

Department of Political Science

Major in Politics, Philosophy and Economics

Chair of Behavioural Economics and Psychology

Cognitive biases in the context of mass media and fake news: an analysis of the case of COVID-19 and its effects on echo chambers.

Thesis mentor:

Massimo Egidi

Candidate:

Valentina Maccari

ID number:

084682

Academic year 2019/2020

Acknowledgements

Ringrazio il Professor Massimo Egidi per avermi accompagnato e consigliato durante la stesura del mio elaborato, nonostante l'impossibilità di incontrarsi di persona dovuta all'emergenza sanitaria di quest'anno.

Ringrazio poi i miei genitori, i cui sforzi e sacrifici mi hanno permesso di intraprendere questo percorso e che mi supportano sempre nelle mie scelte.

Questo lavoro lo dedico alla mia famiglia e ai miei amici.

Abstract

The Internet is probably the greatest technological advancement of modern society. It completely revolutionized the world of communication and accelerated the diffusion of news and information.

In the 21st century, it is possible to know what is happening on the other side of the planet in the very same moment it occurs.

It involves a higher liberty but also a lower control on how information is produced: everyone has the possibility to share something on the Web and there is a higher risk of bumping into a piece of false information. The speed at which a post on Facebook travels and the number of users it can reach is astonishing but also dangerous at the same time.

An increasing number of people in the world is misinformed, but what does this mean? What are the reasons why individuals who are apparently rational believe to a piece of information that is false and published by a non-reliable source?

What I will analyse in this thesis are the behavioural and psychological mechanisms that can explain why misinformation occurs and the number of phenomena that can spread from it, such as echo chambers, user polarization and the filter bubble.

I will then focus on the specific case of the 2020 pandemic of COVID-19 and how we witnessed a situation in which the prejudices and biases of people seemed to have changed. Is it therefore possible that, in certain cases, misinformation can be corrected, and the so-called echo chambers broken?

Table of contents

Part 1

| | |
|---|---|
| The roots of mass information and mass media..... | 5 |
| 1.1 How the Internet revolutionized the world of information..... | 6 |
| 1.2 The risks brought by the Internet: misinformation and fake news..... | 7 |
| 1.3 An historical excursus: the manipulation of information under the fascist regime..... | 9 |

Part 2

| | |
|--|----|
| What are cognitive biases and why human beings believe to fake news..... | 12 |
| 2.1 Communities of biased people: the filter bubble and echo chambers..... | 16 |

Part 3

| | |
|---|----|
| The phenomenon of group polarization explained..... | 18 |
| 3.1 Polarization on the Internet..... | 19 |
| 3.1.1 No-vax movements..... | 19 |
| 3.1.2 National-populist conspiracy theories supporters..... | 20 |
| 3.2 What are conspiracy theories: an analysis proposed by Bradley Franks, Adrian Bangerter and Martin W. Bauer..... | 20 |
| 3.2.1 The viral process of a piece of information..... | 23 |
| 3.2.2 Positive, negative or neutral: the attitude of the users on the Web..... | 24 |

Part 4

| | |
|--|----|
| A new global pandemic: COVID-19..... | 28 |
| 4.1 Event background of COVID-19 (European Centre for Disease Prevention and Control)..... | 28 |
| 4.2 People's reaction to the virus outbreak..... | 30 |
| 4.3 Echo chambers during the pandemic..... | 32 |
| 4.3.1 No-vax movements and conspiracy theories..... | 33 |
| 4.3.2 Healthcare systems and heroization of the medical staff..... | 35 |

Part 5

| | |
|---|----|
| Main findings and conclusions: ways of correcting misinformation..... | 39 |
| References..... | 41 |
| Summary in Italian..... | 48 |

Part 1: The roots of mass information and mass media

The concept of mass media characterizes and includes those tools used for the purpose of communicating and spreading content to the individuals and, therefore, for the transmission of information. Mass media tools include the television, the radio, newspapers and magazines and, in the last decades, the Internet.

To explain what are the mass media and how they work, we have to go back to the concept of communication: a social participatory process congenital to human beings, which has its origins in the Greek terms *koinw* and *koinoneo* (to make common, to link) and the Latin *communico* (to share, to participate). Mass communication is a form of institutionalized communication, which occurs among different social actors within society with the intermediate role of the mass media.

From older tools like the newspaper – born in the 17th century –, getting later to the invention of the radio or the television, mass communication became more and more democratized and addressed to bigger portions of the population, growing through a process of technological development at an incredible pace.

In the 20th century, the human society witnessed then the invention of the Internet (1960s): more in particular, the World Wide Web changed the lives of millions of individuals, introduced by the CERN¹ (European Organization for Nuclear Research) as a project proposed by Tim Berners-Lee and Robert Cailliau in 1989 for facilitating communication among researchers. It allowed information to circulate faster than with the television or the radio and gave people the possibility to be constantly interconnected to one another in every single moment of the day.

Just until a few decades ago, the diffusion of information was a task that belonged to a restricted number of media industries: they were responsible for it via newspapers, newscast or radio programmes and the figure of the journalist represented solely the person whose name was contained in the register of journalists.

With the World Wide Web the sources of information grew, and the figure of the journalist became blurred, compared to the past.

It is on this ground that the phenomenon of fake news takes place: everyone can express their political opinion and thoughts, with the consequence that not everything that is read or written on the Internet can be considered true or reliable.

Fake news are “false stories that appear to be news, spread on the Internet or using other media, usually created to influence political views or as a joke” (Cambridge Dictionary) and unfortunately deeply permeate and influence society, to the point that sometimes also newspapers share them or write articles based on them, contributing to the diffusion of the fake piece of information.

¹ For more information regarding the birth of the World Wide Web, see <https://home.cern/science/computing/birth-web>

1.1 How the Internet revolutionized the world of information and its risks

The invention of the Internet completely revolutionized the world of information and communication. For a time, “it seemed that Internet could entirely redemocratize society” (Eli Pariser, 2011): it is a space for people to interact, to be constantly informed and express their opinion on social, political or economic matters, to unite for a humanitarian cause or organize for a petition, and even to avoid terrorist attacks.

The Internet is also seen by many as the future of democracy and voting, and a possibility for the creation of a real participatory and inclusive democracy.

The digital population grew exponentially from the entrance of the World Wide Web into our lives at the end of the 1990s, until when it was something used just for some limited purposes and not accessible to everyone. According to the data gathered by Statista, in April 2020 more than a half of the world population had access to the Internet, or more precisely is an active Internet user, which means that its use occurs on a daily basis.

Global digital population as of April 2020

(in billions)

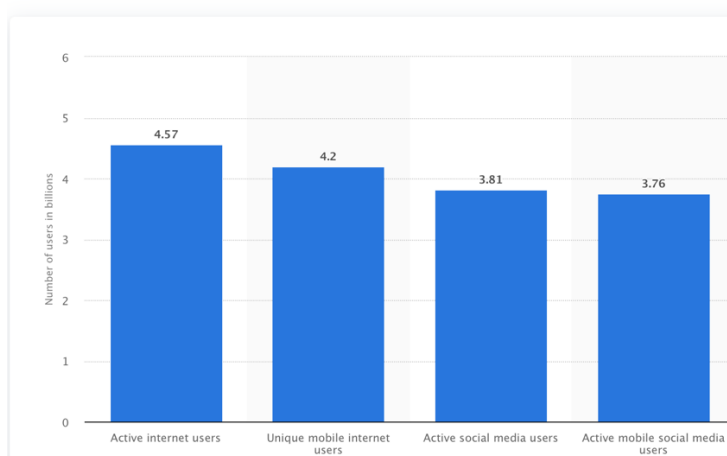


Figure 1: Global digital population in April 2020. (Statista)

New professions like bloggers and online journalists are now considered a new kind of media, and blogs, webpages and newsletters are considered – sometimes erroneously – to have the same value of the news shared by newscasts or newspapers. Every year, the number of printed newspapers copies sold gets lower and lower, substituted either by their online versions or by these new sources of information.

According to the data gathered by ADS (*Accertamenti Diffusione Stampa*), explains Pierluca Santoro for Data Media Hub, almost the entirety of Italian newspapers – with the exception of *La Verità*, which saw a growth of the 22,3% – saw a loss in their printed sales.

It is way easier and faster for people to read information online, especially if it is on articles they bump into by scrolling through the Facebook feed, rather than reading a newspaper or watching the newscast.

“As founder Mark Zuckerberg likes to brag, Facebook may be the biggest source of news in the world (at least for some definitions of “news”)” writes Eli Pariser (*The Filter Bubble*, 2011), which can say a lot about how the world of information has changed since the birth of the Internet.

Social media such as Facebook or Twitter were born to create a connection among people from different places in the world, to express a thought or share a piece of their everyday life, make it also possible to share articles from online blogs and therefore to share a piece of information with all your online *friends*.

If such piece of information is not reliable or true, some incorrect information has been shared with hundreds of people that may share it too.

1.2 The risks brought by the Internet: misinformation and fake news

It is this process of virality on the Web that makes the phenomenon of fake news so dangerous and risky, since people take everything they read on the Internet as truth just because a blogger who may seem trustworthy wrote it and because someone among their friends shared it.

The best example of how easy it is to find wrong information, even on seemingly reliable websites, is Wikipedia. Everyone for sure has used it at least once in their life to look up for a term or a definition but, unfortunately, it is not so trustworthy as one may think. However, “Wikipedia averages more than 18 billion page views per month, making it one of the most visited websites in the world, according to Alexa.com, a Web tracking company owned by Amazon” (Pew Research Center, 2016), even after scandals like that of February 2006, when it was discovered that some United States congressional staffers had been editing the pages regarding some political biographies (Pew Research Center, 2016).

The term Wikipedia comes from the mix of the term “*wiki*” (which in Hawaiian means “quick”) and “-pedia” (the second half of the word encyclopedia) and it is an online encyclopedia created in 2001 in which content is produced in open collaboration, meaning that anyone can contribute and create a new definition or enrich an already existing one with more facts, according to a few simple norms and limits (Milena Talento).

When people look up for something on Google, the first result is always the Wikipedia page since it is the most clicked, which makes people believe that information is more reliable than that of other webpages.

This happens through a bias called *herding bias*: when one sees a lot of people in front of a restaurant, one thinks that is a good restaurant, explains Daniel Ariely (“Predictably Irrational”, 2008).

In the same way, if you know that a lot of people use Wikipedia as a source of information and find it reputable, you are likely to believe it is reliable. This is just a preview of what I will go more in depth later on in section 2 regarding cognitive biases.

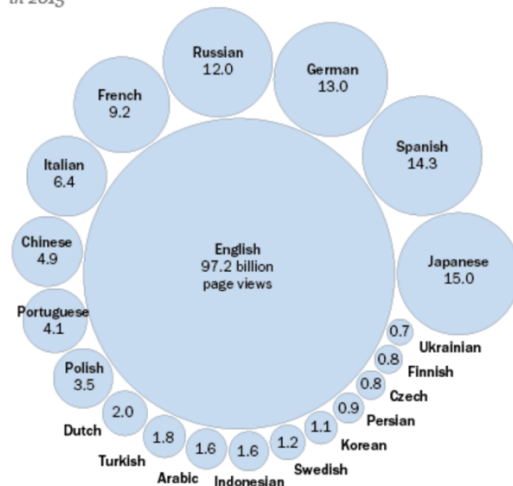
The Internet makes it possible to be informed on every possible topic and issue: if one feels ill, they write their symptoms on the search engine of Google and they can find the possible disease that affects them.

Any doctor can affirm that he or she, at least once since the Internet entered our life, has had to do with a patient that was sure of what their illness was because they discovered it from Google: our society has become a society of experts in everything, from medicine to law to politics, just because it is so easy nowadays to get information on every possible and imaginable topic simply through the Internet.

According to the sociologist Henry Jenkins in his work “Spreadable Media” (2013), written with Sam Ford and Joshua Green, we live in a world in which we are both *consumers* and *producers* of information, in the sense that the distinction between who produces information and who consumes it became increasingly blurred with time and there is a constant exchange of information among all social actors, and not just from the media industries towards their audience. This lightens the role of traditional mass media as an intermediary in the communication with the audience and creates a savage environment with no control on what is published.

English version of Wikipedia gets more than six times as many page views as next largest language version

Leading language versions of Wikipedia, by billions of page views in 2015



Source: Pew Research Center analysis of Wikistats data
PEW RESEARCH CENTER

Figure 2: Page views on Wikipedia in different languages. (Pew Research Center)

The term *misinformation* means “holding inaccurate factual beliefs and doing so confidently” (Kulinski et al., 2000), which is different from *disinformation*, meaning instead “being uninformed and therefore not holding any factual belief at all” (Kulinski et al., 2000); to be informed requires instead that “people have accurate, reliable and true beliefs that they got from correct sources of information” (Kulinski et al., 2000).

