average and the US was not shut down[5]. Now, only 12 died [in the US – E. A.]. Tomorrow, 24 will die, and then everyone will say 'the number has *doubled*' [emphasized tone]. They'll say the virus is *spreading*. But the numbers are nothing, they are miniscule!".

He added a local reference, saying "Your odds of dying from Coronavirus are equal to your odds of winning the Lotto (national lottery)"[6].

Lass's discourse in this interview repeats the number of 30,000 "average" flu deaths (so often that he apologizes for repeating it "like a mantra"). Since flu deaths are estimated retroactively and expressed using a range, this may be an average of estimate extremes for the same year rather than for different years. 30,000 also falls on the safe side of the range of estimates that Trump mentioned on TV call with Hannity on March 4 (27,000 and 77,000, then dropping the number 36,000). Trump, much like Trump, much like Lass, emphasized that the number is unknown to the public and is larger than one would think. But, when US COVID-19 deaths crossed 100,000 in June 2020, could Lass's claim be challenged? Not really. First, because mortality numbers (and especially disease burden estimates) take months to settle and can't be calculated in a timely manner. More importantly, such a refutation would have little consequence. Lass only asked his interviewer if he knows that so many die of flu but didn't explicitly state that surpassing 30,000 deaths should trigger a call to action, and indeed he later changed his formula to "it's just 20 % worse than the flu", almost like a

referee in the the race of Achilles and the tortoise, where "the famously fastest runner will fail to catch the slowest one" (Aristotle, 2018, p. 171). In other words, even as the race continues, it remains extremely difficult to find a "potential falsifier" (Popper, 1985, p. 66) to Lass's statements.

As for the chances to win Israel's Lotto weekly lottery – they are 1 in 16,273,488[7], and with the first Israeli deaths, that probability statement was no longer accurate. As deaths mounted, a deeper argument surfaced: Lass claimed, "nobody dies of COVID-19", as they were all past the average life expectancy. People only died "with Coronavirus" but cause of death should have been stated as old age. In a March 10 he said on Morning News TV: "For a few people who don't have a long life expectancy, you don't ruin a country – you sacrifice the people"[8].

While Lass's numerical claims couldn't be proven (or refuted) instantly, his guess as for the future direction of the discourse was very precise. His March 6 protest that, if 24 will die in the US a day after 12 had died, "everyone will say 'the number has *doubled*'" became true as the theme of exponential growth entered the mainstream discourse within a week. On March 11, five days after this interview, COVID-19 was declared a pandemic[9]. While Dr Tedros of the WHO avoided mentioning the US, "exponential" or "doubling" at that time (he later did)[10], policy makers around the world were less reserved. 24 hours later, on March 12, Prime Minister Netanyahu gave a special announcement on national TV, saying in his trademark grave voice:

> "The virus spreads in a geometric progression. One person infects two people. Each of them infects two more. The four infect eight, the eight infect 16, the 16 infect 32, the 32 infect 64, the 64 infect 128 – and so on and so forth."

This speech is exactly what Lass predicted. Note that Lass repeated and refined Trump's flu analogy within 24 hours, and that Netanyahu repeated and sharpened Tedros's declaration of pandemic just as quickly (ironically, only to be quoted a day later in Israel's Haaretz newspaper under the headline "Trump Is Right About The Coronavirus"[11]).

A few days later, when Israel enacted school closures, the second celebrity expert appeared on the media stage.

Case 2: Michael Levitt

Lass was soon followed by South African/American/Israeli Nobel laureate (Chemistry, 2013), Prof. Michael Levitt, who started his celebrity expert career earlier as a guest on China Global Television Network (CGTN). On February 6[12], Levitt appeared on CGTN to (accurately) predict the end of the epidemic in China. Levitt later moved on to predict, albeit with less success, the downturn of the epidemic in Italy, Iran, France, the US and Israel. Following a March 16 meeting with Israel's PM, he appeared on Israeli TV[13] with the chyron "Netanyahu's Coronavirus consultant" attributing his Nobel prize to Computational Biology (it was, in fact, in Chemistry).

