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Science and Religion Shift in the First Three Months of the Covid-19 Pandemic

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Abstract:
The goal of this pilot study is to investigate expressions of the collective disquiet of people in the first months of Covid-19 pandemic, and to try to understand how they manage covert risk, especially with religion and magic. Four co-authors living in early hot spots of the pandemic speculate on the roles of science, religion, and magic, in the latest global catastrophe. They delve into the consolidation that should be occurring worldwide because of a common, viral enemy, but find little evidence for it. They draw parallels to biblical works, finding evidence of a connection between plague and "social strife." They explore changes in the purviews of science, religion, and magic, and how and why they have changed, as three systems of covert risk management. They speculate on the coming wave of grief when the world populations finally decide that too many people have died, and they envision cultural changes on the other side of the pandemic, to lifestyles, travel, reverse urbanization, and living and working in smaller communities. Using an unusual approach named "crowd-sourced ethnography", they conduct un-traditional ethnography and speculate on management of covert risk in their native countries.
Keywords: pandemic, Covid-19, risk, religion, magic, "science and religion", ethnography, culture change, demographic change.

1. Introduction: The Complex Relationship Between Different Forms of Risk

When one of our co-authors asked several local Polish friends to interpret the following man's actions, the consensus they voiced was – double protection.

Crowd-Sourced Pandemic Ethnography 2020

> An unidentified man enters a nameless Polish grocery store. He reaches to the right, applies hand sanitizer, and rubs his hands together. He turns to enter the store and genuflects deeply and crosses himself [24].

The man in the video has made a clear risk decision, and one wonders if his systems for managing health risk have changed. The man appears to reason that two methods of protection are better than one – one, scientific (the hand sanitizer) and the other, religious (crossing himself in a deep genuflection, before entering a grocery market). In these early months of the Covid-19 pandemic, one imagines the man thinking, I've done my part, God, now the rest is up to you.

Another co-author found the religious observance of crossing oneself in a news film of care givers entering a nursing home in Washington State, the first place in the United States to record cases of the novel coronavirus. Filmed from above, one saw a line of men marching, clothed head-to-toe in protective white garments, single file, into the nursing home, to tend to the sick and dying. Two men crossed themselves, as if to say, God protect me. They knew they were entering a high-risk zone. It must have been difficult work, physically and emotionally.

1.1 Forms of Risk

The goal of this pilot study is to investigate expressions of the collective disquiet of people in the first months of 2020, and to try to understand how they manage the covert risk of the pandemic, especially with religion and magic. Thus, the design of the study conforms to an exploratory effort that will hopefully lead to more refined questions and robust study designs in the future.

Between global catastrophic risk that is most inclusive, and risk managed culturally by groups and individuals with rituals meant to be, surely, hopefully, of some benefit, there are other forms of risk. Yet, they can all can be traced to the malaise of people. Something is not quite right, they feel, and they express that feeling in many ways: daily purchasing decisions, routines of family and work, use of transportation or not, voluntary assembly, voting, protests in the street, and violence. All their decisions and the resulting political and economic events come down to the way large numbers of people feel. In the pandemic, they ask themselves: What kind of risk am I taking? How much risk am I taking? Is my family safe?

There is a contagion operating today that goes far beyond the disease caused by the Covid-19 virus. It is an international contagion of sentiment among millions of people, transmitted daily on the internet and television, in newspapers, social media, and in whispers between neighbors. The connections between global catastrophic risk and the discomfiture of people are complex and rapidly changing, especially in a pandemic when communication modalities are also changing fast. Now, we Zoom to discussions of assaying sewage water to detect Covid-19 viruses. It is, after all, an extremely sensitive measure.

Global catastrophic risk comes in two forms for humans: destruction of the environment and destruction of the species. The environment can be destroyed with a meteor hit, nuclear war, or destructive weather. The human species can be destroyed in response to environmental catastrophes, but primarily by other plants and animals, especially some viruses, bacteria, and molds. Pestilence, as documented in the Bible, was sometimes caused by swarms of insects and destruction of human food supplies. Pestilence and plague in the Bible are often associated with civil strife, and they are now, as well. Destruction of human food chains remains quite possible in the present pandemic. While we defend ourselves against an unseen enemy, Covid-19, we remember to defend the insects that maintain our food supplies, like the pollinators.

Types of risk include additional forms of threat that cross national boundaries, like business risk, calculated carefully for clients that need to know whether to invest in business in specific countries. A related form of risk is socio-political, which is also assessed as a service for companies who insure top managers in unstable countries, primarily against kidnapping. Socio-political risk is the daily work of foreign ministers worldwide. It can involve health risk, too, because poor populations are pushed into marginal areas and this can result in further impoverishment and instability, as well as the consumption of non-domesticated species. This mechanism is the basis for the original theory about the origin of the Covid-19 pandemic, and also how Ebola outbreaks now recur. Researchers proposed the theory that HIV came from the eating of bush meat held in a reservoir species of bat, although now it is proposed that HIV has been part of the human experience for thousands of years [27]. Our understanding of Covid-19 may evolve similarly, over long periods of time. The risk may have been with humans for quite some time.

Finally, there are specific forms of risk that have been analyzed so extensively that they now have their own evaluation methodologies, especially three forms: (1) pharmaceutical risk, whose analysis balances benefits of a drug with the risk of side effects, often in relation to cost, (2) environmental risk, whose own approach is most often reflected in environmental impact statements

(EIS), and (3) workplace risk, or risk to the welfare of employees, contractors, and visitors, which is of great interest to unions and insurance companies.

1.2 Covert Risk Abatement and Overt Clues to It

The missing piece in understanding all these forms of risk – from global catastrophic risk to business and pharmaceutical risk – is a deeper understanding of covert risk, i.e., the human perception of risk, how it feels, how humans conceive of it, how they explain why there is a risk now, and who is at fault for causing the risk. From the perspective of most modern religions, the question of fault points to a different frame of reference that connects sickness and punishment imposed by cosmological forces beyond human control. Modern western religions have largely disentangled sickness and sin, or epidemic and retribution. Jesus did so for Christianity, as we read in the New Testament (Mark 2:5-12; John 9:1-3). In the modern age, the question of who or what is at fault for illness or epidemic vaguely hints at religion's predecessor and competitor, magic, which is associated more often with pre-modern societies (although it is retained in modern societies to an extent and in a more covert form). While magic typically assigns fault in order for a remedy to be forthcoming, that type of association is usually not found in religions typical of modern societies. The same logic is present among some Christian believers who interpret the Covid-19 pandemic as a sign from God that humans are not behaving well [21].

Individual cultures help people understand which risks to fear and how much to fear them [6]. Mary Douglas describes this as a selection process (from all the possible threats) and she is largely correct. However, in the case of the current global pandemic, there is no choice because the options have narrowed down to one, the Covid-19 pathogen. Once the risk is identified without doubt, what does one do? The selection process moves on to remediation: what to do about the risk, how much to do, whether to ignore it and the peril if we do. In most instances of contagion, like yearly influenza, we rest assured in the efficacy of a vaccine or the strength of our own immune systems, as well as support from family and friends, and we go on. We are told by scientific experts that the virus causing the Covid-19 pandemic is novel, meaning new, unconventional, uncommon, even strange. The word has accentuated the massive global anxiety about the novel coronavirus. The name implies that the usual remedies may be unavailable or inadequate.

In the current pandemic, a good clue to the nature of covert risk is the explanation that people devise for it, often anthropomorphizing the danger, its source, and its mollification, so that it appears as a struggle between different types of people, demons, spirits, and/or natural forces like the sun, moon, storms, and wind. At first, this appears pre-modern, but it is very common among people living in industrial societies. Yet, it is only rarely openly discussed.

It is not surprising that the explanation for a pandemic at the level of global catastrophic risk is the creation of a new cosmological interpretation, which is conceived when people are under great stress and there is a poorly understood threat of death. People ask themselves, their family, and neighbors how this danger works, what causes it and what can forestall it or appease it, as if it were an angry god. The explanation is a theory about factors operating in a system, and it is not always scientific. Yet, its neuroscience is available for all to read in theories about the left-brain interpreter [10] and the standard decision-making model [11]. Knowing the neuroscience, one would be surprised if humans did not attempt to construct theories that allow them to manage risk with the help of science, religion, and anything else available.

Religion and magic are different risk management systems often used to manage covert risk. However, magic is more deliberate, more manipulative and unvarnished in its motivation to accomplish good or evil ends. The Covid-19 pandemic is so stressful, magic has been openly pressed

into service. Religion usually supports benign causes, although its actions can be violent and punitive as we read in the New Testament's Book of Revelation. The end of times is preceded by plague, pestilence, and social strife. There is a warning in its fury: Behave well, as if the end of the world is near (1 Thess. 5:16-18), [19]. In this pandemic, religion and magic function at the same time, alongside science, a third, covert risk management system. The three systems of cause and effect are – neurologically and cognitively – all rational, logical, and point toward solutions. They derive from the same human efforts to explain cause and effect. When humans under great stress are pressed to create theory (much like Einstein created theory about time and space), they use one, two, or all three systems of explanation. The creative capacity of humans is the same, and in fear of their lives, they will use any theoretical approach.

Theorizing is not just a personal endeavor, but a collective exercise, an innovative group skill that humans have had since the species arose, and some of its foundations evolved long before [22], [23]. The only difference now is that the internet has allowed millions of people to be involved in developing theories, including conspiracy theories, which are rampant in this pandemic. Nevertheless, these three systems of covert risk management – science, religion, and magic – put the same human brain to work in creative, problem-solving, and reassuring ways. Besides, from different frames of reference, they all work. Belief in a cure is part of the cure, and any modern physician will confirm that.

Crowd-Sourced Pandemic Ethnography 2020

> Under the heading, Riti Magici, or Magical Rites, Israel Felipe posted a video on Facebook on May 5, 2020, which appears to be taken with a cell phone. He writes: "Unexpectedly, an Italian witch dances in the square in Salento in a ritual to combat the plague. Pizzic dance of the magical Taranta tradition, very old. I thought it was as beautiful as the image of the pope walking in Rome" (Trans. Portuguese to English [7]). On *youtube.com* an identical video of the dancer was posted by Jorge Vásquez [25], with these words: …It is a very old dance. It was originally made in honor of the god Dionysus associated with Bacchus. God of wine and fertility. But later he took other courses and led to a dance that was induced to those who were stung by some spider (tarantula) hence the name taranta-tarantella .... so it is a kind of exorcization of the disease...

Indeed, we co-authors were all mesmerized by this winsome modern witch dancing rhythmically in black to ward off the plague, alone in an Italian plaza. It suggests that the fear and anxiety about Covid-19 was sufficiently high that magic was uncloaked and came out into the center of the city in daylight. As the video begins with the dancer in the distance, the small figure appeared to be not a witch, but, strangely, a nun! The witch's garments looked much like a nun's habit. The black dress looked like the nun's black tunic, with a white collar reminding one of a nun's white wimple.

Finally, we note that this winsome witch in the Italian plaza suggests the same lesson as the Polish grocery shopper at the beginning of this paper: When in doubt, use all risk management strategies available. Two are better than one, and with three, you just might survive.

1.3 Method: Crowd-Sourced International Ethnography

The goal of this pilot study is to investigate expressions of the collective disquiet of people in the first months of 2020, and to try to understand how they manage the covert risk of the pandemic, especially with religion and magic. Because the prevalence of the Covid-19 contagion was substantial at the time

that we four co-authors began our research around March 27, 2020, travel was unwise and we were all in some type of lockdown, in England, the United States, and Poland (with family ties to Italy, an early virus hot spot). In March and much of April, we rarely went out of our homes and those of us who taught or worked at universities, did so remotely via internet.

The four co-authors decided to focus on themes related to religion that our collective knowledge base suggested. It combined the theoretical and applied knowledge and experience of one sociologist, one anthropologist, one international relations expert, and one Catholic priest with an academic background in philosophy, theology, and astronomy. Together we had a wide range of professional experience in the societies of England, the United States, Italy, and Poland. In part, our choice of themes conformed to our own interests, but in part, it was guided by the disciplines we had mastered. Our choices were also guided by the media headlines in late March to late May of 2020, i.e., the first two months of the pandemic, if that is measured by open public acknowledgment of it (rather than early suspicions of scattered cases of an unusual type of pneumonia). We settled upon these four themes, and there are implied hypotheses in each one, which became useful in this pilot study primarily in pointing to future research questions:

(1) *The grand unification of problem*. The social sciences and political experience of the coauthors together suggested that a common "enemy" (in this case a viral pandemic) should cause widely diverse and dispersed people to draw together in common cause against a common risk. Did we find evidence of this?
(2) *Anxiety would be expressed in changes in religious ritual, thinking, and feeling*. We all have written on religious topics previously, and we have amongst the co-authors an ordained pastor. We felt sure we would find changes in religion with heightened anxiety in response to Covid-19 risk. Was this born out? How? Were there any unexpected, out-range changes?
(3) *There will be a wave of grief that begins at some point during the pandemic*. This expectation was based largely on the HIV/AIDS epidemic, when some of us recall an explosion of grief when so many had died.
(4) *People who are isolated by the pandemic will somehow express their desire to re-join their faith communities*. What will those expressions be?

After choosing themes that appeared broadly relevant to religious responses to Covid-19 in several western hot spots according to our early observations, we chose a crowd-sourced ethnographic approach and obtained information indirectly from relevant postings of people on the Internet. We did not select an approach for our pilot study that required random sampling, and while bias was undoubtedly introduced, it is, in the end, not relevant to the purpose of the study: hypothesis generation. They were not selected randomly as respondents, but they provided the type of information we sought. Make no mistake: This is not traditional, long-term, in-person ethnography, but it did produce a variety of videos from youtube.com and Facebook, stories from social media, online newspapers, television, and historical documents, poems, cartoons, articles and hypotheses that addressed our four themes, above. We added to this our own personal observations and experiences, and when assembled, this information allowed us to draw some conclusions before restrictions began easing in England, Italy, Poland, and the United States. It is important to note that all this information was collected before the Black Lives Matter protests began worldwide in response to police actions, on May 25, 2020. There is another analysis that would naturally follow this one, which would include the effects of those mass protests on the pandemic (cf. [16]). We shall connect these protests to Biblical

material from two thousand years ago, which links pandemic and civil disturbance. Plague and civil disruption have apparently gone hand in hand for a very long time.

We are not the only ones to use internet-based methodologies to understand social, political, and economic change. We shall try to make reasonable projections based on our chosen fields of social science (one anthropologist and one sociologist), a priest who is also an astronomer with degrees in philosophy and theology, and an expert in international relations. We are two men, two women, two married, two single. We include an Italian living in Poland, two Americans but one living in London, and one British national who is living in America but whose family remains in Britain. Our observation platforms are diverse, international, and ecumenical. We include an ordained Catholic priest, another Catholic, a co-author raised in the Bahá'í faith, and a Protestant (Presbyterian).

We understand the methodological weaknesses of this unusual approach. Traditional ethnography would involve long in-person interviews of individuals willing to be very responsive. It is a traditional part of participant observation, in which it takes months to gain the trust of respondents in the field. Our field was the developed world, especially early hot spots for the Covid-19 pandemic.

There were advantages to our methodology. It allowed us to sample widely and view behavior that was spontaneous and thought-provoking, as people tend to be in unplanned events, poetry, cartoons, and good writing on current events. Covert risk lies just beneath the surface of people's outward façades. It can be a desperate mental manipulation of what one can do and cannot do to stave off danger. It can be embarrassing. Covert risk exists in summary form in the hearts and minds of people in danger of death. It is the sum total of all the calculations that people make in deciding how they should face danger. Personal risk assessment is a calculation, sometimes mathematical, sometimes based on enormous amounts of research, and at other times, simply a gut feeling. Having assessed the danger and methods to forestall it, people then make decisions about what to do. This makes some types of overt behavior excellent clues to changes in basic human beliefs. We found examples of hope, sadness, anxiety, and humor that revealed covert risk in the early stages of the Covid-19 pandemic. Some of it was clearly a calculation of *two* (or more) of our personal risk assessment systems: science, religion, and magic.

When an airborne, respiratory viral pandemic is experienced daily on an intimate level, it is easy to forget that the infection of many millions of people is possible. It is a staggering realization, and most of us look away and return to our daily lives of shopping, self-protection, and weighing the desires for a social life with our future existence. In repetitive routines, the crisis becomes trivialized and we forget exactly what is at stake and how much risk is being borne by so many. That *insouciance* allowed some of the behavior we see in the videos referenced here.

2. The Grand Unification of Problem

The two issues we shall first address are the human perceptions of scope and time: scope of the problem, and the pandemic's sense of urgency. We have some clues about scope from the word pandemic itself, implying the global spread of contagion. However, scope is not simply geographic. It involves a feeling, a conviction that everyone on Earth is confronting a common danger, and that all humans are in the fight together. That joint identification should draw people together, but as we have seen in the first months of the Covid-19 pandemic, mortality rates differ by age, sex, race, location, and culture. Sadly, fingers are being pointed to assign fault and create division. Scapegoating is rampant, but then, it was the same in the Middle Ages, in response to the Black Death [4].

Religion, too, has the goal drawing humans together into a community, and we see admirable examples of religion continuing to function well. However, some of the religion that has arisen is not altogether benign and may not be exactly religion.

2.1 Mind Map Suggests a Broad Scope

There is a global consolidation occurring, and it was beginning before the pandemic struck. Still, divisive forces gnaw at unity and try to show it is not true. In the first months of the 2019-2021 viral pandemic, we are all coming under the same grim umbrella defined by the risk of contagion of Covid-19. We shall be a younger world population when it is done with us, because the mortality rates are so much higher for the elderly, but we shall be different, too. The question is, how different?

Our attention was drawn to an online diagram from the World Economic Forum's Strategic Intelligence program, based on responses from its Global Forum Expert Network. We examined results on Global Governance in the form of a mind map fashioned from statistical research on relationships among many topics, such as these: countries such as Brazil, China, India, and Turkey; technological advancements like artificial intelligence, robotics, and cybersecurity, and 5G networks; governmental functions like taxation and international security; and international functions like financial and monetary systems, geo-economics, the environment, and natural resource security.

According to WEF's Expert Network, Covid-19 has some interesting close relationships among five intermediate factors: Rising Multipolarity, Anti-Globalism, Transnational Actors, Institutional Pluralism, and Deepening Interdependence. Covid-19 is diagramed closest to the last one, Deepening Interdependence [26]. Unsurprisingly, Covid-19 is connected to deeper interdependence of international players in terms of both spread of the contagion via long-haul air flights, and obtaining resources such as supplies, vaccines, and ventilators internationally. In the geo-political realm, we have seen tensions rise between some major world powers since the advent of the pandemic, while they assign blame to each other. In the economic realm, we have seen tourism and international academic and business meetings grind to a near halt, along with air travel and the hotel industry.