The problem of misinformation is that it is difficult to be corrected, since those people who are misinformed are, unfortunately, also the ones who hold the strongest beliefs.

New terms and jobs like *debunkers*² are now a way for fighting misinformation and fake news and to correct the wrong information that circulates online, even though it seems that, according to an effect named *backfire effect* (Brendan Nyhan and Jason Reifler, 2010), the result of such action is that it pushes people to hold even stronger beliefs than before, as a reaction to the attempt of correction.

Unfortunately, it is not so easy to prevent the Internet from being a place for the proliferation and diffuse spread of false information, and to avoid people being trapped in it or convince them that what they read and strongly believe in is actually incorrect.

² Term that comes from the union of “de-” (= to remove) and “bunk” (= informally, something not true). It is the act of proving a false piece of information wrong. (<https://www.thefreedictionary.com/debunking>)

1.3 An historical excursus: the manipulation of information under the fascist regime

The production of fake news and the diffusion of false information is not at all something new: in the last century, in particular during the totalitarian regimes of Adolf Hitler and Benito Mussolini, or also in the Soviet Union, it was the state itself that was responsible for the diffusion of false information with the aim of manipulating people's beliefs and dominating their minds.

Mussolini especially was considered by Hitler a master in the indoctrination of people, and the result that he obtained was that under his regime people firmly believed in the values promoted by fascism.

News were shared and controlled by the party itself, and the regime bought almost all of the newspapers³ and created bodies and authorities to be the sole producer of information.

Gianpaolo Fissore, in an article written for Focus History in 2013, describes in a few paragraphs how the censorship and control of fascism permeated every sector of communication and information.

Newspapers hid crime news or economic failures to give people the image of an historical period of peace and prosperity arisen thanks to the regime, and denied anything that could in any way contribute to its failure.

A curious episode hidden by the fascist Italian press was the defeat, in 1935, of the Italian boxing champion Primo Carnera against the black United States champion Joe Louis (Gianpaolo Fissore, 2013).

This shows how the censorship, control and manipulation of information covered every imaginable event that could undermine the image of the party and the Italian pride.

The “*Leggi Fascistissime*” applied in 1925 imposed that every newspaper had as director a member of the regime, and created new bodies like the “Order of Journalists” and a press office – later in 1937 renamed Ministry of the Popular Culture – responsible for controlling every publication and sequestering documents that shared a view contrary to the regime.

The creation of consensus with the diffusion of false information under Italy's fascist era was also made through the radio and the motion picture industry, as explained by Fissore in 2013. The radio was entirely posed under the control of the state with the creation of the EIAR (*Ente Italiano per le Audizioni Radiofoniche*) in 1927, and was famously used for the transmission of Mussolini's speeches: the most famous one took place on June 10th 1940, to proclaim Italy joining the war in an alliance with Hitler's Nazi Germany.

The movie making industry, highly active and successful in the 1920s and 1930s, had a fundamental role as an instrument for the fascist propaganda. According to the historian of fascism Renzo De Felice – goes on Fissore –, only the 5% of the total Italian movie production of that period had an explicit aim of making propaganda. However, every Italian or foreign movie that was transmitted in Italian cinemas was posed under control and censorship by the party. The Istituto L.U.C.E. (*L'Unione Cinematografica Educativa*), born in

³ “La Stampa” and “Il Corriere della Sera” are among those few newspapers which survived the fascist suppression of the press. The reason is to be found in the fact that the directors of these two journals opted for a position that was, in a certain sense, in alignment with the regime. Aldo Borrelli, the director of “Il Corriere della Sera”, believed more in fascism from an ideological point of view. On the other hand, Giovanni Agnelli, owner of “La Stampa”, simply adopted a consensual line. (Enrica Bricchetto, 2002)

1923 as a private body and which then came to belong to the State in 1925, was responsible for the fascist propaganda through the motion picture industry.

The L.U.C.E. institute produced newsreels, documentaries and movies and allowed their diffusion also in more distant areas of the Italian country, thanks to vehicles equipped with projectors called *autocinemas*.

Newsreels preceded the projection of every movie and had the role of transmitting information regarding the regime, in particular during World War II.

The L.U.C.E. Institute collaborated with the Italian Army, the Marines and the Aeronautics for the creation of a department dedicated to the transmission of war content through the cinema⁴. Of course, the images shown were not a reliable reflection of how the war went and what actually happened.

The facts were distorted to give the Italian people a totally different image and story of how the war was going, and the publication of any content considered as inappropriate or dangerous for the regime was censored (L.U.C.E. Institute). Death and violence were completely denied and hidden, and this contributed to the myth of the war as something to be dreamt of. Nothing had to give people an idea of defeat: no image showed the bodies of those who had fallen, but only the soldiers that were still alive, picturing them as heroes, and showing only those whose uniforms were intact.

The oratorical ability of Mussolini, combined with this activity of manipulation, allowed the fascist leader to perfectly control how information was shared across the country and shows how big the impact of false information can be on people's mind.

⁴ These data are taken from the official webpage of the L.U.C.E. Institute. For more photos from the war archives of the Institute, see <https://www.archivioluce.com/2018/05/30/larchivio-inedito-le-foto-censurate-del-reparto-guerra/>



Figure 3: Photo taken from the war archives of the L.U.C.E. Institute, among those that were censored from the war section. The arrow drawn by the censor indicates that the uniform of the soldier was ripped and therefore it could not be shown. (L.U.C.E Institute)



Figure 4: Another image from the archives of the L.U.C.E. Institute, which shows some wounded soldiers recovering in an hospital. Showing dead or injured bodies indicated a sign of defeat and therefore any picture like this was banned. (L.U.C.E. Institute)

Part 2: What are cognitive biases and why human beings believe to fake news

Why do people who seem apparently rational believe to fake news? And why are these misinformed people polarized towards an extreme position?

The problem relies in the cognitive biases of the human mind, some limits in our rationality that make us believe to the pieces of fake information that we find on the Internet.

The most important studies on cognitive biases are those of the behavioural psychologists Amos Tversky and Daniel Kahneman in 1974, with the help of other studies from Loren and Jean Chapman in the end of the 1960s and of others before them. Their predecessors had already discovered that our mind presents some peculiar attitudes that characterize every individual, but Tversky and Kahneman conceptualized them into a specific category, being that of cognitive biases.

The definition given to them is “systematic biases in the outcomes of decisions people make, arising from the application of one or more heuristics” (Dan Lockton, 2012). Heuristics are instead “shortcut strategies for making decisions or judgements” (Dan Lockton, 2012), like for example rules of thumb, studied by Richard Thaler and Cass Sunstein in 2008, or inference mechanisms studied by Gerd Gigerenzer in 1999.

Behavioural psychology pictures our mind as divided into two mental systems: one that is unconscious, rapid and automatic and the other that is conscious, slow and deliberative.

These two systems are called, as Lockton explains, in different ways depending on different studies: system 1 and system 2 (Keith Stanovich and Richard West, 2002), intuitive and reflective systems (Daniel Kahneman and Shane Frederick, 2002), or automatic and reflective systems (Richard Thaler and Cass Sunstein, 2008).

The system in which cognitive biases find their place is the first system, the intuitive one: the fact that there is not a proper rational process of reasoning makes it easy to “fall” into mental traps and to be irrational, even though we might think of ourselves as very rational and smart people.

In the world of fake news, this phenomenon is important because it can explain why individuals believe that a false information is true and therefore contribute to its diffusion.

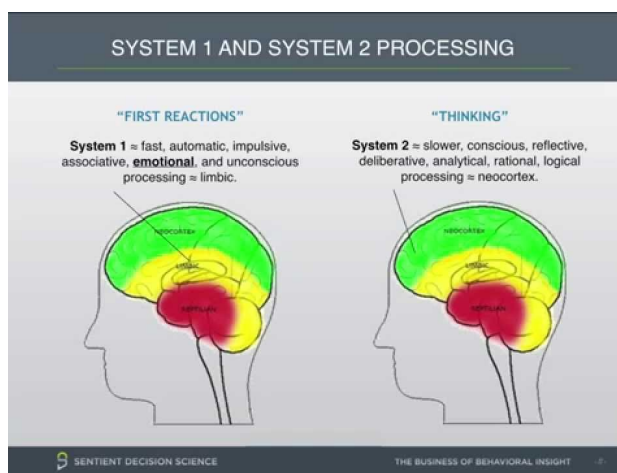


Figure 5: System 1 and system 2 processing illustrated. (Sentient Decision Science)

I have already mentioned the *herding effect* in section 1.2 (Dan Ariely, 2008), according to which if a consistent number of people has a positive opinion on something or follows a certain behaviour in general, then we are more prone to follow them. This can be easily applied to fake news, since if for example a piece of information is shared and diffused by a lot of people on a social media, that makes you believe that it is reliable.

This phenomenon was demonstrated in the famous experiments of Solomon Asch in the 1950s. As explains Nicholas Pellegrino for Practical Psychology, the experimenter had a group of people collaborating with him while one individual was examined: he presented the group of people with a number of questions and asked them to choose the correct answer for each one. The group of collaborators began and chose on purpose an obviously wrong answer, while the person examined would initially choose the correct one.

However, influenced by the behaviour of the other people in the room, the person changed his/her answer, even though it was correct, into the wrong one. This demonstrates that our social behaviours are sometimes stronger than our rationality and that we may prefer, for example, to be part of a social group and be wrong than to be right but alone.

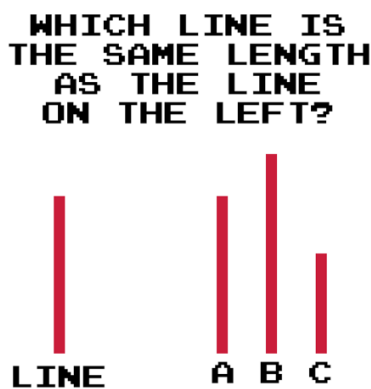


Figure 6: “*Asch line experiment*” proposed by Solomon Asch, an example of the questions proposed in his study. The subjects collaborating with him said the correct answer was B, while the experimented subject responded with A. (Practical Psychology)

An important bias in the context of fake news is the *confirmation bias* (Amos Tversky and Daniel Kahneman, 1974), which makes people more likely to believe to data and facts that confirm their previous existing beliefs or preferences. This bias is similar to the *selective perception bias*, which makes you see what you want to see and what fits your personality and inclinations. Fake news take, in a certain sense, advantage of this bias, since they exploit the inclinations of people.

For example, the immigration flows that have characterized Italy in the latest years have unfortunately contributed to the diffusion of feelings of racism and hate towards minorities and to the belief that “immigrants steal jobs to Italian people” and “come to Italy to rape women and kill people”, also fostered by nationalist political parties.

It is highly likely that a post that circulates on the Internet saying that an immigrant has killed an Italian woman and got away with it is taken as true, as it confirms people’s inclinations and beliefs.

A peculiar behaviour that can be associated to the confirmation bias is the so-called *ostrich effect*, according to which we tend to deny and reject data or information that are in contrast with our beliefs or opinions or that is unpleasant (Effectiviology).

Fake news also take advantage of the emotions of people, which play an important role in their success and virality. The fake news circulating on the Internet about immigrants or corrupt politicians make use of an angry vocabulary that fosters the rage of people and captures the attention of citizens, often combining a smart use language and framing of the sentences with *emotions* such as anger and disappointment and also with *loss aversion* (Amos Tversky and Daniel Kahneman, 1991).

Emotions are the quintessential opposite of rationality, and are responsible for our irrational behaviours; loss aversion is a concept studied by Tversky and Kahneman in 1991 and by Amos Kahneman, Jack Knetsch and Richard Thaler in 1991 with the *endowment effect*, and characterizes every individual, being concerned more on not losing what belongs to him/her than on gaining.

Let us imagine a post saying “this politician has been using dirty money for illegal transactions and activities in which other politicians were involved for 5 years, and now has been paid 150.000€ by the government to stay silent. Our money goes in the pockets of these people! Share if you are outraged!”.

The Internet, especially social media, pullulates with posts of this kind: they make use of an angry vocabulary and perfectly know what are the issues that most affect people, and they combine them in a post that gets viral and to which people easily believe. The attachment of people to money is the best example of loss aversion, and knowing that it goes into the hands of some corrupt politician makes them disappointed and angry.