On TV, Levitt predicted Israel will suffer no more than one or two deaths, a provocative statement later modified on a morning radio news program, "Kalman Liberman", saying: "I will be surprised if the number of (COVID-19) deaths in Israel surpasses 10"[14].

A prediction of death toll does amount to a verifiable claim, unlike Lass's rhetorics. Levitt also said there, as he consistently does[15], that COVID-19 is *never exponential* – again, a more formal denial of COVID-19's spread than Lass's.

When ten days later the number of deaths in Israel reached 15, Levitt was asked on the same radio show, if he'd like to revise his evaluation. Levitt opened by saying that "things are so good it's hard to believe" in spite of that "redundant number of 15 (deaths)" and stood by his numbers. This isn't an error, he said, but an accepted method of counting: "If you count Years of Life Lost, the total of those years lost for all the 15 or 16 deaths is equal to one young 31-year-old guy who dies at a road accident on his scooter." When pressed Later in the interview, he says:

> "Ask any economist – if a person dies at an age that's higher than the life expectancy, you don't count that person. And for those who die at an age lower than life expectancy – you count the years that person lost. True, I should have said I count Whole Life Equivalence, that's how it's done everywhere. Whole Life Equivalence is when a person dies at age 0 – you lost 80 years, if a person dies at 40 – you lost 40 years, half a life. When a person dies at 80 – he has had his complete life. True, he might be a dear father or grandfather or a super-important person or the best CEO of his company but it's not the same as losing a baby. That's how it's evaluated all around the world."[16]

Levitt has repeated this concept, forwarding Twitter followers to the "Disability-adjusted Life Years" page on Wikipedia[17], and referring to the insurance origin of his approach on a podcast interview[18]. Using YLL (years of life lost) is indeed an alternative counting method, in use in actuarial accounting by insurance companies and accident lawyers[19]. Levitt writes: "I have felt that actuaries should have been in charge of COVID-19 deaths."[20] Levitt isn't alone – Prof. Karol Sikora suggested a similar approach to counting of COVID-19 deaths[21].

That brings us closer to Bloor's Alternative Mathematics. Rather than a mathematical error, Levitt's (and Sikora's) error can be seen as suggesting an alternative, utilitarian method of counting lives and deaths. And the following metaphor from Levitt would resonate well with Lass's "sacrifice the elderly":

> "In every population there's a certain number of people who are susceptible, not susceptible in terms of the disease, but vulnerable in terms of being infirmed, having other conditions, I often think about it as having a forest and there are just some trees that are getting

kind of old, broken. When wind comes through, those are trees that are going to fall. That's what seems to happen."[22]

This is very similar to the "horticultural metaphor" (O'Brien, 2011) or "arboricultural" (Johann, 2012) metaphor associated with one of the most extremely utilitarian philosophies – Eugenics. However, as the latter reference says, "The '-cultural' in these adjectives indicates more to do with culture/cultivating (of trees, forests, fields, and gardens) than with nature pure and simple. Man is an actor who imposes his 'gestaltender Wille' (his formative will) on natural material to give it the desired Gestalt (form)." For better or worse, in Levitt's metaphor the gardener stands and watches as nature does its work of destruction.

After the lockdown

Glorification followed by disillusionment and shaming is a pattern so common in the media it's almost a professional risk for pop stars and politicians. Yesterday's prodigy often turns into tomorrow's persona non-grata in interviews and programs. In the cases of Lass and Levitt, I find a different pattern.

