

UiO : **Faculty of Law**
University of Oslo

The Parasite Stress Hypothesis of Human Rights

Candidate number: 8004

Submission deadline: 16th of August, 2021

Number of words: 19912



Acknowledgements

First and foremost, I would like to thank Professor Peris Jones for encouraging me to pursue such an unconventional topic and for his unwavering support throughout the entire writing process.

I would like to thank my family, my father, mother, and brother, for their support throughout these unprecedented times. Their love and support has always made life's challenges surmountable.

I would like to thank my best friend Lucas for his ability to answer any question about any topic, at any time of day. Our endless discussions about anything and everything has inspired me to think more deeply about the world.

Most of all, I want to thank my partner, wife, and the love of my life. Thank you for inspiring me to aim higher each day for the past ten years. You have brought laughter, life and joy to my life and for that I am eternally grateful.

Table of Contents

<i>Acknowledgements</i>	1
<i>Table of Contents</i>	2
1. Introduction	4
1.1. Research Statement	5
1.2. Aims and Purpose	6
1.3. Research Questions.....	6
2. Methodology	8
2.1. Research Process	9
2.2. Statistical Validity and Causation	10
3. What are Human Rights?	12
3.1. Human Rights: Common Threads	13
3.2. Human Rights: “Root Causes” and “Stem Causes”	18
4. Pathogen Prevalence and the Parasite Stress Theory of Values	20
5. Human Rights and the Natural Sciences: Literature Review	23
5.1. Grounding Rights in Biology	24
5.2. Grounding Human Rights in the Brain.....	29
5.3. The Genetic Grounding of Rights.....	30
5.4. Summary	34
6. The Behavioral Immune System and the Parasite Stress Hypothesis of Human Rights ...36	
6.1. The Smoke Detector Principle	39
6.2. The Functional Flexibility Principle.....	40
6.3. Pathogens and Behavioral Kinds	42
6.4. Parasite Stress Theory of Values.....	44
6.5. Pathogens and Collectivism in History.....	47
6.6. The Parasite Stress Hypothesis of Human Rights	49
6.7. Covid-19: A Natural Test.....	50
6.8. Summary	53
7. Cross-national connections: Empirical data	55
7.1. Study 1	56

7.2. Study 2	58
7.3. Study 3	59
7.4. Study 4	60
7.5. Discussion.....	62
7.6 The Parasite Stress Model of Human Rights:.....	65
8. <i>The Rise of Human Rights</i>	67
8.1. The Conceptual Emergence of Human Rights	68
8.2. Cross-national emergence of human rights.....	70
8.3 Redefining human rights.....	74
9. <i>Conclusion</i>	76
<i>Bibliography:</i>	78

1. Introduction

In December of 2019, few could have predicted that the world was at the cusp of a *generation-defining* event. Just four months later, even the most liberal and democratic countries in the world would lockdown, severely restricting the liberties of their citizens. Over a year later, the world finds itself struggling to cope with COVID-19, an invisible force that has tainted our visions of the future with uncertainty. COVID-19 is caused by a pathogen (SARS-CoV-2), a parasitic or infectious organism that causes disease. Once invisible, pathogens were thought to be caused by ghosts and spirits, bearing death and misery upon societies through disease. We now know that infectious diseases are caused by bacteria, viruses and helminths, the microscope liberating us from the hitherto supernatural force. Despite such advances, pathogens remain a leading cause of human mortality globally, killing over ten million persons per year and accounting for 51 percent of years of life lost.¹ Moreover, pathogens are the single most significant ecological force on the human genome, as genes associated with immunity exhibit greater regional variation than genes associated with 13 other of the most impactful ecological variables.² With COVID, we have seen that biology can have profound and rapid effects on the status of human rights globally.³⁴ To what extent then is human biology a hitherto understated influence upon human rights? A major aim of this thesis is to show that there is a need to investigate the various layers of grounding and causality from which human rights emerge. This means integrating perspectives from biology, ecology, the social sciences, philosophy, law, *et cetera*, to create a holistic explanatory model or framework.

While pathogens represent an invisible driver of human evolution, human rights represent an invisible driver of social progress. The fervent passion that surrounds human rights discourse

¹ Dunn et al. (2010).

² Fumagalli et al. (2011).

³ World Health Organization. (2020).

⁴ Sekalala et al. (2020).

believes the difficulty of understanding its fundamental nature. Some have taken the lack of agreement and the *hidden* nature of human rights to imply their non-existence, akin to witches or ghosts.⁵ Others have argued that human rights are justified by some deeper concepts like natural rights.⁶ Some have even tried to justify the existence of human rights by appealing to certain functions in international politics.⁷ This has led to a bifurcation between those who take the meaning of human rights for granted and act in accordance with such implicit meanings — e.g. human rights activists — and those who question the very concept of human rights itself. This thesis hopes to make progress on both fronts by approaching the obscurity through an analysis of human nature. Surely, progress can be made in the study of human rights by better understanding what it means to be human. This — it is argued — will bolster the common-sense conception of human rights but can also contribute to the contested academic literature on the grounds and causes of human rights.

1.1. Research Statement

This thesis will focus on pathogens and their effect on human rights. Human beings and human societies have responded to the ecological pressure of pathogens with biological adaptations that have evolved to inoculate them from the evolutionary consequences of disease. The thesis identifies a connection between the activation of a kind of adaptation — the behavioral immune system — and human rights. Under the activation of this ancient motivational system, humans are more likely to prefer values associated with protection from disease than values consistent with human rights.⁸ At the same time, when the system is dormant there is pressure to uphold human rights as they confer several advantages, of which economic development is one.⁹ *Pathogen prevalence* is a measure of the degree to which pathogens are present in human hosts in

⁵ MacIntyre (2013).

⁶ Donnelly (1982).

⁷ Baynes (2009).

⁸ Thornhill & Fincher (2014).

⁹ Ibid.

a given country or region. What if human rights are causally dependent on pathogen prevalence? As a possible root cause of human rights, it has the potential to provide a novel framework that helps explain cross-national differences in human rights violations, the cross-national differences in levels of respect for human rights and the very recent historical emergence of human rights.

1.2. Aims and Purpose

This thesis aims to develop a novel and interdisciplinary approach to the analysis of human rights. I was inspired by the conceptual development of intergenerational equity in international law. It represented a fundamental shift in how human rights are approached, from a retroactive perspective to a proactive one; wherein current phenomena have relevance to the upholding of human rights for future generations.¹⁰ It also signals a novel connection between human rights and the natural world, a connection that is often taken for granted or overlooked.

My goal is to create a model that predicts human rights violations via fundamental variables like pathogen prevalence in real-time. I believe that the next step for the human rights movement is to move beyond retroactivity and to take positive predictive steps in addressing future rights violations. It is a shame that there are models predicting outcomes in financial markets and the weather but no models that predict the violation of our most fundamental rights. Moreover, I see predictive modelling as an important tool for the international community in the coming years. Not only could it help model human rights trajectories but it can also be used to create strategic action plans that protect individuals and peoples at risk of having their rights violated. Lastly, by using predictive multi-disciplinary approaches to human rights, the human rights movement can begin championing the most *effective* long-term strategies for the protection of human rights globally. By integrating the natural sciences and psychology into the study of human rights, we can begin to inch toward such a future.

1.3. Research Questions

¹⁰ Weiss (2008).

In marking a novel bridge between the natural sciences and human rights studies, the thesis responds to the following research questions:

- (1) Why are there cross-national differences in human rights?
- (2) Can disease prevalence help explain cross-national differences in human rights?
- (3) Is there empirical data that validates the connection between disease prevalence and human rights?
- (4) What bearing, if any, does a biologically informed approach have on our understanding of the concept of human rights and the historical development of human rights?

2. Methodology

We are encouraged, as a part of the MPhil program, to explore interdisciplinary linkages between human rights and various other fields of academic inquiry. We are taught perspectives from philosophy, political science, anthropology, law, and how they all contribute to providing a more complete picture of what human rights *are*. Taking this premise to heart, I considered it logical to look at other fields of study as possible sources for inspiration and perspective. From the 1980's onward, there has been a steady increase in the use of evolutionary models to explain a broad range of human behavior.¹¹ Assuming that human rights are in some sense a product of human behavior, I wondered whether an evolutionary perspective could help explain the many unresolved conceptual puzzles related to human rights. Having a temperamental bias toward nurture over nature, I began to scour the literature on *human behavioral ecology* to investigate whether it had any possible connections to human rights. Such an approach emphasizes the role of environmental factors on human behavior, which the literature showed to be intimately connected. Again, because there is a behavioral element to human rights, and because human behavior is related to human evolution, I posited that the study of human evolution and ecology could be informative for the study of human rights. Surprisingly, I found it very difficult to obtain publications on the connection between human rights and the natural sciences.

By addressing this unexplored territory, human rights can be grounded within a broader and more sophisticated framework, providing new linkages that help elucidate conceptual disagreements and misunderstandings. I am not motivated by a wish to disprove current theories or to show their weaknesses, but rather to see how an empirical approach can improve upon and develop them. It is hoped that this thesis, as an initial exploration, can show the value of openness and intellectual curiosity and can inspire further investigation into the foundations of our most fundamental rights. In sum, this thesis represents an attempt to use science to improve philosophy and social science not to fully supplant or negate it.

¹¹ Laland and Brown (2011).

2.1. Research Process

A systematic review of the current literature on the behavioral immune system was conducted using the google scholar search engine. Over fifty articles were examined on the relationship between parasitic infections and human behavior. I also conducted an extensive study of the biological immune system and the nature of pathogens to better understand the mechanistic foundation of disease. Over 100 articles were then examined on social behaviors associated with parasitic infection (e.g. disgust, mate preference, openness, authoritarianism, collectivism, individualism, etc.). This was undertaken to ensure that the research linking pathogen prevalence to human behavior was consistent with the broader literature on those behaviors. I made every attempt possible to (a) look at the broader body of literature to ensure an understanding of the nuances in the domain, (b) only use well-cited¹² articles published in top journals such that the overall argument of this thesis would not be built on a foundation of sand, and (c) not to make claims beyond a reasonable interpretation of the current literature. I chose to focus on a handful of articles that were most relevant to human rights and observed a gap in the literature concerning the connection between pathogen prevalence and human rights. I found one study that used cross-national measures of property rights as an implied measure of authoritarianism¹³, and one study that used cross-national data on human freedom (Freedom House and Human Freedom Index) as measures of democracy.¹⁴ No studies were found that studied the relationship between pathogen prevalence and human rights *specifically*.

I reasoned that a correlational study was needed, with cross-national measures of pathogen prevalence as the independent variable and cross-national human rights measures as the dependent variable. A correlational study was the best option for the following reasons: (i) it is consistent with the standard methodology used in other studies that connect pathogen prevalence with other social phenomena, (ii) human rights are exceptionally well suited for correlational research because the data is categorized by country (iii) there is accurate cross-national data on pathogen

¹² Papers cited with less than ten citations are very recent publications (i.e. 2020-21).

¹³ Murray et al. (2013).

¹⁴ Thornhill & Fincher. (2014: 81).

prevalence, (iv) and I lack the competence and training in conducting other forms of research (e.g. ethnographic studies, surveys, psychometric questionnaires, interviews, laboratory studies, randomized control trials, *et cetera*). I chose to test several kinds of human rights, from violations of fundamental human rights — e.g. right not to be tortured, right to life — to a broader basket of rights, as this would help shed light on nuances in the relationship and because it addresses the fact that human rights are plural.

2.2. Statistical Validity and Causation

Correlation is a necessary but not sufficient condition for causality. A causal inference can be made under the following conditions: (a) there is a statistically significant relationship between variables, (b) the prior (temporally) variable is causal, (c) there are no other factors that could account for the relationship.¹⁵ Correlation studies can satisfy condition (a) but not condition (c). Condition (b) is difficult to fully satisfy but can be shown beyond a reasonable doubt using correlation.

Since causative inference cannot be derived from correlational data alone, and because it is impossible to conduct a randomized control trial on the cross-national relationship between pathogen prevalence and human rights, the results would have to be situated within a broader theoretical framework, which is standard practice in the social sciences.¹⁶ Theoretical models are initially developed and tested on various datasets and as they become more precise and more data accumulates, the degree of belief in the veracity of the relationship increases. For example, the relationship between smoking cigarettes and lung cancer was initially only correlational, but a sufficient body of literature has emerged presenting the causal mechanisms that explain the correlation. This body of literature is robust enough to satisfy the hypothesis that cigarette smoking can be causative for lung cancer.¹⁷

¹⁵ Gangl (2010).

¹⁶ Brady (2008).

¹⁷ Hecht (2012).

It is clearly beyond the scope of this thesis to provide enough data for causative inference. I have developed some preliminary causal models that will hopefully lead to further research on the relationship between human rights and the behavioral immune system. Acknowledging that the work done in this thesis is itself insufficient for causal inference, I decided to use historical analysis to give a more intuitively satisfactory account of the relationship between historical disease prevalence and human rights.

Historically relevant developments were used to animate the connection between parasitic stress and human rights. For something X to be causal of something Y, requires that Y does not occur in the absence of X.¹⁸ That is, X must be counterfactually related to Y. Counterfactual analysis was used to analyze the causal efficacy of parasitic stress on the status of human rights in different countries. The researcher reasoned that the establishment of human rights as they are presently understood and applied in international human rights law are subject to certain logical parameters. They are temporally confined to the period post-1948 with the adoption of the UDHR at the UN and subsequent treaties and covenants. They are also conceptualized as a response to the horrors of World War Two, specifically the atrocities perpetrated by the German Reich. Fascism can therefore be counterfactually linked to the rise of human rights, and if fascism is connected to pathogen prevalence, then pathogen prevalence plays a role in the historical emergence of human rights. This, the researcher argues, raises tremendous interest in the connection between human rights and pathogen prevalence, strengthened the possibility of a causal connection.