This example can also be used to explain another bias, being the *availability bias* (Amos Tversky and Daniel Kahneman, 1974). This bias is also defined by Tversky and Kahneman as *retrievability of instances*, and explains the attitude according to which if it is easier to find an example in our mind of a particular event or situation – so if it is more available in our memories –, we think it is more likely to happen. So, if we can easily imagine a politician being corrupt or an immigrant killing someone, we are more likely to believe to a fake news like the one I previously imagined.

As narrated by Walter Quattrociocchi and Antonella Vicini in “*Misinformation: guida alla società dell’informazione e della credulità*” (2016), there is a funny and (unfortunately) real episode similar to the example above, that happened in Italy in 2016 and involved also the former vice-president of the Italian Senate Maurizio Gasparri. A satirical page named “*Vergogna Finiamola Fate Girare*” – which translated in English means “shame let’s stop it share this” – shared an image of the frontman and leader of the Doors Jim Morrison, saying that the man in the photo was Goran Hadžić, an Eastern European criminal responsible for more than 50 armed robberies who had never served a term of imprisonment. A Twitter account *tagged* the politician asking him what he thought about it and he, without even recognizing that it was obviously false, responded by saying that it was a shame.



Figure 7: The picture of Jim Morrison, also known as the criminal Goran Hadžić. (Walter Quattrociocchi and Antonella Vicini, 2016)

An important role played in the context of fake news belongs to *cause-effect relations* (Amos Tversky and Daniel Kahneman, 1982), analysed also by Loren and Jean Chapman (1969) with the concept of *illusory correlation*. It is a really common human behaviour which involves the creation of an illusory cause-effect relation, also helped by selective perception.

People see what they want to see, and it is an innate attitude that of trying to find a reason to what happens in the world. Human beings have always been profoundly touched and shocked by catastrophes, pandemics, events to which it is not easy to find an explanation, and we have always tried since the most ancient times to give a logic explanation and a reason to them.

It is something that goes back to the concept of religion and God themselves, which many philosophers and psychologists – from Karl Marx to Sigmund Freud – see as a search to the meaning and sense of life, which can be filled and explained by the existence of a good God who decides for the destiny of our lives.

It is simply unacceptable to realize that catastrophes and tragedies happen and that there is absolutely no mystical reason behind them.

A pandemic like the plague or COVID-19 are good examples of how people need to find a cause to what happens in the world. The cause to the plague was found for example in the Jews, accused of wanting to exterminate the Christian community all over Europe as a vengeance to the years of oppression they suffered for and to gain the power; the same exact thing happened with other diseases or catastrophes, and now we can find it with the case of COVID-19, on which many theories came out, from the one that said that the virus is a biological weapon created by China to gain the economic control of the world over the United States to the one hypothesising that the Chinese government had a plan to diffuse it and then to invent and share the vaccine to be seen as the “saviors of the planet”.

2.1 Communities of biased people: the filter bubble and echo chambers

What is the result of these biases? Can we speak of biased communities of misinformed people? Unfortunately yes, we can. Supporters of conspiracy theories are one example of how the encounter between misinformation and cognitive biases with the dynamics according to which the Internet works can give birth to some peculiar phenomena, like for example *echo chambers*.

Echo chambers are a phenomenon that takes place on the Web, which is fostered by cognitive biases, in particular the confirmation bias. The definition of echo chamber is “polarized groups on the Internet of people with the same narrative and the same readings” (Walter Quattrociocchi et al., 2016) and are the result of two phenomena in particular: the confirmation bias and Internet algorithms.

As we know, the confirmation bias makes us seek the information that supports our beliefs and preferences, and therefore reject or simply avoid the information that goes against our convictions.

The mechanisms of research on the Internet, however, work in a particular way, according to which the data that arrives to us is the result of some mechanisms that “study” our personality and preferences, and shape our own personal *filter bubble* (Eli Pariser, 2011).

In his book “The filter bubble: what the Internet is hiding from you” (2011), Eli Pariser perfectly describes how powerful echo chambers are and how actually the online environment we find ourselves in is.

A filter bubble is a “unique universe of information created for each of us, in which 3 dynamics take place: you are alone in it, it is invisible, and you do not choose to enter it” (Eli Pariser, 2011).

As we may easily imagine, it is impossible to count and imagine all the data that circulate on the Internet.

As Pariser explains, the marketing strategist and blogger Steve Rubel spoke of an attention crash: it is not possible for a single individual and a single device to handle all the information that we might possibly receive, which therefore necessarily needs to be filtered according to certain mechanisms.

Without even realizing, the Internet has access to an enormous amount of information regarding our personal and daily life, and consequently it shapes itself according to these pieces of information.

Pariser goes on saying that the result is that each individual has a kind of “personal” Internet, which suits their job, their taste in music and their interests.

In the 1990s, the CEO of Amazon Jeff Bezos affirmed that he wanted his company to “transport online bookselling ‘back to the days of the small bookseller who got to know you very well’”. His idea soon became real, as if you look for a book on Amazon, the next day you will very likely be proposed a book from the same writer, or a book of the same genre.

Eli Pariser goes back to the origins of the filter bubble: he explains how the computer scientist Nicholas Negroponte proposed a similar and interesting idea, imagining a future populated with some intelligent and

smart agents created for the purpose of helping people in choosing, for example, what to watch on TV according to their interests.

This idea was viewed as a possible solution to the huge amount of information and data that is presented to us each day, and was also appreciated by many, to the point that some companies tried to propose a version of it: Microsoft created “Bob”, an avatar whose aspect looked like Bill Gates, while Apple created a similar one named instead “The Newton” (“The Filter Bubble”, 2011).

Nowadays, every website and social media works in this way, “memorizing” for example the online friends we are more interested in knowing from and placing them at the top of our Facebook or Instagram feed, or knowing that we study economics and therefore avoiding any suggestion regarding other fields of study. Cookies instead memorize the websites we visit and our preferences regarding the language, for example.

In the context of news and information, these mechanisms contribute to the creation of polarized communities of people holding strong factual beliefs. Users with similar preferences tend to polarize together, and these polarized users are also the most active on the Internet.

Part 3: The phenomenon of group polarization explained

Group polarization is not a phenomenon solely related to the Internet era. Cass Sunstein, Harvard Law School professor and co-author of “Nudge” together with Richard Thaler (2008), who worked also at the White House as a collaborator for the former United States President Barack Obama, proposed and analysed the concept back in 1999 with “The Law of Group Polarization” and in 2001 with “Echo Chambers”.

Sunstein analysed how, when people with the same inclinations and opinions have a discussion and talk to one another, their beliefs get stronger and more directed towards an extreme position.

The explanation is not so hard to find and can easily happen to all of us in every context: when an individual finds somebody that supports their opinion, they feel stronger and may strengthen their thoughts. The problem is that, combined with misinformation and the phenomenon of the filter bubble, this fosters the birth of biased and misinformed communities holding strong and inaccurate factual beliefs.

According to Sunstein (“The Law of Group Polarization”, 1999), “group polarization is the conventional consequence of group deliberation”, as he explains the concept using the example of the innumerable deliberative groups in our society, questioning whether they are actually something to be considered positive or not.

To explain how group polarization occurs and takes place, Sunstein starts by taking into consideration that “social influences affect behaviour via two different mechanisms: the former is the informational mechanism, the latter is the reputational one. People are profoundly influenced by what other people do, and by what other people think should be done”.

Sunstein also took into consideration the social and behavioural studies of Solomon Asch, who “raised serious questions about the possibility that the social process is polluted by the dominance of conformity”, he affirms (1999). From this point, Sunstein goes on saying that when individuals lack private information on a certain matter, they tend to trust and rely on the statements and beliefs of other individuals.

The result, after a considerable number of people adopts this attitude, is a *cascade effect*: a large group – or community – of people ends up believing something, maybe erroneously, just because they followed other people’s behaviour.

Group polarization is defined by Sunstein as “when an initial tendency by individual group members toward a given direction is enhanced [by] group discussion”, and therefore there is an extremization of such tendency and position. An example made by Sunstein is that a moderately pro-feminist group of women will be more strongly feminist after discussion, or also that those already in a position critical to going to war will become profoundly opposed to it.

3.1 Polarization on the Internet

On the Internet, the phenomenon of user polarization can evolve into a serious issue, especially when it comes to communities of misinformed people, who hold strong factual beliefs and whose position is extremized. It is not a case that the majority of polarizing issues are object of fake news.

This is not at all surprising: following the mechanism of the confirmation bias and the ostrich effect, if we are convinced of our opinion and more prone to believe to information that confirms such opinion, we consequently refuse any piece of information that opposes to it.

It is quite likely then – also following the studies and discoveries of Asch –, that we also accept as truth a piece of information that is false, just because it confirms our opinion (and maybe that of the other fellow members of our group).

Facebook in particular pullulates with these polarized misinformed groups, whose members are oriented towards extreme positions in supporting for example conspiracy theories and hold strong factual beliefs, made even stronger by virtue of the fact that the people they interact with are people whose beliefs and convictions confirm theirs. Also, being a member itself of a group creates a sense of belonging and a bond with the other members, which can reinforce even more a position on a certain topic.

3.1.1 No-vax movements

An example of conspiracy groups on Facebook regards communities of those people who are opposed to vaccines.

Walter Quattrociochi and Antonella Vicini in “*Misinformation: guida alla società dell’informazione e della credulità*” (2016) make a perfect analysis of how misinformation spreads across conspiracy groups, also exposing the case of no-vax movements.

“In October 2015, the National Centre for Epidemiology, Surveillance and Promotion of Health published the data gathered by the Ministry of Health regarding vaccinations on the national level. Vaccinations against poliomyelitis, tetanus, diphtheria, hepatitis B and pertussis went below the 95% (which is the minimum value individuated by the National Plan for the Vaccinal Prevention 2012-2014). The vaccine coverage against measles, parotitis and German measles went instead from 90,3% in 2013 to 86,6% in 2014. [...] Between 2012 and 2014 there was a decrease in all vaccine coverages.” The risk is obviously high, since “even for what regards diseases that are not present in Italy, there can always be some sporadic cases” (National Centre for Epidemiology, Surveillance and Promotion of Health).

The situation does unfortunately not just regard Italy: also other countries are facing the same problem, people’s scepticism about vaccinating their child – also defined as *vaccine hesitancy* as Quattrociochi and Vicini explain – spread widely and there are cases of children that died of diseases that should be (or have been) eliminated and against which everyone shall be vaccinated. (Walter Quattrociochi and Antonella

Vicini, 2016). The WHO (World Health Organization) works actively, together with virologists, immunologists and doctors individually, to fight these movements.

The Internet unfortunately makes this phenomenon easier to diffuse, as Facebook is populated with groups against vaccines that share false information about their effects and consequences, spreading not only false content but also panic, fear and anxiety.

3.1.2 National-populist conspiracy theories supporters

Another trend among misinformed polarized communities on the Internet – and on Facebook especially – regards those webpages particularly concerned on political or economic corruption, criminality, racism and homophobia.

These websites are responsible for the diffusion of fake news and information regarding these different topics (and also others), sometimes with the only aim of getting more views and clicks. In some cases, the founders of such webpages are the so-called *trolls*: as explain Quattrociocchi and Vicini (2016), until recent times this figure was identified with someone who purposely and constantly felt the need to argue with somebody by provoking them on the Internet. Nowadays, the authors say, it rather refers to someone making fun of other people on the web, for example by publishing – satirically – a fake piece of information and enjoying the reaction of who reads it and believes to its content. An example of the latter is the news depicting Jim Morrison as the famous Eastern-European criminal Goran Hadžić, described by Quattrociocchi and Vicini in “Misinformation” (2016).

Usually, the topics are something on which people are notoriously divided and which are often object of debate. An example of such pages is “*Cose che nessuno ti dirà*” (1,7 million likes), or also the innumerable pages against chemical contrails, or even those on the new world order.

In short, the aim is always that of “enlightening” people by telling them the truth, what governments are hiding from them, and what is actually behind our political and economic world order.

3.2 What are conspiracy theories: an analysis proposed by Bradley Franks, Adrian Bangerter and Martin W. Bauer

Conspiracy theories have always existed: people have always invented stories to compensate their fear and to make the unknown look more familiar and they “spread as devices for making sense of sudden events that threaten existing worldviews” (Bradley Franks, Adrian Bangerter and Martin Bauer, 2013).

As I already mentioned in section 2 regarding cognitive biases, also in this case the human mind plays an important part: when we lack information about a certain topic and we have a few pieces of information, we make inferences and create reasonings that may apparently make sense to link them, which however are not necessarily true.

These are the famous *rules of thumb* of Richard Thaler and Cass Sunstein (2008), or the *inference mechanisms* studied by Gerd Gigerenzer (1999), or also the *illusory correlation behaviour* of Loren and Jean Chapman (1969).