The results on the mind map give us confidence that Covid-19 is related to worldwide changes that go beyond the health threat, itself. Change is occurring everywhere in response to global catastrophic risk. Still, beneath all the figures on dollars, deaths, and soldiers, how are people managing the fear of a lonely death when family cannot visit, and for some, lost wages and housing? As a risk manager and mitigator, how is religion changing?

2.2 Is Public Health the New Religion?

On May 21, 2020, an article linking the viral contagion to a kind of religion was published in a daily newspaper from Italy, where the pandemic saw early and high prevalence. Since that time, higher rates have been recorded elsewhere, but the pandemic in Italy starkly revealed the tragedy of lives lost, families separated, and the exhaustion of health care staff without adequate protection or equipment. The headline in *Il Foglio* translates as, "The pandemic is likely to become the modern version of universal religion; We are in the presence of a secularized messianism" [1]. This is an understandable reaction to a necessarily strong public health outreach program and stringent rules for a culture that appreciates its Italian café society. Public health exhortations can feel like stiff strictures and fingerpointing. The author of the article looks deeper, beneath the obvious, and claims,

> Our society is critical of religion. Nonetheless, new and more senseless forms of religiosity are hidden in it, which end up taking on the features of a superstition. We find ourselves in the presence of secularized messianism: instead of waiting for Jesus to return, we wait with passionate hope for the messiah, or the vaccination against Covid-19, which no one can say for sure when and if it will ever come [1].

The author mixes magic (superstition) and religion, but his point about waiting is well taken. Waiting for a vaccine is hard.

It would be only a matter of degree to separate public health procedures like cleansing the hands from religious rituals like washing feet, and then separate religious ritual from superstition and magic. How can we know exactly what precautions are needed to face an invisible enemy? This quandary causes people to over-react or under-react, or both. How can one run away from an unseen virus when the entire globe is affected? In the absence of answers, humans invent them in the form of repetitive cleaning routines, purification rituals, and talismans. The aggressive quality of the public health effort sometimes makes people want to relinquish all steps at prevention, go to the beach, and join their friends at the café on the piazza. It is such a difficult choice it becomes a non-choice. Angrily, some say: The virus does not care, why should we?

2.3 What's Old Is New Again: The Bible on Plague and Social Strife

Both Old and New Testaments of the Bible help us understand that our own pandemic of 2019-2021 is not the first or the worst. There is a long history of human pandemics in the Middle East and Europe, while large swaths of land were urbanized and populations became dense, while trading and disease vectors were established, and international travel became more widespread. In these pandemics, there tends to be a connection between contagion and social strife.

A new threat is described in the book of Revelation – the end of times. It is foretold by pestilence and plague, and the fear that attends them is due in part to social disruption, which also foretells the end of times. In a parallel way, environmental destruction, marginalization, poverty, and pandemic form a new system in modern, international political thought, just as fearsome as in the Bible. Plagues in ancient and modern society have viral, social, political, and economic similarities. Greek images related to plague, pestilence, and sickness appear in the earliest, Greek-language Bible that survives to modern times [2]. The motifs are strong and ferocious. We read of blood on horses' bridles, social strife, and hardship, which spill over into moral disability.

Plague and pestilence take on cosmological implications in the book of Revelation. We hold that these connotations of hardship survive in the words we use today. Early Biblical images of violence, death, and the end of the world are still carried beneath the obvious meanings of "pandemic" [19]. It makes sense that social reactions are strong and sometimes violent, and cultural reactions to a pandemic are deeply felt and vividly expressed. It also makes good sense to search for the causes of undefined fear in pandemic and the systems of risk management that provide remediation. Changes will likely be expressed in religious thought and behavior. One of religion's main roles is to relieve fear and anxiety, soothe those who mourn, and provide reassurance through parables, ceremonies, and community life. Many of those have already changed with the requirements of social distancing and restrictions on religious gatherings.

The new element of time was introduced in the New Testament. Early Christians were warned that the end of times would not be immediate, so they should curb their sense of urgency. In Thess. 5:16-17, Paul writes: "Rejoice evermore. Pray without ceasing." Our attention was drawn to the phrase, "Pray without ceasing," which denotes both urgency and steadfastness. Is the Covid-19 pandemic reminding us that the end of world may be near? Are pandemic infection and social disruption related? Why are we praying with urgency when it appears that all we do is wait? The conflict can be maddening. Domestic abuse and substance abuse are both up.[1]

Social disruption and pandemic were perhaps not clearly connected at the start of the pandemic lockdowns in March 2020. After the Black Lives Matter (BLM) movement began following police brutalities, they now clearly are. Marching, chanting, singing in closely packed public demonstrations

has provided the perfect circumstances for additional Covid-19 outbreaks. We wonder which comes first, the pandemic or the social strife mentioned in the Bible. We read that the BLM movement was primed by years of pressure and preparation [3]. Therefore, did the stress of the pandemic ignite the demonstrations? Did the demonstrations exacerbate the pandemic? Or both? Looking back over biblical and historical examples of plague, it seems likely it was both. It was not a random occurrence.

2.4 Science, Religion, and Politics Rearrange Themselves

People turn to religion in the present pandemic, but some find little reassurance. The stability built into human religion begins to crumble and many people turn away from it, as one co-author observed in Italy. These same people can lose faith in science, which fails to provide an immediate cure or vaccine, and they are interested most in politics, according to our co-author. Indeed, all modern industrialized societies have substantial proportions who have turned away from traditional faiths. On the other hand, large proportions of believers remain.

In the 2019-2021 pandemic, even politics fails to organize a broad and early testing plan. At this writing, several months into the pandemic, people find themselves chastised by scientific experts to be patient – just as early Christians were chastised by writers of the New Testament to wait for the second coming of Jesus. Is the analogy apt? Probably yes, and probably no. It is complicated. Our view is that the current pandemic, while stirring anxiety and focusing it upon an unknown future, and at the same time, relying on a new scientific manager of risk (a drug, vaccine, and a testing plan), the original anticipatory urgency of early Christians is stirred again and takes on a new form. It is a different millennium, but there is a similar anxiety, in both cases connected to pandemic, plague, or pestilence.

We sense religious and scientific cosmologies shifting. The balance between science and religion strains. People can look for reassurance in both and find little. Science and religion begin to blend, their differences dissolve, their edges blur, and concoctions like the following, darkly humorous reworking of Psalm 23 by cartoonist David Fitzsimmons is published in our media [8]. Its focus is Dr. Anthony Fauci of the US National Institutes of Health. He has provided reassuring leadership in these uncertain times and he has become something of a folk hero, even a savior of sorts. In the beginning and ending excerpts from Fitzsimmons' cartoon that follow, one can see an unusual version of Psalm 23. In the cartoon's image, Dr. Fauci is pictured in a white lab coat, perched on a golden globe that reads, Science, with lit candles in red, white, and blue surrounding him, and a halo adorning his head. In a global pandemic, the values of science blend into religion, and the values of religion trickle over into science.

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Dr. Fauci is my shepherd;
I shall not want quackery.
He reassureth my soul:
He leadeth us in the path of scientific
reason for our species' sake…

…Surely goodness and mercy shall follow
Us all our lives at a distance of 6 feet.
And we shall not dwell in this house
Forever.

Amen

3. Religion Remains Strong but Changes

In a once-a-century pandemic, it makes sense to look for change. Our initial impression from crowdsourced media is that there is a massive, collective rise in anxiety due to the Covid-19 virus. The change is substantial, so we hypothesize with some conviction that there is sufficient fear and anxiety to drive social and cultural transformations. We expect some of the change to involve religion because of its traditional role in the management of risk. We do not label this rise in anxiety a psychiatric disorder, although the effects could well be disabling for some people. We point to a malaise widespread upon the land that can distract us and keep us from sleeping or concentrating on our work. One of the co-authors has begun, with a chuckle, to use the phrase, "Coronavirus Derangement Syndrome"[2] when a new and unidentified malady crops up while on lockdown. No one wants to visit a doctor's office or hospital now, because of the fear of contagion, so we treat our family's small illnesses ourselves. Home-based medicine has emerged again, where it started. The availability of telemedicine appointments has especially helped the high risk and elderly.

Just as science and religion are re-aligning themselves and jostling for position in these times of stress, so too are religion and magic. In our distributed, crowd-sourced methodology that is anythingbut-traditional participant observation, we have succeeded in uncovering hints of social and cultural trends beginning to occur in these first months of the 2019-2021 pandemic. We still do not know how much fear is appropriate for this virus, so we live tentatively, holding our breaths, anxiously awaiting a cure or vaccine. We co-authors search for signs of change in religion and for a sign the pandemonium is winding down and a new normal is stabilizing with innovations like temperature-checking drones, immunity passports, and "no cash" [17].

3.1 The Forces of Wrath and Mercy Remain Stable, but Updated

The double-edged sword of divine wrath and mercy is a very old concept in the Circum-Mediterranean region that goes back more than two thousand years. It forms an important part of the doctrine of divine retribution in all the major world religions that developed in the region. We see clearly from recent survey results that this concept is not just a remnant of the past, but clearly retained in the 2019-2021 pandemic. An AP-NORC poll in conjunction with the University of Chicago Divinity School finds that respondents are looking for a deeper meaning in the Covid-19 pandemic. Among Americans who believe in God, 31 percent feel strongly that the virus is a sign that God is telling humanity to change. Forty-three percent of Evangelical Protestants believe this strongly [21]. The four co-authors agree that there is a sizable proportion of individuals in the modern societies of England, the United States, Italy, and Poland who see the pandemic as a sign from God for humans to behave differently.

At the same time, most modern Christian faiths, including Catholicism, have disentangled God's direct retribution in the form of natural events. No longer is an earthquake, for example, seen as punishment of people for their sins. Instead, the modern Catholic Church prays for victims of an earthquake (cf. [12]). Still, one hears the viewpoint voiced among people of many Christian faiths that the Covid-19 pandemic is punishment for human ills. The co-authors' view is that it is a re-working of an old theme and an expression of great fear in the face of a new, unknown contagion. In times of stress, people often re-work traditional cultural motifs in the face of new and daunting problems. The result is a blend of old and new in expressions cultural creativity, perhaps like the following.

3.2 Modern Talismans Are Pressed into Service, and Converted to Religion

There is a wide range of religious and quasi-religious objects that offer support in the face of stress and anxiety. It is said that they help people focus, or pray, or remind them of special people or times in their lives. Some of them are simply good luck charms, a physical object that is perhaps linked to a more spiritual realm. Beliefs in talismans, amulets, and charms are widespread, and they span pre-modern and modern religions. Some are not associated with any religious belief, which was initially the case for the talisman described in this conversation between two of the co-authors. The talisman surely illustrates a type of antidote to the anxiety about the coronavirus. However, the most interesting aspect of the conversation is that these two co-authors together create something different with the talisman. That creation signals the perpetuation of religious and community affiliations with people, even in isolation from them.

Crowd-Sourced Pandemic Ethnography 2020

> Co-Author A:
> After the pandemic struck, I stopped shopping. I was convinced it was a waste of time because if I got the virus, I'd never survive, not with asthma. I was high-risk… But, that changed at some point and I guess I decided I was going to live. So, I made a purchase… It was a green amethyst ring that I have named my 'Coronavirus Ring,' after I noticed that the 18K gold stations on either side of the stone look a little like the 'corona' of the virus. I thought to myself (having become just a tad more OCD and a tad more mystical as this thing goes on), 'No, I can't encourage this virus!' And then, I noticed that the large green amethyst stone (which goes nicely with my gold wedding band, the plain one, it's not a time for diamonds), was actually separating – splitting – defeating this virus! I said to myself that if I survive this thing, I will give the green amethyst set to my cousin, who just moved in to self-isolate with her beau. I thought she would like it, even if I died.
>
> Co-Author B:
> Thank you for sharing this with me. Now, let's imagine the coronavirus amethyst ring is an amulet to ward off this demon. Imagining the moment when you give your cousin this ring, a moment of triumph, is a powerful image to carry through these days, focusing the mind in this way doesn't seem at all odd to me.

In this example, a non-religious talisman first obtained largely in innocence became a good luck charm. Then, it is converted into a symbol of religious community and a meaningful relationship between people – even people who are socially distanced to prevent spread of the virus.

3.3 Believers Strain to Re-Join Their Religious Communities

Social distancing must eventually accommodate deeply held religious concepts about how to worship, how to behave toward friends and family, and how to die. In widely published sources, we see the traditions of established religions accommodating, for example, in an image of a worshiper in Liverpool, England, sitting alone facing the altar of an Anglican church and preparing to celebrate Holy Communion remotely with the priest on his laptop screen [17]. A Facebook post shows a New York priest baptizing an infant with a water pistol while the mother holds the baby up, looking very

pleased. Are these examples a sacrilege? Jokes? "No" to both. It is the way that culture usually changes, slowly and carefully, but not quite so slowly or carefully in a pandemic. Social change speeds up as the sense of urgency is widely, deeply felt.

An example of a brush with death by Monsignor Derio Olivero, Bishop of Pinerolo, gives an intimate reflection of the longing for community in a time of social distancing, absence of regular religious services, and an inability to see family [20]. Indeed, the Monsignor's harrowing account of an extraordinary mystical experience recalls St. Ignatius of Loyola's "movement of faith in illness," i.e., personal discovery while recovering from illness.

Crowd-Sourced Pandemic Ethnography 2020

> Vatican City, April 27, 2020 [excerpts from an interview with Monsignor Derio Olivero, 59, bishop of Pinerolo]
>
> The Monsignor: You need caution: I risked dying from that virus… I suggest prudence to the bishops. You don't know fully what this disease is…
>
> *Question*: How do you comment on the clash between bishops and government?
> *Answer*: …This is not the time to show your teeth but to collaborate… Those who show their teeth reaffirm their rights and seem to win, but they will collaborate in defeat.
>
> *Question*: How was your illness?
> *Answer*: Very hard… At a certain point I was sure I would die. The doctors also confirmed it to me. Before the illness, if they asked me what I thought of death I would have I replied that I was very afraid. And instead, in those moments when I was really close to death I was at peace, calm.
>
> *Question*: How did you feel?
> *Answer*: I felt there was a force that kept me alive. I didn't have the strength to move, but I felt a presence that kept me up. When I woke up, I saw that hundreds of people gathered to pray for me.
>
> *Question*: What were your feelings exactly?
> *Answer*: As if everything was evaporating, all things, all roles, all. Do you know what was left? Trust in God and relationships built. Here I was only made of these two things. They were two solid things, they were me…
> This disease affects the breath. In the Bible breath means spirit, life. The spirit that is given. Every breath is a gift to be tasted, it comes from God.

Monsignor Olivero's feeling of a presence and his awareness of others gathering in prayer, reflects a yearning of oneness with his faith community. When social distancing prevails and lockdown follows – not to mention, hospitalization! – people feel isolated and seek in different ways to re-join their communities. Perhaps this is one source of the sense of urgency felt in a pandemic: The sense of grief at losing that community and wishing to rejoin those who are temporarily lost.

In a different context, England rather than Italy, one of our co-authors reports the same strain toward joining a faith community. The co-author imagines that the walkers outside her window can hear the prayers inside, forming a community where none really existed. Or did it?

Crowd-Sourced Pandemic Ethnography 2020

> Thank you for your Easter Greetings. We had our own private vigil and today celebrated with our Church on Zoom. The quiet of these days has made it far easier to connect with the Paschal mystery. Yesterday was like high summer in London, a balmy breeze, not dissimilar to a warm spring evening in the Holy Land. We read scriptures aloud with windows wide open, wondering if it might touch, ever so slightly, the ears of those passing. Those who walk these days are, as a rule, never going anywhere, they are just walking, so perhaps more open to the experience of what is happening in the background.

4. Conclusion: The Coming Wave of Grief and the Cultural Changes to Follow

Those of us old enough to recall the HIV/AIDS epidemic as adults in the 1980s may remember being surprised by the mention of grief. At some point (currently undefinable for the Covid-19 pandemic), there will come a sense that too many people have died in too short a time, and grieving must commence. It will be as if a conscious population decides to turn some imaginary corner and go on. At this writing, in June 2020, there is no such sense that grieving has begun or that it should. It is surely a time for grieving individual people. Whole families feel the brunt of grief. The broader sense of a time to grieve will be much like 9/11, when the twin towers in New York City were hit and destroyed, and many died. "We've been hit," will be the voiced conclusion. Now, it is as if the world population is still holding its collective breath, waiting to see just how bad the pandemic will hit South America, India, and Africa, while they worry about second and third waves in the northern hemisphere.

The question remains: When will the broad-based grieving begin, and what will determine that collective decision? We read of expectations of this grief among the self-aware, along with the specter of future post-traumatic stress disorder. US Governor Andrew Cuomo states that the "coronavirus will leave an 'entire generation' facing PTSD as he opens up on 'heavy burden' of death toll and reveals 'I still hold myself responsible'" [9]. Just how much survivor guilt will there be? Unknown, but, at the same time, many of us have run into difficulty concentrating. A *New York Times* editorial asks, "Trouble Focusing? Not Sleeping? You May Be Grieving" [15]. Many of us have run into problems concentrating, even without knowing anyone who has died (yet). This suggests that it is not just the death of people that will be mourned, but a way of life, as well. We will not enjoy, at least for some time, the same easy way of sipping a glass of wine in a steamy, packed bistro, or enjoying our friends, elbow-to-elbow in a rathskeller. "Those were the times!" we will say repeatedly and grieve. We will never enjoy an international flight again in quite the same way.

Things have changed. When we arrive at a new and different lifestyle, after we all receive a vaccine (we ardently hope), we shall not go back to the same way of living before the pandemic. There is an apt aphorism: "You cannot step in the same river twice." When we step out of this bubble, what will we find? The writers in the literary magazines and hot spot newspapers have begun to speculate. We shall only be able to move freely with some form of "immunity papers" like an "immunity passport" that states we have had the Covid-19 virus and are immune (one presumes, but not with certainty), or that one has had a vaccine. One of the co-authors has name and number stamped on ocular implants after cataract surgery, and so is quite identifiable. Will the same proof of status be common on the other side of the pandemic? Will we socialize in smaller groups? Will we travel less?