¹⁸ Sobel (2000).

3. What are Human Rights?

Most dissertations and theses begin by defining human rights as rights possessed by all individuals simply in virtue of being human. This definition has become so deeply embedded in the literature on human rights that its veracity is often taken for granted. The truth, however, is that no one *knows precisely* what human rights are. In fact, no one knows whether they are many different things, one coherent core concept or a mere fiction. This is due, in part, to the difficulty of grounding human rights on a coherent foundation. Complex arguments attempt to reduce human rights to rationality, to a higher power like God, to metaphysically real but physically detached platonic realms, to political functions in the international domain, and so on and so forth. Even though these arguments are complex and intricate, they have failed to inspire agreement over the concept of human rights. Instead, they have led to a seemingly never-ending discussion and contestation among scholars. Despite this puzzling fact, there is a strong intuitive sense that human rights are important, that they are necessary, and that all persons have them. This deep intuitive sense has made human rights the *lingua franca* of injustice at the international level,¹⁹ with the term serving as a buzzword whenever a morally repugnant political regime needs to be singled out. Moreover, human rights have achieved status as customary international law,²⁰ with the Universal Declaration of Human Rights serving as the conceptual bedrock of the international legal tradition. This shows that there is a coherent and unified way in which human rights are operationalized in non-academic settings.

Using Rawls's terminology,²¹ there is a *conception* of human rights that has become entrenched at the international level and whose content is generally agreed upon, while the *concept* of human rights is currently indeterminate. This strange bifurcation warrants explanation. Why are human rights so ubiquitous and yet so conceptually enigmatic? Is there a difference between the general content of human rights — i.e., how they are commonly understood and applied — and what human rights *actually* are in a deeper metaphysical sense? How can there be disagreement

¹⁹ Tasioulas (2007: 76).

²⁰ Lillich (1995).

²¹ Rawls (2009).

over the social effects of human rights if we don't fully know what they are? And why has there been so little progress on the foundational concept of human rights?

To answer these questions, four important conditions will be proposed that must be satisfied for any adequate theory of human rights: (i) the theory must ground human rights on a framework that is more fundamental to and more complex than the human rights framework itself (ii) the theory must explain the historical emergence of human rights — i.e. must address causality and must be realistic (iii) the theory must explain why human rights have a sense of depth — e.g. why they *feel* universal — and (iv) the theory must shed light on the current ontological and epistemic disagreement over the concept of human rights. This section will give a general conceptual outline of human rights, which will serve as the foundation for a hypothesis of human rights that will be developed in the following sections.

3.1. Human Rights: Common Threads

Broadly speaking, there are two schools of thought when it comes to human rights. One is naturalistic, appealing to human nature for justification; the other is political, appealing to the function of human rights in the international arena. These two camps disagree fundamentally over what human rights *are* and often over what particular rights can be characterized as such. They need not necessarily disagree over what rights are human rights as they may end up with similar lists but they will disagree about how their respective lists are justified. Despite this contestation, there are certain key features of the concept of human rights that are commonly agreed upon and that are useful to spell out. Firstly, human rights are a particular *kind* of right, belonging to the general category of rights. Secondly, human rights are plural: there are many of them. Third, human rights are universal and applicable to all living persons and are not dependent on any specific political, cultural or social context. Lastly, human rights have high priority.²²

That human rights *are* rights, is not controversial. Rights are intrinsic to human rights, i.e. any particular human right is not a human right if it is not also a right simpliciter. They are

²² Nickel (2019).

categorically connected just as fish filet is connected to fish. Thus, any conception of human rights that negates their categorization as rights is *prima facie* unsatisfactory. Generally speaking, rights are:

entitlements (not) to perform certain actions, or (not) to be in certain states; or entitlements that others (not) perform certain actions or (not) be in certain states.²³

Rights imply duties because human beings are not isolated from one another. The interaction of one rights holder with another, together with the need to uphold the rights of both require that individual rights holders have a duty to respect the rights of others. Without duties, there is a sense in which rights cease to be in a socially connected world. Human rights are a particular kind of right that are unique to human persons and are therefore dependent on conceptions of personhood. Thus, human rights are rights that belong to a particular category of beings. The opposite is true, with things that fall outside that category not having such rights. Colin Wilson has human rights because he is a human person, while a duck does not have human rights because it is not a human person. This is simple enough, but it becomes more challenging once we investigate the meaning of the term human person.

Defining personhood, as it turns out, is philosophically challenging²⁴ — e.g. whether it is determined by the capacity to reason and on linguistic ability²⁵ or whether personhood extends temporally. The way one chooses to define human rights will have bearing upon what objects have human rights. For example, if a computer can reason in a manner sufficiently similar to human persons, and if personhood is defined solely on the basis of this capacity, then computers are persons and have human rights. However, ascribing human rights to a computer, even an advanced one that can reason in a manner far exceeding the capacity of any human, seems intuitively inappropriate. A functional definition of human rights seems inadequate when it contradicts our

²³ Wenar (2021).

²⁴ Parfit (1984).

²⁵ Nussbaum (1997).

intuitions about human rights. There is something unique about human experience and of being a human being that makes rights attribution warranted only under very stringent conditions.

Another view, and a possible solution to the problem of personhood, would be to anchor the concept in consciousness of a particular kind. By implication, human rights would be possessed by all beings that have consciousness to a degree sufficient for personhood. This approach is promising, but we know very little about consciousness²⁶ itself and even less about what entities other than human beings possess it and to what degree.

Some have responded to these challenges by introducing new terms like *sentience* instead of concepts like reason.²⁷ Under this view, all beings that have awareness of feelings and sensations have rights. Hence, if animals are sentient, then they have rights. And if human beings and animals share sentience, then it is arbitrary to ascribe different types of rights to humans than animals. By implication, human rights and animal rights ought to share many similarities given that they are justified on the same grounds. Although this approach is interesting, its exceedingly broad scope is unhelpful for the unique class of human rights.

The broader, more important point to be made here is that attributing human rights is no trivial matter and that it faces many conceptual complications. It is therefore quite remarkable that there is so little disagreement over the concept in non-philosophical domains. In international law, for example, personhood is defined in terms of agency²⁸, which is an inherent component of more complex legal concepts like *mens rea*. Human agency is therefore presupposed *a priori* in most legal systems, unless an individual is significantly impaired in some relevant manner — e.g. has damage to certain brain regions or is behaviorally affected by a substance or illness. Moreover, the “dominant tradition has typically grounded rights in the possession of rationality and language, thus implying that non-human animals do not have them.”²⁹ There is agreement over the legal

²⁶ Chalmers (1996).

²⁷ Singer (1995).

²⁸ Griffin (2001).

²⁹ Nussbaum (1997).

conception of human rights in international law and hence agreement over what objects have human rights precisely because it is a continuation of this dominant tradition.

Agency can be derived from an individual's ability to reason, which is expressed through language. Reason is perhaps an unfortunate term here, for it overshadows a more important concept: free will. Reasoning allows an individual to formulate future possibilities — e.g. if I meditate consistently, then I can become more zen. The individual can then choose to act upon these reasoned outcomes freely, or so it is implicitly believed. Without this belief, there would be no distinction between a person acting under normal circumstances and one acting under duress or under influences that undermine their free will. Appeal to language is then made because we know of free will (or believe we do) through an ability to communicate this faculty to others. Other beings lack this faculty and we have therefore been unable to verify whether they do indeed possess it.

Lastly, free will is necessary for a robust conception of rights, as duties become meaningless without it. One person's duty to uphold another person's rights only makes sense if that person can choose to uphold that duty. In sum, free will is taken to be self-evidently true of human rights which helps explain why there is little disagreement over it in non-philosophical domains. Without free will, it is difficult to see the point of legislating against human rights violations, after-all it would mean that there is nothing that can be done about it. Free will is the implicit medium through which we attempt to reduce bad outcomes in the future and the assumption that it exists is of central importance for human rights.

Returning to the broad features over which there is near universal agreement, plurality seems to be a central feature of human rights. Even more minimal conceptions of human rights that ground them in Lockean natural rights generally accept more than one right, i.e. life, liberty, and property. There is an ongoing debate over how many such rights there are³⁰ and whether or why specific rights exceed acceptable boundaries.³¹ But such demarcation problems go beyond a

³⁰ Brems (2009).

³¹ Griffin (2001).

single human right. The claim that there is only one human right is generally thought of as excessively revisionist and is far too divorced from the ordinary language usage of human rights to be up to par.

Agreement over the absolute character of human rights is nearly universal and is generally accepted as a fundamental feature. That they are absolute means that they apply to all human beings and cannot be revoked under any circumstances. Some argue that human rights are not absolute because certain utilitarian cases wherein killing or torturing one person saves many other persons are morally justified.³² These cases and views aside, there is consensus about the claim that human rights cannot be taken away from persons under any circumstances.

Lastly, it is generally agreed that human rights have high priority and that they are important. They would not be the *lingua franca* of state transgression if it were not so. Some push-back may be given by pointing out that certain regions have not historically been so interested in human rights and have not given them high priority.³³ But by-and-large, that human rights are important is agreed upon. As has been discussed, these key features of human rights, over which there is general agreement, still manifest disagreement to some degree. This disagreement is most often associated with philosophical debates over the concept in which the fundamental axioms of human rights are questioned. On the other hand, these axioms are taken to be self-evidently true in international law and in more common discourse about human rights.

Reframing these different conceptions as *hypotheses* about human rights may be helpful. This allows for a degree of detachment from any specific view and may allow for a less argumentative approach. If there are various hypotheses about human rights but there is still much disagreement, then it implies that (a) there is a possible lack in the quality of the evidence presented, (b) there are possible methodological problems that explain the lack of progress, (c) it is perfectly reasonable to propose a novel alternative hypothesis that differs from present ones, and (d) empirical testing is one valid way — among many others — of attempting to validate any given hypothesis about human rights. The concept of human rights is challenging, complex and

³² Gewirth (1981).

³³ Engle (1999).

contested. A new unified theory of human rights will be presented in later sections, one that is based on a hypothesis about the connection between it and the natural world.

3.2. Human Rights: “Root Causes” and “Stem Causes”

A notable development for the human rights movement is a move from merely documenting abuses to identifying their “root causes” or “initiating phenomena in a chain of causation.”³⁴ This is motivated by a belief that identifying effective interventions requires an understanding of the root causes that can help bring about significant and lasting change.³⁵ According to Susan Marks such an approach is warranted but has failed to effectively produce its intended effects for three reasons: “in the first place, the investigation of causes is halted too soon. Secondly, effects are treated as though they were causes. And thirdly, causes are identified, only to be set aside.”³⁶ Furthermore:

By ‘halting the investigation of causes too soon’ is meant that the analysis of causes is not taken far enough back. So, for example, attention is directed at abuses, but not at the vulnerabilities that expose people to those abuses. Or there is discussion of vulnerabilities, but not of the conditions that engender and sustain those vulnerabilities. Or the focus is turned to the conditions that engender and sustain vulnerabilities, but not to the larger framework within which those conditions are systematically reproduced.³⁷

Although Marks correctly pushes the chain of causality to the larger framework that causes conditions from which human rights and their abuse emerge, such frameworks are themselves insufficient as root causes. Any social framework from which human rights conditions are reproduced are themselves caused by a set of further conditions, which are more

³⁴ Marks (2011: 60).

³⁵ Ibid.

³⁶ Ibid.: 70.

³⁷ Ibid.: 71.

fundamental than the framework itself. Relying on root causes that are fundamentally social leads to effects being treated as though they were causes and hence would likely lead to causes being set aside. This is because most social causes are in fact effects of more fundamental causes. For example, Marks's own solution to these problems involves re-orienting human rights analysis through the lens of "planned misery" that takes into account "the logic of particular socio-economic arrangements."³⁸ This is a valuable first step and identifying such logics can indeed help explain the manifestation of human rights cross-nationally to some degree. The problem, however, is that it can never *fully* explain why human rights are differentially expressed between nations and regions. A more comprehensive assessment requires a further move to the deeper-rooted set of conditions that cause the logic of those socio-economic arrangements, which cannot themselves be emergent from the socio-economic framework itself, e.g. productive organizational processes.

In an excellent review of the literature on the social scientific causes of human rights abuses, Hafner-Burton identifies conflict and institutions as central.³⁹ She identified these as causes from which violations "stem", as conflict creates vicious cycles of violence that cannot be easily attenuated, while certain institutional systems (e.g. autocratic systems) are more likely to violate human rights.⁴⁰ From a social science perspective, trade policies, investment, aid, sanctions and international law are the key strategies for combating conflict and problematic institutions.⁴¹ Although these strategies may apply to the "stem" of the problem they do not necessarily address the "root" causes and this may help explain why it is so challenging to change governmental attitudes toward human rights.

The central takeaway from the current analysis is that a purely social-scientific approach to human rights cannot identify the most fundamental levels of causality. Social phenomena are themselves grounded in human biology and ecological factors that constrain

³⁸ Ibid.: 75.

³⁹ Hafner-Burton (2014).

⁴⁰ Ibid.

⁴¹ Ibid.

their domain. While the social sciences can identify and evaluate the “stem” or “trunk” of human rights, understanding their genuine “roots” requires the integration of the analysis of more fundamental factors of human behavior. It will later be argued that policy changes at the “root cause” level, will be more impactful than changes at the “stem cause” level.