After the refutation of Levitt's prediction at Liberman's program, he was no longer invited to Israeli media. Deaths mounted, lockdown was imposed, and yesterday's uber-optimist was forgotten. However, on the day the first lockdown was lifted, in an unusual aftermath, Levitt received a gesture that is almost an apology. Anchor Asaf Liberman uploaded a station-sponsored 4-minute social media video *about* Levitt. The well-edited video was titled: "Fear Factor: Why don't we listen to optimistic opinions?"[23]. Titled with a reference to the NBC/MTV stunt game show Fear Factor, the video chides the audience for failing a fear challenge and thus missing the message of a persecuted saviour:

> "You would think that in times of crisis, we – Israel, and humanity at large – will turn to people who think outside of the box. Aren't these the myths we were raised up on? Nobody believes the historical hero or movie hero at first, until the moment it turns out he is right. From Galileo who argued the earth circles around the sun, to Jeff Goldblum on Independence Day, who tried to convince the US president that aliens are about to attack. This is the genre we like best: The mainstream is wrong, trust the strange philosopher, the outcast FBI agent, or the teacher with an alternative viewpoint."

Liberman was not the first to use the Hollywood movie Independence Day (1996) and its sequel Independence Day: Resurgence (2015) as a source of analogies for the global COVID-19 crisis and the framing of celebrity experts as world saviours. Already on February, several Twitter users joked about the resemblance of Prof. Didier Raoult and of Trump's personal doctor Harold Bornstein to each other

and to Dr. Okun, an Area 51 astrophysicist who saves the world from invading aliens who try to control his mind in Independence Day: Resurgence (Fig. 4). In March, the visual idea was developed and integrated into the 2015 movie poster (Fig. 5). Liberman's video compares Levitt not to Okun but to another Independence Day scientist, the character of Levinson (Fig. 6), an outsider scientist who single-handedly alerts the president and saves the world
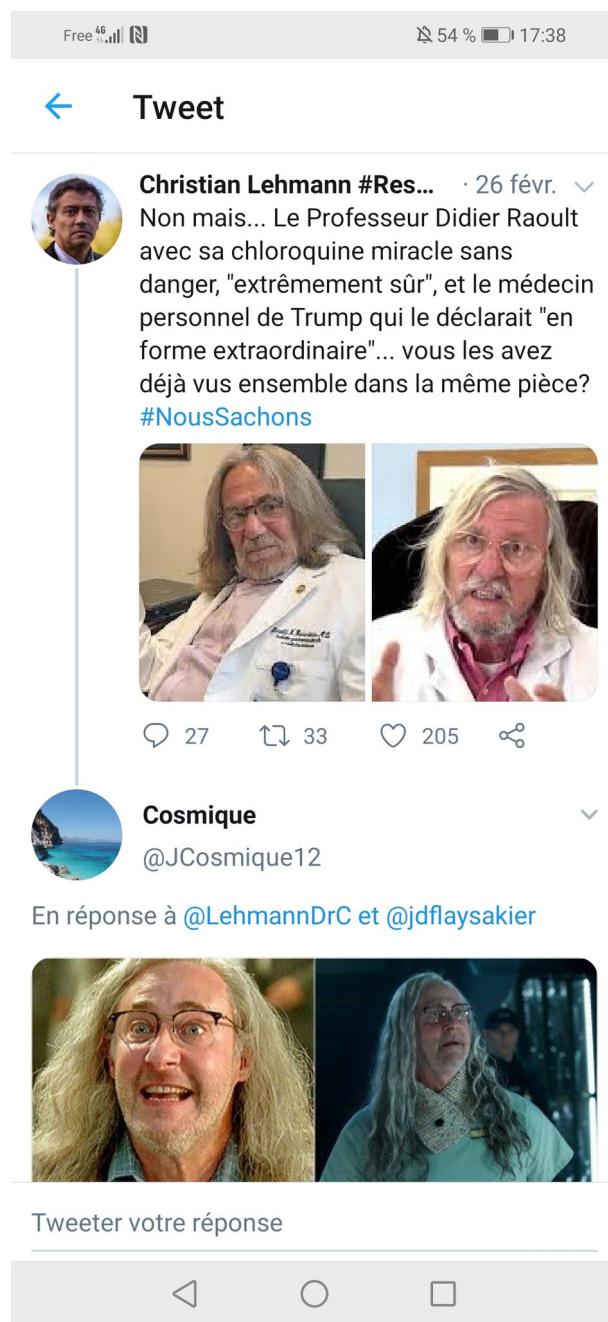

Figure 4: Celebrity expert Prof. Didier Raoult and Trump's personal doctor Harold Bornstein are jokingly compared to Dr. Okun, an Area 51 astrophysicist who saves the world from invading aliens who try to control his mind on Independence Day: Resurgence (2015) (@ComplotsFaciles and @JCosmique12 February 26, 2020, retrieved October 4, 2020).