It is very likely that the rapid urbanization of a New York City or London will slow down, and people will "decentralize," living much of their lives in smaller communities, linked to urban life via internet, satellite, and eventually, the once-monthly trip on high-speed commuter rails. Will courtship change? Will grandma move back home from dangerous nursing homes? Will college dormitories downsize? Whatever the changes to come, we four co-authors hope that, in this exploration of changes in religion in response to the Covid-19 pandemic, readers begin to understand a sobering thought: There is continuity and strength in our religious institutions, but we will miss so much about the times before the coronavirus assault on world society, and we will know with certainty we have changed forever.

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Notes

1. New York physician Dr. Nicole Saphier spoke in a news video to the online news source, *Daily Mail,* about the effects the coronavirus was having on suicides, self-harm, domestic violence, and drug abuse. She said they were on the rise during the coronavirus pandemic. The news video is available at: https://www.dailymail.co.uk/video/newsalerts/video-2168196/Suicides-drug-abuse-risecoronavirus-pandemic.html.

2. The origin of the expression Coronavirus Derangement Syndrome is apparently widespread (e.g., [5], [14], [13], [18]). It appears to be a derivative of a similar expression used to describe Americans who were unhappy that Trump won office in 2016. They were said to be suffering from Trump Derangement Syndrome. Our co-author's usage was not unique.

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The Sociology of Global Warming: A Scientometric Look

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Abstract:
The theory of anthropogenic global warming (AGW) enjoys considerable consensus among experts. It is widely recognized that global industrialization is producing an increase in the planet's temperatures and causing environmental disasters. Still, there are scholars – although a minority – who consider groundless either the idea of global warming itself or the idea that it constitutes an existential threat for humanity. This lack of scientific unanimity (as well as differing political ideologies) ignites controversies in the political world, the mass media, and public opinion as well. Sociologists have been dealing with this issue for some time, producing researches and studies based on their specific competencies. Using scientometric tools, this article tries to establish to what extent and in which capacity sociologists are studying the phenomenon of climate change. Particular attention is paid to meta-analytical aspects such as consensus, thematic trends, and the impact of scientific works.
Keywords: global warming, global cooling, climate change, sociology of disaster, environmental sociology, meta-analysis, scientometrics

1. Background

According to a growing number of economists, humanity is entering a new phase of development called the Fourth Industrial Revolution (4IR) [1]. Still, there is disagreement about the prospects of the revolution. As Klaus Schwab notices, some believe that "technology will unleash a new era of prosperity," and others believe "it will lead to a progressive social and political Armageddon by creating technological unemployment on a massive scale" [2, p. 36]. It is worth noting, however, that technological unemployment is just one of the dark clouds gathering on the horizon. Another one, perhaps the scariest one, is global warming.

The two processes are related. After all, industrialization is indicted for being the main cause of climate change and other environmental disasters, such as "unsafe levels of air pollution, the depletion of fishing stocks, toxins in rivers and soils, overflowing levels of waste on land and in the ocean, loss of biodiversity, and deforestation…" [3, p. 1]. To conclude that the 4IR will bring a new era of prosperity, one must, first of all, assume that this new developmental phase is qualitatively different from the three that preceded it. Indeed, one thinks that the 4IR involves also

technological developments capable of reducing CO2 emissions, such as the introduction of telework on a large scale, the expansion of the digital economy, the use of renewable energy sources, the planning of sustainable smart cities and green transport. Nonetheless, the narrative about the future of humanity is still dominated by uncertainty and controversy. If humans "have a unique opportunity to harness this Fourth Industrial Revolution (…) to help fix environmental issues", on the other hand, it cannot be excluded that the 4IR could "also exacerbate existing threats to environmental security or create entirely new risks that will need to be considered and managed" [3, p. 1].

Not only the prospect of technological development is disputed, but also the theory of global warming itself is under debate. When scientific theories become at the same time socially relevant and controversial, to the point that even non-experts get involved in the discussion, it means that the time has come to face the question from a meta-analytical point of view. The meta-analyst, instead of espousing one of the positions on the field, takes a neutral stand and focuses on the dynamics of the debate, rather than on the merit of the matter.

There is little doubt that the issue of anthropogenic global warming (AGW) is both important and controversial. The harshness of the debate is perfectly understandable if one considers that many opinion leaders present AGW as an existential threat to humanity and propose solutions that put economic interests and common lifestyles at risk. Faced with this situation, it is not surprising that a strand of meta-analytical studies has already emerged and is being enriched over time with new contributions. To give just one example, in 2013, a group of researchers led by John Cook analyzed the evolution of the scientific consensus on climate change in the peer-reviewed literature indexed in *Web of science*. Attention was focused on articles published in scientific journals. Books, book chapters, and conference papers have been excluded from the analysis. The researchers examined 11,944 abstracts of as many articles published in the period between 1991 and 2011 and thematically focused on 'global climate change' or 'global warming'. Cook's team found that 66.4% of the research expressed no position on AGW, 32.6% expressed support of the theory, 0.7% claimed that it is unfounded, while the remaining 0.3% said they were uncertain about the causes of global warming. So, among the studies that expressed a position, 97.1% supported the thesis that the phenomenon exists and is mainly caused by human activities [4]. In terms of absolute frequency, the idea of AGW was supported by 3896 and rejected by 78 scientific studies. This means that, although there was no unanimity, consensus among the experts was very large (at least at the time of that study). To date, Cook's article has been downloaded 1,170,341 times and cited 1257 times.

Here, we do not aim to question the consensus studies already carried out, but to explore other aspects of the issue, while remaining within a meta-analytical perspective. The purpose of our study is to understand how the debate on global warming has also involved sociologists, even though the issue seems in principle outside their competence. In other words, the question from which this research starts is the following: to what extent and in which capacity do sociologists contribute to the debate on global warming?

2. Research Methods and Techniques

To answer the above question, we will provide a meta-analysis centered on research topics and trends [5, p. 5], without neglecting the impact aspect, which has originally been the main focus of scientometrics [6]. When we will have to provide examples of studies falling within the themes of our research, we will choose the most influential ones. The number of citations is an indication of the impact, although not the only one possible since an article can also be widely read and rarely quoted.

We will carry out both quantitative and qualitative analyses. First of all, we will reconstruct the dynamics of the emergence, frequency, proximity, and relation of some expressions in English, such as 'climate change', 'global warming', 'sociology of disaster', and 'environmental sociology'. By 'emergence' we mean the first appearance of a term-and-concept in the history of ideas. By

'frequency' we mean both the relative frequency of terms in the scientific literature and the absolute number of publications containing the terms. By 'proximity' we simply mean the co-presence (or togetherness) of two terms in the same publication. By 'relation' we mean the theoretical or instrumental connection between concepts.

As for the databases, we will use those provided by *Google* and in particular *Google Books* and *Google Scholar*. As we have seen, meta-analysis of data extracted from *Web of science* already exists. The choice of a more specialized database is perfectly understandable if the issue is establishing the consensus among climatology experts. In our case, however, we are interested in understanding what experts from other disciplines, and in particular sociology, write on the subject. It therefore seems useful to use a less selective database. Specialists in the humanities and the social sciences often prefer the book format to express their ideas or publish in journals that, though having a long history and reputation, are not necessarily indexed in *Web of science*.

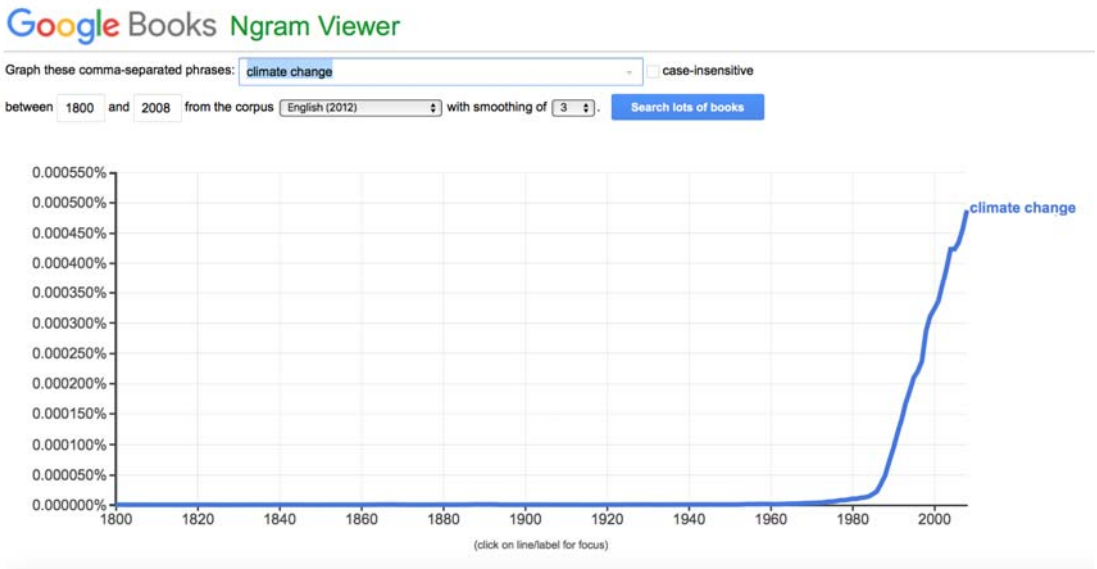
Further details on research techniques, and their intrinsic limitations, will be provided along the research path.

3. Climate Change, Global Cooling, Global Warming

Our scientometric analysis will begin with the detection of the emergence and relative frequency of the term 'climate change'. Google offers an agile tool to carry out this type of search, namely *Ngram Viewer*. To begin with, we will simply extract the graphs provided by the tool, setting the period from 1800 to 2008.

The flaws of *Ngram Viewer* are well known, but they do not compromise its usefulness. Some occurrences of terms could be incorrectly identified. 'False positives' occur, for example, when looking for a term in periodicals (newspapers, magazines). Sometimes, the tool confuses the journal's founding date with that of publication of the issue. This is why hand search is still needed when it comes to verifying the actual emergence of a concept. Also, the tool does not provide data after 2008, because the scan of works published after that year is still ongoing. For more recent periods, it will therefore be necessary to rely on *Google Scholar*.

As Graph 1 shows, there are sporadic occurrences of the term 'climate change' during the nineteenth and twentieth centuries, however, the real 'emergence" of this term-and-concept is located between the 1970s and 1980s.



Graph 1: Relative Frequency of the term 'climate change', period 1800-2018 (source: *Ngram Viewer*)

American geologist Roger Revelle and Austrian chemist Hans Suess were the first scholars to draw

attention to the danger represented by the increase in CO2 emissions for the planet's climate balance. They pointed to the problem in an article published in *Tellus* in 1957, which has collected to date 1275 citations [7]. However, many years passed by before the issue became of central importance for the international scientific community.

The creation of the Club of Rome in April 1968, on the initiative of Italian entrepreneur Aurelio Peccei and Scottish scientist Alexander King, and the publication in 1972 of a report entitled *Limits to Growth* had a non-secondary role in the development of this trend. The report predicted that economic growth would not last indefinitely because of the limited availability of natural resources. It also drew attention to possible environmental disasters caused by industrial pollution. Although the report's main topic was not climate change, the problem was raised in the following form: "It is not known how much CO2 or thermal pollution can be released without causing irreversible changes in the earth's climate, or how much radioactivity, lead, mercury, or pesticide can be absorbed by plants, fish, or human beings before the vital processes are severely interrupted" [8, p. 81]. Despite the lack of assertiveness, this observation did not go unnoticed and inspired many scientific studies. One must consider that nine million copies of the book were sold and even more people read the work in libraries or by photocopy.

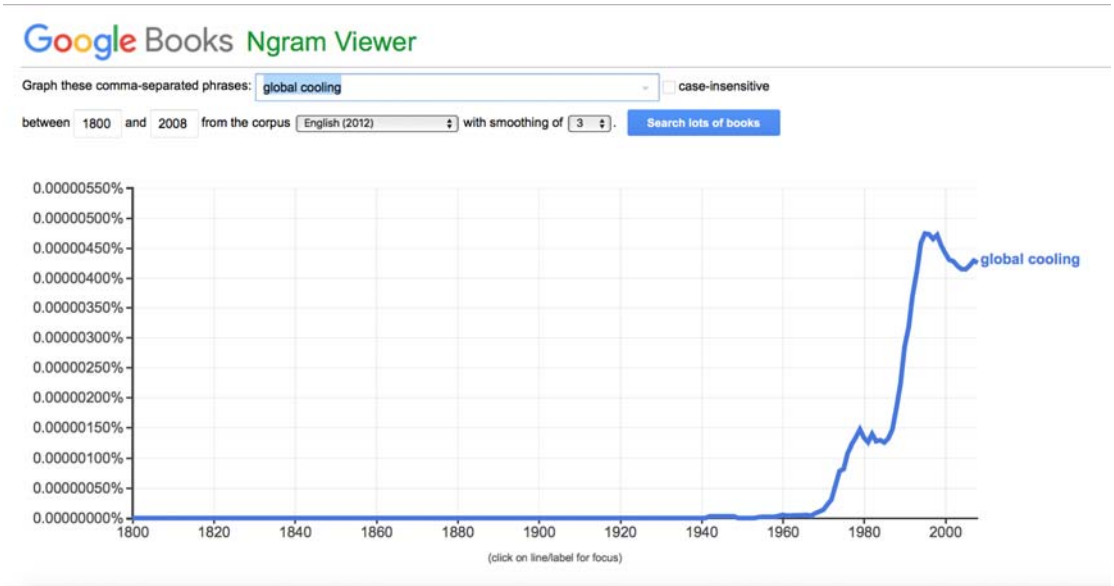
Since 1972, experts from various United Nations sub-agencies began to systematically investigate the relations between climate anomalies and human activities, emphasizing the role of the concentration of CO2 in the atmosphere [9, p. 34].

As can be seen from Graph 1, the takeoff of the term 'climate change' occurs in the early 1980s and then its growth became unstoppable. Some decisive events that occurred during that period must therefore be mentioned. One of these is the first global climate conference, organized by the World Meteorological Organization (WMO) in Geneva in 1978. Since then, the issue has become central to the scientific community. The second event is the 1988 Toronto conference, attended by "around 300 natural science scholars, economists, sociologists, and environmentalists from 48 countries" [9, p. 34]. On that occasion, for the first time, the scientific community involved the political world in the discussion, "calling for a 20 percent reduction in global CO2 emissions by 2005, as well as for the formulation of an international convention on the matter" [9, p. 34].

In 1992, the problem of climate change began to interest the United Nations. Representatives of 178 countries attended a conference on environment and development in Rio de Janeiro. On this occasion, the *United Nations Framework Convention on Climate Change* was created. As many as 189 countries signed the convention and committed to reducing carbon dioxide emissions to slow down climate change. However, as noted by Hans-Werner Sinn, it is the Kyoto Protocol, signed in 1997, that opened a new chapter in climate policy, causing some countries to commit themselves for the first time to reducing greenhouse gas emissions by a certain percentage. Precisely, the Kyoto Protocol, ratified by 189 countries, established "the goal of reducing greenhouse-gas emissions over the period 2008–2012 by 5.2 percent on average relative to the year 1990" [9, p. 35].

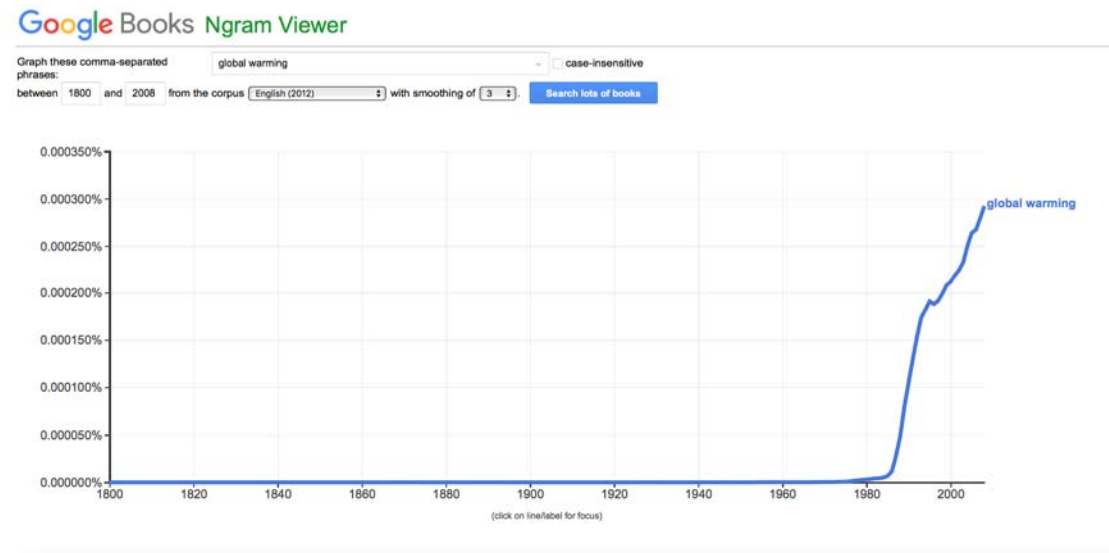
The term 'climate change' is used with increasing frequency, but it should be emphasized that it is a neutral term that indicates both heating and cooling. Before the aforementioned events, a theory also circulated that the prospect for planet Earth was that of anthropogenic global cooling [10, 11]. There is an ongoing debate to establish what percentage of climatologists was in favor of global cooling or global warming in the 20th century. Some climatologists argue that, even then, the experts who denounced the danger of global warming were the majority and the opposite impression derives from the fact that the idea of a new glaciation awaiting us on the horizon was dominant in the media, more than in the scientific literature [12]. However, the fact remains that scholars marching to a different drummer were not lacking, and their publications appeared in prestigious scientific journals, such as *Science*.

Ngram viewer reveals that the term 'global cooling' emerges in the sixties and takes off in the seventies. As for frequency, Graph 2 shows that this term experiences a first decrease in the early 1980s and a second decrease at the turn of the millennium.



Graph 2: Relative Frequency of the term 'global cooling', period 1800-2008 (source: *Ngram Viewer*)

We can instead note, in Graph 3, that the expression 'global warming' took off in the 1980s and steadily grew until 2008.



Graph 3: Relative Frequency of the term 'global warming', period 1800-2008 (source: *Ngram Viewer*)

From these graphs, however, we cannot *sic et simpliciter* infer that the 'fashion' changed in the 1980s or that, all in all, the two predictions on the fate of the planet have had the same weight in the scientific literature. To get a more precise idea of the situation, we must shift from relative frequencies to absolute numbers. The peak in the use of the term 'global cooling' was recorded in 1998 and amounts to 0.0000047162%.

Google makes raw data available to all ngram corpora online [13]. We are interested in the total counts for the English corpus. A file provided by the search tool contains the total number of tokens per year. The line of our interest is the following one: 1998,9406708249,45989297,87421. It means that, in 1998, 87421 books were published in English, containing 45989297 pages and 9406708249 words. With a simple formula, we can calculate the absolute number of occurrences of the expression 'global cooling' in the scientific literature, in the peak year.