4. Pathogen Prevalence and the Parasite Stress Theory of Values

Pathogens are any parasitic or infectious organisms that can cause disease — e.g. bacteria, viruses, helminths. For example, SARS-CoV-2 is a pathogen that causes the COVID-19 disease. Pathogen prevalence is a measure of the degree to which pathogens are present in human hosts in a given country or region, while pathogen richness refers to the number of pathogens in a territory or country — i.e. the number of *kinds*.⁴² Prevalence can be measured by infectious disease incidence as it logically implies the presence of a pathogen. Thus, when prevalence is high in a country, there tends to be a higher mortality rate from infectious disease. The main drivers of pathogen prevalence are climate (temperature and precipitation), host richness — i.e. number of species that can be infected by parasites — differences in disease control efforts, and the amount of time a human population has been present in a given region.⁴³ The strongest correlate of pathogen prevalence is disease control effort ($r = 0.69$), indicating that advancements in technology and improvements in organized health initiatives can have dramatic effects on the amount of infectious disease in a country or region.⁴⁴ Such efforts are important because pathogens have significant effects on human well-being.

⁴² Dunn et al. (2010).

⁴³ Ibid.

⁴⁴ Ibid.

As a leading cause of mortality, killing nearly 11 million per year, pathogens affect significant downward pressure on human life as they are “responsible for 51 per cent of years of life lost globally.”⁴⁵ Recent models show the influence pathogens exert on the human genome, having more causal influence than any other factor such as climate, diet and geography.⁴⁶ In fact, genes associated with immunity exhibit greater regional variation than genes associated with 13 other ecological variables.⁴⁷ This primacy results from millions of years⁴⁸ of morbidity and its effects on fitness through natural selection which have profound effects on human physiology. For example, humans can make trillions of antibody molecules⁴⁹, giving an indication as to how complex our immune system is and indicating the long evolutionary history humans have had with pathogens.

When we are exposed to pathogens our immune system accelerates its activity, which can sometimes manifest as a fever⁵⁰ or general inflammation. The inflammatory response can be so intense that it causes death, with the body attacking and breaking down its own tissues and organs — the primary mechanism by which COVID-19 leads to mortality. This is not to say that all bacteria and viruses are harmful. Mitochondria, for example, are ancient bacteria that have symbiotically evolved with human cells, becoming an integral part of human cellular energy production.⁵¹ Moreover, there is an astounding amount of non-human cellular activity in human beings as “the number of bacteria in the body is actually of the same order as the number of human cells, and their total mass is about 0.2 kg.”⁵² Our biological immune system has therefore

⁴⁵ Ibid.

⁴⁶ Fumagalli et al. (2011).

⁴⁷ Ibid.

⁴⁸ Wolfe et al. (2007).

⁴⁹ Alberts et al. (2002).

⁵⁰ Atkins (1960).

⁵¹ Andersson & Kurland (1999).

⁵² Sender, Fuchs, & Milo (2016).

developed selectively, allowing some types of bacteria and viruses to flourish in symbiosis with the human organism, while simultaneously protecting against harmful pathogenic organisms.

Parasite stress is a function of pathogen prevalence and its effects on human populations. The greater the pathogen prevalence in a given region the greater the parasitic stress on the population in that particular region. For example, countries near the equator have — on average — higher incidences of pathogen prevalence than countries further away from it and hence have — on average — higher incidence of parasite stress. The stress induced by parasites leads to a reaction on the part of social groups that is manifested in various ways. For example, it can lead to collectivist cultural values wherein in and out-groups are more clearly defined.⁵³ Such values are an *adaptation* to a particular environment that maximizes the fitness of the social group by conferring immunity against diseases. The parasite stress theory of values and sociality makes this precise claim: that cultural values are fundamentally caused by reactions to parasites as an ecological stressor.⁵⁴ This theory will be extended to human rights, yielding the parasite stress hypothesis of human rights PSHHR. If the PSHHR is sound, then it can be used to explain cross-national differences in human rights, with the variation being at least partly explained by differences in parasitic stress. A more detailed explanation will be given in later sections, after a review of the current literature connecting human rights with the natural sciences.

⁵³ Thornhill, & Fincher (2014).

⁵⁴ Thornhill, R., & Fincher, C. L. (2014).

5. Human Rights and the Natural Sciences: Literature Review

Two important questions will be introduced to frame this section: (i) the grounding question: *what are human rights grounded on?* and (ii) the emergence question: *under what conditions do human rights emerge?* These questions will be used as heuristics for the dissection of the literature on human rights and the natural sciences. They will also help explain why biological explanations of human rights require ecological variables as an additional factor to explain cross-national variation. No published articles on the relationship between pathogen prevalence and human rights were found. Moreover, no articles were found attempting to discover ecological correlates of human rights that may help explain their emergence and future trajectories. One paper⁵⁵ — arguing that religiosity is not antithetical to human rights — briefly mentions that physical integrity rights are associated with geographic regions (the Middle East and North Africa) but does not provide an explanation as to *why* this is the case.⁵⁶

The current literature on human rights and biology is very sparse, with the few existing publications attempting to ground the former in the latter. This can be seen as an attempt to respond to the *grounding question*, answering what the fundamental base of human rights is. Although such attempts are laudable, their solutions fall short in an important respect: they fail to satisfactorily address the *emergence question*. And if a response to the grounding question fails to answer the emergence question, it suffers from a deficit in explanatory value. For example, analyzing the social evolution of homo sapiens and the survival benefits of cooperation does not answer *why* human rights only emerged as a socially entrenched phenomenon in very recent times. By extension, it is difficult to provide a robust explanation of cross-national differences in human rights from such a point of view alone. A more complete theory of human rights will be able to respond to both the grounding and emergence questions.

⁵⁵ Cole & Perrier (2020).

⁵⁶ Cingranelli & Kalmick (2020).

A partial answer for why the current literature lacks such explanatory adequacy is that there are no proposed mechanisms by which ecological variables affect the emergence of human rights. In more colloquial terms, there has been an emphasis on nature over nurture because the fundamental sources of nurture have not yet been discovered. This section will critically evaluate the merits and shortcomings of the scant literature on the connection between human rights and natural science. Whereas the social science approach to human rights is limited because it does not go beyond the social causes of human rights, the current literature on human rights and biology is limited because it does not critically consider the distinction between grounding and causation. Since grounding and causation do differ⁵⁷ and because a causative answer is required to address the emergence question, grounding alone is a necessary but insufficient theoretical lens by which to investigate human rights.

5.1. Grounding Rights in Biology

Edwin Freuhwald proposed a scientifically grounded theory of rights in his article *A Biological Basis of Rights*.⁵⁸ He argues that although rights are of universal import to all societies, previous attempts to ground them — e.g. in God — are unsatisfactory. Rights, Freuhwald argues, can be grounded on mind and culture-dependent anthropogenic truths that are best understood from the lens of an Environment of Evolutionary Adaptedness (EEA).⁵⁹ Under this view the “fundamentals of rights derived from how our brains evolved with the details of rights arising from how a particular culture reacted to how differing geography, ecology, and social conditions affected survival.”⁶⁰ By extension, and given our common evolutionary heritage, rights have a neuro-cognitive universal core, much like how grammar is theorized to have a universal core despite the regional linguistic variation.⁶¹ In more straight forward terms it means that rights are

⁵⁷ Bernstein (2016).

⁵⁸ Fruehwald (2009).

⁵⁹ *Ibid.*: 197.

⁶⁰ *Ibid.*

⁶¹ Chomsky (1986).

deeply rooted cognitive mechanisms whose emergence can be traced back millions of years as adaptations to specific environments.

According to Fruehwald, rights exist because (a) humans are sentient moral beings (b) they keep the social contract together and (c) they prevent violence and increase chances of survival.⁶² He says that these factors “justify” — i.e. ground — the existence of rights. He then goes on to say that rights come from⁶³ (a) the autonomy of humans (b) reciprocal altruism (c) as a solution to certain evolutionary problems (e.g. property rights avoid harm and physical violence) and (d) our innate morality.⁶⁴ These factors have led to a universal grammar of rights⁶⁵ which have in turn led to specific rights like: (1) property rights (2) a right to basic fairness (3) liberty rights and (4) a right to be treated equally. Grounding rights in this way leads to a constrained conception which is difficult to extend to human rights. Although Fruehwald’s fundamental hypothesis that rights are grounded in biology has merit, his attempt to infer the biological causality of rights is not convincing.

For example, the emergence of strong property rights is traced to the Glorious Revolution of 1688,⁶⁶ making them a very recent phenomenon from an evolutionary perspective. None of the factors Fruehwald proposes — e.g. our innate morality — help explain *why* strong property rights emerged only recently. This explanatory gap results from two primary weaknesses in Fruehwald’s reasoning; firstly, he fails to distinguish between partial grounding and full grounding, and secondly, he fails to emphasize the role of non-biological factors in the emergence of rights. Not only does this weaken his account of rights *simpliciter* but it makes it nearly impossible to account for the emergence of *human rights*. It is like trying to explain the emergence of the dachshund without explaining the domestication and selective breeding of wolves. Yes, one can explain the

⁶² Fruehwald, (2009: 213-215).

⁶³ I take this wording to imply causation, making these causative factors of rights.

⁶⁴ Ibid.

⁶⁵ Ibid.: 213.

⁶⁶ Rajan & Zingales (2003).

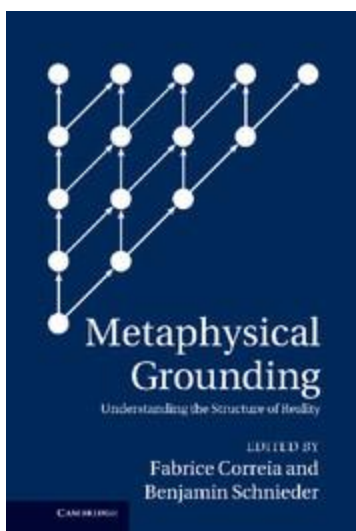
fact that dachshunds prefer to eat meat, that they have a good sense of smell and that they are social by looking at the environment in which wolves evolved, but this does not help to fully explain the unique characteristics of the dachshund. We need both the deep evolutionary antecedents but also the rapid ecological changes in order to make more robust claims. The distinction between full and partial grounding will help in this regard.

Distinguishing between partial and full grounding is important but seldom — if ever — discussed in the human rights literature. Understanding this vital distinction helps explain why grounding human rights have been a generally unfruitful endeavor. Trogdon and Witmer provide a neat summary of the distinction between the two:

Suppose that a collection of one or more facts D grounds some fact A. As a preliminary characterization of the distinction between *partial* and *full* grounding, we can say that D partially grounds A if it *contributes* to explaining A, and D fully grounds A if nothing needs to be added to D to get a fully satisfactory explanation of A. As any ground contributes to explaining what it grounds, any ground is a partial ground. But not every partial ground provides a fully satisfactory explanation of what it grounds, so not every ground is a full ground.⁶⁷

In this case, we can say that biology partially grounds human rights because the former *contributes* to explaining the latter. However, we cannot say that biology fully grounds human rights because it does not provide a fully satisfactory explanation of it. Full grounding is quite a rare relation in the physical world and is more commonly found in logical and mathematical systems: for example, if p and q, then p is a case of full grounding as p is completely explained by p and q.

⁶⁷ Trogdon & Witmer (2021: 1).



The cover of *Metaphysical Grounding*⁶⁸ shows the grounding relation clearly and intuitively. While grounding can be understood in terms of explanation, it can also be understood in terms of fundamentality.⁶⁹ Under this conception of grounding, explaining one phenomenon requires appealing to something more fundamental than the phenomenon itself. By implication, many different things can be grounded in the same base. For example, all biological material is partially grounded in cell biology. Since human beings and other animals are made up of biological material, they are both grounded in cell biology. Thus, cell biology partially grounds human beings and other animals and is *more fundamental* than both. At the same time, neither humans nor other animals can ground cell biology, since they are less fundamental. The upshot of grounding and viewing metaphysical relations in this way is that understanding the more fundamental helps explain the less fundamental and by focusing on the relationship between layers of fundamentality, we can aim to build models that do not contradict the metaphysics of reality. Although this seems to imply a reductionistic account of human rights, the literature on which the thesis relies does not necessarily lead to such a conclusion.

Biological organisms are dependent on the wider non-biological environment in which they are situated. For example, fish are dependent on aquatic ecosystems while lions depend on

⁶⁸ Correia & Schnieder (2012).

⁶⁹ Schaffer (2016).

terrestrial ecosystems. Human rights, insofar as they are grounded in human biology, are also grounded in non-biological ecological factors, and hence are only partially grounded in biology. Among non-biological ecological factors temperature, latitude, humidity, pathogen prevalence, soil nutrient status *et cetera*. Although this is not necessarily inconsistent with Fruehwalds views, failing to emphasize this distinction between partial and full grounding may explain why he did not extend his account to human rights.

While grounding links the world across levels of fundamentality, causation links the world across time.⁷⁰ For example, the human brain is composed of neural cells, which are in turn composed of atoms, which are in turn are composed of quarks. We can say that the quarks ground the human brain (because of transitivity). However, quarks do not cause the human brain, just as the parts of a car do not cause a car or parts of a tree does not cause a tree.

The causal explanation of any brain requires temporal antecedents. For example, sexual reproduction (fusion of gametes) causes rapid mitosis (cell division) which causes cell differentiation and proliferation to form a human brain. By analogy, the emergence of human rights cannot be explained by an appeal to biological grounding alone but rather require biological and other *causation*. This means that a comprehensive account of human rights requires a broad spectrum of grounds that underlie the causal chain from which human rights emerge.

Despite these weaknesses, Fruehwald's fundamental insight — that rights are partially grounded in biology — is important and this thesis aims to build on it. This thesis will go a step further by arguing that *human rights* are partially grounded in biology and in ecology and that these factors play a *causative* role in the emergence of human rights. This, it is hoped, will satisfy both the grounding and emergence questions.

⁷⁰ Schaffer (2012).

5.2. Grounding Human Rights in the Brain

Gibbons and Skinner⁷¹ attempt to ground human rights on biology. Their argument is as follows:

1. Brains cause minds.
2. Minds cause wills.
3. Wills cause undertakings.
4. Undertakings cause risks.
5. Risks cause duties.
6. Duties cause rights.
7. Rights cause law.