According to Bradley Franks, Adrian Bangerter and Martin W. Bauer (2013), “conspiracy theories are a way to transform an anxiety over something undefined into a fear of something clear and specific”, and they hypothesise that this happens through a process of both *anchoring* and *objectification*.

Anchoring is “naming an unfamiliar object or event” so that it becomes less mysterious or unknown and “classified and positioned in a familiar semantic field [...]”. Anchoring makes it recognizable and less threatening”. Objectification occurs when some “abstract contents are made tangible through a metaphor or a concrete visual image”, which makes again less scary and more familiar an event or anything that is not known. According to the authors, conspiracy theories focus in particular on seeing an agent where there is actually only “a little more than randomness” and on seeing “structural dynamics which nobody in particular designed”. As already explained, it is easier to find a direct cause to a disease outbreak, a meteorological catastrophe or simply death. It is also comforting in a certain sense to, at least, imagine these events as caused by someone who can be blamed: in some cases in fact, when conspiracy theories are widely diffused and believed, they can be “used to frame events in radical ways so as to mobilize collective action against a target (the conspirational agent)” (Franks et al., 2013).

Franks, Bangerter and Bauer (2013) explain how conspiracy theories can vary according to a set of three dimensions: they can be believed more or less passionately, they can vary according to their distribution – and therefore spread all over society or just in small contexts –, and they can be different regarding collective action, which can be a consequence fostered by conspiracy theories in certain cases.

There is a huge number of conspiracy theories regarding various events and figures: from the mysterious death of John F. Kennedy in 1963, or the theories according to which Elvis Presley and Michael Jackson may still be alive, or even those circulating on Area 51 and the secrets kept by the government regarding discoveries on alien life.

Other theories are more recent and potentially dangerous if they happen to spread, like for example those on the supposed “real” consequences of vaccinations, or the “truth” about AIDS, or the government harming us without letting us know with chemical weapons etc.

Conspiracy theories may find their origins in a loss of trust in governments, political figures or economic decisions: also in this case people are not able to find a reason and seem not to accept that events happen by case, and feel the need to make up stories about hidden intrigues, secret organizations and entities that govern our political and economic world.

Here again, the authors explain this, saying that “CTs (conspiracy theories) appeal especially to constituencies who are averse to the structures of organized religions or established political orthodoxies.

CTs have a subversive flavour that contradicts official accounts of events” (2013). It is not surprising that the communities that most support those alternative views of power structures are particularly those that are, in a certain sense, already in a subversive position with regards to those structures and distrust them.

According to Bradley Franks, Adrian Bangerter and Martin W. Bauer (2013), conspiracy theories can even be associated to a quasi-religious mentality: they identified some characteristics of conspiracy theories and the communities supporting them with qualities belonging to religious representations, even though conspiracy theories “lack many of the institutional features of organized religions”.

The first characteristic analysed by them is that religious representations often involve an “interplay of intuition and counter-intuition, natural and supernatural, that makes them cognitively attractive, and contributes to their *stickiness* (the appeal to potential believers)” (Franks et al., 2013).

In religious representations, as well as in conspiracy theories, there is always a *metarepresentation*, according to which not everything is fully understandable or necessarily interpreted by the believers, and there is a percentage of doubt “arising from their empirical indeterminacy”.

The authors go on explaining that another peculiar quality of religious representations and conspiracy theories is that the conspirational agents are seen as “supernatural agents characterized by some psychological qualities” (Pascal Boyer, 2001): agents are seen as omniscient entities “relative to the focus of the conspiracy” (Franks et al., 2013). For example, the Jews, seen as conspirational agents in many conspiracy theories, were seen as supernatural beings able to dominate the mind of Christians and allied with the devil (Henri Zukier, 1987), to have an “omniscience and omnipotence regarding medicine, astrology or alchemy in the Middle Ages, or finance in the modern era” (Henri Zukier, 1987).

Another feature pertinent to both religious representations and conspiracy theories is the fact that their believers and supporters feel like they are in a constant “battle in response to a crisis, a cosmic war between good and evil” and a “sense of conflict with enemies from within and from without” (Martin Marty and Scott Appleby, 1994, 2004). The attitude is that of a perpetual fight with both those who belonged to the “enlightened” and lost their path and those who, instead, have always been in an oppositional position.

In fact, another analogy with religious representations is that when conspiracy theories arise from a conflict over sacred values – such as for example health, freedom or life –, they are more likely to be widely believed and also to lead to intense commitment and action. Frank, Bangerter and Bauer use as an example that of genetic modification, which is interpreted by people as a “threat to the sanctity of life and reproduction, or to the natural ways of eating”. In this case, they explain, the conflict arises more regarding the value at stake than the conspiracy itself. When a “sacred value” is in danger, people are more motivated to mobilize and fight for it.

3.2.1 The viral process of a piece of information

Echo chambers on the Internet are not only a phenomenon that regards conspiracy groups or misinformed users: the Web is populated as well with members from the scientific community.

Several studies were taken on these two different and opposite communities on their behaviour on the Web, both when individuals from the same group interact and when members from the two opposite positions do.

A study taken in 2019 named “The Spreading of Misinformation Online” (Michela del Vicario, Alessandro Bessi, Fabiana Zollo, Fabio Petroni, Antonio Scala, Guido Caldarelli, H. Eugene Stanley, and Walter Quattrociocchi) concerns the viral process of a piece of information – namely a post –, distinguishing between a conspiracy piece of information and a scientific one.

A first variable to be analysed is the lifetime of the post, which means for how long the post circulates on the Web and therefore for how long it is “active” (meaning that it receives comments and likes and is shared by users); a second variable that is studied regards instead the number of users that the post reaches.

For what concerns the conspiracy piece of information, the relation between these two variables is of a positive kind, and the post goes through a quite linear process: the more time passes since it is published, the more users it reaches. This means that a piece of false information that circulates in an alternative information community is “assimilated more slowly” but reaches a high number of people.

Science news instead “quickly reaches a higher diffusion; a longer lifetime does not correspond to a higher level of interest”. As soon as the post is published, there is a peak in the number of users reached and in the interactions, therefore the comments and likes it receives and the number of times the post is shared by users. However, after this peak the post becomes quite stable and “a longer lifetime does not correspond to a higher level of interest” (del Vicario et al., 2019).

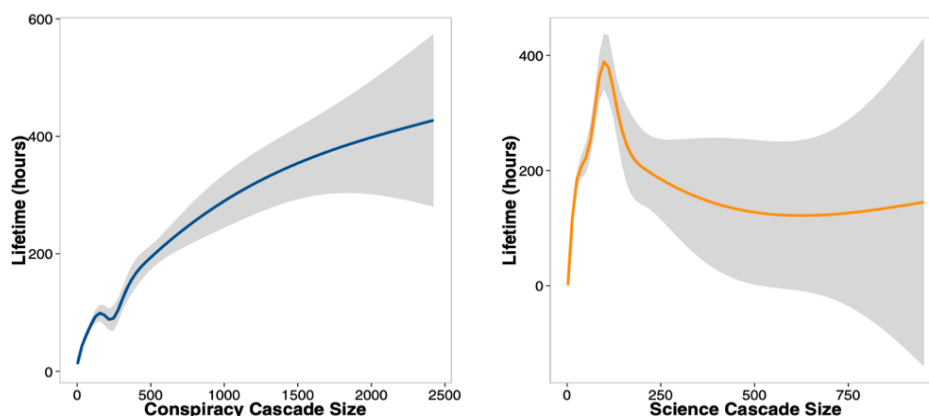


Figure 8: Illustration of lifetime and number of users reached for a post of a conspiracy kind and one of a scientific kind. (del Vicario et al., 2019)

Another interesting phenomenon that is studied is also what is named *mean edge homogeneity* (del Vicario et al., 2019), which means that in the wide majority of cases, the post is published and remains in the same environment. This means that a conspiracy piece of information, for example, is published by a member of a conspiracy echo chamber and its lifetime and interactions are both in the echo chamber itself.

This is, again, the demonstration that the confirmation bias has a fundamental role when analysing individual behaviours on the Internet and that people with the same positions and beliefs interact with one another in the same echo chamber.

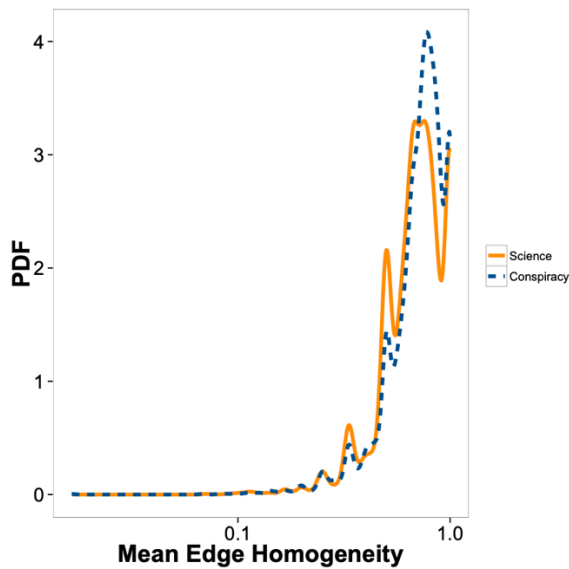


Figure 9: Graph showing the likeliness that a post is shared by a member of the same community in which it is published, which for both echo chambers. (del Vicario et al., 2019)

3.2.2 Positive, negative or neutral: the attitude of the users on the Web

As also said in section 3 regarding polarization in the studies of Cass Sunstein (1999), when an individual shares his/her opinion with another individual who has the same inclinations, it is likely that the two will end up being in a more extreme position than they were before talking to each other.

This is the perfect explanation of what happens in echo chambers, as individuals who find themselves in there constantly communicate, discuss and confront with people who have their same opinions.

This could be associated, in a certain sense, to someone talking to themselves in front of the mirror. There is no confrontation with another position and therefore people in echo chambers live in an environment that is completely closed and in which their opinions get stronger and stronger.

Such extreme positions are not positive on the Internet, which is unfortunately an environment for the proliferation of feelings of dissatisfaction and disillusionment towards political or economic figures, of people risking the life of their children and refusing to vaccinate them, of individuals who firmly think that the government is spying them, entering their private life without their permission, keeping secrets or seriously harming them.

If someone is already sceptic about vaccinating their child and enters into a discussion with an individual with the same position, they will end up being strongly against vaccinations and will probably decide not to vaccinate their children.

Another study named “Emotional Dynamics in the Age of Misinformation” (Fabiana Zollo, Petra Kralj Novak, Michela Del Vicario, Alessandro Bessi, Igor Mozetič, Antonio Scala, Guido Caldarelli, Walter Quattrociocchi, 2015) was taken regarding the feelings of individuals in such communities on the Web, analysing in particular the emotions arising from comments – therefore a discussion – under a post of conspiracy or scientific kind. A technique called *sentiment analysis* was used to analyse the comments under conspiracy or scientific posts on the Italian Facebook. For the study, the authors gathered a number of pages of these two categories with the help of some Facebook pages that are active in the work of *debunking*, like for example “*Protesi di Complotto*” and others: the conspiracy pages taken into account are those that aim at “telling the truth”, and the scientific ones were easier to find since any publication is checked and controlled.

A system called *Support Vector Machine (SVM)* analysed the comments of 280 thousands of Italian Facebook users, and was structured in a way to detect what it meant for a comment to be positive, neutral or negative according to the language used by the users.

The tendency discovered was that, as expected, the sentiment found on conspiracy pages is more negative when compared to that on scientific ones.

However, when analysing polarized users from both echo chambers, the negativity increases in each of them. This means that when there is polarization, users – no matter if correctly or wrongly informed – tend to show a more negative behaviour. “Furthermore,” – Zollo et al. explain – “the sentiment of polarized users is negative also when they interact with one another. Also, as the number of comments grows – i.e. the discussion turns longer – the sentiment is more and more negative”.