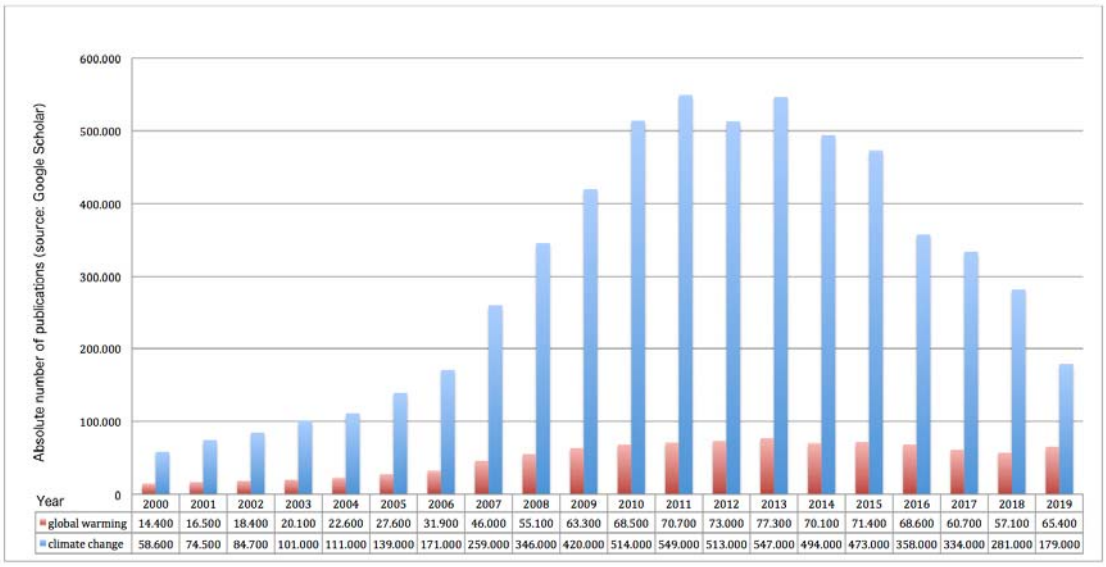
0.0000047162 x 0.01 x 9406708249 = 443,639 ≈ 444

We repeat the same operation with the term ‘global warming’. This time, the peak was recorded in 2007 and amounts to 0.0002792486%. The line provided by the tool for that year is the following one: 2007,16206118071,82969746,155472. Let us apply the formula again.

0.0002792486 x 0.01 x 16206118071 = 45255,357 ≈ 45256

As one can see, the term ‘global warming’ is used a hundred times more than ‘global cooling’, in absolute terms. Furthermore, even if the use of the expression ‘global cooling’ continues to grow, both in relative and absolute terms, it must not be forgotten that the term is widely used also in geological studies concerning the past. This consideration, of course, also applies to the expression ‘global warming’. Indeed, many articles and books detected by the search engine discuss the phenomena of global cooling or global warming which occurred in geological eras that precede the so-called Anthropocene.

The numbers confirm, however, that the hypothesis of global warming was already dominant in the past. At the beginning of the 21st century, both experts and the media abandoned the hypothesis of global cooling. Therefore, in the surveys concerning the new millennium, we will also abandon this concept by limiting our search to the expressions ‘climate change’ and ‘global warming’ (Graph 4). Our focus will shift from the frequency of terms to the distribution of the annual frequency of publications including the terms. We will extract the data from *Google Scholar* and use it to create charts in *Excel*.



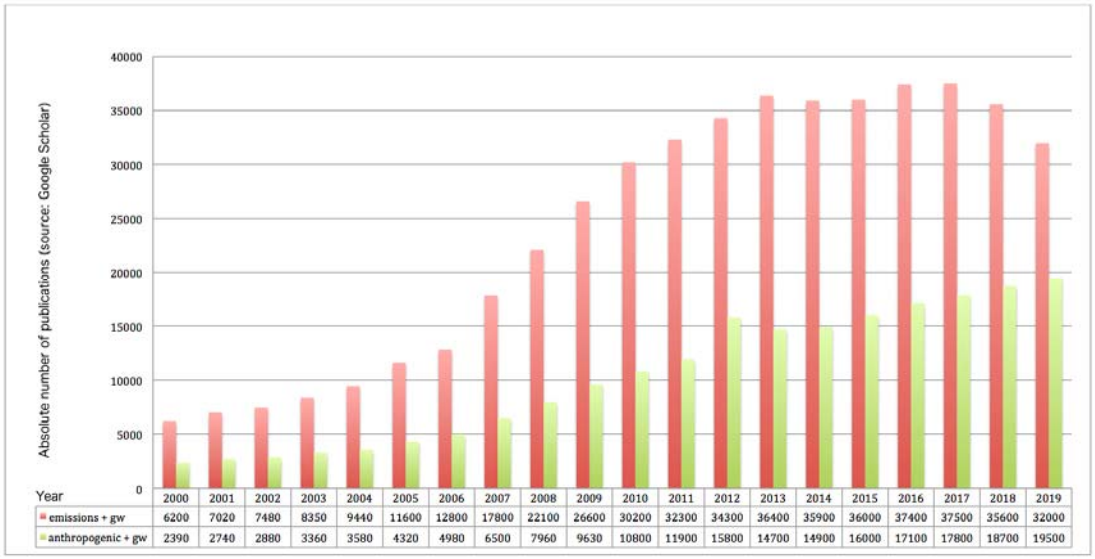
Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
global warming	14.400	16.500	18.400	20.100	22.600	27.600	31.900	46.000	55.100	63.300	68.500	70.700	73.000	77.300	70.100	71.400	68.600	60.700	57.100	65.400
climate change	58.600	74.500	84.700	101.000	111.000	139.000	171.000	259.000	346.000	420.000	514.000	549.000	513.000	547.000	494.000	473.000	358.000	334.000	281.000	179.000

Graph 4: Absolute Frequency of publications including the terms ‘global warming’ and ‘climate change’, period 2000-2019 (source: Google Scholar)

Google Scholar is known not to be a fully reliable database [14, pp. 10-11]. However, when working on large numbers – as in our case – the detected general trend is still informative. It is anyway a more reliable figure than that deriving from a simple ‘impression’, which often reflects a local situation (of one’s department, or one’s country).

Overall, 2,360,000 scientific publications containing the expression ‘climate change’ were detected. If research is limited to the period 2000-2019, the amount of publications is 1,070,000. As one can see, after an almost exponential growth in the period 2000-2011, there is a stall and then, starting from 2013, a constant decline. The curve of scientific publications containing the expression ‘global warming’ also follows a similar trend, although the peak is reached in 2013.

This trend seems to be in contrast with the impression obtained from the public debate, but we have already stressed that these terms are also used in the geological field to describe phenomena not related to anthropic activities. More significant figures are obtained when the expression 'global warming' is entered in the search engine in combination with terms such as 'emissions' or 'anthropogenic'. The dominant narrative is in fact that global warming is of anthropogenic origin and the CO2 emissions of cities, industries, and means of transportation are the main cause of the phenomenon.



Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
emissions + gw	6200	7020	7480	8350	9440	11600	12800	17800	22100	26600	30200	32300	34300	36400	35900	36000	37400	37500	35600	32000
anthropogenic + gw	2390	2740	2880	3360	3580	4320	4980	6500	7960	9630	10800	11900	15800	14700	14900	16000	17100	17800	18700	19500

Graph 5: Absolute Frequency of publications including the word-combinations 'emissions' + 'global warming' and 'anthropogenic' + 'global warming', period 2000-2019 (source: Google Scholar)

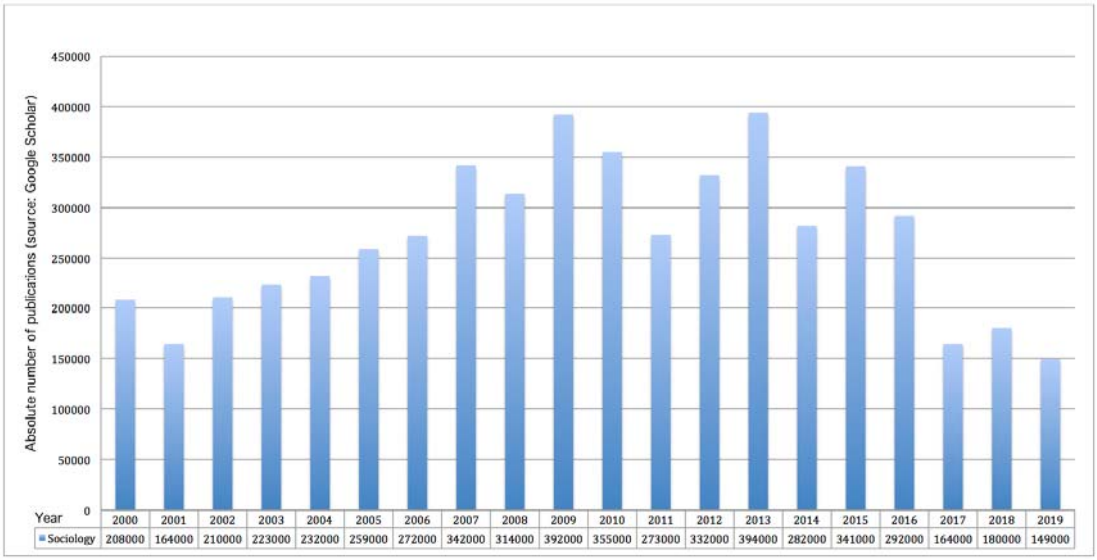
As for the 'emissions' plus 'global warming' word combination search, Graph 5 shows a steady growth in publications in the period 2000-2013 and, then, a stabilization around an average figure of 35,000 per year.

Even less unequivocal is the figure obtained by searching the word combination 'anthropogenic' plus 'global warming'. As the graph shows, the growth of publications is constant and passes from a minimum of 2390 items in the year 2000 to a maximum of 19,500 items in the year 2019. Globally, in the last twenty years, 130,000 articles including the expressions 'emissions' and 'global warming' have been published, with a growing frequency. In the same period, 128,000 publications containing the expressions 'anthropogenic' and 'global warming' appeared.

Graph 5 represents the distribution of absolute frequencies. The relative frequencies would tell us the proportion of the intellectual effort devoted to this field of research. However, in this context, the global effort is more significant than the relative one. After all, it is the global effort that increases the likelihood of finding an effective solution to the problem of climate change. However, we can rule out the hypothesis that the growth of publications on global warming is a side effect of the general growth of publications, because the distribution of the latter on a global level follows a different trend [14, p. 14].

4. Sociology, Environmental Sociology, Sociology of Disaster

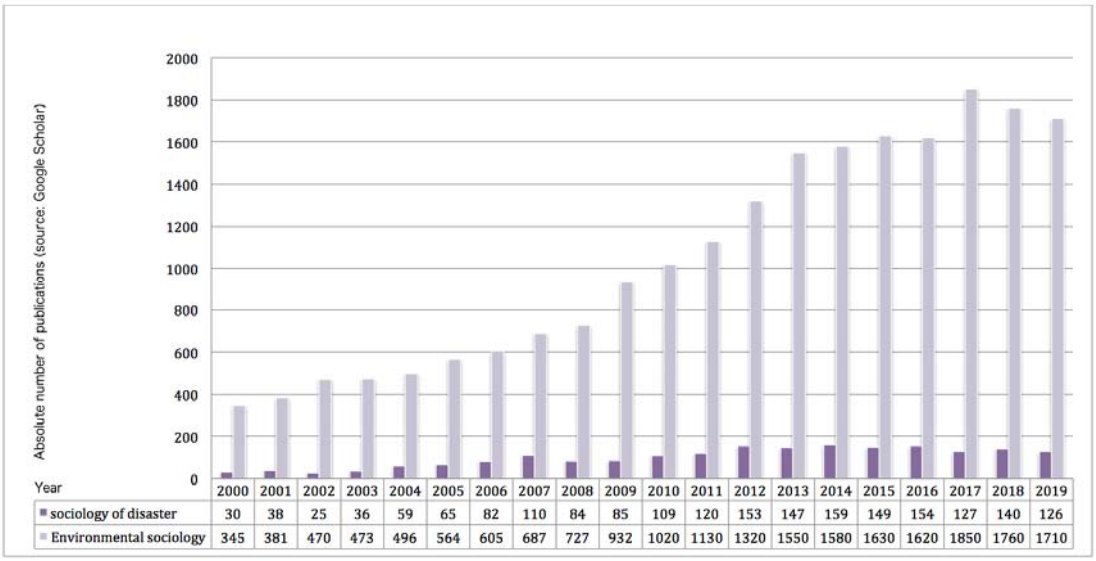
If we take a look at the trend of publications containing the term 'sociology', we can see that, after a period of growth that culminates in 2013 with 394,000 items, a steady decline begins (see Graph 6).



Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sociology	208000	164000	210000	223000	232000	259000	272000	342000	314000	392000	355000	273000	332000	394000	282000	341000	292000	164000	180000	149000

Graph 6: Absolute Frequency of publications including the term 'sociology', period 2000-2019 (source: Google Scholar)

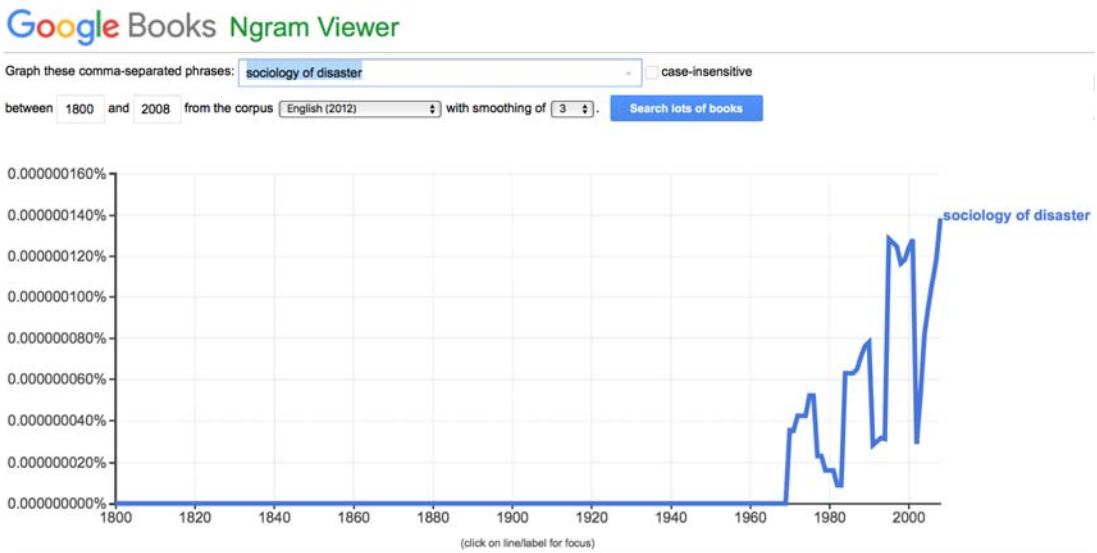
The figure is significant when compared with publications containing expressions such as 'sociology of disaster' or 'environmental sociology', which indicate subdisciplines of sociology. In Graph 7, as regards the sociology of disaster, we see that after a growth that follows the trend of the mother discipline, in the period between 2012 and 2019 growth stops, but a similar decline is not noticed. This means that, in the face of a decline in interest in sociology, the sociology of disaster stands out, even if it is numerically at a much lower level. As far as environmental sociology is concerned, the figure simply 'contradicts' the trend of the mother discipline. In other words, this subdiscipline enjoys growing interest.



Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
sociology of disaster	30	38	25	36	59	65	82	110	84	85	109	120	153	147	159	149	154	127	140	126
Environmental sociology	345	381	470	473	496	564	605	687	727	932	1020	1130	1320	1550	1580	1630	1620	1850	1760	1710

Graph 7: Absolute Frequency of publications including the terms 'sociology of disaster' or 'environmental sociology', period 2000-2019 (source: Google Scholar)

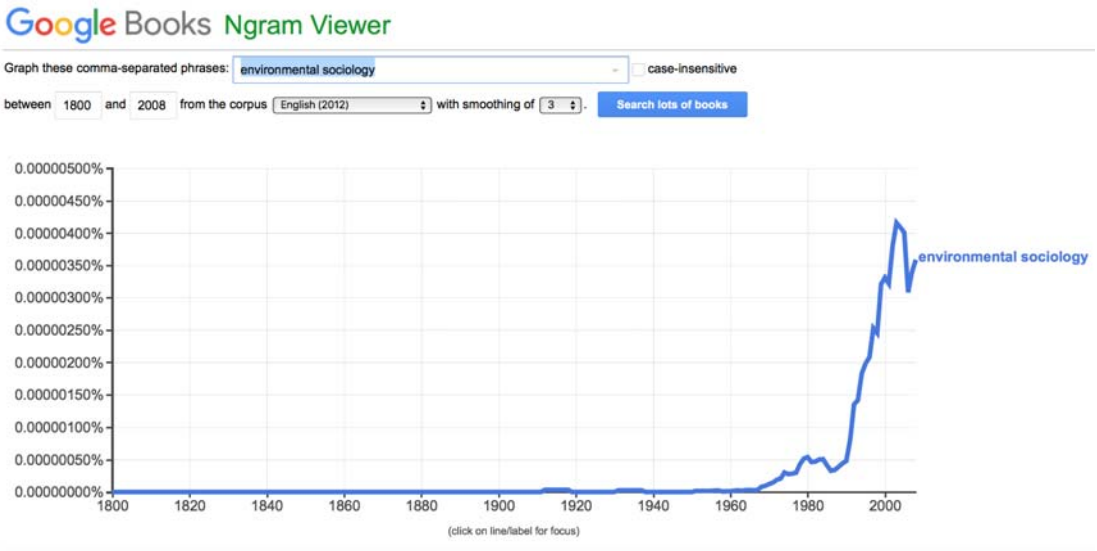
While reams have been written on the history of sociology, less has been said about the histories of the sociology of disaster and environmental sociology. It, therefore, seems useful to also take a look at the emergence of these fields of study, once again using *Ngram Viewer*.