The problem with this argument, especially in its current form, is that it makes it seem like rights are fully caused by brains (through the law of transitivity). However, and as was argued previously, human biology — which the brain belongs categorically to — does not fully ground rights. Moreover, human biology does not fully cause rights either. Thus, although a weakened version of the argument — that rights are partially caused by brains — is sound, the strong version is explanatorily inadequate. Again, it fails to address both the grounding and the emergence questions.

More problematically, the strong version of the argument — that brains fully cause rights — can be knocked down at step one of the argument. The authors acknowledge that “if minds are caused by things outside the brain, law is grounded on them, not on the brain.”⁷² They do so in order to appeal to the notion that law and hence rights ought to be grounded on the brain. This presupposes a very constrained understanding of grounding — i.e. that grounding = full grounding. Rights can be both grounded on the brain and on other things with a more sophisticated conception of grounding. Moreover, the contents of the mind are themselves functionally grounded in a variety

⁷¹ Gibbons & Skinner (2003).

⁷² Ibid.

of outside factors like notebooks and the internet.⁷³ This means that brains are a higher-level ground, themselves dependent on more fundamental grounds.

The idea that a “jurisprudence grounded in human biology avoids this trap by presupposing that brains cause minds and that we need look no further for the ultimate sources of law”⁷⁴ is therefore only partially true. Unfortunately, since such an effort suffers from excessive reductionism, it only helps explain a partial connection between rights and the complex systems it emerges from. Most crucially for the purposes of this thesis, it does not help explain why there are cross-national differences in human rights, or even why human rights have emerged at a particular time in history.

5.3. The Genetic Grounding of Rights

So far, grounding human rights in biology was thought to be appropriate insofar as a distinction is acknowledged between full and partial grounding. The same can be said for attempts to ground human rights in the human brain. Another possibility is to attempt to ground human rights in the human genome. This strategy is based on the idea that human rights are functionally necessary for mitigating human violence⁷⁵ because violence is a universal trait that may have a genetic foundation.⁷⁶ It may imply the reduction of human rights to specific gene-environment interactions, leaving out much of the current human rights discourse.

David Keane believes that there is a potential link between natural rights and natural selection, as the concept of nature has played a significant role in the “philosophical foundations of international legal norms of rights and responsibilities.”⁷⁷ Furthermore, he believes that “it is

⁷³ Clark & Chalmers (1998).

⁷⁴ Gibbons & Skinner (2003).

⁷⁵ Robinson (2013).

⁷⁶ *Ibid.*: 58.

⁷⁷ Keane (2010).

inevitable that human rights, with its focus on individual protection mirroring the ascent of the individual and subsequently the gene as the unit of natural selection, will become a focused subject of evolutionary biology.”⁷⁸ Put differently, human rights will be studied from an evolutionary perspective because they are justified on natural grounds and because the “natural” belongs to the domain of natural science. At the same time, Keane argues that the implications of genetic research will continue to need legal and human rights perspectives as modes of criticism.⁷⁹ More specifically, he argues that socio-cultural conditions, power relations and structures of inequality are all important domains that mark the limits of what natural science can independently investigate. Fundamentally, Keane believes that there will be more interconnectedness between the natural sciences and human rights, vis-a-vis the mutual appeal to nature. This is likely correct and is consistent with this master’s thesis. At the same time, there are important issues that Keane does not address.

Is it possible that human rights are grounded in genes and if so, in what ways? If human rights do indeed have a genetic basis, what ethical dilemmas does it lead to? For example, explaining the emergence of human rights due to *genetic mutations* implies that human rights only emerge in certain populations. The corollary, that human rights do not emerge in some populations because they lack the specific genes would challenge many core human values. This would also question the *universality* of human rights in an important way, as it would imply that they are *gene dependent* and hence context dependent.

A remarkable study by Chiao and Blizinsky found that the short (S) serotonin transporter functional polymorphism (5-HTTLPR) was significantly more likely to be expressed in collectivist than individualist cultures.⁸⁰ S allele⁸¹ carriers are at greater risk for depression as a result of

⁷⁸ Ibid.

⁷⁹ Ibid.

⁸⁰ Chiao & Blizinsky (2010).

⁸¹ Alleles are specific forms that genes take, while genes are DNA sequences that determine phenotypic expression (traits). Genes are constituted of two alleles, with the dominant allele being expressed as a trait. For example, there is a gene for hair colour, and alleles for brown hair, blonde hair, red hair etc. Humans receive one allele from each parent, with the dominant allele

chronic life stress (e.g. interpersonal conflict) than long (L) allele carriers. Moreover, the L allele is associated with cognitive biases like openness, creative thinking and more risk-taking behavior, which are in turn associated with increased self-expression and autonomy.^{82,83} Paradoxically, the increased frequency of the S allele in nations and regions is associated with a lower incidence of depression. This is due, in part, to the fact that the S allele is more common in collectivist cultures that promote norms that “increase social harmony and encourage giving social support to others”.⁸⁴ From this, Chiao and Blizinsky infer that collectivism serves an *anti-psychopathology* function against the disposition to depression of S allele carriers.⁸⁵ Collectivism is therefore an *adaptive behavior*, which may serve the dual-function of pathogen avoidance and anti-psychopathology in populations that are susceptible to both.

Since collectivism is negatively associated with rights⁸⁶ and if the aforementioned genetic connections are sound, then there is a sense in which human rights are genetic to some degree. Does this mean that human rights can only emerge in some societies and not others? The answer, as far as the current data suggests, is both yes and no. Yes, because the combination of strong ecological variables like pathogen prevalence together with the expression of the S allele exerts significant downward pressure on the emergence of individualistic traits. And not because the association between the S allele and collectivism is only 70%, while the S allele is still expressed at 40-45% in individualist cultures.⁸⁷ Furthermore, it means that (a) both collectivist and individualist cultures have the same alleles that are expressed to differing degrees, (b) there is

(e.g. brown hair) being expressed. In the same way, the short short (5-HTTLPR) is one of two alleles (the other being long) that is differentially expressed (e.g. more often collectivist cultures).

⁸² Chiao & Blizinsky (2010: 535).

⁸³ Isen et al. (1987).

⁸⁴ Chiao & Blizinsky (2010: 534).

⁸⁵ Chiao & Blizinsky (2010: 534).

⁸⁶ Oyserman et al. (2002).

⁸⁷ Chiao & Blizinsky (2010: 530).

likely a tipping point at which the expression of either the L or S allele has a causal influence on social structure — e.g. if the S allele exceeds sixty percent of the population — and (c) ecological or other changes can lead to the suppression of the S allele and hence lead to greater individualism at the population level.

That the expression of the alleles can change is logically inferred from the fact that they are present in all societies and are dependent on mate choice. Ecological changes can drive changes in mating preference⁸⁸ and the expression of the alleles are therefore not fixed. Moreover, although the associations between genes and individualism-collectivism are striking, there are many other gene-environment interactions that play important roles in the emergence of human rights. It is unlikely that the expression of one allele or the suppression of another can explain both attitudes toward and the emergence of human rights globally. Thus, the current data suggests that there is nothing genetically *exceptional* — to the degree that the differences are insurmountable — about societies that have high human rights standards. This also means that there is no genetic barrier to entry to human rights since societies have very similar genetic grounding. This and related problems will be discussed in further detail in the coming sections.

Keane does not address the problem of genetic mutations, but instead argues that the “universality of rights and the universality of genes may implicate the two” and that there is “evidence of behaviour which corresponds to rights in all human societies.”⁸⁹ Although moral behavior associated with rights *simpliciter* is universal as Keane argues⁹⁰, human rights \neq rights *simpliciter* and are instead a locally emergent phenomenon — i.e. have emerged from and have become entrenched in the West.⁹¹ A universal genetic basis of human rights would not be able to account for this geographical difference in purely genetic terms. Luckily, ecological variables play an important role in the emergence of complex social phenomena and we need not look at genetic

⁸⁸ Cronk (1991).

⁸⁹ Keane (2010: 471).

⁹⁰ He refers to altruism, cooperation, and a sense of fairness as universal human traits (ibid.: 482-488).

⁹¹ Pollis et al. (2006).

differences in order to study human rights. The claims of this thesis are in fact consistent with the view that human rights are universally emergent from the human genome and not emergent from genetic differentiation. This is because, as will be argued in detail, human rights are grounded in and causally related to many variables (both genetic and ecological), with the ecological effects having the most explanatory power. This thesis will therefore not be fundamentally concerned with the degree to which human rights are grounded in genetics and cross-national differences will be evaluated without reference to such grounds.

5.4. Summary

This section gave an overview of the current literature on human rights and biology. Fruehwald's article was shown to provide an important connection between biology and the study of rights by attempting to ground the latter in the former. It was argued that Fruehwald's thesis is insightful but that it fails to critically address the important role of ecological factors on the emergence of rights. This makes it nearly impossible to extend his observation to more complex rights, a class to which human rights belong.

Gibbons and Skinner's attempt to ground human rights in the human brain is an important contribution as it identifies a connection with explanatory significance. The problem with this approach is that human rights are not only grounded in the brain, but in many other things as well. It is helpful to investigate the relationship between human rights and the human brain but a more complete understanding of human rights will have to go beyond it.

Finally, Keane's article discussed the possibility of grounding human rights in the human genome. Although some current research suggests a genetic basis of human rights, it was argued that the genome only plays a partial role in its formation. Moreover, there are important aspects of human rights that cannot be reduced to human biology and hence, a purely scientific approach does not represent the summit of human rights studies. So not only are there — as Keane notes — ethical, moral and legal domains of human rights that cannot be analyzed purely in terms of gene informed scientific analysis, a gene-based approach may be less fruitful than an ecologically oriented one.

The current literature, it was argued, makes some important initial observations. However, a more fully developed and more interdisciplinarily integrated body of literature is needed. In other words, there is a clear research gap in this domain. A new non-reductionistic path is required, one that assumes that human rights are grounded in multiple domains and that it has a multitude of causal factors. This would lead to a more integrated understanding of human rights, for which both the natural and social sciences can make important contributions. The next section will tackle important questions related to the connection between human rights and biology and a framework will be developed that allows for a novel reanalysis of human rights through a human behavioral ecology perspective.

6. The Behavioral Immune System and the Parasite Stress Hypothesis of Human Rights

While pathogens have played a significant role in the biological development of human beings, they have also had a significant influence on contemporary human behavior. This behavior is influenced by ancient motivational systems like the need for self-protection or the acquisition of mates, which have evolved over millions of years. They are “activated by perceptual and inferential cues; and, when activated, they have implications for many different kinds of social psychological phenomena.”⁹² We have only recently come to understand these systems from a scientific point of view, seeing them as emergent from our evolutionary past. Science has, in this regard, replaced esoteric or occult explanations which were the dominant traditions throughout human history.

One such motivational system is the *behavioral immune system* — henceforth BIS — which helps detect the presence of parasites and prevents contact with them, leading to changes in social cognition and social behavior.⁹³ This system has developed to complement the biological immune system and to create an additional buffer against parasitic threats. The BIS is postulated to have emerged as a result of the limitations of the biological immune system. As an added line of defense, it confers a benefit because the biological immune response is *metabolically costly*: leading to an estimated 13% increase in metabolic activity, is *temporarily debilitating*: as fevers impede normal physical functioning and is *reactive*: being instantiated only after the infection has occurred.⁹⁴ Pre-emptive behaviors that avoid infection are a cost-effective first line of defense, complementing the limitations of the biological immune system. The behavioral immune system

⁹² Ibid.

⁹³ Murray & Schaller (2016).

⁹⁴ Murray & Schaller (2016).

can be thought of as a moat that protects the castle, while the biological immune system is the army inside the castle.

The activation of the BIS is associated with the affective experience of disgust.⁹⁵ That is, there is a tendency for individuals to report feelings of disgust when exposed to cues that imply a risk of infection. Most pathogens cannot be detected through sight or hearing because of their microscopic size. The BIS is therefore designed to detect infected persons or objects through visual and other cues rather than the pathogens themselves.⁹⁶ The survival cost of a false positive is lower than that of a false negative and since evolution is biased in favor of survival, the BIS can be described as *hypersensitive*.⁹⁷

Behavioral responses are also falsely instantiated in cases where pathogens are not present because the system responds to *inferred* risk vis-a-vis cues that correlate with infection.⁹⁸ In various experiments, disgust is instantiated by objects that are not infected but resemble infected objects (e.g. chocolate fudge shaped like feces, sterilized plastic cockroaches).⁹⁹ These experiments show that perceptual cues are fundamental for the instantiation of the system. As an intuitive example, observe your reaction to the following paintings.¹⁰⁰¹⁰¹

⁹⁵ Schaller (2015).

⁹⁶ Murray & Schaller (2016).

⁹⁷ Schaller & Duncan (2007).

⁹⁸ Murray & Schaller (2016).

⁹⁹ Tybur et al. (2013).

¹⁰⁰ Unknown (1818).

¹⁰¹ Unknown (1819).



For many, the image on the left leads to a visceral reaction and a feeling of disgust or discomfort. Clearly, the image itself is not infected with parasites, but our physiological system responds to it as if it was. To strengthen the intuition, compare your reactions between the images. If our intuitions match, then you will have a different reaction to the image on the right and you will feel like there is a physical difference between the two images. Moreover, the second painting should not instantiate the same feeling of disgust or discomfort that the first image does. In fact, one may feel a sense of relief, especially because the second image depicts the woman in the first image *after* she has been cured of the disease. The feeling of discomfort from the first image signals the activation of the behavioral immune system, which makes the somewhat abstract behavioral immune system more concrete.