Figure 5: The concept of Raoult-as-Okun integrated into the 2015 movie poster (@VladumirIbitch, March 20, 2020, retrieved October 4, 2020).

Figure 6: In his video, Israel's radio presenter Liberman compared celebrity expert Prof. Levitt to another Independence Day character, Levinson, an ex-scientist turned cable technician who alerts the president to the alien danger in the 1996 film, and is promoted to Earth Space Defense (ESD) director in the 2015 sequel. However, unlike the French meme-makers Liberman isn't joking. (KANN news, April 19, 2020, retrieved from https://www.facebook.com/1489977989 65601/videos/1763682747168056 on October 4, 2020).

from destruction by aliens in the original 1996 film. Liberman uses this reference to reproach the viewers for wanting to live in a "world without skepticism", for remembering Levitt only for that one sentence about the 10 deaths, and for reacting with "contempt, mockery, even anger" towards Levitt's optimistic message while they

> "embrace the decision makers or the experts that they send to us with messages about thousands of upcoming deaths [...] Who has a negative influence on our life – the fearmongers or the optimists? Who harms the public more – those who say we're about to triumph over the virus, or those who leave us all in fear?"

Liberman's video doesn't leave any doubts about who are "the experts they send to us" by literally portraying the responsible public officials – the Director General of the Ministry of Health and the Director of Public Health Services. Both were constantly targeted by the media, and resigned on May 12 and July 7 respectively. Levitt went on to spread his message on YouTube and is translated to several languages.

Lass's affair with the media developed much better. His message appealed to both left and right (embraced by progressive Tel Aviv activists as well as appearing on the website of radical right-winger and conspiracy theorist David Icke, who was kicked out from Facebook on May 1st). On May 8, as soon as the lockdown was lifted, he was invited to the hugely popular Ofira and Berkovich TV program for his media "coronation" (Haaretz journalist Moran Sharir's term). A few days later, another channel (Kann TV news) had anointed him and a hospital department director as "Leaders of the opposition" (to the lockdown; a segment title). He appeared on TV panels, newscasts and magazine covers, aggressively silenced a director of the Coronavirus dept. in a leading hospital on air, starred as a small business owner in a promo by the municipality of Tel Aviv (serving a chili peppers and garlic drink and shouting to the disgusted customers' faces "you're brainwashed!"), and as of early July tickets were sold for his first live public performance. Hazfalafel.com, an Israeli meme generator website has a Lass template, titled *Lass belittles things* and users have used it to create memes in which he downplays nuclear bombs ("It's just a cauliflower"), porn movies ("They're just friends!"), etc. (see Fig. 7). His recurring bloated assertions were finally examined by Guy Zohar, a TV anchor specializing in dissecting disinformation in the

Figure 7: Some of many Lass Internet memes paraphrasing his "It's just flu!" statement (left to right): a nuclear detonation seems to Lass as if "it's a cauliflower!" (Ilan Nachmias, 2020), Israel's nuclear facility seems to Lass as if "It's just a textile factory!" (Tomer Yahalomi, 2020), a KKK meeting seems like "it's just line dancing!"(Tamir Barak, 2020), the lady on the far right is identified by Lass as an "essential worker" (Dana Vinakur, 2020), Bambi's dead mother is misdiagnosed by Lass as if "she's just asleep!" (Hadas Moshel, 2020) and the Game of Thrones's "Winter is Coming" seems to Lass like "it's just the weatherman!" (Chagit Yosef, 2020). Most were captured from a Lass Memes Facebook group, which at the time had a cover image appropriately stating, "it's just a group".

media. Zohar wittingly compared Lass's predictions *to other Lass* predictions and showed that in 2020 Lass moves the goalposts as time goes by. For example, Lass pooh-poohs COVID-19 because "it's just a flu", but in the previous year Lass pooh-poohed flu, too.