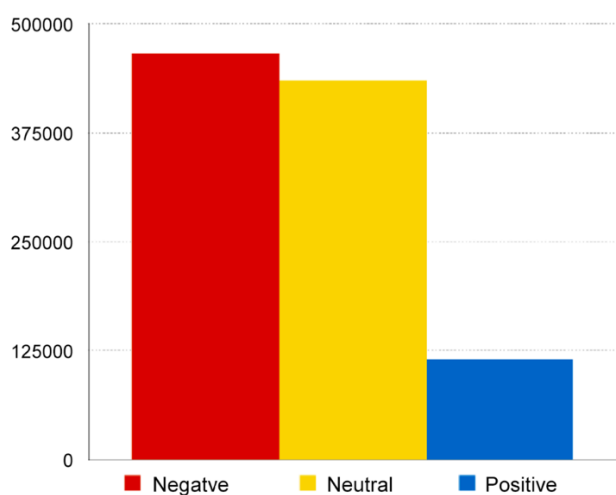


Figure 10: Sentiment distribution over the entire set of one million comments. (Zollo et al., 2015)

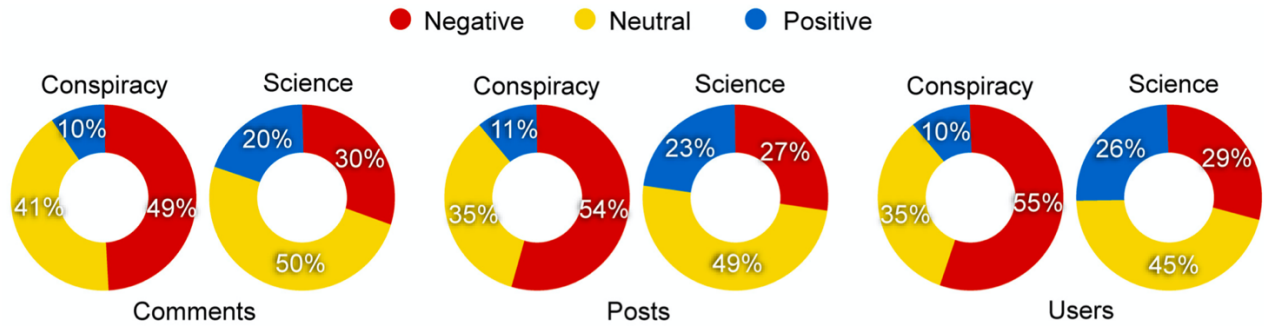


Figure 11: Sentiment under the posts of conspiracy and scientific pages showing the percentages of positivity, negativity and neutrality of comments, posts and users. (Zollo et al., 2015)

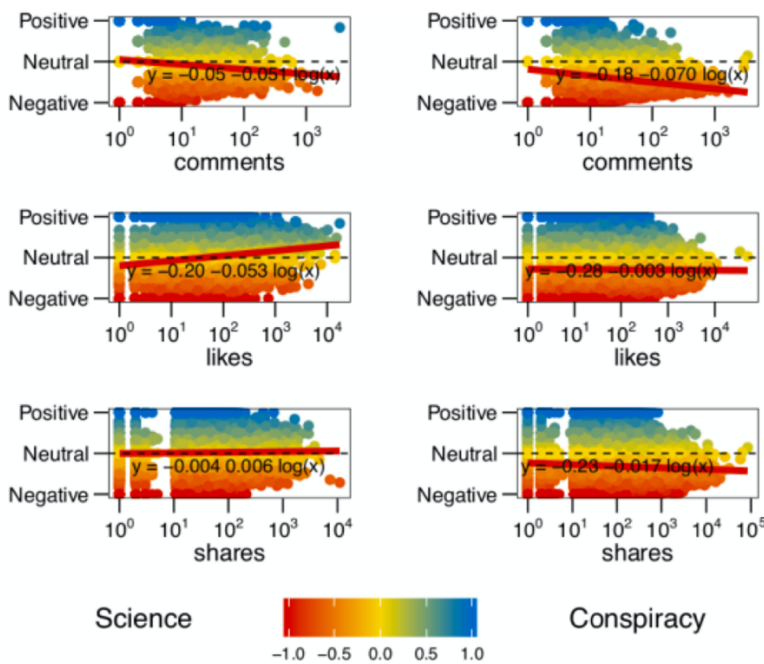


Figure 12: This figure represents how with the increase in the number of comments, likes or the times the post is shared, the sentiment changes. When the discussion gets longer for example, there is a tendency in both echo chambers towards more negativity. When the number of likes to a post increases, the discussion in the scientific echo chamber gets more positive while in the conspiracy one it stays quite stable. As the times the post is shared increases instead, the discussion remains quite stable in both chambers. (Zollo et al., 2015)

The important conclusion of this study is that an environment in which there is polarization and a tendency towards an extreme position – no matter if from a scientific or a conspiracy community – shows, surprisingly, a similar activity.

Even if users find themselves in a scientific community and are correctly informed, the sentiment analysis shows a tendency towards negativity also for them, and they get angrier as they keep discussing with other users. Therefore, a persistence in an echo chamber, be it of a scientific or of a conspiracy kind, influences the emotions of users and contributes to the rise of an angry attitude (Zollo et al., 2015).

Figures 10, 11 and 12 show the sentiment that arises when users discuss and confront with individuals from their same echo chambers. The result of a discussion among members of the two different echo chambers

interacting with one another shows an even higher tendency to negativity. This last discovery is not really surprising, since it is easily imaginable that when members of the two communities confront, what rises is an heated argument and an angry debate between two opposite extreme positions.

Part 4: A new global pandemic: COVID-19

The COVID-19 pandemic that the world has been witnessing since the beginning of January 2020 – whose name comes from “Coronavirus Disease 2019” – is a coronavirus pandemic caused by SARS-COV-2 (Severe Acute Respiratory Disease Coronavirus 2), a name given by the fact that, according to the scientists who studied it, it is connected to the family of SARS-COVs, or Severe Acute Respiratory Disease Coronaviruses (Italian Ministry of Health, 2020).

There are several types of Coronaviruses, which are a series of respiratory diseases that can be more or less dangerous: among them, the MERS (Middle East Respiratory Syndrome) and the SARS outbreak that occurred between 2002 and 2004. The name “Coronavirus”, the Italian Ministry of Health explains, comes from the shape of these viruses under the electron microscope, which looks like a crown. This family of viruses was first studied and discovered in the 1960s and may infect humans and also animals.

The Coronavirus that started spreading at the end of 2019 in China is a “novel Coronavirus”, meaning that this particular type of Coronavirus virus had never been seen before. Even though COVID-19 belongs to the same family of SARS-COVs, it does not mean that COVID-19 has to be confused with SARS, which was a much more severe and dangerous disease⁵.

Even though there is still no certainty nor assurance regarding this, scientists hypothesize that the virus may have been caused by a “*spill over*”, a phenomenon that occurs when a virus passes from animals to humans (ISS, Superior Institute of Health).

4.1 Event background of COVID-19 (European Centre for Disease Prevention and Control)⁶

The first cases of COVID-19 were reported by China at the end of December 2019 in Wuhan, Hubei province. The Municipal Health Commission spoke about 27 “pneumonia cases” – among which 7 were particularly severe – whose origins could not be identified. The link among the patients was to be found in Wuhan’s Huanan Seafood Wholesale Market, which sold fish and live animals (ECDC, European Centre for Disease Prevention and Control).

The market was subsequently closed, and samples were tested positive with a novel Coronavirus, and “Cases showed symptoms such as fever, dry cough, dyspnoea; radiological findings showed bilateral lung infiltrates” (ECDC).

On January 9th 2020, the Chinese CDC (Centre for Disease Control and Prevention) announced the outbreak of a number of reported cases of a new type of Coronavirus, later named SARS-COV-2 causing COVID-19.

⁵ The SARS disease had a much higher mortality rate (around the 10%) compared to that of COVID-19 (around the 2/3%) and the respiratory disease was more violent and severe than that of the pandemic of 2020. The number of people infected by SARS did not reach 10.000 and the victims were less than 1.000. (Il Post, 2020)

⁶ These data are taken from the ECDC (European Centre for Disease Prevention and Control) website, which precisely exposes the various episodes that occurred internationally, from the first clusters of cases in Wuhan in December 2019 to the declaration of a “global pandemic” in March 2020.

By the end of January the virus had already started its way to other countries – among which Thailand, Japan and South Korea and later on also European ones – , and on January 23rd 2020 the city of Wuhan was locked down and no movements from outside or inside the city were allowed, while those in the area internal to the city were limited.

On January 30th 2020, the World Health Organization communicated the spread of a novel coronavirus and a “public health emergency of an international kind”, measures were taken to make sure that passengers arriving from China were tested, while several flights arriving from China or directed there were even cancelled.

On February 22th 2020, Italy communicated the presence of a few clusters of cases in the regions of Lombardy, Piedmont and Veneto and initially advised the Italian population of such regions of maintaining a distance of 1 meter from other people and avoiding aggregations and crowds, with a decree issued on March 8th 2020.

However, the virus showed a rapid and dangerous spread that obliged the government to extend the decree to the whole Italian nation. On March 11th 2020 the World Health Organization declared the world to be witnessing a situation of “global pandemic”. Italy was entirely put in quarantine with a decree issued by the Italian Prime Minister Giuseppe Conte, with strict public health measures to be applied.

Thereafter, also Spain, France and the United States were compelled to adopt the same measures: between March and April 2020, more than a third of the world population lived under lockdown restrictions.

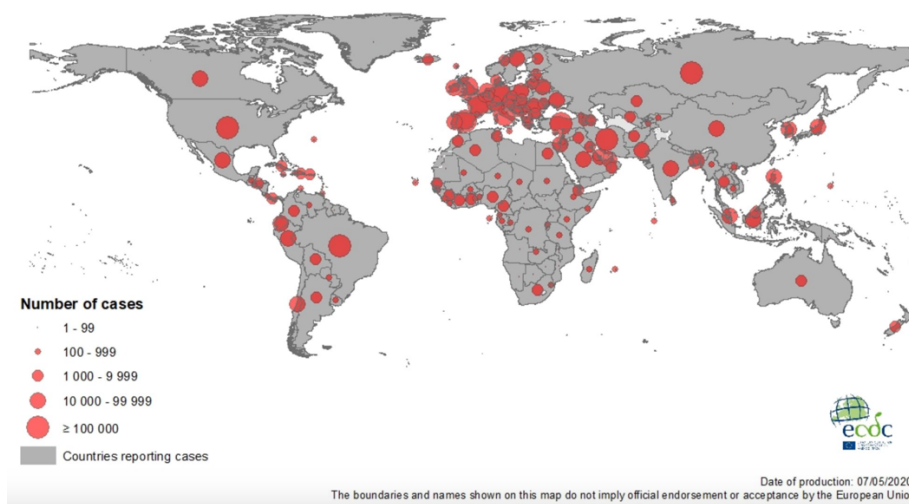


Figure 13: Graph showing the number of COVID-19 cases all around the globe, May 7th. (ECDC, 2020)

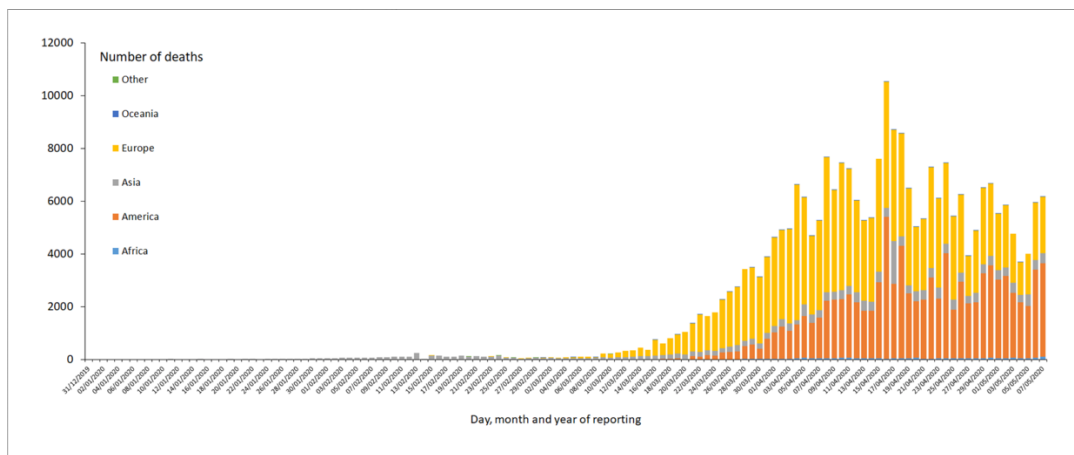


Figure 14: Graph showing the number of deaths per area of contagion as of May 7th 2020. (ECDC, 2020)

4.2 People's reaction in Italy to the COVID-19 outbreak

The various feelings of people towards the 2020 health emergency were, in a certain sense, similar to the renowned 5 phases for the elaboration of a loss by Elizabeth Kübler-Ross: denial, anger, compromise, depression and acceptance.

At the end of December 2019, the initial response of people to the first news about coronavirus was of a denialist kind. People tended to underestimate the risk that the contagion could bring (apart from the high number of victims), namely the overcrowding of hospitals which could not sustain the big number of infected people, especially in the intensive care units, that the pandemic of COVID-19 would cause.