In addition to adaptive feelings (i.e., disgust), the BIS also includes cognition (worry about contagion), dispositions (values, interaction) toward in-group and out-group members, and prejudice toward individuals manifesting visual or other cues related to infection.¹⁰² The broad

¹⁰² Thornhill & Fincher (2014).

range of the system leads to an important principle in the study of the relationship between parasitic stress and behavior: the smoke detector principle.¹⁰³

6.1. The Smoke Detector Principle

Smoke detectors are designed to detect a real danger (fire) but can be set off by a number of non-dangerous events. For example, students living in housing provided by SiO in Oslo have complained that the fire alarms are too sensitive and that they are triggered too easily and too often.¹⁰⁴ What is the rationale behind this hypersensitivity? One explanation is that false-positives and false-negatives are equally erroneous but unequally costly. For this reason, smoke detectors are calibrated to be hypersensitive as the cost of a false-positive is much higher than that of a false-negative. For example, the cost of a false-positive in a Norwegian student village in Oslo is between 1000-2000 kroner (this is what the Fire Department charges), while a false-negative can cost millions of kroner in damages if the building burns down. By analogy, the cost of failing to detect a parasitic infection in another human has had a historically higher cost than falsely detecting a parasitic infection in a non-infected human. The cost of a false-positive in this case could be death, which is a higher cost than that associated with a false-negative, in most if not all cases. This is a disaster from an evolutionary perspective, as it implies that the organism cannot pass on its genes — a failure in adaptive fitness.

This is especially true given the higher mortality rates throughout human evolutionary history.¹⁰⁵ Our ancestors did not have the luxury of modern medical treatments and were more susceptible to predation. Diseases could easily lead to death, making it rational for them to avoid infected persons and objects at all costs. However, because the BIS developed over millions of years and because regional decreases in pathogen prevalence are a modern trend, the relative degree of hypersensitivity of this system is continually increasing — i.e. false-positives are more frequent. With an increase in the number of sources that can activate the BIS — i.e. technology — and the fact that it is unlikely that the system itself (being ancient and deep-rooted) will undergo

¹⁰³ Nesse (2005).

¹⁰⁴ Universitas (2013).

¹⁰⁵ Clarke (1997).

rapid change, we should expect the system to be activated very frequently. Hence, it is probable that the BIS and its sensitivity will continue to play an important role in human-to-human interactions. While the smoke detector principle illustrates the strategic cost-benefit ratio of a hypersensitive BIS which helps explain the regularity of immune-supportive behaviors, there is another important principle that connects exposure to pathogens and human behavior: the functional flexibility principle.

6.2. The Functional Flexibility Principle

Given the sensitivity of the BIS, it seems reasonable to ask why humans are not constantly avoiding one another. COVID-19 has been a remarkable test case for the BIS and has shown that under certain conditions “social distancing” can become an individually motivated behavior.¹⁰⁶ But why is such behavior only common in exceptional times like pandemics? Why isn’t such avoidance behavior more common during “normal” times? The functional flexibility principle helps answer these questions. According to this principle, there are important trade-offs associated with the BIS: most fundamentally the trade-off between disease avoidance behavior and *other* fitness-relevant activities.¹⁰⁷ Unlike in the present day, calories and cognitive resources were more finite in our evolutionary past. The overactivation of the BIS as depletory of these resources would have been adaptively non-beneficial. Thus, “when contextual cues imply that perceivers are relatively invulnerable to infection, the system produces relatively muted responses. In contrast, when contextual cues imply that perceivers are more vulnerable to infection, the system produces stronger affective, cognitive, and behavioral responses.”¹⁰⁸ In other words, the degree of activation is dependent on the *degree of susceptibility* on the part of the perceiver.

For example, women who are in the earlier stages of pregnancy have an increased vulnerability to infection because of the suppression of their immune activity.¹⁰⁹ The immune

¹⁰⁶ Shook et al. (2020).

¹⁰⁷ Schaller & Park (2011).

¹⁰⁸ Murray & Schaller (2016: 9).

¹⁰⁹ Noonan et al. (1979).

system is suppressed in order to protect the early-stage fetus. This leads to an increased risk of infection to the mother, and as a consequence, women in the early stage of pregnancy — compared to later stages — are more likely to “exhibit relatively intense disgust responses to stimuli that, on the basis of superficial cues, appear to pose some risk of infection.”¹¹⁰¹¹¹¹¹² Thus, the intensity of the activation of the system depends on various individual factors and is expressed differentially among and between populations — because of in-group and inter-group variation in susceptibility.

The flexibility of the immune system extends to more mundane instances. For example, people report shopping less often during COVID and being more vigilant in the grocery store.¹¹³ This differs from the changes brought on by pregnancy as they are more dependent on psychological than physiological processes. Given that the system can be activated digitally¹¹⁴ (without the actual presence of infectious risk) and given that people have greater access to infectious cues via their digital devices, the broad instantiation of the system independent of the *actual* prevalence of COVID is to be expected. On the other hand, because the system is flexible, we would expect to see less social distancing and vigilance without the same digital messaging surrounding COVID. The functional flexibility principle is therefore a useful heuristic with which to evaluate and analyze social behavior, which in turn will have bearing on the study of human rights.

The smoke detector principle will help explain why there is more pressure against human rights promoting cultural values and why cultural values consistent with human rights are less prevalent. It will be used to show that there is an inherent bias toward collectivist behavioral systems that reflect the activation of the BIS. At the same time, the functional flexibility principle

¹¹⁰ Murray & Schaller (2016: 9).

¹¹¹ Fessler et al. (2005).

¹¹² Navarrete et al. (2007).

¹¹³ Makhanova & Shepherd (2020).

¹¹⁴ Culpepper et al. (2018).

will be needed to help explain why some countries and regions show fewer signs of behavioral immune system activation. The dormancy of the BIS, consistent with the functional flexibility principle, gives rise to conditions conducive to individualism and human rights.

In modern times, the dormancy of the BIS also confers a significant economic benefit. For example, low-pathogen stress is associated with increased trade and the emergence of financial institutions.¹¹⁵ Increases in trade and the exchange of ideas are associated with economic growth and development.¹¹⁶ The activation of the BIS places negative pressure on such trends, which can lead to cycles of behavior that are not conducive to individual well-being. Human rights, it will be argued, are an expression of the principles that help defend against the undesirable effects of the behavioral immune system and help maximize the positive effects of human interaction and variability.

6.3. Pathogens and Behavioral Kinds

There are various kinds of output associated with the BIS, which represent distinct categories. One distinction is that of *proactive* and *reactive* responses.¹¹⁷ The latter pertains to reactions that emerge in the presence of information that imply immediate risk, such as “smelling foul odors or seeing someone with open sores.”¹¹⁸ Reactive responses are thus characterized as avoidant or prophylactic behaviors, which include restricted sexual attitudes, positivity toward condom use and avoidance of persons with physical cues associated with illness.¹¹⁹ Proactive responses differ in that they target the management of long-term threat of illness, like hygiene behavior — e.g. plumbing. Mate selection (proactive) is an immune-related behavior that is based on factors like physical attractiveness and facial symmetry.¹²⁰ These factors protect against the

¹¹⁵ Nikolaev & Salahodjaev (2017).

¹¹⁶ Alvarez et al. (2013).

¹¹⁷ Ackerman et al. (2018).

¹¹⁸ *Ibid.*: 6.

¹¹⁹ *Ibid.*

¹²⁰ *Ibid.*: 7.

risk of pathogen exposure as healthy persons have a decreased likelihood of being infected, giving a protective advantage to offspring.¹²¹ Thus, proactive behaviors extend temporally between generations.

There is also a distinction between deliberate and non-deliberate behavioral strategies. Strategies like vaccinations, condoms, masks and hand sanitization can be classified as self-consciously intentional, while other behaviors like avoiding rancid foods are not.¹²² Self-consciously intentional behaviors can be explained by the individuals performing the behaviors — e.g. a person knows that getting a vaccination is intended to provide immunity against disease, whereas non-self-consciously intentional behaviors cannot necessarily be explained in this way. Because of this distinction, there are many behaviors that we would not categorize *a priori* as pathogen avoiding. For example, disgust related behaviors during early pregnancy cannot easily be linked to pathogen avoidance. The distinction may also make the broad social effects of the BIS seem novel or surprising. This helps at least partially explain why there is a research gap in the study of human rights from a behavioral ecology perspective, as the connections are not *prima facie* obvious.

Lab studies have shown that infectious cues make individuals less extroverted¹²³, more likely to promote prohibitive sociosexual values¹²⁴, less likely to favor foreign persons¹²⁵ and more likely to conform with social norms.¹²⁶ The BIS is therefore a well-documented phenomenon at the individual level and may have a tremendous bearing on the status of human rights cross-nationally.

¹²¹ *Ibid.*: 7.

¹²² Murray & Schaller (2016).

¹²³ Mortensen et al. (2010).

¹²⁴ Murray et al. (2013).

¹²⁵ Schaller & Park (2011).

¹²⁶ Murray & Schaller (2012).

6.4. Parasite Stress Theory of Values

The parasite stress theory of values and sociality (henceforth PSTV) was proposed by Corey L. Fincher and Randy Thornhill¹²⁷ in 2014. At its core, the theory proposes that disease prevalence is a fundamental cause of social values. Because parasitic stress is the most powerful ecological determinant of human biology, the PSTV serves as a fundamental theory of human sociality. Under this view, cultural values are an *adaptation* to disease threat that underlies other proximate causes of culture like GDP or political regime type.¹²⁸

The PSTV uses the BIS as a mediating variable between infectious disease and social values. Once instantiated, the BIS gives rise to adaptations like “philopatry, xenophobia, neophobia, and ethnocentrism, which are the basic features of assortative sociality.”¹²⁹ These features then ground other social phenomena like democracy, autocracy, individualism-collectivism, religious conservatism, and many other phenomena. More complex social values are built — bottom-up — by the individual level changes associated with the BIS.

Because the PSTV is a relatively new theory, the literature on the subject is still developing. Studies have confirmed some of its social implications: like its effects on gender equality, with the changes in pathogen prevalence *preceding* changes in gender equality.¹³⁰ It is also associated with increases in individualism¹³¹¹³², degree of religious belief and strength of family ties¹³³,

¹²⁷ Thornhill & Fincher (2014).

¹²⁸ Thornhill & Fincher (2014: 83).

¹²⁹ Thornhill & Fincher (2014: 83).

¹³⁰ Varnum & Grossmann (2016).

¹³¹ Fincher et al. (2008).

¹³² Santos et al. (2017).

¹³³ Fincher & Thornhill (2012).

technological innovation¹³⁴¹³⁵, authoritarianism¹³⁶, political conservatism¹³⁷, social conservatism¹³⁸, ritualized physical contact in traditional cultures¹³⁹, the emergence of economic institutions¹⁴⁰, racial prejudice¹⁴¹, homicide¹⁴², democratization¹⁴³¹⁴⁴ and philopatry.¹⁴⁵

Although the broad range of associations seems surprising at first, it makes more sense when one is reminded of the fact that pathogens are the most significant ecological variable in human evolution. Our genes and hence our behavioral dispositions have therefore been most strongly affected by this ecological force. In some sense, humans have been like fish in water. We have not been self-consciously aware of the degree to which the water around us affects everything we do and only recently have we managed to change our very relationship to it. Modern technology has enabled some of humanity to move out of the water and onto the beach, with intermittent tsunamis reminding us of our past. While some have moved onto the beach, they wonder why those who have remained in the water behave differently than them. But rather than looking at the obvious difference in ecology, other more obscure explanations are preferred.

¹³⁴ Murray (2014).

¹³⁵ Bennett & Nikolaev (2021).

¹³⁶ Murray et al. (2013).

¹³⁷ Inbar et al. (2012).

¹³⁸ Terrizzi et al. (2013).

¹³⁹ Murray et al. (2017).

¹⁴⁰ Nikolaev & Salahodjaev (2017).

¹⁴¹ O'Shea et al. (2020).

¹⁴² Thornhill & Fincher (2011).

¹⁴³ Thornhill & Fincher (2014).

¹⁴⁴ Thornhill et al. (2009).

¹⁴⁵ Thornhill & Fincher (2014).

Among the cultural values that result from parasitic stress, the individualism-collectivism scale “appears to be the most significant cultural difference among cultures” that accounts for a “deep structure of cultural difference.”¹⁴⁶ This makes it an attractive target for the evaluation of cross-national differences in human rights. Authoritarianism, which is associated with collectivism¹⁴⁷¹⁴⁸ is another attractive target as it has been linked more directly with human rights.¹⁴⁹¹⁵⁰ The distinction between the two concepts will be useful to spell out: “whereas hostility against in-group deviants and out-groups is an integral component of authoritarianism, intra and intergroup aggression is not explicitly included in the concept of collectivism.”¹⁵¹ Collectivism can be modelled as more fundamental than authoritarianism, with the latter requiring further ecological or social factors for its instantiation (as hostility is an additional feature). Authoritarianism is associated with negative attitudes toward human rights¹⁵² and the suppression of liberties,¹⁵³ making it a better measure for human rights violations. Collectivism is still an important dimension to consider as it causally precedes authoritarianism and because it has similar causal priority to the other social dimensions related to pathogen prevalence.

¹⁴⁶ Triandis (2001).

¹⁴⁷ Kemmelmeier et al. (2003).

¹⁴⁸ Gelfand et al. (1996).

¹⁴⁹ Moghaddam & Vuksanovic (1990).

¹⁵⁰ Crowson (2007)

¹⁵¹ Kemmelmeier et al. (2003).

¹⁵² Moghaddam & Vuksanovic (1990).

¹⁵³ Murray, Schaller & Suedfeld (2013).

On the other hand, individualism is associated with democratic governance¹⁵⁴, and democracy is associated with respect for human rights.¹⁵⁵¹⁵⁶ Individualism can be thought of as more fundamental than democracy and as causally prior. Thus, individualism is an important measure for the development of human rights. The individualism-collectivism scale can be used to map out long-term trajectories for human rights; as violations *ex hypothesi* will emerge from collectivist societies and protection will emerge from individualist societies. Furthermore, the current literature on parasite stress and its association with individualism, collectivism, authoritarianism, and their subsequent association with human rights indicate that parasitic stress can be highly informative for the cross-national analysis of human rights.