Graph 8: Relative Frequency of the term 'sociology of disaster', period 1800-2018 (source: *Ngram Viewer*)

As one can see from Graph 8, a research field called 'sociology of disaster' emerged in the 1960s. We find the expression, for example, in an article by Jerome R. Saroff on the 1964 Alaska earthquake, included in the volume *Sociology in Action* edited by Arthur B. Shostak. Quite interestingly, the article refers to an antecedent use of the expression. Indeed, Saroff writes: "A decade ago the term 'sociology of disaster' would have left many sociologists unclear as to precisely what it implied. Today, it is a recognized and growing area of sociology deserving serious attention" [15, p. 108]. And, further below, he adds what follows: "The sociology of disaster is still in the stage of development where the collection of information is its major concern, and much of existing disaster literature is essentially descriptive rather than analytic" [15, p. 109].

Graph 9 shows that the research field called 'environmental sociology' also emerged in the 1960s. The item identified in 1936 is, in fact, a false positive.



Graph 9: Relative Frequency of the term 'environmental sociology', period 1800-2018 (source: *Ngram Viewer*)

If the absolute frequencies are calculated starting from the relative frequencies provided by *the Ngram Viewer*, the preponderance of environmental sociology in contrast to the sociology of disaster becomes apparent. The relative peak of occurrences of the term 'sociology of disaster' is

registered in 2003. The line of the ngrams corpora for that year is as follows: 2008,19482936409,108811006,206272. By applying our formula, we obtain the absolute number of occurrences.

$$0.0000001383 \times 0.01 \times 19482936409 = 26.944 \approx 27$$

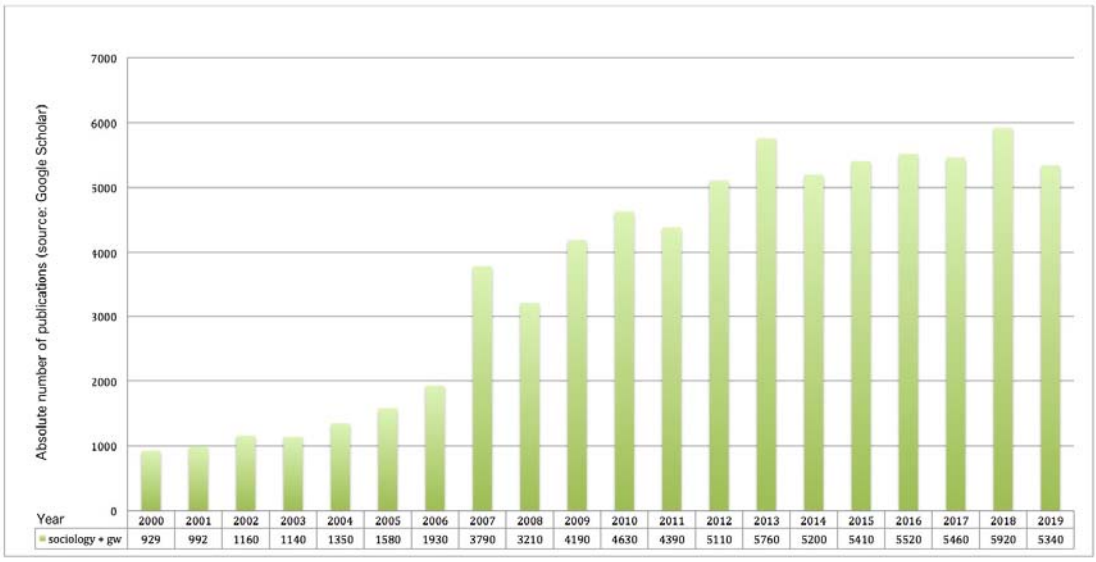
As one can see, the number is rather small. We repeat the same operation with 'environmental sociology'. In this case, the relative peak is recorded in 2003 and amounts to 0.0000041565%. In that year, 127066 volumes were published, containing 68561620 pages and 13632028136 terms. Let us apply the formula again.

$$0.0000041565 \times 0.01 \times 13632028136 = 566.615 \approx 567$$

It is a much higher number. It now becomes useful to combine the data we have collected and see how general sociology, environmental sociology, and sociology of disaster are related to the problems of global warming.

5. A Look at the State of Proximity and Theoretical Relations

First of all, we detect the state of proximity, or compresence in the same publication, of the terms 'sociology' and 'global warming' (Graph 10). Overall, in the two decades 2000-2019, 17,600 publications contain both terms, while 19,800 publications include both the terms 'sociology' and 'climate change'.



Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
sociology + gw	929	992	1160	1140	1350	1580	1930	3790	3210	4190	4630	4390	5110	5760	5200	5410	5520	5460	5920	5340

Graph 10: Absolute Frequency of publications including the terms 'sociology' and 'global warming', period 2000-2019 (source: Google Scholar)

As the graph displays, the growth is continuous and there is a clear discontinuity starting from the year 2007. The publications containing both terms double compared to 2006, going from 1930 to 3790 items. After a slight drop in 2008, we register again a considerable growth in the biennium 2009-2010.

A possible explanation for this shift is found in an article published in *Current Sociology* in 2008, signed by Constance Lever-Tracy. The author notes that 2005 was a crucial year for the debate on global warming. The date '2005' returns 69 times in her text. It already appears at the very beginning of the article, where we read what follows: "During 2005, escalating climate change, at least partly induced by human activity, came dramatically closer, both to public awareness and to present or imminent experience" [16, p. 445]. Lever-Tracy recalls the many

catastrophic events – starting from the tsunami in the Indian Ocean – that fill the pages of newspapers that year. She concludes that "the year 2005 was also a social 'tipping point', with global warming perhaps irreversibly on the public agenda" [16, p. 459]. This explains quite well the significant increase in publications in 2007, if we take into account the physiological time of reaction, research, writing, evaluation, and publication of the results.

Lever-Tracy's article aims to mobilize the sociological community. She asks her colleagues to take a more active role in the study of global warming. The author recognizes that this idea has made its way into the awareness of ordinary people, but laments that sociologists, except for those involved in environmental sociology, are not particularly engaged on this front. Of course, the importance of a topic, i.e. the quantity of publications it deserves, basically remains a subjective judgment, but it is also true that normative articles – such as the one we are discussing – often have a decisive impact.

Lever-Tracy starts from the assumption that global warming is a fact and that it is (at least in part) of anthropogenic origin. Therefore, she tries to understand the reasons that leave sociologists suspicious or indifferent about the issue. The fundamental reason for the disengagement is identified in the belief that sociologists are not competent to judge the phenomenon. Still, for the author, the belief is ungrounded because the phenomenon, being capable of causing social change, should also be taken into consideration by general sociology. Another brake on the commitment of sociologists would come from the fact that they "have remained much closer to the social constructivist paradigm of nature" [16]. In the sociological perspective, natural scientists do not simply study facts, they socially construct them, and the construction of scientific facts is partly determined by material interests and cultural influences. Lever-Tracy hopes that this theoretical perspective will soon be overcome and a multidisciplinary cooperation between social and natural scientists will become reality.

Our numbers confirm that the interest in global warming is relatively greater in publications that explicitly refer to environmental sociology. Besides, the figure shows that the occurrences of sociological works on global warming have risen since the publication of Lever-Tracy's article. The article itself had a role in this growth, as it has been cited 140 times at the time of writing.

A response to Lever-Tracy's 'call to arms' came, in the same journal, from Reiner Grundmann and Nico Stehr [17]. These sociologists do not dispute the importance of the problem raised, but cast doubts on some of the author's positions. In particular, they underline the virtues of constructivism because, starting from their proper perspective, sociologists can say something original. The sociologist's task can be neither to popularize the results acquired by natural scientists nor to propose practical solutions. To accomplish these goals there are already scientific journalists and politicians. Sociologists must contribute to the debate, but based on their specific skills and competencies. Furthermore, unlike Lever-Tracy, the authors do not believe that climate change should become the main focus of sociology. They point out that, formulated in these terms, the appeal is likely to remain wishful thinking.

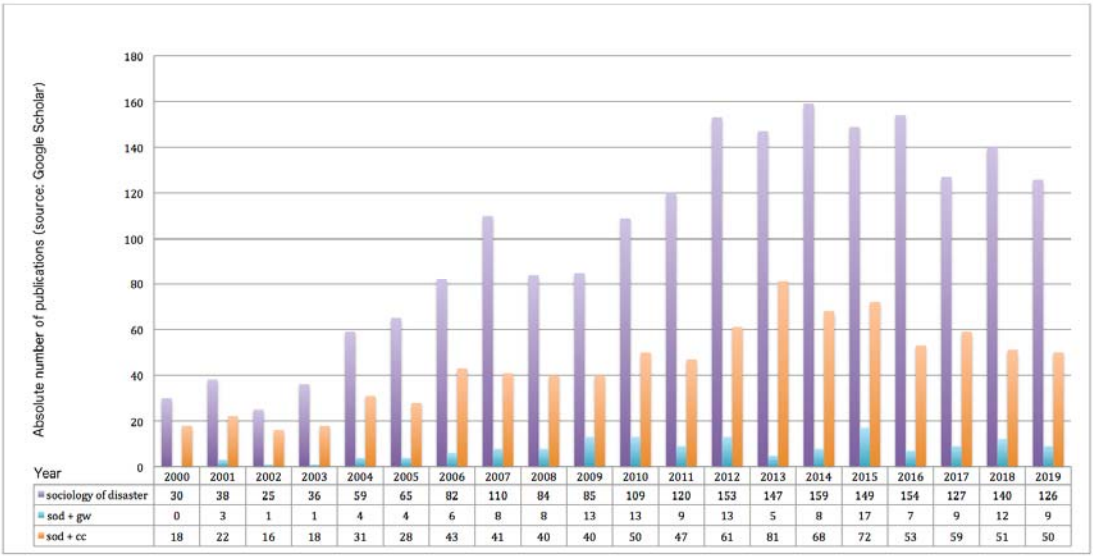
Note that Lever-Tracy does not completely abandon the constructivist perspective. She writes that "while sociologists may not be trained to evaluate the scientific evidence, they should know to be wary of the powerful corporate interests motivated to deny global warming, and respectful of the choice of 'speaking truth to power' that many scientists have now adopted" [16, p. 448]. However, as one can see, she applies this perspective selectively only to studies and narratives that deny global warming. This implies abandoning the postulate of the axiological neutrality of sociology. The sociology of knowledge was born when a tool of political struggle (the denunciation of hidden interests) was transformed into a research method [18, p. 11]. But this method must be systematically applied to study all the parties involved in the struggle; otherwise, there is a risk of turning sociology into ideology.

A significant push to the debate has been also given by the publication of *The Politics of Climate Change* by Anthony Giddens, described by the author himself as "a book about nightmares, catastrophes – and dreams" [19, p. 1]. The volume ignites the general interest on the issue of global warming, at all levels, so much so that even the former American President Bill Clinton recognizes

it as “a landmark study in the struggle to contain climate change, the greatest challenge of our era,” and openly recommends it by saying: “I urge everyone to read it” [19, cover]. To date, the book has collected 2,760 citations.

Quite curiously, a year before publication, Lever-Tracy had accused Giddens of being the example of the disengagement and of having also raised doubts about the reliability of climatological studies. A year later, Grundmann and Stehr recognized the importance of Giddens’ contribution, but not without stressing that it was a political rather than a sociological contribution in the strict sense. The moral of the story is that you can’t please everyone.

If we tighten the target on publications that include the terms ‘sociology of disaster’ and ‘global warming’ in the period 2000-2019, we find very few occurrences (Graph 11). A total of 150 items over twenty years are detected. They are too few to establish a reliable trend. One can observe a growth up to the biennium 2009-2010 and then a discontinuous trend. More indicative are the figures concerning publications including the terms ‘sociology of disaster’ and ‘climate change’. We have detected a total of 889 publications distributed over 20 years. The publications constantly grew from the year 2000 (18 occurrences) to the year 2013 when the peak is reached with 81 occurrences. Then there is a drop to the 50 items detected in 2019.

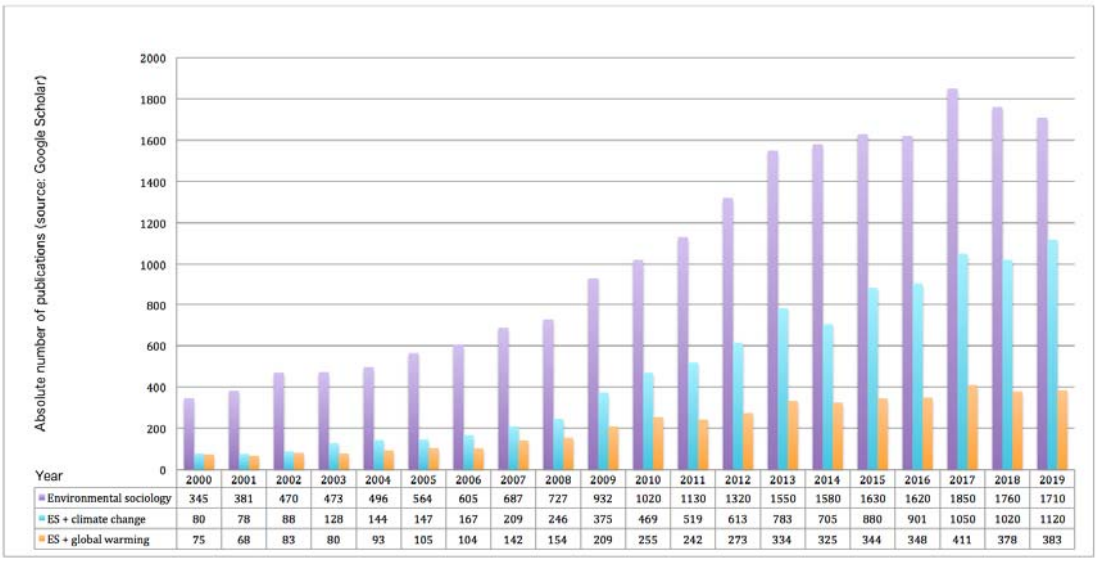


Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
sociology of disaster	30	38	25	36	59	65	82	110	84	85	109	120	153	147	159	149	154	127	140	126
sod + gw	0	3	1	1	4	4	6	8	8	13	13	9	13	5	8	17	7	9	12	9
sod + cc	18	22	16	18	31	28	43	41	40	40	50	47	61	81	68	72	53	59	51	50

Graph 11: Absolute Frequency of publications including the terms ‘sociology of disaster’, and the word-combinations ‘sociology of disaster’ (sod) + ‘global warming’ (gw) or ‘sociology of disaster’ (sod) + ‘climate change’ (cc) over the period 2000-2019 (source: Google Scholar)

The first example of scientific work including both terms appears in 2001. Gary A. Kreps writes the entry “Sociology of disaster” for the *International Encyclopedia of the Social and Behavioral Sciences* and mentions global warming as a risk (“Global warming and ozone depletion are defined objectively and subjectively as environmental hazards or risks”) which can, however, potentially turn into a disaster (“The possible disastrous consequences of these hazards, including secondary effects such as sea-level rises in the oceans, remain matters of scientific and public debate”) [20].

The most significant aspect revealed by the graph is that about half of the publications including the term ‘sociology of disaster’ also mention the issue of climate change. The connection between the two concepts becomes even more evident when the field of environmental sociology is explored (see Graph 12).



Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Environmental sociology	345	381	470	473	496	564	605	687	727	932	1020	1130	1320	1550	1580	1630	1620	1850	1760	1710
ES + climate change	80	78	88	128	144	147	167	209	246	375	469	519	613	783	705	880	901	1050	1020	1120
ES + global warming	75	68	83	80	93	105	104	142	154	209	255	242	273	334	325	344	348	411	378	383

Graph 12: Absolute Frequency of publications including the terms 'environmental sociology', and the word-combinations 'environmental sociology' (es) + 'global warming' (gw) or 'environmental sociology' (es) + 'climate change' (cc) over the period 2000-2019 (source: Google Scholar)

Once again, the use of the term 'climate change' is predominant over that of 'global warming'. Still, in this case, we have an absolute number of publications ten times higher. In the first twenty years of the 21st century, at least 16,200 books or articles containing the term 'environmental sociology' were published and 9,810 of these publications mention the issue of climate change. In 2019, about two-thirds of publications dealing with environmental sociology, for whatever reason, also talk about climate change.

As an example, we can cite a report prepared by Joane Nagel, Thomas Dietz and Jeffrey Broadbent on the *Workshop on Sociological Perspectives on Global Climate Change*, held in Arlington, Virginia, on May 30-31, 2008 [21]. The approach of these scholars is the one typical of 'engaged sociology'. Their report tries to answer two questions: 1) what is the state of sociological research on global climate change? 2) what are the main climate change questions that sociologists should try to answer? It, therefore, proposes both a state of the art and a research program for the future. The compilers show that, on the analytical-descriptive level, sociological analyzes of the causes of climate change as well as sociological perspectives on the impact of global warming exist and are legitimate. Besides, on the axiological-normative level, they encourage both sociological approaches to mitigation and adaptation to climate change and recommendations for the advancement of sociological research in this sector. In other words, sociologists can and must deal with the causes of the problem, by studying aspects such as the implications of urbanization, industrialization, and the spread of consumerist culture in the world. Starting from this knowledge, they can suggest possible solutions. For instance, some studies emphasize the role of information communication technologies and teleworking, in the frame of the digital economy, in reducing the negative side effects of industrialization [22].

Among the publications falling under the label 'environmental sociology', we can also find examples of 'value-free sociology' – that is, studies mainly aimed to reconstruct and analyze the dynamics of narratives. Fritz Reusswig contributes to the collective book *Environmental Sociology* with a chapter entitled "The New Climate Change Discourse: A Challenge for Environmental Sociology" [23]. The author proposes a detailed analysis of the climate change discourse in Germany and the United States of America and shows how the different social actors involved in the debate use thematically coupled sequences of topics to influence each other or the social context, to make their respective interests and points of view prevail in collective decision-making processes.

6. Summary and Conclusions

Thousands of studies claim that global warming is an ongoing process of anthropogenic origin, an unwanted side effect of the industrial revolutions, which is already producing environmental catastrophes and could lead to the extinction of many living species, including humankind. Among those who espouse this thesis, there are pessimists and optimists. Pessimists predict a future of famines, epidemics, floods, and wars for resources. Some scientists say that we have already passed crucial climate 'tipping points'. This means that it is too late to stop and reverse the process. In other words, humanity has to prepare to adapt to irreversible and negative changes. In their view, only if world leaders declare a state of emergency, right now, we will be able to mitigate, at best, the effects of global warming. Optimists believe that it is still possible to put the train back on the tracks. A radical transformation of the mode of production and consumption, a profound change of lifestyle, the reduction of all forms of pollution and waste of resources, demographic control, and other well-conceived initiatives may reverse the trend and save the planet.