The healthcare systems of many countries were not ready for something like that, and the health emergency underlined also a deficiency in the efficiency of such systems.

During this phase, people relied on the fact that the virus would infect only the 2% of the population and therefore there was nothing to be afraid of, and believed that it would remain circumscribed to the Chinese areas once any possible movement in and out of the country had been stopped.

Moreover – at least initially – newspapers and newscasts tended to underline that those mostly affected by the virus were the elderly. Consequently, what was understood was that young and middle-aged people did not run any risk. However, the virus showed a fast expansion in several countries: some younger and healthier patients with no previous pathology were infected and people realized that the virus was more severe than it had been previously imagined. This contributed also to a spread of fear and panic, with people falling into panic buying and leaving the supermarkets empty, and also a diffused psychosis anytime they heard someone coughing or sneezing.

Then the phase of anger came. A strong xenophobia arose towards the Chinese population, viewed as the responsible agent for the diffusion of the virus. People stopped buying at Chinese drugstores and eating at Chinese restaurants for fear of the virus and there were also episodes of hate and bullying towards members of Chinese communities living in other countries. This reaction is not at all surprising: as already explained in

section 2 with regard to cause-effect relations and in section 3.2 going more in depth with conspiracy theories, when a catastrophe occurs individuals have a necessity to find someone – or something – to be imputable. It happened during the black plague of 1346 in Europe, with the Jews accused of being the so-called *untori*⁷: all over Europe, members of the Jewish communities suffered a persecution for this, to the point that the Pope Clement VI Himself issued two papal seals – one on September 26th and another one the next year – denouncing the outrageous acts of violence against the Jews, seen as a scapegoat for the plague (Francesco Mandis, 2012).

Antisemitism was at that time an already well-rooted feeling in Europe, and Jewish communities existed in many countries, even though the attitude towards them – especially from Christians – was very hostile.

It is not at all surprising that, at that time, a catastrophe such as the plague had a religious dimension and was seen as a punishment sent by God for the sins of humanity: the infected were seen as devilish creatures that needed to be exorcised. Among the ways to fight it, in fact, there were prayers, as also explained by Giovanni Boccaccio in his masterpiece “*Il Decameron*” (wrote between 1349 and 1351 circa).

The same happened, more intensely, during the plagues of the 14th and 15th century. The persecution of the plague spreaders is very detailly narrated by Alessandro Manzoni in “*I Promessi Sposi*” (1827).

In his masterpiece, Manzoni perfectly narrates the reality of the psychosis caused by the diffusion of the plague: people saw *untori* everywhere, and violence and anger against any suspect became an ordinary thing. A religious procession was organized in Milan on June 11th 1630 by cardinal Borromeo, to expose the body of S. Carlo and hope in a divine help to put an end to the terrible situation⁸. The procession caused the gathering of big crowds of people in every district of the city and contributed to the diffusion of the disease: however, also in this case, people believed the fault was of the *untori*, who took advantage of the situation to spread the city with their poisonous unguents.

Some curious conspiracy theories regarding China arose since the first weeks of diffusion of the virus, which started circulating on Facebook and as messages on WhatsApp. One theory, for example, saw the Chinese government as responsible for having “invented” the virus in a laboratory and having spread it on purpose to gain the economic and political power over the United States. According to some, the Chinese government already possesses the vaccine for COVID-19, but is waiting to diffuse it and sell it to the rest of the world (Lead Stories, 2020).

This fake news was proved wrong by several debunking and fact-checkers organizations and was born due to a supposed patent for the virus that had been found, which instead regarded the virus that caused the epidemic of SARS in 2002 (FactCheck.Org, 2020).

⁷ This term means “plague spreader” and was used during the time of the plagues of 1300, 1500 and 1600 to define those people who purposely infected places and other individuals, diffusing the disease through infected unguents. It is famously used in “*I Promessi Sposi*” (Alessandro Manzoni, 1827).

⁸ These data are taken from the official website of Alessandro Manzoni’s masterpiece, seen as a perfect and highly reliable documentation of the situation of the plague of that time. (<https://promessisposi.weebly.com/peste.html>)

An image started circulating too, picturing the inventor of the virus said to belong to Karmalah Laboratories, who was actually a Spanish Youtuber named Raul Alvarez (Poynter, 2020).

Other conspiracy theories regard instead the various ways through which the virus spreads and also those through which the contagion can be avoided. For example, other bodies like the Taiwan Fact Check Center had to prove wrong some rumours according to which the virus did not infect those assuming steroids, ethanol or salted water. Actually, there is unfortunately no mystical remedy to the virus yet and there is still no vaccine to the virus.

The phases of compromise, depression and acceptance are to be thought more as an intertwined big phase.

As already explained in section 4.1, when the first clusters of cases were reported in Italy in the Regions of Lombardy (Codogno) and Veneto (Vo' Euganeo) on February 21st 2020, the Italian government adopted the first measures to avoid the diffusion of the virus. The initial refusal to respect the norms given by the government – especially by younger people – and the fast increase in the number of cases brought just a few weeks after, on March 11th 2020, to the entire nation being put under a total lockdown.

After that, people slowly came to accept the situation: the campaign for the sensibilization against Coronavirus called *#iorestoacasa* was launched by the government on the national television channels and quickly spread on Instagram and Facebook, sharing the message that people had to stay home not for themselves but to protect other people and their country, and to avoid the overcrowding of hospitals. The number of daily dead and infected people increased each day, with a peak reached on March 27th 2020 of 969 victims in 24 hours.

The Italian population realized the gravity of the situation especially when, on March 18th, some profoundly touching images started circulating on the Web, picturing a long row of military vehicles transporting the corpses of the victims outside the city of Bergamo, whose funeral parlours could not hold any more coffin of the victims⁹.

4.3 Echo chambers during the pandemic

The case of echo chambers during the COVID-19 pandemic is particularly interesting.

Such a health emergency had, of course, a huge impact on the whole country and – from a certain point of view – it changed the life and the behaviour of many. The 70 days of total lockdown and restrictions over people's liberties, also afterwards, had the consequence of making them understand how important freedom is and how fundamental it is to collaborate cohesively when the lives of many are at stake.

For a while, it seemed like the Italian population felt closer to one another than ever: during the first weeks of the pandemic, people from the whole country in every city and district “joined” together, singing the national

⁹ To see the article, please click here:

https://www.repubblica.it/cronaca/2020/03/18/foto/bergamo_non_c_e_piu_posto_70_mezzi_militari_portano_le_salme_fuori_dalla_regione-251650969/1/#1

anthem from their balconies and terraces and applauding the medical staff for their efforts and sacrifices. However, not all that glitters is gold: this beautiful patriotic feeling was more of a façade. Those individuals belonging to the polarized communities on the Web mentioned in section 3.1, especially those focused on health issues, maintained a strong position even in such an extreme and peculiar situation like a global pandemic.

4.3.1 No-vax movements and conspiracy theories

The case of people belonging to anti-vaccination movements is the first example of how, in an extreme situation like a pandemic outbreak, one can remain entrenched in his or her position.

Researchers and scientists all around the planet are still working together and studying the structure of virus to find a vaccine, which is probably going to be discovered not earlier than in 2021.

A vaccine, as the experts say, is the only way to get totally rid of the virus, and the only hope to completely return to a normal life like the one we had before.

However, people from no-vax echo chambers still do not agree: as already mentioned in section 4.2, the most curious conspiracies were born in the context of the pandemic, affirming that there are some hidden purposes from the various heads of state and government around the world behind the diffusion of the virus and an hypothetical vaccine.

In Italy, unfortunately, such theories are shared and diffused even by those people who should represent the population. The former 5 Star Movement deputy Sara Cunial – who never renounced to openly show her no-vax position – affirmed that if a vaccine was to be discovered, she would not get vaccinated: the reason is that, according to her, the most affected areas of Brescia and Bergamo (Lombardy), where flu vaccines were widely distributed and promoted, were those that were most infected by the virus (with a higher probability of the 30% of being infected, some say). Therefore, according to Cunial, there is a supposed connection between the flu vaccine and the diffusion of COVID-19 (La Repubblica, 2020).

The reason to believe that is actually really simple, and it is the result of a bias called *cherry-picking* (Open Online, 2020): this behaviour, similar to the confirmation bias, occurs when an individual just *picks* the information and data that confirms his or her hypothesis. The flu vaccine is suggested in particular to elderly patients, who are those most at risk during the flu period. It has been affirmed since the beginning, by experts, that those people who were most at risk with regards to the COVID-19 outbreak were also elderly patients, for whom the conditions could be much more severe than for younger people. In fact, according to the bulletin of the ISS (*Istituto Superiore di Sanità*) published on May 14th 2020, the average age of cases is 62 years old (on a range between 0 and 100), the 35,7% presents a previous pathology (as may many patients of a certain age), and the deadliness rate increases for patients older than 60 years old (ISS, 2020).

The supposed correlation between those individuals who had been vaccinated from flu and those who were infected by the virus makes sense just because those who were most vaccinated were elderly people, who are also those most at risk for COVID-19.

The ex-deputy had already asserted that vaccines may hide political and hegemonic aims: when voting for the decree regarding COVID-19, she affirmed that the nation was “preparing its children for living in a virtual lager”, and subsequently attacked the Microsoft founder Bill Gates, who said he would be ready to finance the research on a possible vaccine, for “being responsible for sterilizing millions of African women with his pro-vax policies”. Behind the philanthropic activity of Gates in fact, she saw a desire for a hegemonic domination on African and poor countries. She also asserted a suspicious friendship of the Italian Prime Minister Giuseppe Conte with Bill Gates, in the hope of being part of such “power games” (La Repubblica, 2020).

For these utterances, the politician gained the disapproval of many in the Chamber of Deputies, who also hypothesised an accusation of contempt.

Another episode regards the *Lega Nord* vice-mayor of Pordenone Michele Ghiglianovich, who on several Facebook posts openly lined up with no-vax movements. In particular, he shared a video against vaccines in general – and in particular the one against Coronavirus –, which advised people “not to get vaccinated when the vaccine is released, because there will be anything inside it to make us transform into zombies” (La Repubblica, 2020).

The post supports a vision that sees the pharmaceutical companies as responsible for a suspicious plan and want to enrich themselves at the expenses of people. On April 13th 2020, writes *La Repubblica*, Ghiglianovich shared other messages from a Facebook page affirming that “the introduction of a global vaccination will kill everyone” and that “such vaccination will be a venom presented as a plan for a global health insurance”.

Other theories connect instead the spread of COVID-19 with the highly discussed 5G telecommunications, another big threat against humanity according to members of echo chambers these days. According to some theories that started circulating in particular in Great Britain, where also violent protests against the new data network arose, 5G allow “bacteria to communicate and circulate faster and more densely” and that this can facilitate the diffusion of the virus (La Repubblica, 2020).

These behaviours show how, even if luckily not heavily diffused among the majority, the positions in such echo chambers may become even more extremized in a situation of profound stress and fear. What is particularly worrying is that these messages are shared on the Internet and circulate rapidly, creating a risk for other users who may be subject to fall into the trap of conspiracy.

4.3.2 Healthcare systems and heroization of the medical staff

Another type of echo chamber, popular in Italy and that during the pandemic showed a curious behaviour, concerns those communities based on a heavy critique to the management of the healthcare system and to the medical staff more generally.

It is not a secret that Italy is – sadly – famous for an imperfect management of public systems, often due simply to a bad organization or, in other cases, to a wrong management of the national budget.

The *Sistema Sanitario Nazionale* (National Health System, SSN) was introduced in Italy in 1978, preceded in 1968 by the Mariotti Law, which instituted and organized the various hospital bodies, the national hospital fund and the responsibility in the healthcare system to Italian Regions. The SSN is based on the three values of universality, equality and equity, since it is accessible to everyone with no discrimination.

In the 1990s, the degree of decision-making power and management power of the various Regions was increased, in order to guarantee every Italian citizen “uniform and essential levels of assistance and appropriate service” with the help and cooperation of the local health agencies, also named ASLs (Assidai).

“According to the data gathered by the OECD, in 2018 Italy spent the 8,8% of its GDP for the healthcare system, a number that decreases to 6,5% if we just consider the spending financed exclusively with public funds [...] This datum is close to the OECD average of 6,6%, even though it has decreased since 2010.” (AGI, 2020).

According to a report named “State of Health in the EU: Italy, Health Profile 2019” published by the OECD (Organization for the Economic Cooperation and Development), the EU Commission and the European Observatory on Health Systems and Policies, the number of doctors every 1000 citizens is above the European average (4 compared to the European 3,6), while the number of nurses is below (5,8 compared to the European 8,5). There is, however, a shared concern for a future lack of personnel (AGI, 2020).