6.5. Pathogens and Collectivism in History

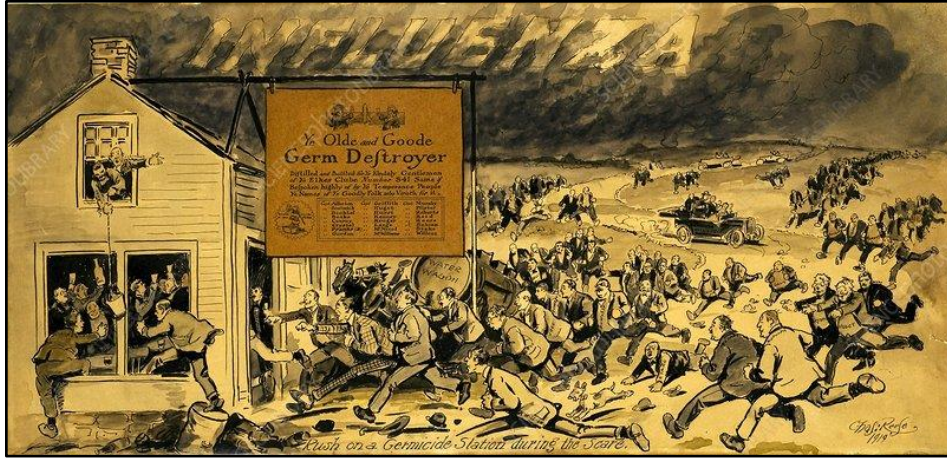
While pathogen prevalence has been empirically associated with various social phenomena, artists have made interesting depictions of the association throughout history. For example, *The Germicide Rush* by Charles Reese depicts the collectivist rush during the 1918 Influenza epidemic of 1918-20.¹⁵⁷

¹⁵⁴ Thornhill & Fincher (2014).

¹⁵⁵ Poe et al. (1994).

¹⁵⁶ Cingranelli & Richards (1999).

¹⁵⁷ Reese (1919).



Unity under a centralized authority can be seen depicted in earlier works as well, like in the 14th century painting *Leprosy Victims Taught by Bishop*¹⁵⁸ and the formation of in-groups and punitive behavior toward out-groups is depicted in the painting *Strasbourg Massacre*.¹⁵⁹



These depictions show how profound the effects of disease can be at the societal level and how far back it stretches in human history. The 14th century was an important time in the history of pandemics. In fact, the term “quarantine” refers to the 14th century when coastal cities in Italy were infected with the bubonic plague. In Venice, ships were required “to sit at anchor for 40 days

¹⁵⁸ Bonum (1360).

¹⁵⁹ Tielt (1353).

before landing” which was called quarantine, a derivation of the Italian words *quaranta giorni* (40 days).¹⁶⁰ The bubonic plague of the 14th century killed an estimated 20 million people in Europe alone, between a third and a half of the population.¹⁶¹ So although the COVID-19 pandemic has come as a shock to some, pandemics and especially epidemics are not new in human history. Because such occurrences stretch back millions of years, they have had a powerful effect on the social orientation of humankind. Few phenomena can alter human social behavior at such large scales in such a rapid manner. The PSTV gives a parsimonious explanation of this effect.

6.6. The Parasite Stress Hypothesis of Human Rights

The basic features of the PSTV — e.g. ethnocentrism — are a product of localized host-parasite coevolution. These evolutionary arms races are *localized geographically*, leading to groups becoming immune to the specific set of pathogens present in their particular environment.¹⁶² These behaviors become geographically entrenched in much the same way that distinct languages emerge in different populations. When populations develop immunity to particular pathogens in their environment, in-group safety is maximized. However, increases in pathogen prevalence in a particular region make out-group members more dangerous as sources of infection, while reliance on in-group members through internalized norms and values becomes more important.¹⁶³ For example, the Native Americans did not have immunity from many diseases that European populations had immunity to — including smallpox and measles, which had devastating effects and is thought to be the primary reason for their population decline.¹⁶⁴

¹⁶⁰ CDC (2020).

¹⁶¹ McEvedy (1988).

¹⁶² Thornhill & Fincher (2014).

¹⁶³ Thornhill & Fincher (2014).

¹⁶⁴ Patterson (2002).

In contrast, when parasite stress decreases, out-group contact becomes less dangerous and the benefit of trade outweighs the risk of infection. Humans are psychologically hardwired to calculate these costs and benefits, producing “psychological adaptations that function to contingently guide feelings, cognition, decision making, and behavior.”¹⁶⁵ This is consistent with the functional flexibility principle discussed previously, differing slightly in that these higher-order psychological adaptations reflect the degree of susceptibility of the *social group*. At the same time, the degree of susceptibility is grounded in the perceptual systems of the individuals that make up the group. In this sense, the PSTV is a bottom-up theory, with psychological changes at the individual level grounding the higher-order behavior of the group. Addressing individual psychological attitudes in this way may therefore have tremendous social outcomes and should be strategically considered by the human rights movement. This thesis will extend the PSTV to human rights and will propose the parasite stress hypothesis of human rights — henceforth PSHHR:

Human rights are causally dependent on pathogen prevalence

The causal relationship is mediated by the BIS and leads to two important sub-hypotheses: (a) that human rights emerge from low-pathogen contexts where individualism is the predominant social value and (b) that human rights violations and the absence of respect for human rights emerge from high-pathogen contexts.

6.7. Covid-19: A Natural Test

The COVID-19 pandemic is a useful test case for the PSTV. The theory predicts that COVID will result in increased authoritarianism, in-group preference, xenophobia, conservatism, and other factors related to an increase in collectivism. We can propose the following hypothesis: if there is evidence for an increase in collectivism and related factors as a result of COVID-19, then the PSTV has predictive validity. There is a growing body of evidence that suggests the activation of the BIS in many countries, which confirms the PSTV.

¹⁶⁵ Ibid.

Authoritarianism is on the rise in many countries. A six-week longitudinal study from Poland with 849 participants showed a significant increase in right-wing authoritarianism, desire for national cohesion and sexual prejudice, during the outbreak of COVID-19.¹⁶⁶ According to the study, the “results clarify that authoritarianism increases in response to threat and leads to rejection of in-group dissenters because of the associated desire for in-group cohesion.”¹⁶⁷ The authors make an interesting connection¹⁶⁸ between their results and previous studies that show changes in authoritarian attitudes as a consequence of increases in disease reporting by the media during the Ebola virus disease outbreak.¹⁶⁹ This is consistent with the literature on the behavioral immune system and its activation through perceptual cues. The authors did not observe an increase in social dominance orientation, which is associated with a response to internal conflict — e.g. civil war — and intergroup competition.¹⁷⁰ It is possible, however, that increases in social dominance orientation will actualize as opposition groups become politically discontented and begin to dissent.

Another study on subjects from the UK (N = 2025) and the Republic of Ireland (N = 1041) found an association between right-wing authoritarianism, nationalism and anti-immigrant attitudes, which were dependent on levels of perceived threat.¹⁷¹ The authors note that only when anxiety as a result of perceived level of threat is high, does right-wing authoritarianism rise.¹⁷² The authors observed insignificant yet non-zero effects on persons with low levels of anxiety.¹⁷³ The authors also note that the results are interesting in that the previous literature connects anti-

¹⁶⁶ Golec de Zavala (2020).

¹⁶⁷ *Ibid.*: 7.

¹⁶⁸ *Ibid.*

¹⁶⁹ Beall et al. (2016).

¹⁷⁰ Golec de Zavala (2020).

¹⁷¹ Hartman et al. (2020).

¹⁷² *Ibid.*

¹⁷³ *Ibid.*

immigration attitudes to threat from out-groups, but that in this case there is no threat from a particular outgroup.¹⁷⁴ Interestingly they fail to make the connection between the threat of outgroups in the form of individuals that fail to adhere to immune-conferring social norms. This means that although COVID does not discriminate between social groups, there is motivation to create social groups with streamlined behavioral norms.

It is relevant to note that such effects are possibly a direct consequence of government actions taken in the UK. In March of 2020, the Scientific Advisory Group for Emergencies (SAGE) published a document for the government wherein they outline strategies for adherence to social distancing measures. Under “persuasion” they state that the “perceived level of personal threat needs to be increased among those who are complacent, using hard-hitting emotional messaging.”¹⁷⁵ Under “coercion” they state that “social disapproval from one’s community can play an important role in preventing anti-social behaviour or discouraging failure to enact pro-social behaviour..., it needs to be accompanied by clear messaging and promotion of strong collective identity.”¹⁷⁶ Moreover, in appendix B under strategy 2, SAGE calls for the “use of media to increase sense of personal threat” while acknowledging that the “spillover effects” could be negative.¹⁷⁷ Although the intentions behind the SAGE document were ostensibly benign, it is possible for other governments to use similar strategies to intentionally alter the psychological and behavioral profile of their populace for their own institutional benefit. Moreover, the document is important because it shows that the behavioral immune system and its behavioral consequences are taken seriously by non-academic institutions.

Although the studies mentioned show increases in authoritarianism, there is evidence that suggests that the activation of the BIS goes beyond political divides and spans across the political spectrum. One study suggests an increase in left-wing authoritarianism during the COVID-19

¹⁷⁴ Ibid.: 9.

¹⁷⁵ Scientific Advisory Group for Emergencies (2020).

¹⁷⁶ Ibid.

¹⁷⁷ Ibid.

pandemic. It found that both left-wing and right-wing authoritarianism is significantly positively associated with the endorsement of punitive attitudes toward dissenters — e.g. emergency-enhanced punishment.¹⁷⁸ This indicates that the psychological mechanisms at play go beyond political ideology and are more fundamental than higher-order political beliefs. They are likely mediated by collectivism, which is a universal psychological trait that grounds authoritarianism at the political level.

The successful containment of COVID in collectivist societies can also be taken as evidence for the PSTV. The theory predicts *ceteris paribus* that collectivist societies have social values that lead to behaviors that confer immunity against pathogens. Thus, collectivist societies should have a strategic advantage in pandemic situations, as they can mobilize more rapidly. This hypothesis is confirmed by various studies conducted during COVID-19.¹⁷⁹¹⁸⁰ Other studies directly link the BIS to threat responses associated with COVID-19.¹⁸¹¹⁸²¹⁸³ Taken together this body of literature can be taken as positive evidence for the PSTV and that COVID-19 has led to the activation of the BIS globally. This may have grave implications for the future of humanity, the global health crisis marking a global inflection point.

6.8. Summary

This section began by introducing the behavioral immune system (BIS) as one of two human immune systems — in addition to the biological immune system. The activation of the system based on perceptual cues and hence on *inferred* pathogen exposure was discussed and

¹⁷⁸ Manson (2020).

¹⁷⁹ Cao et al. (2020).

¹⁸⁰ Alon et al. (2020).

¹⁸¹ Makhanova & Shepherd (2020).

¹⁸² Kempthorne & Terrizzi (2021).

¹⁸³ Shook et al. (2020).

related to two important principles: the smoke detector principle and the functional flexibility principle. Together, they help explain why the BIS is *hyperactive* and why it isn't activated at all times. Different kinds of BIS responses were then discussed and it was argued that since all such behaviors are not self-consciously intentional, (a) they cannot be fully understood *a priori* (b) their social implications may seem novel and (c) human rights scholars have not applied the theory to their own domain. The PSTV was introduced as a general theory for the emergence of human values. The theory was extended to the PSHHR which makes two important claims about human rights: (a) that they emerge from low-pathogen contexts and (b) that their violation occurs more frequently in high-pathogen contexts. Finally, COVID-19 was presented as a test case study for the theory and it was argued that there is evidence that is consistent with the PSTV.

It must be stressed that the PSTV and hence also the PSHHR are agnostic with regard to the moral dimensions of human culture.¹⁸⁴ In other words, the theory itself does not presuppose or imply that one set of cultural values is superior to another. They are — under this view — simply adaptations that respond to particular context-dependent survival challenges. The next section will present data linking human rights with pathogen prevalence.

¹⁸⁴ Thornhill & Fincher (2014).

7. Cross-national connections: Empirical data

Four correlational studies were conducted in order to test the parasite stress hypothesis of human rights. According to this hypothesis, human rights are causally dependent on the degree of parasitic stress within a country or region. In order to test it, data was organized cross-nationally, yielding scores for human rights and pathogen prevalence. These scores were subsequently correlated, yielding a correlation coefficient, r . In addition, the studies were conducted to support the second sub-hypothesis of the PSHHR: violations occur more frequently in high-pathogen contexts. The same measure of pathogen prevalence is used as the independent variable in all four studies, with the dependent variables being different human rights data sets.

Pathogen Prevalence

A measure of historical pathogen prevalence by Murray and Schaller was used to assess parasite stress.¹⁸⁵ It is based on the prevalence of 9 diseases: leishmaniasis, schistosomes, trypanosomes, leprosy, malaria, typhus, filariae, dengue, and tuberculosis from 1940-1960, which was gathered from epidemiological atlases.¹⁸⁶ A numerical estimate is provided on a 4-point scale from -2 to 2 (wherein 2 represents the highest prevalence), which was subsequently z-scored (where 0 is the mean value).

The historical measure was chosen because the parasite stress hypothesis of human rights emphasizes the causal impact of disease prevalence on social values. Murray and Schaller investigated the cross-cultural variability between sociosexuality, extraversion and openness to experience in relation to contemporary and historical measures of parasite stress and found stronger correlations with historical measures.¹⁸⁷ Fincher et al. found that historical measures

¹⁸⁵ Murray & Schaller (2010).

¹⁸⁶ Ibid.