On the other hand, some experts consider the catastrophic predictions related to the so-called 'greenhouse effect' to be largely exaggerated. Some of these scholars believe that the phenomenon is to a certain extent imaginary, while others believe that the phenomenon exists but is not of anthropogenic origin. Rarely, one may found researchers convinced that, in reality, the Earth is cooling and not heating. Although being a minority, the existence of climate dissenters cannot be denied.

It should be stressed that the lack of unanimous agreement can only disturb those who have an outdated and dogmatic image of science, one based on the idea that the rigorous application of the scientific method can only produce irreproachable, correct, cumulative studies, especially if they are evaluated by peers and published in class A journals. We underline this aspect because, among the supporters of the AGW theory, some deemed it necessary to deny the existence of studies of a different orientation or to question the intellectual honesty of the outliers. There is no need to venture into this enterprise. Anyone familiar with the history of science, the functioning of scientific communities, the fundamental epistemological questions of the field, knows well that science is a human enterprise and, as such, fallible. Consensus does not mean truth, but a high degree of consensus is already a remarkable and sufficient result to decide lines of action.

Our research shows that sociologists display a growing interest in the topic of global warming. Sociological publications concern the most disparate aspects. Typically sociologists engage in public opinion surveys or discourse analysis, trying to understand what common people and political leaders know and think about the phenomenon. However, their focus can be on behaviors as well. Lifestyles and policies that are believed to produce or mitigate the phenomenon are also studied. Although many geologists and climatologists are convinced that the issue of climate change is fundamentally their territory, it must not be forgotten that global warming is not only a natural phenomenon but also a social and cultural one.

If global warming is produced by the ways of life, production, consumption, and transport of humans, it is clear that social scientists have something significant to say about it. Anthropologists, philosophers, sociologists, historians, psychologists, economists, etc., would have something important to say on climate change even if the phenomenon were not of anthropic origin since it would anyway have catastrophic repercussions on the life of humans and the organization of society. And they would have a right to speak even if the phenomenon were completely imaginary, because human behaviors are the consequence of beliefs, regardless of whether they are true or false. One of the most significant sociological ideas is indeed the so-called 'Thomas theorem', elaborated by American sociologist William Thomas in 1928: «If men define situations as real, they are real in their consequences» [24, 25].

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Theology in Times of Pandemic

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Abstract:
A question arises regarding theology and its functions when trying to cope with the coronavirus pandemic. Surely Christian faith – along with other religions – can play a role in helping to deal with this crisis, both for individuals and collectively. Theology connects with the effort religious faith and Churches perform and provides models and ideas to highlight the Christian sense of what is happening, that is, in reference to a saving God. Four keys, rooted in the Christian tradition, are proposed that allow us to understand these difficult times in a meaningful way, that is, as revealing "signs of the times" for believers, assisting them in their struggle to cope with these challenging circumstances.
Keywords: salvation, apocalypse, conversion, paschal mystery, incarnation, religious coping, hope.

I am writing this article after two weeks of forced confinement and in the midst of one of the worst health, social and economic crises our world has experienced in recent decades, or at least wealthy Western societies, where we have not suffered such negative experiences since perhaps the tough period of the wars of the mid-20th century. This situation certainly invites reflection and analysis, although many think that it will come later, and that now there are other more urgent things to do. However, reflecting 'hot' can be a useful and necessary exercise in difficult times.

At these moments the non-rhetorical question arises about how and what can theology contribute, if it can contribute something in the middle of this struggle, if that reflective exercise from faith does not appear now rather a luxury, as something superfluous in the face of the most pressing tasks. At least, Christian faith and its practices become useful and necessary for many, for those who invoke the name of God and Mary and seek salvation, help and hope, or even inspiration to engage in risky caring activities. A first answer is linked to that perception about the helpfulness of faith in this context: if the Christian faith, and in general religious beliefs, have meaning and play important functions in these tough times, then theology is still necessary and important to guide and encourage everyone's efforts to face the crisis with which we are living. Theology is closely connected with lived experience, and takes very seriously its own contexts and challenges.

This is a critical situation that poses a test to faith and theology, that is, these times present conditions to which churches and Christian reflection must respond effectively, or else they fail in their central duties and aims. They would then, and rightly, also lose credibility. If Christian faith

does not rise to the occasion to convey hope, comfort, and encouragement in these special moments, then it is discredited. Something similar happens with theology: if it is not capable of providing an analysis and a discourse that can interpret and give meaning to these 'signs of the times', then it becomes a sterile and useless reflection. The situation of catastrophe we are living can be read as a case of 'risk management' from a theological point of view. That perspective allows to assume an angle from which Christian reflection may become relevant and contribute, together with other strategies, to deal with the current challenges.

The theological crisis of prestige goes back a long way: it has been affected both by criticism and disdain on the part of more recognized scientific and academic discourses with greater intellectual reputation, as well by distrust in broad Catholic circles, which did not understand this intellectual effort and its practical utility. Partly it was the fault of the theologians themselves and their inability to confront the most serious problems that the faithful lived through, to offer correct diagnoses and answers or proposals to address the most critical challenges. Theology in general has lived self-absorbed and has become a self-referential exercise, with little contact with lived reality and with the problems of current people, and even more so of believers. In fact, where was the theology as the temples were emptied and confidence in the Church was vanishing? Where was it during the serious crisis of sexual abuse that has shaken many Catholic communities? We cannot fail now; I would not like to be asked where was theology and where theologians during the pandemic, when the entire population was confined, Christians could not celebrate the sacraments and many were engulfed in anxiety.

Theology has before it the challenge of becoming a much more attentive discourse to the signs of the times and to the conditions of its own context to provide analyses that could help us to understand difficult situations such as the ones we are going through, and to orient the consciences before the great uncertainty that we live. Now more than ever it is time to "give reason for our hope" (1Peter 3,15). Probably we can do better today than in former critical situations, in which a pestilence was just seen as a divine punishment. The catastrophe now lived surely opens to alternative readings and coping strategies.

In these pages I want to express the commitment of theology to society and the Church to provide a reflection inspired by Christian Revelation and the long experience of study that we have accumulated for many centuries. Indeed, this is not the first time that theology has had to deal with a great epidemic, or other calamities that periodically plague humanity and question us about our destiny and about divine action in a world seemingly left to its own and that we do not control. For this purpose, I propose four keys or models that have helped in the past, and can continue to assist making sense of this crisis we are experiencing now, and to display a range of options so that believers can choose one or more that they find most helpful and weighty or which facilitate their search for meaning. Indeed, I understand the task of theology at this time as a reflection that assists our contemporaries to project meaning in what happens from the reference to a God who saves us. Those keys are trying to establish a certain order: first, the apocalyptic, which anticipates an end through catastrophes; second, the invitation to conversion from effective signs; third, the paschal or the sacrifice that gives life beyond death; and fourth, the incarnation or accompaniment to human suffering and hopes. In what follows I will present a non-exhaustive description of these keys in their application to this specific situation.

The main inspiration for these exercise is the work of the Lutheran theologian Richard Niebuhr, *Christ and Culture* (1951), a book that managed to explain the plurality of choices and the unavoidable need to choose for Christians at any time, and considering a richness of models or styles on supply. We got used to his five models: from most radicals and contrasting to those looking more synthesis and convergence between our faith and our worldly circumstances.

1. The Apocalyptic Key

Without a doubt this is the most immediate and probably the most frequent for many centuries before other episodes of plague or great calamities. In fact, it is more than justified in the New

Testament texts and it is easy to apply in times of great anxiety. Broadly speaking, the apocalyptic mentality understands history as a declining process, although apparently progress is registered, in reality things get worse, society and culture move further away from God; sin and corruption increases, and faith is extinguishing; only a few resist in the midst of general misunderstanding and even persecution. Everything points in this apparently calm and enjoyable environment to a profound distortion in the minds and hearts of the inhabitants of this world, who have deviated from what would be a virtuous life, in fidelity to the divine will. Given this panorama, there is no other choice but to expect a radical change that could touch everyone's heart.

The apocalyptic scenario points to a catastrophe, to the great crisis that anticipates the end of time and to a great last regeneration. Of course, ideas of punishment or divine correction arise in this context, reminding themes and episodes from the Old Testament together with a righteous mentality, because God is paying already for guilt and crime in this life, in the historical condition, or awaits the end times to do justice to his chosen ones. This key has in fact been repeatedly applied throughout history and in the midst of the greatest evils suffered by humanity and especially Christian communities. It is even too easy to understand in a key of punishment and purification the times and circumstances that we have lived through until very recently in western societies: too much frivolity, too much corruption on many levels or in many areas – including the Catholic Church – too far from God and his Church. It is not uncommon then to believe that God might grow tired of this humanity, that his anger explodes and that he corrects us with an epidemic that forces us to rethink all the certainties that we had acquired, to recognize all the errors of these years, to turn to Him.

Cognitive psychology applied to the study of religion suggests that more immediate reactions or perceptions in the religious mind following more direct or 'easy' patterns: it is about understanding God as an 'agent' behind everything that happens and still more when we cannot get a more convincing explanation, and our relationship with Him in terms of exchange, reward and punishment, as a consequence of our acts or behaviour. It can be stated that a thoughtless or fearful religious intuition feels drawn to those categories, finding it easier to think about what happens as divine punishment for the people's sins, rather than look for other explanations perhaps more complicated or subtle, more theologically elaborated. Such elaboration is the theme of the further sections of this article [1].

In any case, it is not wise to underestimate the apocalyptic perspective, which has been a source of hope and courage for many generations of Christians, and which tries to vindicate the victims and the innocent in a history full of suffering and injustice. In this view, the punishment dimension becomes less central, and Christians feel empowered in the midst of their great struggles. This was a point the German theologian J. Baptist Metz claimed in a time of great pressures and anxieties [4]. That view contributes to relativize the present, the history with everything that can be considered great or valuable: everything is reduced – except love and fidelity – when the end of time is anticipated, when the only thing that counts is the people's innermost being and the God who is anticipated at the end of the way and encourages us to draw closer to Him. He has in His hands the power to overcome evil, which can never prevail over divine grace. Therefore, it would not be advisable to discard this great vision with all that it supposes to encourage believers, and also in connection with the following key, which understands all that as a sign that calls for conversion. The apocalyptic scenario invites an anticipation of a future end of consummation, which, although it does not take place immediately, nevertheless contributes to illuminate the lives of Christians in times of strong trial, and to provide a very valuable resource: hope for those who trust God, in the midst of a despairing environment.

2. A Sign That Invites Conversion

This, too, is a key strongly rooted in Biblical Revelation, where times of great difficulty are perceived not so much as punishments, but as signs that invite conversion, a radical change of perspective and behaviour. This reading is often found in Old Testament Prophets, but it is also a

key in the Gospels, which, in the face of trials and difficulties, invite conversion and following Christ. It is quite evident that the Christian tradition has repeatedly understood the great historical trials that the Church or society has suffered as invitations to review behaviours that were assumed in a too easy and sure way, to turn our eyes towards God and to change perceptions and attitudes until recently discounted.

The pandemic offers us a unique opportunity to activate an urgent reflection on the dubious drift that the western world was assuming. From a cognitive psychology point of view the issue is clear: when things go wrong, the question arises spontaneously: where have we failed? What have we done wrong to deserve this? For sure, such a mentality can be understood as naive, or again, a simple derivation of a mind that needs to identify culprits or agents of evil, also in the face of natural processes whose cause cannot be attributed immediately. Hence the abundance and popularity of conspiracy theories. The theological view must be much more subtle and not fall into a too crude or naive cognitive scheme. It does not look for culprits, and that is not the nature of the 'sign of conversion', but rather what opportunity a certain crisis or historical evil can pose to change and improve, which for us implies returning to God, accepting his will; or in other words, what is the advantage or benefit, the lesson we can draw from something so negative.

There are many reasons, when looking critically at our culture, to identify processes or attitudes that have been assumed in a thoughtless way and that invite a change of heart. There is plenty of choice, but a theological look should point out the most troubling issues. From my point of view, recent culture had entered a phase of exaggerated confidence in human capacities, supported by technical means, such as Artificial Intelligence, to overcome all our limits, fix every big problem we were finding in our way, and even to achieve immortality. I have read in recent years too many books and papers telling their great expectations based on our scientific-technical capacity to improve the world, to achieve fulfilment [5]. The dreams born during the Enlightenment were finally coming true, and our humanity was facing the true opportunity to overcome every evil, including moral evil through systems of 'moral enhancement'. All this would render full happiness much more accessible. These grandiose visions had as a clear consequence an increasing marginalization of religious faith and of Christianity in particular as a religion of salvation: we would not need salvation from supernatural instances if we could achieve it by our own means. Almost a feeling of omnipotence was taking over some intellectual sectors, and a highly successful author has even dared to speak of *Homo Deus* [2]. All that hubris of omnipotence, that absurd divinization, has vanished in a few days, and has given way to a sense of great fragility, to the perception that the great western civilization has feet of clay and is very vulnerable to any contingency, to the unforeseen, because we do not have control of the situation at all, no matter how much our science and our technologies, certainly necessary, advance.

Another historical episode from the beginning of the last century comes to mind that resulted in a great theological reaction and a strong social and religious change. I am referring to the reception of the Great War (1914-1918) by a group of young theologians headed by Karl Barth. It is not difficult to trace in that theological reaction themes that are now familiar to us. The young Barth composed his famous comment to the *Letter to the Romans* just at the end of that catastrophic war and other catastrophic pandemic (1919), which took millions of young lives ahead, as a protest manifesto against the trust inspired by the social, economic and scientific progress linked to the so-called 'liberal culture', and the complacency that most academic theology of his time showed with these tendencies, with a culture too confident in human progress. That case probably gives us signs as to how theology captured in that very dramatic situation an opportunity to rethink not only a theological model, but a whole cultural form that was too sure of itself, and that also distanced itself from God. An epochal correction was imposed, a vindication of the Christian faith in radical and ground-breaking terms: Christian faith was conceived in sharp contrast with human endeavours, as a steady correction and call to relativize every achievement.

The truth is that great difficulties and historical tests have revived the faith of so many people and that also at this time many of our contemporaries are turning their eyes towards God, praying with more intensity, trying to encourage everyone from their own faith and hope. In this

perspective, we cannot understand the current crisis as a divine punishment, but as an opportunity to return to Him, to change our lives, giving more space to what really counts, and leaving aside false idols that have seduced us in these times with their promises of a happy life and even immortality. It is too easy to find biblical resonances in this temptation to build only relying on our own resources, but it is more appropriate – theologically speaking – to look for a different horizon, and to find a new meaning and light in what is happening. That attitude would help to correct wrong tendencies and to offer reasons of hope based on Christ and his grace.

Another experience associated with that of conversion follows from the forced situation of lockdown that most of us are living these days. This experience has given rise to austerity attitudes, to a vision of essentiality that invites us to value those things that count the most and to neglect what is secondary. Perhaps it is an important occasion to discern between the values that can provide more meaning to our lives and what is accessory: to value life, family, and friendship, above other realities so that these days we can focus in what really drives our lives, or at least to pose the big questions that really help to build a meaningful life.

3. The Paschal Key: Death and Resurrection

The third most relevant reason in the attempt to illuminate the events we are experiencing these days is the paschal. This key, unlike the previous two, is not as intuitive or, in other words, it is – cognitively speaking – more 'expensive' or less 'easy' to perceive. The dynamic that inaugurates Christ Passover is, as some cognitive psychologists like to say, quite 'counterintuitive': death is a condition of life; self-emptying and humiliation are conditions of exaltation and glory; suffering is the way that leads to full happiness; sadness is in turn joy. These are fully Christian categories, and it is difficult to find parallels or similarities in other cultural or religious traditions; we are facing a genuine or specific point of Christian faith, which is now being tested. The closest topic in the history of religions is probably the idea of 'sacrifice': a propitiatory victim is offered to the divinity or to supernatural powerful forces to placate their rage or to substitute for the sins and wrongdoings of people. However, the Paschal sacrifice – which doubtless has been understood in that sense too – demands a broader understanding, not a God to placate or a continued transgression to heal and cancel, but the opening of a different mentality and an alternative way to perceive the negative and the distressing events in life and history.

The application of the paschal principle is very familiar to Christians: the passage from death on the cross to the resurrection of Christ invites us to think that even the most negative moments of personal or collective existence can give way to a new life, beyond even from death. This principle can be understood in several ways. The eschatological key is the first: in a Christian sense, physical death gives way to a new life that anticipates the resurrection of Christ, a possibility that is open for all who follow him. Of course, this key is somewhat limited, although it is also important to remember it before the thousands of victims of the pandemic. We Christians have the right to claim that this is not the ultimate end, and that these deaths open the door to a different life, in another dimension. It would not hurt to recover in these times the strongly eschatological tone of the original Christian message, which announces life where others only see death. We have something to offer to all those who leave us abruptly and in the midst of great loneliness. They are not just figures of a sad statistic that throws us all into despair; from the paschal perspective, they are men and women called to new life in Christ, to victory over death.

Another key to reading the Passover of Christ is broader, or not reduced to the eschatological dimension: everything negative and painful that we Christians can experience refers to a horizon of transformation with the promise of a better life. Surely the human experience that comes closest to the paschal dynamics is that of self-giving love and that of sacrifice for others' sake. The idea that some expressions of love require self-denial, or the surrender beyond one's own interests to get access to more exalting and full states is not new or strange for those who discover love beyond its superficial forms or just the erotic version. However, the Paschal dynamic contains within it a promise that goes beyond the experiences of self-sacrificing love, or sacrifice for other

people, or at least gives them full meaning. In fact, Easter offers a horizon or a guarantee that allows us to go through any form of negativity and suffering in the hope that they will change into joy and fulfilment; Or, in other words, it offers to those who in these difficult times sacrifice themselves for others the promise that their love will not be in vain. The profound idea of the Passover of Christ is that all the good that we have been able to do will remain forever, it does not fade away, it does not die, but it is projected to eternity, as had happen with thee good Christ did perform during his ministry by us. In the dead and risen Christ we have the certainty that our love, tested in the crosses of each day, all the good done, will be forever and will never die.

4. Faith as Incarnation and Accompaniment

The fourth theological key that I propose in order to provide a meaning to these times of trial is the one that invites us to share and assume both the pains and the sometimes heroic gestures of dedication that we observe, as a manifestation of God's grace, as the presence of his Spirit who lives among us. It is a more reflective key, which is born from a view capable of perceiving the gift of God and his mysterious presence in the events that humanity lives, both positive and negative. This perception is placed at the other extreme regarding the apocalyptic mentality: where the apocalyptic sees degeneration and decay, the incarnate person observes the work of God, his love present in many ways; where the first sees above all experiences of sin, the second perceives expressions of grace; where the first sees negativity that invites a catastrophic end to purification, the second sees much love and dedication, much hope. It is close to the mystical experiences in many religious traditions, a mysticism able to discern the divine presence in its mysterious forms, but close too to human experiences of empathy and compassion, to a deep rooted tradition able to connect the best expressions of human love and self-giving to the divine.