Lass replied to Zohar immediately: "All my numbers were 100 % correct on the day they were given."[24] This is the sort of brazen statement that can get researchers in trouble (see Prof. Epstein's COVID-19 estimates[25]), but the media has other rules of conduct. Lass ended his reply to Zohar with a suggestion that Zohar takes issue with the "incorrect numbers" of the Ministry of Health. Three weeks later, Zohar did exactly that, and criticized MOH statistics in a segment titled "One thing about which Lass was right" – exactly the criticize-but-hug pattern we've seen with Liberman and Levitt (and with a similar rhythm).

Conclusion: Optimism and passivity

Levitt and Lass never missed a chance to point out the pessimism of the official narrative, and their own optimism is mentioned in almost every interview. Their reason to be cheerful, to paraphrase Ian Dury's song cited above at the outset, does not consist in finding a cure to an epidemic (as in Dury's song), but in finding a cure to anxiety. That cure consists of relieving society of responsibility to act. As Los Angeles Times quoted Levitt on the headline of its March 23 article, his message is "It's going to be fine" – but the logic behind it isn't that that no-one will die. Some people will die, *with* a COVID-19 infection, but not because of it. These people had to die anyway, because they presumably were "broken" (Levitt) or "past the average life expectancy" and had to be "sacrificed" (Lass)[26]. The statistics, Lass repeatedly claims, are skewed because the global medical establishment tags dead bodies with COVID-19 as cause of death when, in fact, people simply die of old age. In fact, what will cure the pandemic is a simple change in the way death certificates are written. Levitt echoes the sentiment: "The older passengers (of Diamond Princess – e. a.) may die from old age: if we wait long enough, the Ferguson value will be accurate. These people will be dying <u>WITH</u> coronavirus and not <u>BECAUSE OF</u> coronavirus, an important distinction that needs to be widely understood" (Levitt, 2020, caps and underline in the original – E. A.).

The optimism and relief that's appreciated by the media emanates, then, from this utilitarian and rather dystopian worldview. The passivity it suggests in the face of the epidemic is more extreme than the original arboricultural metaphor which had a "-cultural" ending, indicative of responsibility. Here, contemporary Corona-skeptics seem to adopt a medical laissez-faire approach more extreme than the classic libertarian approach of Chicago school's Friedrich Hayek who acknowledged the government's duty to provide "protection against epidemics" (Hoppe, 2004,

p. 363). Compare this classic position with Lass: "a government cannot stop a virus"[27].

Given the lack of proactivity they recommend, it's peculiar that both experts – Levitt and Lass – encounter only criticism for details they exaggerated but receive little pushback[28] from the media against their hardcore utilitarianism and passivity. Here is an example of potential media reaction to utilitarian arguments: in 2014, Prof. Sikora, a former WHO chief (and contemporary COVID-19 skeptic), said: "Do we really expect that people in their eighties with multiple insoluble health problems should have the same technology brought to bear on their cancer as those in their prime?"[29]. The Times had titled this news item "Doctor wants to deny elderly cancer drugs", and the Mirror echoed the framing as "Leading cancer doctor says frail elderly patients should be denied some expensive drugs in favour of the young"[30]. Such media response to a utilitarian worldview was completely lacking in 2020.