¹⁸⁷ Schaller & Murray (2008).

were better predictors of individualism/collectivism than contemporary measures, highlighting the potential causal “time-lag” between decreases in pathogen prevalence and social outcomes.¹⁸⁸ These results suggest that parasite stress is a “plausible cause” of cross-cultural variation rather than an outcome of cultural differences.¹⁸⁹

Moreover, the historical measure is internally reliable (Cronbach’s alpha .84) and has a correlation ($r = .84$) with contemporary cross-national measures of parasitic stress.¹⁹⁰ Lastly, the historical measure was the most accessible data set with measures for 230 countries and regions, coded for in a user-friendly manner.

7.1. Study 1

Analysis was conducted on 143 countries ($N = 143$) for which there was empirical data on human rights violations. This data set represents a broad range of human rights violations from press freedom and civil liberties to torture and executions. The data were correlated with the historical prevalence of disease-causing parasites for all 143 countries ($N = 143$).

Human Rights Violations

The measure was obtained from the Fragile States Index which is “based on a conflict assessment framework” developed by the Fund For Peace.¹⁹¹ The specific measure of human rights and rule of law was used “which looks at whether there is widespread abuse of legal, political and social rights, including those of individuals, groups and institutions.”¹⁹² This dataset

¹⁸⁸ Fincher et al. (2008).

¹⁸⁹ Murray & Schaller (2010).

¹⁹⁰ Ibid.

¹⁹¹ The Fund For Peace (2018b).

¹⁹² The Fund For Peace (2018a).

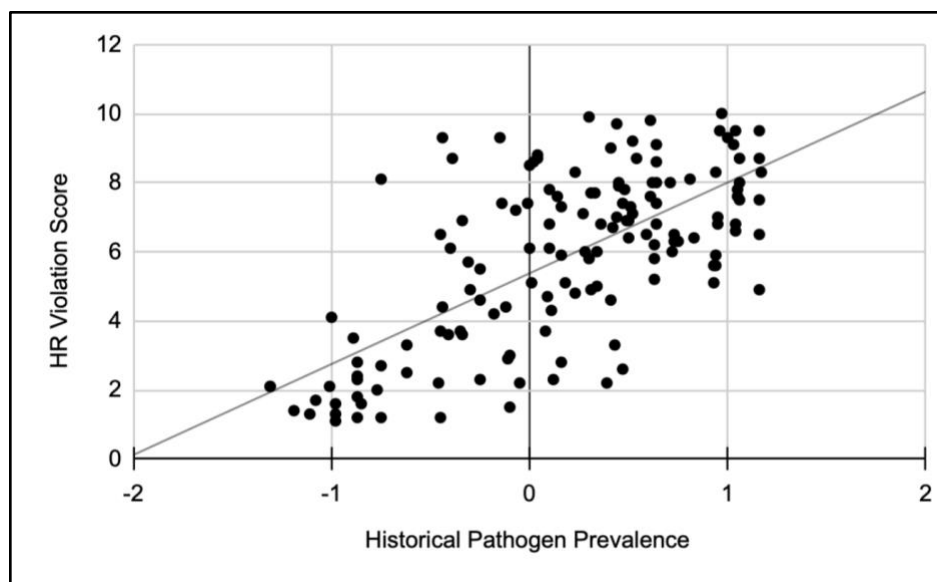
was used in order to assess the cross-national state of human rights in a *broader* sense. This includes data on:

- Press Freedom
- Civil Liberties
- Political Freedoms
- Human Trafficking
- Political Prisoners
- Incarceration
- Religious Persecution
- Torture
- Executions

The data is based on cross-national scores in 2014 and is presented on a 10-point scale from 0 to 10, wherein 10 indicates the highest rates of human rights violation.

Results

Analysis revealed that pathogen prevalence strongly predicted the measure of human rights violations ($r = .68, p < 0.00001$). Given that the human rights violation scores represent the state of human rights cross-nationally in a broad sense, the results indicate that pathogen prevalence is related to an extensive range of human rights violations. It also supports the hypothesis that a broad range of human rights are more frequently violated in nations with greater parasite stress. The abuse of a broad range of human rights is clustered around nations with historical pathogen prevalence scores above the mean z score of 0. Conversely, nations with the lowest HR violation scores are tightly clustered well below the z score.



7.2. Study 2

Analysis was conducted on 149 countries ($N = 149$) for which there was empirical data on human rights protection. The human rights measure differs from study 1 in that it focuses on a measure of physical integrity and state violence, rather than a broad range of human rights.

Human Rights Violations

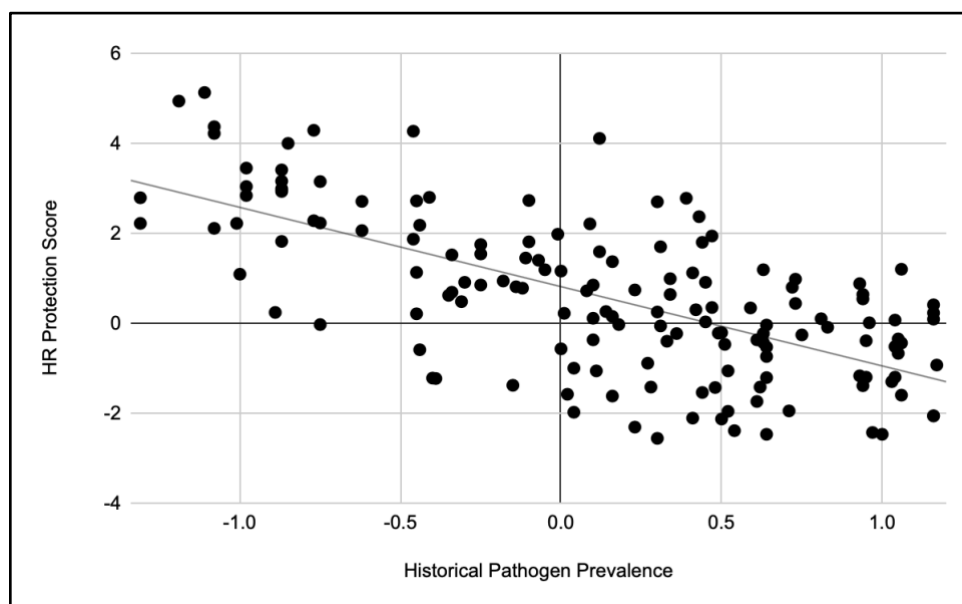
The Latent Human Rights Protection Scores Version 3 was used which was developed by Schnakenberg and Farris in 2014.¹⁹³ This data set focuses specifically on the physical integrity of citizens measured through torture, government killing, political imprisonment, extrajudicial executions, mass killings and disappearances in 2014. The data ranges from a score of -3.8 to 5.4 with the higher scores representing a better state of national human rights protection.

Results

Analysis revealed that pathogen prevalence strongly predicted the measure of human rights protection ($r = -.66$, $p < 0.00001$). The results support the parasite stress hypothesis of

¹⁹³ Schnakenberg & Fariss (2014).

human rights for a unique class of human rights. The relationship between physical integrity (as a very serious class of human rights) and parasite stress also supports the hypothesis that human rights violations are more frequent in nations with higher parasite stress.



7.3. Study 3

Analysis was conducted on 143 countries ($N = 143$) for which there was empirical data on human rights protection of physical integrity rights.

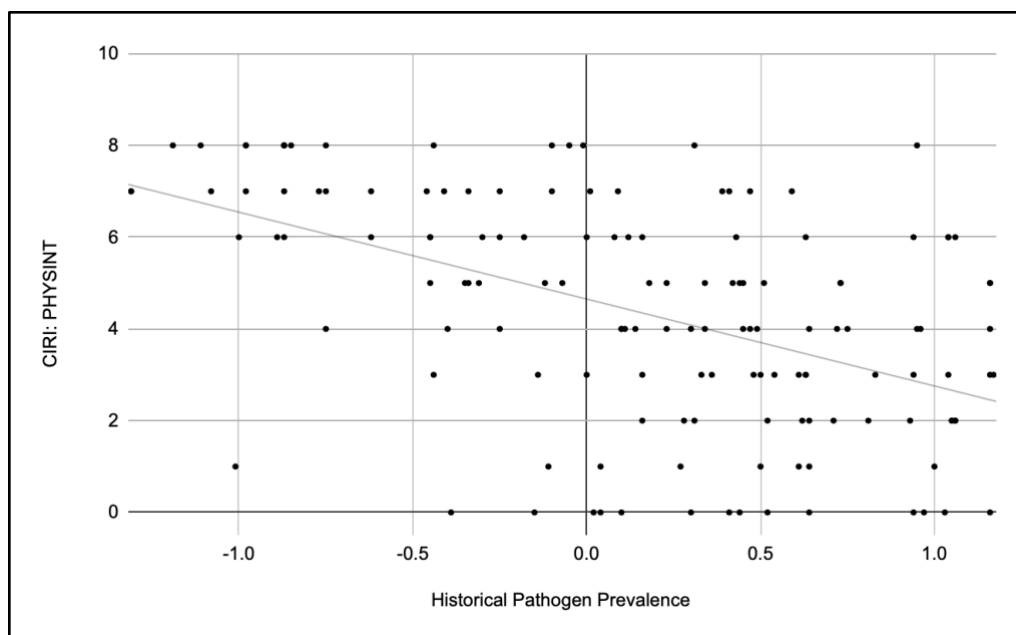
Human Rights Violations

The data was gathered from the CIRI dataset which is based on the US State Department Country Reports on Human Rights Practices. The specific measure used in this study is the Physical Integrity Rights Index which is an index based on Torture, Extrajudicial Killings, Political Imprisonment and Disappearance indicators. “The values range from 0 (no government respect for these four rights) to 8 (full government respect for these four rights).”¹⁹⁴ The specific values are from 2011.

¹⁹⁴ Cingranelli et al. (2013).

Results

Analysis revealed that pathogen prevalence strongly predicted the measure of physical integrity ($r = -.49, p < 0.0001$). The results support the parasite stress hypothesis of human rights.



7.4. Study 4

Analysis was conducted on 141 countries ($N = 141$), 130 countries ($N = 130$) and 77 countries ($N = 77$) for which there was empirical data on levels of state perpetrated human rights violations.

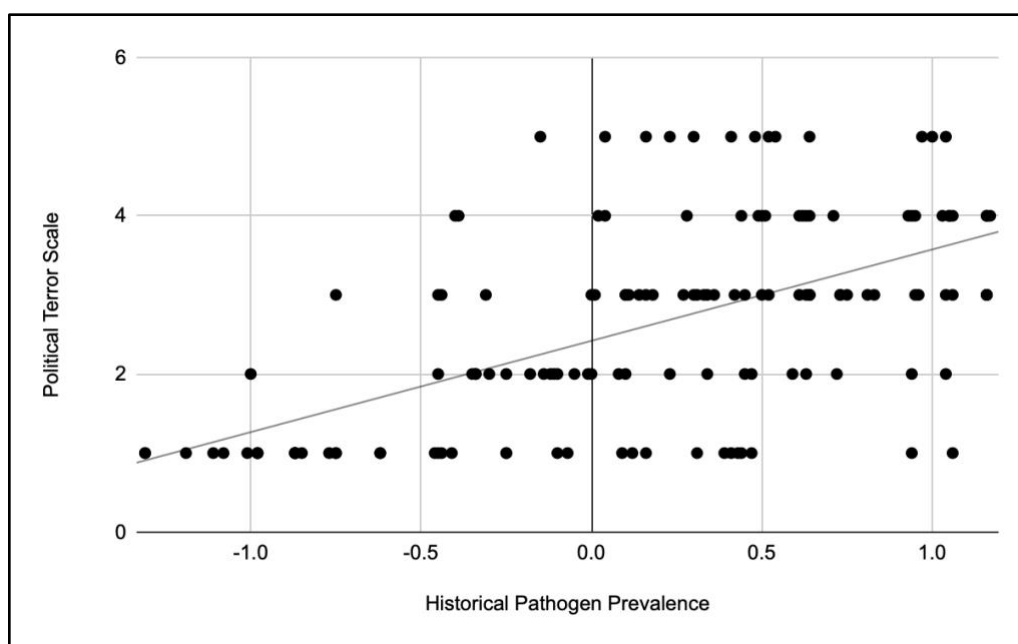
Human Rights Violations

The Political Terror Scale measures levels of political violence and terror, which uses reports from Amnesty International, the U.S. State Department and Human Rights Watch. The data focuses on torture, political imprisonment and murder. The scale has 5 levels, with 1 representing countries under a “secure rule of law” wherein torture, political murder and

imprisonment are “extremely rare” or “exceptional.”¹⁹⁵ Conversely, level 5 represents nations wherein “terror has expanded to the whole population” and wherein “leaders of these societies place no limits on the means or thoroughness with which they pursue personal or ideological goals.”¹⁹⁶