The theological exercise in this case focuses on everything that reveals the best of humanity in the midst of its wounds, because it assumes a vision from within that human condition, which also reveals its greatness. This perspective takes advantage of and strongly applies the initial declaration of the dogmatic constitution of Vatican II, *Gaudium et spes*:

> The joys and the hopes, the griefs and the anxieties of the men of this age, especially those who are poor or in any way afflicted, these are the joys and hopes, the griefs and anxieties of the followers of Christ. Indeed, nothing genuinely human fails to raise an echo in their hearts… That is why this community realizes that it is truly linked with mankind and its history by the deepest of bonds (GS 1).

For this reason, the Church can read the situation that humanity lives in these times, with its lights and shadows, from within it, and not from the outside, as those who judge from above. The Christian faith discerns in what is happening the signs of life that are reflected in all the efforts made at different levels of a society that feels threatened and insecure, even scared. In this situation, faith learns to be close and share, to encourage everyone and to announce hope.

Several theologians have insisted in recent years that the believing mission to recognize the providential action of God is not identified in the extraordinary, the supernatural or in the limits of natural processes, but in the very dynamics of creation and in the efforts of science, in the best of humanity that walks towards overcoming evil [3], [7]. This is a unique opportunity to discern the presence of God both in those who suffer most and in those who love and serve others.

5. Some Concluding Remarks

These times are testing many realities, many proposals and we are not sure how we will live, how we will feel after all this will be over. The truth is that an important result of this state of affairs is that it has forced us to rethink the Christian faith as a 'salvation religion' and not only as a spiritual expression, almost as something close to the aesthetic experience. In this sense, the Christian faith

recovers its genuine character, provided that it really knows how to help people of our time to face and overcome these difficulties. In this regard, it should be remembered that religious faith is best seen as a 'coping system', as 'religious coping', that is, a series of resources – beliefs, rites, prayers – that help those who apply them to address difficult or critical moments. A focused research we have conducted in recent years [6] indicates that such a faith-based coping strategy works best when combined with other secular strategies, such as therapeutic help, friendship, or knowledge and study. This data again points to the Christian faith being called to walk alongside other positive expressions, not apart or not in competition. This is something that can also be deduced from the current situation, in which we all are called to offer the best to face our great challenges.

Christian faith becomes in the current context a way to look at an experience of perceived risk and generalized catastrophe, but a plural one; or better: it offers a set of cognitive resources to cope with that situation. Its 'management' cannot assume the form of other 'rational strategies', which look for effectiveness and results, since Christians are used to apply categories like grace, gift, and eternity that defuse sheer pragmatic criteria. However, the coping strategies it builds and offers before catastrophic processes are very helpful for many, and should be taken into account by those who hold public responsibilities. The working of Christian faith can hardly be assessed, except in the innermost experiences of people, which, by their own conditions, can hardly become subject to any management. This condition is the one that renders faith and grace more mysteriously effective and can bear lasting and deep consequences.

My colleague and friend Konrad Szocik has pointed out – after reading a former version of this paper – that the current situation reveals intrinsic fragilities and vulnerability in human condition, something that will never be overcome, despite the false promises of transhumanists and optimist technologists. This perception renders theology an unavoidable reflection. After all, "Theology may be the last conceptual system which reminds us of that fact [our fragility] independently on human hope for science" (Szocik). The question is to what extent such a reminder becomes useful. Possibly only at the condition that theology provides at the same time a hint of hope and resources to cope.

And one last note. Many of us miss in the public appearances of our politicians and authorities, especially when they make the most dramatic and solemn announcements, a necessary conclusion: "May God help us." It would be a sign of real and concrete post-secularization, a way of giving hope to all over the divisions.

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Reply to Walter Block on Ethical Vegetarianism

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Abstract:
I address Walter Block's recent criticisms of my book, *Dialogues on Ethical Vegetarianism*. Methodologically, Block relies too much on appeals to contentious and extreme assumptions. Substantively, most of his objections are irrelevant to the central issue of the book. Those that are relevant turn on false assumptions or lead to absurd consequences. In the end, Block's claim to oppose suffering cannot be reconciled with his indifference to a practice that probably causes, every few years, more suffering than all the suffering in human history.
Keywords: vegetarianism, veganism, libertarianism

1. Introduction

In a recent issue of *Studia Humana*, economist Walter Block has advanced a spirited critique of my book, *Dialogues on Ethical Vegetarianism*.[1] Block raises a dizzying array of objections, too numerous and varied for me to address all of them here. Fortunately, many of them are beside the point of my book. I have in mind where Block advocates legalizing insider trading [1, p. 60], criticizes my use of "them" [1, p. 60], discusses ending trade with China [1, p. 58], and so on. In addition, some of Block's remarks are very difficult to make sense of on their face, such as his suggestion that there is no way of knowing whether a cure for cancer would be more valuable than a brief episode of sadistic pleasure for two boys [1, p. 55]. I shall pass over these points.

In what follows, I shall critique Block's philosophical methodology, then address some of Block's more relevant objections, then conclude by examining Block's view of the evil of suffering.

2. Methodological Points

2.1. The Argument from Libertarianism

Walter Block and I have two main methodological differences. First, among Block's preferred forms of argument is what I call "the Argument from Libertarianism," which consists of appealing directly to

"libertarianism" to establish a philosophical point. There are two variants of this argument form. First, the Positive Argument from Libertarianism:

> Libertarianism says that P.
> Therefore, P.

For example, Block tells us, "In this philosophy [viz., libertarianism] the only crimes are those with (human) victims." Nor is Block merely avowing his own beliefs. He criticizes me more than once for not arguing in libertarian-typical ways or taking sufficiently libertarian positions [1, pp. 54, 59-60, 62].

Despite being a libertarian myself, I find this argument form not at all persuasive. I do not accept any position simply because it is the libertarian position. I first figure out what I believe about a variety of philosophical issues, *then* look for labels to describe my views. I call myself a libertarian because that term happens to correspond to my political views. I do not first decide that I'm a libertarian and then adjust my views to make sure that the label fits me; that would be irrational. If it should turn out that I endorse some libertarian views and some non-libertarian views, that is of no concern to me.

One must of course hold a *consistent* set of beliefs. But there is no inconsistency in holding libertarian views about some issues but not others. For instance, there is nothing inconsistent in supporting gun rights, capitalism, and ethical vegetarianism – regardless of whether the last position counts as "libertarian" or not. *If* Block is right (I don't think that he is) that libertarianism only recognizes crimes with *human* victims, then so much the worse for libertarianism; that gives us no evidence at all that only human victims matter morally.

The other form of the Argument from Libertarianism is even less cogent. I call it the Negative Argument from Libertarianism:

> Libertarianism doesn't say that P.
> Therefore, who cares about P?

For instance, Block avers that he does not care whether it is unethical for a large corporation to drive a small company out of business, because libertarianism doesn't say anything about that [1, p. 54]. He goes on to explain that libertarians qua libertarians are "not at all interested" in whether torturing animals is morally alright, since libertarians only care about the question of what constitutes just law [1, p. 55] (plus, to a small degree, whether initiation of force is alright [1, p. 54]).

I find this bizarre. If Block were completely uninterested in moral questions, I could at least understand that, for that is how psychopaths are. But he avows interest in one type of ethical question: the question of when it is morally acceptable to coercively punish someone for some action. He allegedly doesn't care about any other kind of wrong, or any other problem, besides the problem of unjust law (or lack of law) – because that, in Block's view, is what libertarianism is about. (But see section 4 below for contrary indications.)

Imagine a libertarian hospital run by Walter Block's cousin, Doctor Joe Block. A patient comes to see Dr. Block about a medical problem:

> Patient: Doctor, I'm feeling a pain in my chest.
> Block: Was it caused by force or fraud?
> Patient: What? Of course not.
> Block: Then stop complaining and go home.
> Patient: But I think I might be having a heart attack!
> Block: Having a heart attack and not having a heart attack are both compatible with libertarianism. So, as a libertarian, I am not at all interested in that.

Now the point of this mini-dialogue is not to discuss the duties of doctors. Here is the point: many things are extremely important, even if they are not addressed by one's preferred political ideology. To declare that one does not care about any problem that is not addressed by one's ideology is simply not a reasonable position.

As I noted in the *Dialogues*, 74 billion animals are slaughtered on factory farms every year, worldwide. All or nearly all of them have lives of extreme suffering before their deaths, suffering of a sort that we would unhesitatingly dub "torture" if it were deliberately inflicted on any human being. Now, the total number of humans who have ever lived on Earth is estimated to be about 110 billion. Thus, as shocking as this statement might initially sound, it is completely plausible that just a few years of factory farming causes a greater total quantity of suffering than *all the human suffering in all of history*. Note that Walter Block does not dispute any of these facts. To react to such a problem with indifference would be a shockingly nihilistic stance.

Perhaps Block's point is not that *he* does not care about such problems, but that *libertarianism per se* does not care about such problems. But of what interest is that to ordinary, conscientious human beings? Imagine modifying the above dialogue so that Dr. Block's last line reads:

> Block: Having a heart attack and not having a heart attack are both compatible with libertarianism. So libertarianism per se does not care about that.

Whereupon Dr. Block declines to do anything about the patient's symptoms. Block's remark may be true, but it is not a reasonable reaction to the patient's problem.

2.2. Extremism

Here is the other main methodological difference between Block and myself: Block believes that thinkers should take up extreme, unqualified generalizations with high confidence. Thus, he criticizes me for failing to advance strong, confident claims about rights as other libertarians do [1, p. 62] and for allowing exceptions to my advocacy of vegetarianism [1, p. 54]. On the other hand, he praises me for taking the seemingly extreme view that factory farming has caused more suffering than all the suffering in human history [1, p. 57-8].

To Block, my intellectual style must seem inconsistent: sometimes I am admirably bold, while at other times I am disappointingly modest. Let me explain why this seeming inconsistency occurs: it is because I am not trying to produce either bold or modest statements per se; I am trying to produce *true and relevant* statements. I of course prefer that the mode of expression of my views should be entertaining, so that more people will read them. But I do not adjust the content of my beliefs to enable me to make more exciting, brave, or otherwise fun statements.

The problem with extreme, sweeping generalizations is that they are nearly always false. If we are seeking the truth, then, we should try to avoid such statements as much as possible, compatible with still addressing the important issues. That has been my approach in political philosophy, and that was my approach to ethical vegetarianism. In both cases, I try to build my key conclusions on the most modest, least controversial premises possible. That is not a weakness; that is simply trying to seek the truth reliably.

3. Objections to the Case for Ethical Veganism

In this section, I address nine objections that Block raises to my ethical argument for veganism.

3.1. "Suffering Can Be Good"

My central case for veganism turns on the vast pain and suffering caused by human consumption of animal products. But Block argues that pain and suffering can sometimes be good. Masochists, he says, desire suffering as an end in itself [1, p. 54].[2] In addition, suffering inflicted as part of just punishment is morally good [1, p. 60-61].

Neither of these points is relevant. Animals on factory farms are not sexual masochists playing an enjoyable sexual game with the farm workers. They also are not guilty of any wrongdoing, so their suffering is not part of just retribution for anything. We do not need to figure out whether retributivism in the theory of punishment (the view that suffering for the blameworthy is intrinsically morally good) is correct, because, whether or not retributivism is true, no one thinks it applies to the case of animals on factory farms.

Block might say that he is criticizing my thesis that all pain and suffering is bad no matter what. But I never advanced any such thesis. (Again, I tend to avoid simplistic, unqualified generalizations.) My claim is that torturing animals on factory farms for the sake of trivial benefits for yourself, in the way that we are doing in actual reality, is wrong. Block has not attempted to identify any reason why that might be acceptable.

3.2. "Rights Require Homesteading"

Block holds that in order to possess rights, one must "homestead" one's rights by petitioning for them. (We can leave aside exactly what counts as homesteading, since any reasonable interpretation will make this false.) Animals presumably cannot petition for rights since they cannot speak. By the same token, however, infants and certain severely mentally disabled people cannot petition for rights either. So it would seem to follow, on Block's view, that torturing babies and severely retarded people is permissible. It is hard to think of a clearer *reductio ad absurdum* of a moral view.

In response, Block approvingly quotes Murray Rothbard, stating that babies are "future human adults." Neither Block nor Rothbard explain how this is supposed to be relevant. In any case, this does nothing to address the problem of severely retarded humans, who will *never* acquire normal intelligence and will never petition for anything.

Block then tries another gambit: he says "we go by species, not individual, membership." He gives no further explanation or justification; that is the entire argument. The assertion seems to be that babies and the mentally disabled have rights because *other* members of their species have homesteaded things. Block makes no effort to explain why species classifications are morally special but not genus classifications, race classifications, hair color classifications, or any other grouping – nor, indeed, why the moral rights of an individual would depend upon a *grouping* of that being with any other entities at all, rather than on the actual characteristics of that individual.

Let's think about land ownership. This is the source of Block's idea of homesteading, and Block invites us to take land ownership as the model for all rights. But land ownership certainly does not work in the way that Block and Rothbard require: I do not own a plot of land because I *could* homestead it *in the future*, or because someone *else* homesteaded it, or because *other members of my species* homesteaded *other things*. The way homesteading works is that the *individual* who *actually* homesteads a plot of land acquires that specific plot of land and nothing else. So again, on the homesteading theory, there is no basis for infants or severely disabled humans to have any rights. The idea that they have rights because they might homestead something in the future or because other conspecifics have homesteaded other things is a non-starter.

The homesteading theory is so problematic that you might assume that Block would not have asserted it without some powerful evidence for it. But then you would be mistaken. Block's argument

for the theory is a particularly weak iteration of the Argument from Libertarianism: "Why is petitioning all-important? Because this lies at the very core of libertarianism" [1, p. 55]. He then explains that we need a theory of property rights, and that libertarians generally invoke a version of homesteading to explain the initial acquisition of property. He does not, however, give any reason why there cannot be any other rights.

3.3. Reductio of the Risk Argument

In my book, I argued that if there is even a reasonable chance that animal suffering matters, then we must end factory farming because the sheer quantity of suffering is so great. If, for example, there is even a 1% chance that animal suffering is as important as human suffering, then the expected value of a year's worth of factory farming is equal to that of a program that tortures *740 million* people [2, pp. 17-19].

Block's objection: there is a nonzero chance that almost *any* action might cause some horrific evil; e.g., maybe sitting on a chair causes agony to the chair [1, p. 61], maybe my being a vegan will shortly cause the painful death of everyone in the world by some unknown mechanism [1, p. 56], and so on. Thus, "anyone can make up any 'calculation' of this sort to prove a point" [1, p. 56].

It is not clear what to make of this contention. Is Block saying that because it is possible to devise an *incorrect* expected utility calculation to support any course of action, we should never consider expected utility? This hardly seems cogent.

Perhaps Block thinks that there is a *correct* expected utility calculation supporting any course of action. But this thesis is contradictory, for it implies that both doing A and *refraining* from doing A maximize expected utility, for every A. Moreover, the thesis is false on its face. To make the argument that, e.g., sitting on chairs is wrong, one would need to do two things: (a) One would have to show that sitting on chairs was more likely to cause pain than to *relieve* pain, and that sitting was more likely to cause pain than refraining from sitting. One cannot show this sort of thing when one has simply made up an arbitrary hypothesis; there will always be an opposite arbitrary hypothesis to cancel it out. (b) One would have to argue that the expected harm to the chair *outweighs* the expected benefit we get from sitting on a chair. Block gives no indication of how someone would show that – which is not surprising since of course that is false.

In a footnote, Block invites the reader to make the probabilities (e.g., the probability that sitting on chairs causes pain) as low as one likes [1, p. 67n8]. It thus appears that Block thinks that the expected utility calculation would favor not sitting on chairs, no matter how low the probability is. This is not how expected utility calculations work; they are not insensitive to probabilities.

Perhaps Block's point is that my expected utility reasoning is analogous to his proposed expected utility arguments, namely, the arguments that would show (i) that I should give up veganism, and (ii) that we should avoid sitting on chairs.

If that is Block's point, I fail to see how his arguments are similar to mine, other than that both mention expected utility. I did not rely on any arbitrary hypotheses, nor any hypotheses with absurdly low probabilities, as Block's examples do. It is in fact *overwhelmingly probable* that farm animals experience pain and suffering, whereas it is *incredibly improbable* that chairs do. If one thinks that this isn't a relevant difference, then one does not understand expected utility.

3.4. "Farming Is Good for Animals"

Block worries that ending meat consumption would be bad for farm animals, because farm animals would no longer be raised and thus future generations of them would not have a chance to live at all [1, pp. 58-9].

I addressed this argument in my book, where I pointed out that the argument, if sound, would also support raising a special race of humans as slaves (or for food, or to torture for fun, etc.). About these slaves, it would also be true that they would not be alive at all if there were no such industry. One can even imagine that the slave traders in this industry – in between beating their slaves, packing them into train cars like sardines, and so on – would take a page from Professor Block and declare themselves friends of the slaves.

Block is aware of this objection, which he quotes from my book. What is his response? He agrees that slavery would still be "not okay. Of course not," then immediately adds, "But better than the alternative!", whereupon he simply restates the precise argument that my objection was an objection to.

It is difficult to understand what is going on here. Is Block agreeing with me or disagreeing? My objection was essentially this:

1. The argument in defense of the meat industry is analogous to the argument in defense of the slave industry (with people who are specifically bred to be slaves).
2. The argument in defense of the slave industry is unsound.
3. Therefore, the analogous argument in defense of the meat industry is unsound.

Which premise might Block be disputing? He makes no effort to dispute that the analogy is fair; indeed, he adds his own analogy apparently comparing our use of animals to a race of aliens coming and enslaving all mankind. So as far as I can tell, Block embraces premise (1).

He also endorses premise (2) when he agrees with me that it would not be okay to breed people to be slaves. He therefore must accept (3), which follows from (1) and (2). But then Block immediately goes on to simply restate the argument that we just showed to be unsound.

Perhaps Block actually disagrees with (2) but simply expressed himself misleadingly. Perhaps his view is that running a slavery industry, as described, *would be permissible* because it is "better than the alternative." If that is his view, then he could consistently claim that operating the meat industry in the status quo is also permissible. But this would be quite a remarkable view. I don't know what kind of libertarianism it is that endorses involuntary slavery. In any case, this seems like about as clear a *reductio* as the earlier one about torturing babies.