The expression "alternative facts" appeared in media discourse after it was used by U.S. Counselor to the President Kellyanne Conway during a Meet the Press interview on January 22, 2017, in which she defended White House Press Secretary Sean Spicer's false statement about the attendance numbers of Donald Trump's inauguration as President of the United States. The phrase acquired the meaning of a shallow refusal to admit reality, a sort of a novice error. COVID-19 celebrity experts seem to stand on a stronger platform, with a structure, a logic, a common language with colleagues (doctors *and* economists), even historical roots. This at the very least begins to justify the title of "alternative mathematics" in the discourse sense.

Attempts to refute the assertions of celebrity experts like Lass and Levitt were not very successful. One reason is that their discourse is rarely formulated as hypotheses that could be refuted. In addition, as we've seen with Levitt, even when an outrageous hypothesis is stated, gets refuted, and the refutation is admitted to, all that does not dent the support of the media and he was featured in a video celebrating his commitment to optimism in an *Eppur si muove* moment. Lass saw similar success – after calling to sacrifice the elderly, he has been invited to replace a well-known radio shock-jock. The controversy that is out of place on an academic resume, could be positively highlighted in his shock jock resume and thus the controversial interviewee, has been re-invited as the controversial interviewer. Both have become very popular on Twitter (Levitt with 61,000 followers as of September 2020, Lass acquiring 5,000 Hebrew speakers in 3 months) and Facebook (Lass has 18,000 Hebrew-language followers on the network he blames for instigating Corona panic). It seems that criticism of their "errors" was not very effective. Compared to the limited success in countering the inaccuracies in their discourse, it would be more important, and more consequential, to criticise the worldview that underlies their alternative mathematics.

Acknowledgement

Notes

1   Dury, I. (1979). Reasons To Be Cheerful, Part 3. [Recorded by Ian Dury and the Blockheads]. On Reasons To Be Cheerful, Part 3 [Single]. London, England: Stiff Records. (my emphasis) Ian Dury was a victim of the 1949 polio epidemic.

2   Celebrity Experts. (n. d.). Retrieved October 4, 2020, from https://www.normanphillips.co.uk/celebrity-appearances/celebrity-experts/.

3   Raoult and Wodarg are discussed in (Angermuller J and Rielke J, 2020).

4   Sharir, M., & Lass, Y. (2020, May 22). Was Yoram Lass Right? To Live A Normative Life, You Pay With Human Lives. Haaretz. https://www.haaretz.co.il/gallery/television/.premium-MAGAZINE-1.8859817. (Retrieved October 2, 2020). All translations from Hebrew-language sources are mine, unless otherwise mentioned.

5   Burns, K. (2020, March 13). Trump's 7 worst statements on the coronavirus outbreak. Retrieved October 2, 2020, from http://www.vox.com/policy-and-politics/2020/3/13/21176535/trumps-worst-statements-coronavirus.

6   Lass, Y. (2020, March 6). Your Odds Of Dying From Coronavirus Are Equal To Your Odds of Winning The Lotto [Interview by N. Mish'al]. Retrieved October 16, 2020, from https://103fm.maariv.co.il/programs/media.aspx?ZrqvnVq=HLKKJE&c41t4nzVQ=EL

7   Rosenthal, N. (2016, October 4). What is the Probability of Winning the Lottery? Retrieved October 2, 2020, from https://davidson.weizmann.ac.il/online/askexpert/%D7%9E%D7%94-%D7%94%D7%A1%D7%99%D7%9B%D7%95%D7%99-%D7%9C%D7%96%D7%9B%D7%95%D7%AA-%D7%91%D7%9C%D7%95%D7%98%D7%95.

8   Channel 7 Staff. (2020, March 10). Former Health Min. official: 'Wild media is exaggerating coronavirus' – Technology & Health. Retrieved October 2, 2020, from https://www.israelnationalnews.com/News/News.aspx/277085.

9   Adhanom, T. (2020, March 11). WHO Director-General's opening remarks at the media briefing on COVID-19 – 11 March 2020. Retrieved October 02, 2020, from http://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-COVID-19---11-march-2020-

10   Chappell, B. (2020, March 26). 'We Are At War,' WHO Head Says, Warning Millions Could Die From COVID-19. Retrieved October 2, 2020, from http://www.npr.org/sections/coronavirus-live-updates/2020/03/26/822123471/we-are-at-war-who-head-says-warning-millions-could-die-from-COVID-19.