Based on the yardsticks of efficacy, accessibility and resilience – the ability to survive a sudden shock or health emergency –, the study analyses the case of Italy.

Italy presents a low level of preventable or treatable deadliness cases compared to the average data of other European countries, low levels of hospitalisation and high levels of survival to cancer and tumours.

“Regarding these data, the role covered by local actors and authorities is highly important, giving primary cures and acting as gatekeepers in the access to secondary ones. [...] Also, the increasing number of multidisciplinary equips giving assistance to patients in more severe conditions and affected by chronic diseases, or even the services of prevention for the entire population.” (OECD et al.).

For what concerns accessibility, a number of patients (2%) exposes a problem of “unsatisfied health need” due to the long waiting lists and costs. The problem here relies in the fact that, unfortunately, Italian regions sometimes present discrepancies in the quality of services supplied. This explains the reason why people often move to the Northern Regions to get cured, or in general the stereotype on the inefficient South.

Also, the percentage of direct health payments charged to Italian citizens has increased from 21% in 2009 to 23,5% in 2017, while in the rest of Europe it is the 16%. This consequently raised some dissent in the less privileged categories of the Italian population, who lament such increase in the costs.

Another concern regards the obstacles to the formation and hiring of new doctors. Italy registers the highest age levels for doctors among all countries in the EU, with “in 2017, the age of more than half of Italian doctors being equal or higher than 55 years old” (OECD et al.). Italy, and in general Europe, shows a trend of ageing of population, and is composed by a high number of elderly people.

Unfortunately, this trend is reflected also in many categories of jobs, where the majority of people working in a field is considerably aged. In 2005, the 30.7% of the working force in Europe was made of aged people, and the percentage has increased since then (Eleonora Albanese, 2013).

This creates a difficulty for younger people to access in particular some jobs, which present almost no turn-over. Becoming a doctor involves several years of formation made of university studies and internships, which further hinder the hiring of new workers and does not facilitate their access. In a study named “Imbalances in the Physicians’ Italian Workforce: European Comparison and Prospects” (Raffaele Latocca, Giulio Toso and Giancarlo Cesana, 2004), the authors explain how, in Italy, the average waiting period for an occupation for a student enrolled in the first year of medicine is 15-16 years. Plus, when a doctor is hired in Italy, he still is highly dependent on people covering superior roles, and he or she will have to work several years as a precarious to gain more independence and security. Due to this phenomenon, people often speak of “stable precarious doctors”.

The OECD then continues, explaining that Italy spends less than other countries for public health and that the country particularly suffered the consequences of the economic crisis of 2008. This is worrying for the reason that, in a time of sudden crisis like a pandemic outbreak, the healthcare system might not be able to sustain a similar situation.

In fact, this is a problem that showed in particular during the COVID-19 pandemic: “between 2000 and 2017, the number of hospital beds has decreased by the 30%, and went from 3,9 every 1000 citizens to 3,2, while the EU average is 5 every 1000 citizens.” (OECD et al.). The reduction in particular affected Southern regions of Italy which first underwent the so-called “*piani di rientro*”¹⁰ and public hospitals.

During the pandemic in particular, the number of hospital beds in the intensive care units of the Italian hospitals had to be increased with donations, since they were not enough for the number of patients that needed a more intensive treatment for the virus.

¹⁰ This expression indicates a deal that serves to put side by side the Italian Regions and the national government, especially for what regards the spending on health. It is “aimed at re-establishing the financial-economic equilibrium of the interested Region” (Ministry of Health). The central government “responds to needs of support to activities of programming, management and evaluation relative to Regional Health Services” (Ministry of Health).

Therefore, the functioning and management Italian healthcare system is overall quite positive. The average life expectancy in Italy, according to the statistics of the Eurostat in 2017, gains a second place after Spain, reaching a really positive age of 83,1 years old.

The problems concerning the obstacles in the formation and occupation of new doctors, the increase in the costs for what regards direct payments issued by citizens and the reduction of hospital beds has, however, fostered a shared feeling of dissatisfaction in the Italian population and the birth of echo chambers focused in particular on addressing such issues and criticising the country for not caring about its citizens.

As I already explained in section 3.2, the study of Frank et al. (2013) shows that people feel particularly moved and become irrational when a sacred value – like for example health – is at stake. The problems above are not to be considered as a conspiracy theory. Such issues are real and they require to be solved, especially in a period like the one we are witnessing, in which the sudden health emergency of a global pandemic showed how the inefficiencies of many systems of our societies can cost the lives of many.

Regarding these groups, the health emergency of COVID-19 paradoxically caused a distortion in the perception of the medical staff, which went under a process of heroization due to their work in fighting the virus and cure the thousands of patients. During the first weeks of the lockdown especially, a real movement supporting the medical staff arose, with people applauding and cheering doctors and nurses and showing their solidarity to them for the sacrifices made during the pandemic. People organized musical flash mobs from their balconies to thank the medical staff for their efforts, not only in Italian cities but also in other infected areas of the globe, like for example in New York City.

People seemed to have changed their perception of medical figures and saw them as the new heroes of our society. The reason for such change is probably to be found in part in a real feeling of empathy and compassion for a category of people who worked in bad conditions and for terribly long shifts, with a lack of the required material and tools to be protected and solve the situation. Also, people sometimes change their opinion according to the trend of the moment and following the behaviour of other individuals, as demonstrated also by Asch and Sunstein in their studies. Therefore, those that changed their opinion and previously heavily denounced the health system may also have followed a trend or a mass tendency.

The real reason of this change of behaviour may be that, however, the rage of people was not addressed directly at the jobs of doctors and nurses but rather at the government and its way of managing the healthcare system overall. What citizens are interested in – or are able to judge positively or negatively – is not the quality of a doctor himself, but rather the results and the outcomes that his or her job can bring. Such results are given, on the one hand, by the management of the healthcare system and, on the other hand, by the daily efforts of the medical staff.

The way the whole health emergency of COVID-19 was managed, at least looking at how doctors and nurses worked, was positively seen by the public. People set aside their concerns or their bitterness towards the management of their healthcare systems and focused on how the medical staff sacrificed themselves for their nations to take care of the thousands of victims of the virus.

In this way, what happened was that citizens finally came to be able to discriminate between the management of the healthcare system – either bad or good, with its perks and flaws – and the job of doctors and nurses. This is particularly surprising since what often happens with regards to echo chambers is that individuals are irrational and, for this reason, unable to lucidly look at phenomena.

Therefore, concerning this particular situation, we can notice something that seems like a “rupture” in an echo chamber. People changed their mind and abandoned – even if we cannot know the real reasons or their real beliefs – an extremized position, almost shifting to the opposite side.

Part 5: Main findings and conclusions

Correcting misinformation is not at all an easy task. As we have seen, it is very complicated to make people understand that a certain piece of information is wrong. The problem relies not in the piece of information itself, but in the fact that it is the interconnection of broader concepts, and changing it means changing the mindset, ideas and opinions of a certain person. It may even sound paternalistic and dictatorial to impose a certain thought to people, as it could further create a reaction of rebellion to the attempt of correction.

Moreover, as I explained, such opinions are even stronger when people are members of a community or a group, an echo chamber in which deliberation among them contributes to strengthening those beliefs and making them more extremized.

The job of a debunker is complex, and different ways have been tried to correct misinformation at the same time in the attempt to avoid making people angrier and more suspicious towards media industries and reliable authorities.

Quattrociochi and Vicini (2016) describe how the Washington Post had once a section called “What was Fake on the Internet This Week”, born in 2014 thanks to Caitlin Dewey, which unfortunately had to be shut down after its 82nd week.

The creator of the column herself affirmed, in an interview for First Draft with Craig Silverman, that “Debunking is easy! It’s convincing people to trust the debunk that can be hard” and spoke of the difficulties encountered in dealing with the controversies and reactions of people triggered by her debunking column.

She also explained how what she “experienced doing debunking work is a sense of frustration and feelings of futility, due to the fact that the fake stuff would often get much more social traction and traffic” and that people would distrust the newspaper entirely due to the level of “unwillingness to believe the debunk”.

I already spoke of the *backfire effect* (section 1.2) analysed by Brendan Nyhan and Jason Reifler (2010), namely the reaction of misinformed individuals to the attempt of correction of their wrong factual beliefs.

The authors, in fact, studied precisely what is the reaction and response of people when someone tries to change their misperceptions of reality. According to them, “it’s important to note that the account provided above does not imply that individuals simply believe what they want to believe under all circumstances and never accept counter-attitudinal information” (Nyhan and Reifler, 2010). Nyhan and Reifler explain how, paradoxically, the very fact of arguing with somebody who has a different position compared to them, showing them “vigorously” the reasons why they do not agree with them, makes them believe their position is even more congruent. In this, they agree with Lodge and Taber (2000).

Also, as I exposed in section 3.2.2, talking of the study “Emotional Dynamics in the Age of Misinformation” (Zollo et al., 2015), even the simple interaction between members of two different echo chambers – a scientific and a conspiracy one – instigates negative feelings and does not bring any good result, but only increases rage and extremises each one’s own position. Therefore, if any kind of interaction is already difficult to imagine,

due to the algorithmic dynamics of the Web and the effects of the confirmation bias, it is even worse when it occurs.

Probably, the direct action of correction and debunking is not a good solution to the problem.

The health emergency witnessed in 2020 was so shocking that it changed, as we have seen, the minds of certain categories of people and, in a certain sense, “broke” an echo chamber. As I also explained, this probably may have happened in part due to people being moved by a social mass trend rather than a real change in their beliefs and in part by a real feeling of empathy. An important result is that people came to understand and differentiate between who is responsible for what: they realized that a bad management of the healthcare system depends on their governments and not directly on doctors and nurses and were able to lucidly discriminate between these two categories. Also, the public appreciated and supported the efforts and sacrifices made by the medical staff, without whom the health emergency of COVID-19 could not be solved.

Therefore, in this case, a change occurred: the strong positions of such people became less extreme, which is a considerable result.

Such an extreme situation did, however, not change the mind of other people, namely those who support no-vax movements, who remained strong on their positions. Even worse is that they took the promotion of a vaccine as a reason for strengthening their positions even more and to create further conspiracies on the malevolent goals and activities of their governments.

Therefore, there is still not a real and efficient solution and a way of correcting misinformation. The job of debunkers is complex and risky, as it runs the danger of even worsening the problem.

However, certain peculiar phenomena can – even slightly – create a rupture in echo chambers and make people change their mind.

There is hope, in a future, that misinformation can be corrected and the information that circulates on the Internet controlled. The problem, however, relies in the human mind: as shown by the psychological studies of Tversky and Kahneman, Ash or Loren and Jean Chapman, the very matter may be cognitive biases as an innate human behaviour, which cannot be changed.

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Summary in Italian

Quello dell'informazione è un mondo che è cambiato decisamente molto nel corso dei secoli. Basti pensare a invenzioni come la stampa nel XV secolo introdotta da Gutenberg, il telegrafo di Chappe nel XVIII e Morse nel XIX secolo, la radio di Marconi o il telefono Antonio Meucci, o anche la televisione e il cinema.

Questi strumenti hanno rivoluzionato il modo di comunicare e dato inizio a quello che può oggi essere considerata la comunicazione di massa.

L'informazione non è, però, sempre stata qualcosa di democratico e universale: un tempo, le notizie riguardo i fatti politico-economici circolavano tramite gazzette o semplicemente a voce nei caffè e nei salotti dei nobili del tempo, che appartenevano alle uniche categorie alle quali era permesso conoscere i fatti del tempo ma, soprattutto, avere il potere decisionale in fatto di politica ed economia.

Con la diffusione di tali strumenti e di ideologie liberal-democratiche sempre più partecipative, si è dato inizio a un nuovo modo di comunicare ma soprattutto di informare i popoli: l'informazione e la conoscenza divennero così accessibili a tutti.

Un'ulteriore invenzione del nostro tempo – e ben più recente – che può essere considerata rivoluzionaria è Internet: soprattutto, il World Wide Web proposto da Tim Berners-Lee e Robert Cailliau come progetto del CERN nel 1989 ha permesso una vera e propria rivoluzione per quanto riguarda sia la diffusione che la produzione dell'informazione.

Internet permette all'informazione, innanzitutto, di viaggiare molto più velocemente: è possibile sapere di un fatto che accade dall'altra parte del pianeta nel momento stesso in cui esso sta succedendo, semplicemente aprendo Facebook, Instagram o Twitter.

I social network in particolare, ma anche strumenti come ad esempio i blog, permettono a chiunque di poter esprimere le proprie idee e di informare. Il rischio che ne deriva è però che, navigando e informandosi in Internet, si corre il pericolo di trovarsi di fronte a informazioni false. Il potere della condivisione con centinaia di utenti, poi, permette all'informazione scorretta di viaggiare e “contagiare” un gran numero di persone.