There are two more problems with Block's argument, apart from leading to an endorsement of slavery. First, the argument presupposes that our only options are (a) torturing animals horribly in factory farms, or (b) killing (or letting die?) all farm animals (including all members of their species?). (I'm not sure what Block thinks the second alternative is; he refers to vegans as "a genocide threat" to farm animals [1, p. 59], so I assume he thinks that we'd have to extinguish their species.) Here are two more alternatives: (c) treating farm animals humanely, (d) not raising any animals for food but allowing their species to exist in the wild. (There are in fact wild chickens, and there used to be wild cows.) Block's argument for (a) is that it is better than (b). But he makes no attempt to show that (a) is *the best possible* alternative. If there is *any* option that is better than the horrible option (a), then (a) is clearly impermissible.

Here is the other problem. As mentioned in my book, the lives of factory farm animals appear to be so miserable that it would be much better if no such lives existed. To see my point, imagine that I told you that it was possible to greatly expand the human population of the Earth. We could have ten times as many people! To make this happen, what we have to do is create 70 billion new people who would spend their lives jammed into cages or barns where they could barely move, sitting in their own excrement all day. Most would never see the light of day. Many of these people would be living in buildings where the floor was covered in ammonia, so that they would be breathing ammonia fumes at all times. Once in each person's life, someone would come by and chop a small body part off the person, without anesthetic. Occasionally, someone would come by and just beat one of the people for

the fun of it. The women would be used to breed more people, but the babies would be forcibly separated from their mothers at birth. Finally, after lives of just a few months on average, someone would come and cut these people's throats or bash in their skulls.

I have it in my power, I tell you, to bring about that world, but I will only do it if you tell me to. What say you?

That is analogous to Block's idea that we should continue to create billions more animals to live and die in factory farms every year. Everything I stipulated in that scenario is accurate to the conditions in factory farms.[3] For my part, I do not find this difficult to evaluate. Obviously, you should say "No, do not create the 70 billion miserable lives."

3.5. "Animals Kill Other Animals"

Block cites the fact that chickens sometimes kill and even eat other chickens. He proudly contrasts humans, who very rarely eat members of our own species [1, p. 59].

I am not sure what point Block is trying to make. Is he arguing that because chickens sometimes eat other chickens, it is morally permissible for us to torture and kill chickens in order to experience the pleasure of eating their flesh? The logic of this inference escapes me.

Perhaps the idea is that chickens are so vicious that they deserve to suffer and die? Human beings, however, have been killing each other, torturing, raping, robbing, and so on, for all of human history. If anything, humans seem far worse than most animals. By Block's logic, then, raising humans in factory farms would be fine.

3.6. "Rights Imply Responsibilities"

Block says that "with rights come responsibilities" [1, p. 59]. Since animals do not have any responsibilities, presumably, they cannot have rights.

Block, however, gives no argument for his premise. (A popular catch phrase is not an argument.) Remember what we are talking about here. We are talking about inflicting severe pain and suffering, followed by death, on other beings for our own relatively minor pleasure. It must be explained why *that* is acceptable. Now consider this explanation: "The creatures we are torturing and killing don't have responsibilities, so everything is fine." I fail to see the logic here.

Again, Block's assumptions lead to absurdity. Since babies, severely mentally retarded people, and severely mentally ill people lack responsibilities, they must have no rights; hence, we may torture and kill them at will.

Perhaps Block would deny that it is acceptable to torture and kill other beings merely because they lack responsibilities. Perhaps he would say only that such torture is not a *rights violation*, but it is still wrong for some other reason. But then he would be granting my main point: factory farming is wrong, and it's wrong to buy the products that come from that source.

3.7. "Utilitarianism Supports Rape"

Block worries that a purely hedonistic (concerned only with pleasure and pain) philosophy would lend support to rape: as long as the rapist's pleasure is greater than the victim's pain, rape would be permissible [1, p. 61]. To avoid this conclusion, he thinks, we should adopt a rights-based, libertarian philosophy.

This argument is off-target; it does not address anything that I have ever said or thought. I did not advance a purely hedonistic philosophy, nor did I suggest that no one has any rights. I simply

argued that we should not inflict severe pain and suffering on other creatures for the sake of minor benefits to ourselves. This does not entail that no one has rights, nor did I in any way suggest that.

3.8. "Experts Can Be Wrong"

In the *Dialogues*, I mentioned that most experts who review the ethical arguments concerning vegetarianism agree that they are compelling [2, p. 69]. Block, however, objects that putative experts are sometimes wrong; for instance, humanities professors often wrongly support minimum wage laws [1, p. 61].

There are two problems with this. First, humanities professors are not experts on economics, so this is not an example of experts getting things wrong. That is a minor problem, though, because we could surely find an example of actual experts getting something wrong.

Here is the second problem. The fact that experts are not infallible does not imply that you are reasonable to disregard their judgments – unless of course your own non-expert judgment *is* infallible. For example, health experts used to believe that fat in general was bad for you. Now it is thought that only some fats are bad while others are good. So medical experts are fallible. It does not follow from this that, if your doctor gives you some advice, you should ignore it.

Now, unlike Block's example of humanities professors talking about economics, ethics professors who work on animal ethics actually are experts on that subject. They tend to be highly intelligent; to be well-informed about the relevant ideas, distinctions, and arguments in the field; and to have spent a long time thinking about the subject. If you don't think those characteristics increase one's odds of getting to the truth, then you must be a radical skeptic, because it is hard to imagine what could possibly help one to get to the truth if those things don't make any difference. Of course, ethics professors are fallible like all humans, but that's no reason for disregarding their judgment – again, not unless you, unlike all the experts, have some unerring access to the truth.

3.9. Shutting Down Modern Society

Finally, Block worries that my ethical views might require us to shut down modern society. He notes that deep mining, dams, nuclear power, and windmills all cause some amount of suffering and/or death. He might have added that the same is true of all technology.

This would be a strong objection if my thesis in the book was, "All activities that ever cause any harm at all are impermissible." Fortunately, I have never held such an absurd view, and neither, to the best of my knowledge, does anyone else. (If someone held that view, I think the most obvious objection would be that the view entails that *everything whatsoever* is impermissible, so we'd all be obligated to be completely passive, not even breathing, until we die.)

I argued that factory farming is wrong because of the enormous amount of pain and suffering it causes, for the sake of trivial benefits for ourselves. This does not imply, nor did I suggest, that everything that causes any suffering or death at all is wrong. We are not limited to the two options of holding either (a) it is always wrong to cause any amount of suffering for any reason, or (b) it is always perfectly permissible to cause any amount of suffering for any reason.

I have not advanced a complete theory of all the possible conditions in which actions are right or wrong, or even in which causing suffering is right or wrong. No doubt Block will be disappointed by this. Be that as it may, we do not need to entertain any such theory, because the case at hand is not a difficult case. We are talking about factory farming, and buying the products that it produces. We only have to answer whether *that* is permissible.

Well, if *ever* it is wrong to cause suffering, factory farming is about the best example one can think of (that and torturing babies for fun, as discussed earlier). Surely we humans would need a good

reason for inflicting, every few years, *more suffering than all the suffering in all of human history* on other creatures. Do we have such a good reason? To answer that, we do not need to first write down a list of every possible good reason that anyone could ever have. All we have to do is look at the actual reasons that people have given in this case. When we do that, we find some of the most obvious non sequiturs, absurdities, rationalizations, and attempts at distraction that you will find in all of human discourse.

4. Opposing Suffering

After all I have said, you might assume that Walter Block and I have opposite views on the subject of animal ethics. Not so – at least, not as opposite as they could be. For Block explicitly embraces my main premise:

> If I had to summarize this book in three words it would be: "stop the suffering." I acknowledge that I, too, support this plea. Who but a malevolent, malicious person, a sadist, would actually support anguish, whether for humans or non-humans[?] There is altogether too much misery in the world, and any lessening of it has to be counted on the asset side of the ledger [1, p. 60].
>
> I join [Huemer] in opposing suffering, whether for man or beast. The world has far too much misery. Any reduction is to be fervently welcomed [1, p. 63].

How is it possible that those sentiments are not swiftly followed by a zealous agreement with me on the abomination of factory farming and the moral unacceptability of patronizing that industry? How can a person oppose suffering yet still find it acceptable to continually cause enormous amounts of it for the sake of minor benefits for ourselves?

As far as I can tell, the answer is, "By misdirection." When Block appears just about to embrace my main conclusions, as in the above two quotations, he instead turns aside and starts discussing some other issue. He follows the first quotation above with a discussion of how it is permissible to cause suffering to convicted criminals who deserve punishment. He does not go on to explain how farm animals are like convicted criminals; he simply moves on once the issue of retributivism has diverted attention from the problem with meat consumption. He follows the second quotation above with a comment about how he doubts that it would be just to imprison meat-eaters and farmers. He never explains how buying meat from factory farms is acceptable, though. Again, once the issue of just or unjust imprisonment has distracted Block's attention, he is able to move on without addressing the main issue.

That is generally how Block's critique goes. In case this hasn't been made sufficiently clear, the central thesis of my book was that it is morally wrong for us, right now, to buy products from factory farms, as almost everyone is doing. Almost none of Block's critique bears on that; almost none of it could be seen as even attempting to explain why it would be acceptable to buy factory farm products. (See especially the arguments addressed in sections 3.1, 3.2, 3.3, 3.6, 3.7, 3.8, and 3.9 above.)

Block never disputes the cruelty of factory farms or the enormous amount of suffering they are causing. Nor does he dispute that we should reduce suffering; again, see the two quotations above. Perhaps Block would say that, in the above two quotations, he only meant that he supports reducing suffering *as long as the cost of doing so is not too high*. This could be a rational position, depending on how one understands "too high." Perhaps if the cost would be giving up a much larger amount of pleasure, then the cost is too high. Perhaps even if it requires giving up a *slightly* larger amount of pleasure, one could claim that the cost was too high (that, at any rate, is what the utilitarians would

say). But suppose the cost is giving up a little bit of pleasure for ourselves, for the sake of averting thousands of times greater suffering – as is in fact the case for ethical vegetarianism. If one still says that *that* is too high a cost, then one cannot seriously claim to be against suffering.

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Notes

1. See [1], responding to [2].
2. That, incidentally, is not correct. Masochists desire pain in sexual interactions as a means to increasing arousal and thus enhancing sexual enjoyment. Block also mistakenly conflates pain with suffering. It is possible to enjoy pain in certain contexts, but it is not possible to enjoy suffering, as this is a contradiction in terms. By definition, if one is enjoying an experience, one is not suffering.
3. For more on factory farm conditions, see [3, pp. 877-83].

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A Short History of the Discovery of Black Holes

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Abstract:
The concept of black holes or completely collapsed gravitational objects as they were originally called has fascinated the scientific community and writers of science fiction for centuries. The mathematical proof of the existence of black holes came from the collation of multiple lines of evidence, some of which were highly debated and was derived from both indirect and direct sources. The measurement of gravitational waves and the observation of a black hole represent one of the most astounding achievements in astrophysics which will open up new areas of investigation for the role that black holes play in the formation, maintenance and evolution of galactic structure.
Keywords: general relativity, Chandrasekhar limit, singularity, gravitational waves, black hole, galactic structure.

1. Introduction

Why should black holes exist and how do we *know* that they do? This article summarises some major developments over the last 236 years, which describe the theory and fact which shows that they *do* exist, celebrated by the ground-breaking publication of the first image of a black hole.

2. Early History

1784 – 1965: Establishing the Theory

In 1784, John Michell first suggested that objects could have such a high mass that light is unable to escape their gravitational field [1]. Albert Einstein's general theory of relativity in 1915 [2] described how mass could bend space and produce gravity, proposing that orbits of stars and

collsions of massive accelerating objects, would cause ripples in the fabric of space – gravitational waves as we call them today.

Einstein's theory stimulated further thinking by Karl Schwarzschild [3] that a single spherical body – called a singularity – could be produced of infinte mass in a very small volume. The fate of stars when they run out of fuel depends upon their size and may produce either a white dwarf, a neutron star, or a black hole, with each object having increasing density. The term Chandrasekhar limit, proposed by Subrahmanyan Chandrasekhar in 1931 [4], is the maximum mass of a stable white dwarf star and white dwarfs with greater masses undergo further collapse to either neutron stars or black holes. Should massive stars collapse under the weight of their own gravity as proposed in 1939 [5], it was believed that the star would grow dimmer as it collapses.

That all large stars approximately 1.4 times the mass of the Sun (the Chandrasekhar limit) would form singularities was finally accepted in Sir Roger Penrose's 1965 publication [6], settling the theoretical problem of whether black holes *could* exist. These new bodies were originally called 'completely collapsed gravitational objects' and it is generally accepted that the term 'black hole' was coined by John Wheeler in 1967 [7].

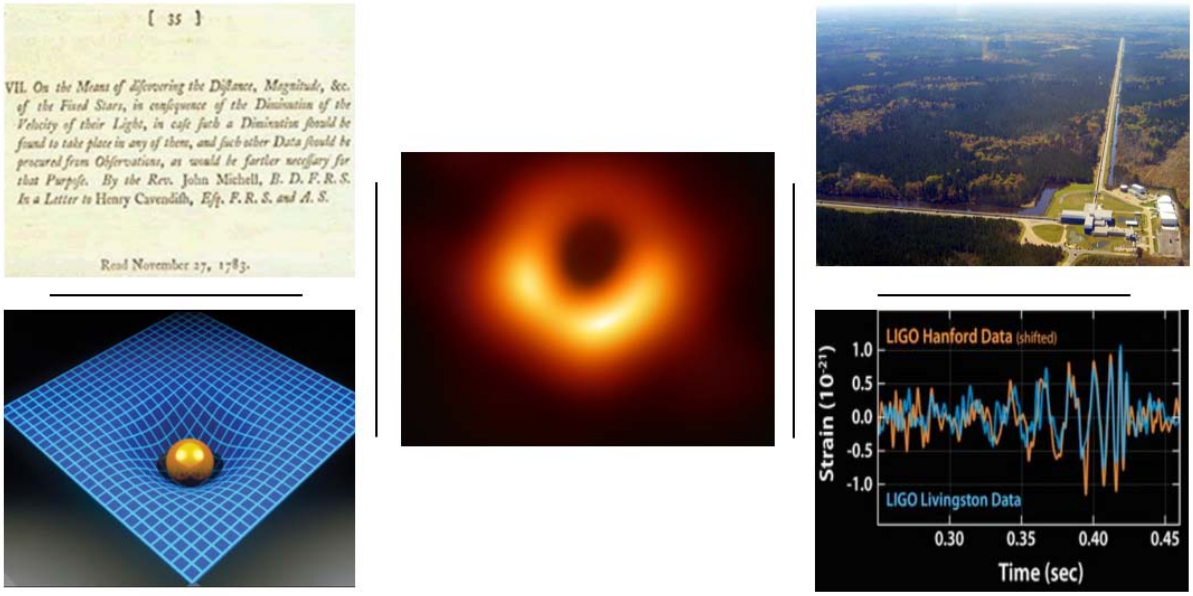
Further observations supporting the theory came from quasi-stellar objects (quasars) first discovered in the 1950s [8]. In 1964, Maarten Schmidt observed that quasar spectral lines of hydrogen were highly red-shifted, implying that quasars were either receding at a speed much greater than any known star or are highly luminous and compact objects [9]. We now know the latter to be the case and quasars are extremely luminous and active galactic 'powerhouses' emitting light from gas in a swirling disc surrounding supermassive black holes.

3. Later Years

1965 – 2015: Testing and Confirming the Theory

Evidence for the existence of black holes is both indirect and direct. Indirect evidence comes from the use of Kepler's equations to measure the mass of an object by its gravitational influence on other bodies, for example the stars that orbit it. The first black hole binary system called Cygnus-1, was identified as a bright point source of X-rays in 1965 [10] and the X-ray emission from it suggested a small collapsed object of approximately 15 times the mass of the Sun [11]. Later, an intense radio source called Sagittarius A* was discovered from an object very close to the centre of the Milky Way. When Kepler's equations were applied to the stars orbiting Sagittarius A*, the mass of the central object was estimated to be 4.4 million times the mass of the Sun. This suggested the existence of a massive black hole at the centre of our galaxy [12].

The first *direct* evidence of the existence of black holes came in 2015 with the observation of gravitational waves [13] by detectors at LIGO (Laser-Interferometry Gravitational-Wave Observatory). Like a water wave in the sea, gravitational waves squeeze and stretch the medium, in this case space and extremely small changes can be measured by 2 detector arms. Each arm is about 4 km long and there are 2 facilities 3000 km apart with a mirror at the end of each arm, a laser source and very sensitive instruments. The team found data consistent with the merger of two black holes of approximately 36 and 29 times the mass of the Sun. Since then, many gravitational wave events have been recorded.



Five key events in the history of black holes*. Michell's paper read in 1783 and published in 1784 (top left; credit Royal Society of London) sowed the idea and Einstein's theory of General Relativity published in 1915 predicted matter would distort the fabric of space (bottom left; credit Physics stack exchange). Fast forward 140 years to one of the two LIGO interferometers (top right; credit Caltech/MIT/LIGO lab) and a signal measuring gravitational waves (bottom right; credit LIGO) and the first image of a black hole (centre; credit Wikimedia Commons).*

2015 – The Present Day: 'Seeing' the First Black Hole

Further indirect evidence came from the detection of the event horizon – the point from which matter cannot escape the gravitational pull of a black hole – in the centre of the Messier 87 galaxy known as M87*. Three radiotelescopes measured the emission of high-energy photons and modelled the expected brightness observed for material either falling onto a surface, or through an event horizon. The study discovered that M87* was darker than would be expected for an object with a surface and concluded that scientists had actually witnessed the event horizon [14].

The first image of a black hole was published in 2019 [15]. Data was collected by the Event Horizon Telescope, a collection of 8 radio-observatories across 4 continents over 2 years and shows M87* to have an enormous mass of about 6.5 billion Suns – a truly supermassive black hole. The image resembles a circular void surrounded by a lopsided ring of light which shows the black hole as a silhouette. Further analysis of the imaging data shows the brightness flickering over time [16], which is likely due to M87* shredding and consuming nearby matter heated to billions of degrees as it gyrates through intense magnetic fields before it plunges over the event horizon and is finally consumed. Also in 2020, LIGO detected a strong gravitational wave signature consistent with the merger of two black holes of 85 and 66 times the mass of the Sun [17] – described by the one of the scientists on the team as 'mindboggling'! Recognition of the scientific theory and proof of the existence of black holes came to fruition with the award of the Nobel prize in Physics to three scientists, including Sir Roger Penrose in October 2020.

We have indeed come a very long way since 1783 and there is no doubt more excitement to come from this captivating subject in future.

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