11   Carmeli, O. (2020, March 29). 'Trump is right about the coronavirus. The WHO is wrong,' says Israeli expert. Retrieved October 2, 2020, from http://www.haaretz.com/israel-news/.premium.MAGAZINE-israeli-expert-trump-is-right-about-COVID-19-who-is-wrong-1.8691031.

12   The Point: Why should we be optimistic about coronavirus? (2020, February 6). Retrieved October 2, 2020 from https://www.youtube.com/watch?v=Ha5YUGqmWKg&t=506s.

13   Levi, A. (2020, March 18). Netanyahu's Corona Advisor: "A Scenario With Thousands Of Deaths Is Improbable". Retrieved October 2, 2020, from https://13news.co.il/item/news/domestic/health/corona-adviser-1030287/.

14   Edmunds, D. R. (2020, March 20). Nobel laureate: Israel will have no more than 10 coronavirus deaths. Retrieved October 2, 2020, from http://www.jpost.com/israel-news/nobel-laureate-israel-will-have-no-more-than-ten-coronavirus-deaths-621407.

15   Michael Levitt Lab. Research. Retrieved October 2, 2020, from http://med.stanford.edu/levitt/research.html.

16   Kann News – Prof. Levitt: Age Of Israeli Corona Deaths Is Highest In The world. Retrieved October 2, 2020, from https://omny.fm/shows/kan-news/89d80d0d-f459-4e0f-838a-ab8e0061e4ac.

17   Levitt, M. (2020, May 23). Retrieved October 2, 2020, from https://twitter.com/MLevitt_NP2013/status/1264101279615389696?s=09.

18   Rose, B. (2020, June 13). London Real: Professor Michael Levitt – How COVID-19 Panic From The Government Destroyed Millions Of Lives. Retrieved October 2, 2020, from https://podcasts.apple.com/us/podcast/professor-michael-levitt-how-covid-19-panic-from-government/id474722933?i=1000477838183.

19   To add insult to injury, his life expectancy data was also off by a few years.

20   Levitt, M. (2020, June 28). I have felt that actuaries should have been in charge of COVID-19 deaths. Retrieved October 2, 2020, from https://twitter.com/MLevitt_NP2013/status/1277353783199256576?s=09.

21   Hardy, J. (2020, June 11). Prof Karol Sikora: Covid-19 death toll may be less than half of what has been recorded. Retrieved October 2, 2020, from https://www.telegraph.co.uk/news/2020/06/11/prof-karol-sikora-covid-19-death-toll-may-less-half-has-recorded/.

22   See interview with Brian Rose of Londonreal.tv mentioned in footnote 18. Vice says of London Real: "In the channel's early days, interviews rarely racked up more than 10,000 views, with predictably esoteric staples of the alternative media – such as ayahuasca, cryptocurrencies, martial arts and self-mastery – being common territory for conversation. Post-pandemic, however, the channel has homed-in on coronavirus misinformation to sate the appetite of a growing following of conspiracy enthusiasts. Since the banned Icke interview, London Real has hosted talks with the likes of Dr Andrew Kaufman and anti-vaxxer Dr Rashid Buttar, both of whom refute the official coronavirus narrative." Scott, B. (2020, May 21). The YouTuber Accused of Using Coronavirus to Scam His Followers. Retrieved October 2, 2020, from https://www.vice.com/en_uk/article/bv8x5a/london-real-brian-rose-digital-freedom-coronavirus.

23   Liberman, A. (2020, April 19). Fear Factor: Why can't we Listen To Optimistic Opinions? Retrieved October 2, 2020, from https://www.facebook.com/148997798965601/videos/1763682747168056/.

24   https://www.facebook.com/yoram.lass/posts/1160075037693371 Last accessed 03/07/2020.