Si crea così la disinformazione, un fenomeno per il quale le persone non sono disinformate (ossia non informate), ma sono informate male e in maniera scorretta a causa di fonti poco raccomandabili.

Il concetto di *fake news* è oggi molto conosciuto e reputato un pericolo per la nostra società, al punto che si sono andati a creare mestieri che si occupano proprio di sfatare codesti miti falsi e correggere la disinformazione: ecco che nasce la figura del *debunker*, il cui ruolo è proprio questo.

Il problema è che gli utenti disinformati sono, purtroppo, inclini a possedere idee estremizzate e molto forti. A causa di ciò, il lavoro di correzione della disinformazione diviene più difficile. Il fenomeno del *backfire effect* (Nyhan and Reifler, 2010) avviene infatti proprio quando, nel tentativo di correggere le forti idee di un individuo disinformato, egli arriva a fortificare ed estremizzare ulteriormente il suo pensiero.

In questa tesi, si analizzano dapprima gli atteggiamenti psicologici per i quali la disinformazione avviene, e a causa di cui diviene difficile correggere la piaga dell'informazione scorretta.

I bias cognitivi sono definiti da Dan Lockton (2012) come “errori sistematici nei risultati delle decisioni che le persone prendono, risultanti dall'applicazione di una o più euristiche”. Essi sono dei comportamenti irrazionali che caratterizzano ciascun individuo, intelligente o meno egli sia.

Le euristiche vengono definite invece da Lockton come “scorciatoie decisionali e di giudizio” e stanno ad indicare quei ragionamenti che facciamo che appaiono razionali e corretti ma che mancano in realtà di dati o informazioni.

I bias cognitivi sono quindi qualcosa di perfettamente umano e non necessariamente negativo: ad esempio, il *confirmation bias* spiegato da Amos Tversky e Daniel Kahneman (1974) può verificarsi in molteplici situazioni. Esso avviene quando un individuo accetta solamente le informazioni che confermano le sue idee e inclinazioni, evitando invece di prendere in considerazione quelle che si trovano in opposizione con esse.

Un altro bias cognitivo è l'*herding effect* esposto da Dan Ariely nel suo libro “*Predictably Irrational*” (2008), secondo il quale se si vede una lunga fila di persone davanti a un ristorante, si tende a pensare che quel ristorante sia necessariamente buono.

Si può poi parlare anche dell'importanza delle emozioni e della loro influenza sulle decisioni che gli individui prendono. Amos Tversky e Daniel Kahneman (1991) parlano anche di *loss aversion*, un atteggiamento secondo il quale gli individui danno più peso al rischio di perdere qualcosa piuttosto che quando si ha la possibilità di guadagnarla.

Un altro atteggiamento interessante è poi quello di cercare una causa e una correlazione tra eventi o individui che dia senso e concretezza a fatti ignoti, studiato ancora da Tversky e Kahneman agli inizi degli anni '80 e da altri psicologi comportamentali come ad esempio Loren e Jean Chapman negli anni '60. Questi atteggiamenti spiegano perché, quando avviene una catastrofe o un evento inspiegabile e tragico, si cerca sempre una spiegazione – o meglio una cospirazione – e, soprattutto, un colpevole da imputare.

È esattamente quello che avvenne ai tempi della peste dei secoli XIV e XV narrata da Alessandro Manzoni ne “I Promessi Sposi”, alla quale vennero ricercate le cause più disparate fino ad arrivare a teorie cospirazioniste sulle comunità ebraiche, viste come responsabili della diffusione del virus con lo scopo di sterminare i cristiani.

Purtroppo, anche in epoca moderna si è ripresentato questo fenomeno: la pandemia di COVID-19 ha scatenato, tra le tante reazioni, la diffusione di una serie di teorie di complotto sul governo cinese e l'invenzione da parte di esso stesso del virus nei laboratori del proprio paese, con lo scopo di ottenere il potere politico ed economico sulle altre potenze mondiali, con particolare interesse verso gli Stati Uniti. Questa è solo una delle tante fantasiose teorie inventate in seno a tale emergenza sanitaria, che si sommano poi a tutte quelle più datate e popolari riguardanti il Nuovo Ordine Mondiale, i vaccini, le scie chimiche e via dicendo.

Nel contesto della disinformazione e delle *fake news*, questi comportamenti hanno un ruolo fondamentale nello spiegare perché degli individui apparentemente razionali e intelligenti arrivino poi ad avere credenze radicali e, soprattutto, sbagliate.

Quello che scaturisce da questi atteggiamenti e da queste credenze è il fenomeno delle cosiddette *echo chambers*: degli ambienti virtuali chiusi, come ad esempio gruppi su Facebook, dove persone misinformate con le stesse inclinazioni si confrontano tra di loro dando luogo poi a una polarizzazione di gruppo.

Lo spiega molto bene Walter Quattrociocchi, insieme ad Antonella Vicini, in “Misinformation: guida alla società dell'informazione e della credulità” (2016): Internet ci porta, tramite algoritmi e cookies, a vivere in una sorta di bolla (chiamata *filter bubble*) personalizzata, che rispecchia i nostri interessi e ci dà notizie sulle persone e le cose che ci interessano di più. Quando una persona è misinformata quindi, si troverà costantemente nello stesso ambiente. Inoltre, il parlare e confrontarsi esclusivamente con persone con idee altrettanto estremizzate porterà l'utente a rafforzare ancora più le proprie posizioni.

Questo fenomeno, in ogni caso, non riguarda solamente i gruppi di misinformati – che presentano più spesso però un atteggiamento di polarizzazione – ma anche gruppi e comunità di tipo, ad esempio, scientifico.

Ciò è dimostrato in uno studio chiamato “*Emotional Dynamics in the Age of Misinformation*” (Fabiana Zollo et al., 2015), nel quale i ricercatori mostrano come, anche in una comunità di tipo scientifico (e quindi correttamente informata), può verificarsi una radicalizzazione delle proprie posizioni in seguito a un confronto con membri della stessa comunità.

Il fenomeno della polarizzazione di gruppo risale a ben prima dei gruppi di no-vax su Facebook: Cass Sunstein, autore di “*Nudge*” (2008) insieme a Richard Thaler e collaboratore alla Casa Bianca dell'allora presidente degli Stati Uniti Barack Obama, ne spiega le dinamiche in “*The Law of Group Polarization*” (1999) e nel suo “*Echo Chambers*” (2001). Egli spiega come la deliberazione possa portare all'estremizzazione delle proprie posizioni, e come ciò possa avere un effetto molto negativo e d'impatto all'interno di una società che fa della deliberazione un elemento sempre più importante a livello democratico.

Un altro aspetto fondamentale nello studio del comportamento umano riguarda poi l'influenza che altri individui hanno sulla persona e sulle sue decisioni e ragionamenti: Sunstein si rifà, infatti, ai celebri esperimenti di Solomon Asch negli anni '50, in cui viene per l'appunto dimostrato come una persona possa farsi influenzare dalle opinioni altrui.

Il rischio si corre quando, sfortunatamente, si parla di gruppi di no-vax o di sostenitori di teorie cospirazioniste di stampo nazional-populista. Questi individui sono un pericolo per la nostra società, perché le loro posizioni possono portare alla non vaccinazione dei propri figli da malattie che dovrebbero essere assenti nel XXI secolo, o diffondono idee sul governo riguardo strani giochi di potere o fatti mai avvenuti.

Quello che si va poi ad analizzare in questo elaborato è come questi gruppi abbiano reagito alla situazione di emergenza sanitaria vissuta nel 2020, con la diffusione del Coronavirus COVID-19.

La diffusione del virus, iniziata a partire dalla fine di Dicembre 2019 in Cina (Wuhan, provincia di Hubei) ed estesi poi nel resto del pianeta, ha portato con sé la nascita di molte teorie riguardanti la creazione e la scoperta del virus e anche possibili vaccini o cure.

Inizialmente, molte teorie di complotto riguardavano uno scetticismo nei confronti del virus stesso: si diceva essere un'arma di distruzione di massa per far stare le persone chiuse in casa e dominarle, che fosse stato inventato nei laboratori cinesi e fosse “scappato” per poi diffondersi, che fosse stato diffuso di proposito dal governo cinese per guadagnarsi la posizione di egemonia a livello mondiale. Ciò ha causato una crescita di odio e psicosi nei confronti dei membri delle comunità cinesi di molti paesi e città, spesso anche vittime di violenza.

Altre leggende riguardano invece il vaccino per tale virus, non ancora purtroppo scoperto: qualcuno pensa che il governo cinese sia già in possesso del vaccino ma che stia aspettando di sterminare decine di migliaia di persone per poi venderlo a prezzi altissimi. Sono sorte anche le più svariate controversie riguardanti possibili cure e rimedi contro il virus, come ad esempio che bere acqua salata o calda non permetta di essere contagiati, che i fumatori o chi assume steroidi ed etanolo rischino meno il contagio.

Le due *echo chambers* poi analizzate sono quella dei no-vax e i gruppi contro la malasanità.

Il primo, come reazione alla pandemia globale, non mostra cambiamenti di posizione riguardo i vaccini. Vi è anche l'esempio, narrato dalla Repubblica, di due politici italiani apertamente no-vax che si sono schierati contro la possibile diffusione di un vaccino come cura alla malattia.

Sara Cunial, ex deputata al Movimento 5 Stelle, e il vicesindaco leghista di Pordenone Michele Ghiglianovich hanno esposto i loro pensieri riguardo un ipotetico vaccino. La prima ha affermato di non avere intenzione di vaccinarsi e ha parlato di una sospetta correlazione tra il vaccino antinfluenzale e il COVID-19, o di come le politiche di vaccinazione promosse da personaggi politici e non come Bill Gates abbiano chiari fini egemonici. Ghiglianovich ha invece condiviso un video (non suo) sulla sua pagina Facebook in cui si consiglia di non sottoporsi a vaccinazione – se e quando un vaccino dovesse essere inventato – perché “dentro ci sarà di tutto per trasformarci in zombie”. Queste sono quindi le posizioni generali dei no-vax, i quali in seguito a una pandemia globale mantengono le loro posizioni salde e, forse, ancora più estremizzate.

Per quanto riguarda i gruppi particolarmente concentrati sulla malasanità, si è visto un cambiamento nelle posizioni. In particolare, il movimento di “eroicizzazione” del personale sanitario per gli sforzi nel curare le migliaia di pazienti malati di COVID-19 ha causato una rottura in tale *echo chamber*.

Nei mesi di maggior diffusione del contagio, medici e infermieri hanno lavorato per turni molto lunghi, in condizioni rischiose e senza essere sempre forniti del materiale protettivo necessario per evitare il contagio. Si temeva soprattutto un sovraffollamento degli ospedali, soprattutto per quanto riguarda i posti nei vari reparti di terapia intensiva del paese, non pronti per un'affluenza come quella che ci fu nel periodo di picco dei contagi.

Si è creato quindi un fenomeno di solidarietà comune con medici e infermieri a sostegno dei loro sacrifici, caratterizzato da *flashmob* musicali e applausi dai balconi e dalle terrazze di tutto il paese.

Probabilmente, questo atteggiamento è stato mosso in parte da un sentimento di genuina empatia e solidarietà con tale categoria di lavoratori, in parte da una tendenza del momento. La causa reale è probabilmente da ricercare nel fatto che il pubblico ha saputo discernere tra il lavoro dei medici – fatto di sacrifici e sforzi e che ha portato ottimi risultati nella gestione dell'emergenza – e quello che pertiene alla gestione del sistema sanitario, con i suoi difetti e problemi organizzativi e gestionali, di cui si occupa lo stato. Il cittadino non è interessato o non critica la qualità di un medico, ma guarda esclusivamente i risultati: il lavoro di medici e infermieri durante l'emergenza sanitaria COVID-19 ha fatto emergere il loro coraggio e la loro capacità, da distinguere rispetto al lavoro dello stato e a tutte le inefficienze che esso può portare. Si è quindi registrata una “rottura” in una *echo chamber* di individui con idee molto forti.

Per concludere, una situazione estrema come quella di una pandemia mondiale può scuotere gli animi delle persone e creare uno shock emotivo al punto da far loro abbandonare, in certi casi, una posizione forte ed estrema. D'altra parte, gli animi di altre categorie non sono stati mossi nemmeno da una situazione così estrema e catastrofica.

C'è quindi ancora da investigare e ricercare per trovare nuovi modi in cui la disinformazione e le *echo chambers* possano essere corrette.