25   "Richard Epstein." Wikipedia, Wikimedia Foundation, 1 July 2020, en.wikipedia.org/wiki/Richard_Epstein. Last accessed 03/07/2020

26   Magen, H. (2020, March 25). Lockdown lunacy. Retrieved October 4, 2020, from https://en.globes.co.il/en/article-lockdown-lunacy-1001322696.

27   See 26.

28   Spiegelhalter, D. (2020, April 2). Transcript - Coronavirus: Understanding the Numbers. Retrieved October 4, 2020, from https://riskytalk.libsyn.com/transcript-of-coronavirus-understanding-the-numbers is an exception to the rule, providing counter-arguments to measuring cost-effectiveness.

29   Templeton, S. (2014, May 04). Doctor wants to deny elderly cancer drugs. Retrieved October 4, 2020, from https://www.thetimes.co.uk/article/doctor-wants-to-deny-elderly-cancer-drugs-fh23xx6dl8c.

30   Mirror.co.uk. (2014, May 05). Leading cancer doctor says frail elderly patients should be denied some expensive drugs in favour of the young. Retrieved October 4, 2020, from https://www.mirror.co.uk/news/uk-news/karol-sikora-leading-cancer-doctor-3497059.

References

Angermuller, J., & Reinecke, J. (2020, April 27). Science and populism in the coronavirus controversy: the celebrity logics of expert discourses. DiscourseNet Seminary, Retrieved October 2, 2020, from https://www.youtube.com/watch?v=5yL2QTGvTMo.

Aristotle. (2018). Physics. (C. D. C. Reeve, Trans.) Indianapolis, Cambridge: Hackett.

Bartlett, A. A., Fuller, R. G., Plano Clark, V. L., & Rogers, J. A. (2004). The Essential Exponential! For the Future of Our Planet. Lincoln: Center for Science, Mathematics and Computer Education, University of Nebraska.

Bloor, D. (1991 [1976]). Knowledge and Social imagery (2 ed.). Chicago/London: The University of Chicago Press.

Hoppe, H.-H. (2004). Friedrich A. von Hayek: Critical Assessments of Contemporary Economists, 2nd Series. (R. D. John Cunningham Wood, Ed.) London: Routledge.

Johann, C. (2012). The Nazis and Nature: Protectors or Predators? Vingtième Siècle. Revue d'histoire, 113(1), 29-39. doi:10.3917/vin.113.0029.

Levitt, M. (2020, March 25). How Accurate are the Number of UK and US Deaths Predicted by Ferguson et al (2020)? From Dropbox (unpublished article): https://www.dropbox.com/s/35el2dfdg-di46on/5.a.%20How%20accurate%20are%20the%20num-ber%20of%20UK%20and%20US%20Deaths%20Predicted%20by%20Ferguson%20et%20al%202020_by_Michael_Levitt-v2.pdf.

Ma, J. D. (2014). Estimating Initial Epidemic Growth Rates. Bulletin of Mathematical Biology, 245–260. doi:https://doi.org/10.1007/s11538-013-9918-2.

O'Brien, G. (2011). Anchors on the Ship of Progress and Weeds in the Human Garden: Objectivist Rhetoric in American Eugenic Writings. Disability Studies Quarterly, 31(2). doi:http://dx.doi.org/10.18061/dsq.v31i3.1668.

Popper, R. K. (1985). The Logic Of Scientific Discovery. London; New York: Routledge.

Roberts, M. G., & Heesterbeek, J. A. (2007). Model-consistent estimation of the basic reproduction number from the incidence of an emerging infection. Journal of mathematical biology, 55(5-6), 803–816. doi:https://doi.org/10.1007/s00285-007-0112-8.

Wagenaar, W. A., & Timmers, H. (1971). The pond-and-duckweed problem; Three experiments on the misperception of exponential growth. Acta Psychologica, 43(3), 239-251. doi:10.1016/0001-6918(79)90028-3.