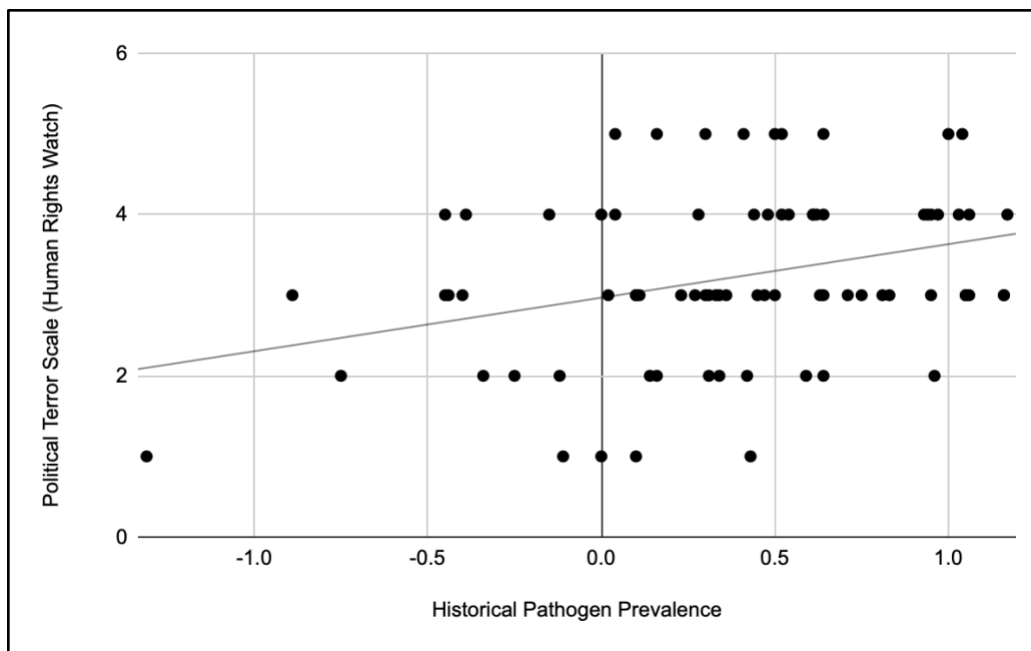
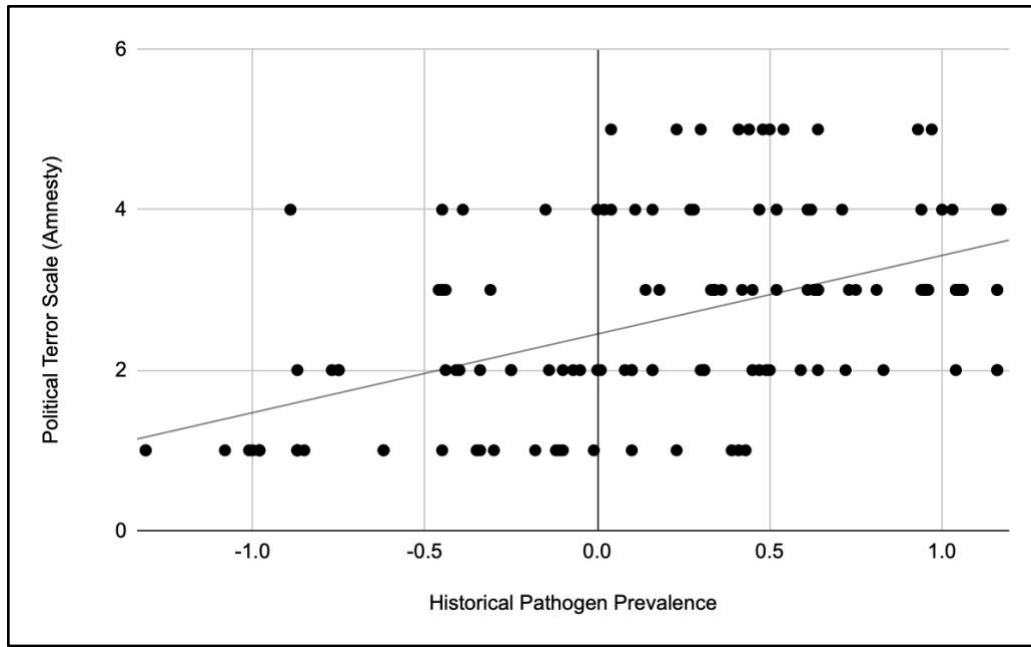
Results

Analysis revealed that pathogen prevalence strongly predicted levels of political terror for two data sets of the PTS: U.S. State Department ($N = 141$) ($r = .57, p < 0.00001$) and Amnesty International ($N = 130$) ($r = .51, p < 0.00001$). Pathogen prevalence moderately predicted levels of political terror for the Human Rights Watch dataset ($N = 77$) ($r = .32, p < 0.004553$). Together, the results support the parasite stress hypothesis of human rights.



¹⁹⁵ Political Terror Scale (2020).

¹⁹⁶ Ibid.



7.5. Discussion

Collectively, the data not only supports the parasite stress hypothesis of human rights but also supports the second sub-hypothesis: that their violation occurs more frequently in high-pathogen contexts. The attribution of a “strong” correlation coefficient for 5 out of 6 datasets is

based on Akoglu's interpretation for political science, which ranges from .4 to .6 and from -.4 to -.6.¹⁹⁷ The correlation of .32 for one of the PTS datasets is considered "moderate", while 1 or -1 is "perfect" and 0 is "none" under Akoglu's rubric.¹⁹⁸ The mean correlation coefficient of the above studies is .54, which amounts to a "strong" aggregate correlation. The weakest correlation ($r = .32$) was found with the Human Rights Watch measure from the PTS. However, this was by far the weakest data set among all studies, with a lack of scores (i.e. N/A) for many countries, leading to a significantly smaller sample size ($N = 77$) compared to the other studies in the PTS itself ($N = 141, 130$). At the same time, the strongest correlation found in study 1 ($r = .68$) is close to a "very strong" correlation with a large sample size ($N = 143$).

Weaknesses

Although the results appear astounding from a purely correlational standpoint, with more than half of the variance in human rights being accounted for by pathogen prevalence, the results alone are insufficient for causal inference. The studies did not control for confounding variables like GDP or inequality, leaving open the possibility that the correlation can be accounted for by other factors. The robustness of the results can be increased in the future by replicating the study with control variables.

Studies 3 and 4 used categorical/discrete data, while studies 1 and 2 used continuous data. The correlations in studies 3 and 4 could possibly be strengthened by using other techniques like logistic rather than linear regression. Moreover, human rights are notoriously difficult to quantify as there is a gap between the concept of human rights and the indicators used to quantitatively assess it.¹⁹⁹ Although the PTS and CIRI are the most commonly used datasets in human rights studies, there are concerns that cross-national differences in data gathering methods and differences in language usage can lead to "information effects" that mitigate their reliability.²⁰⁰ The results must therefore be understood within the context of possible error and bias.

¹⁹⁷ Akoglu (2018).

¹⁹⁸ Ibid.

¹⁹⁹ Thede (2001).

²⁰⁰ Clark & Sikkink (2013).

The use of the historical measure was justified on the basis that pathogen prevalence is a historical antecedent to social outcomes and because the historical measure is strongly correlated with contemporary measures ($r = .84$). Moreover, contemporary datasets were not easily accessible, making it difficult to incorporate in the study. A more complete assessment could be made by replicating the study with contemporary data and data from different periods between the present and the 1960s, providing nuance to the results. For example, the rapid increases in technology from the 2000s onward may have had important influences on contemporary pathogen data. This could help evaluate the temporal aspect of the relationship between parasitic stress and human rights, i.e. how rapidly a change in pathogen prevalence leads to cross-national changes in human rights.

Consistency with existing literature

The correlations are consistent with previous studies on the relationship between pathogen prevalence and other measures associated with human rights. Thornhill et al. found correlations between parasite stress and less democratic and authoritarian political systems (r 's $> .6$, N 's > 168 , p 's $< .01$).²⁰¹ The statistical significance remained even when controlling for GDP and inequality (GINI coefficient). Murray et al. replicated these findings with strong correlations between authoritarian governance and parasite stress with four additional data sets and with r 's ranging from .47 to .67 (p 's < 0.1).²⁰² In addition, they found that pathogen prevalence strongly predicted authoritarianism at the individual level ($r = .65$), supporting the hypothesis that the association is mediated by the behavioral immune system.²⁰³ Moreover, Murray et al. controlled for GDP, wealth inequality, education and life expectancy (from disease irrelevant threats).²⁰⁴

²⁰¹ Thornhill et al. (2009).

²⁰² Murray et al. (2013).

²⁰³ Ibid.

²⁰⁴ Ibid.

7.6 The Parasite Stress Model of Human Rights:

Considering the statistically significant relationships identified in the above studies and the broader theoretical context within which the results are situated, the following causal model is proposed as a supplement to the PSHHR.

Basic Model

Parasite Stress → *activation of the behavioral immune system (smoke-detector principle)* → *changes in values at the individual level (in accordance with the functional flexibility principles)* → *changes in values at the cultural and political level (increases in collectivism and authoritarianism)* → *decreased respect for human rights as antithetical to collective ideals*

This model elucidates the causal mechanism that underlies the potential causal relationship between parasite stress and human rights. Because the behavioral immune system is hypersensitive, parasite stress will easily trigger its activation, which in turn causes changes in values at the individual level. The aggregated changes to the individual ground changes in social values at the societal level and lead to changes in public political discourse. Consequently, the status of human rights is jeopardized as they contradict the values of disease avoidant collectivist political ideologies. The hypersensitivity of the BIS is evidenced cross-nationally by the fact that genuinely high respect for human rights is rare, with countries with *the lowest* rates of parasite stress having the highest degree of respect for human rights. This is exactly what we would expect from the PSHHR.

However, human rights *violations* as physical actions taken by governmental systems require a further causal chain. Changes in values that are antithetical to human rights are not *sufficient* for the violation of rights. Additional social dimensions are required in order to account for violations. This is evidenced by the fact that conflict is among the two strongest predictors of human rights violations from a social scientific perspective.²⁰⁵ An additional model is needed to account for the triggering of violations.

²⁰⁵ Hafner-Burton (2014).

Trigger Model

Basic model → formation of outgroups (political, ethnic, sexual, and other social minorities) → conflict through trigger events (terrorism, activism, dissent, civil war) → violation of human rights as a governmental response to outgroup dissent → collectivistic justification for human rights violations and further marginalization of outgroups → further escalation of human rights violations

This model helps integrate conflict (as a social scientific cause of violations) with a biologically informed understanding of the causes of human rights violations. Under this view, parasite stress is one “root” cause (among others) of human rights violations, with the “stem” causes like conflict resulting in their actualization. The “root” and “stem” causes are individually necessary but not individually sufficient causes for human rights violations. The models are rough outlines that aim to provide sufficient conditions for human rights. A more robust model of sufficient conditions will likely tend toward much greater complexity, requiring numerous root and stem causes.

8. The Rise of Human Rights

While the previous section aimed at supporting the parasite stress hypothesis of human rights and the second sub-hypothesis that human rights violations are more frequent in higher pathogen contexts, this section will be concerned with the other aforementioned sub-hypothesis: that human rights emerge from low-pathogen contexts. Whereas the previous section gave preliminary evidence suggesting that one root cause of human rights violations is parasitic stress, this section will identify low levels of parasitic stress as a root cause of positive human rights practice. We can begin by stating that high levels of parasitic stress have been the historical norm for most states. Indeed, rapid developments in technology have only very recently changed our relationship to pathogens. One of the first articulations of rights discourse is attributed to Thomas Hobbes who conceived of the “Right of Nature” as the liberty of human beings to use their own power to preserve their own life.²⁰⁶ Under Hobbes’s conception of the state of nature, the extent to which such liberties extend is constrained by the subjugation of the individual to authority. This is because that very state of nature is a war among men, wherein the preservation of life is challenged by incessant competition and violence.²⁰⁷ The central motivation, therefore, to unite under a sovereign stems from the perils of the state of nature, as the former is preferable to the latter.

Although that motivation is consistent with the literature presented in previous sections, the justification for it must be altered. Indeed, the state of nature is more aptly characterized as human beings against parasites, rather than human beings against other human beings. Human beings converge under a sovereign that manages and controls social values and norms partly in order to protect the collective from outside disease threats. Thus, given a state of nature wherein the probability of survival decreases outside of the collective or alternately in a social structure wherein the robustness of the collective is not secured, individuals are willing to subjugate their

²⁰⁶ Hobbes (2016).

²⁰⁷ Ibid.

rights for the integrity of the collective. As was previously mentioned, there is an association between parasitic stress and individual level authoritarianism that supports this view. We can therefore take the state of nature, characterized as human beings against pathogens, as our starting point, showing how in most contexts social values constrain human rights.

The state of nature is the structural antecedent of nations with high levels of respect for human rights. To move beyond the state of nature and toward stronger human rights norms requires decreasing pathogen stress to deactivate the behavioral immune system. This is why the UDHR is considered the conceptual inflection point for human rights, while the emergence of its modern form has been attributed to a later date, namely the 1970s.²⁰⁸ I will proceed by outlining the factors that led to the UDHR from a parasite stress angle and will then focus on why the human rights movement only came to prominence decades later in the 1970s.

8.1. The Conceptual Emergence of Human Rights

In 1948 human rights became codified as a unique class of rights in the UDHR, in large part as a reaction to the holocaust.²⁰⁹²¹⁰ Human rights were conceptually unique because of their *universal* character, diverging from national rights grounded in citizenship.²¹¹ One important connection between the UDHR and parasite stress is that a root cause of the political regime from which the holocaust emerged is empirically tied to psychological changes that are attributable to the 1918 influenza pandemic. Germany was hit badly by the 1918 influenza and so were other fascist states like Italy and Spain. Italy is estimated to have had the highest excess mortality ratio in Europe as a direct result of the pandemic at 172 percent, while Spain and Germany had 87 and 73 percent respectively.²¹² As a comparison, the lowest excess mortality ratio was observed in

²⁰⁸ Moyn (2012).

²⁰⁹ Morsink (2019).

²¹⁰ Moyn (2012).

²¹¹ Moyn (2012).

²¹² Ansart et al. (2009).

Finland at only 33 percent.²¹³ A recent paper by Blickle provides evidence that “influenza deaths in 1918 are correlated with an increase in the share of votes won by right-wing extremists, such as the National Socialist Workers Party (the Nazi Party), in the crucial elections of 1932 and 1933.”²¹⁴ More precisely, increases in right-wing voter behavior was associated with higher municipal mortality rates as a consequence of the 1918 influenza.²¹⁵

The activation of the behavioral immune system can be thought of as a reasonable underlying cause of the voting behavior, leading to increases in authoritarianism and disgust at the individual level, which was subsequently amplified by the Nazi party. As Neuberg argues, “these underlying psychological processes may be implicated in various modern forms of intergroup aggression, such as “ethnic cleansing” and genocide. The horrible effectiveness of Nazi propaganda to inspire the genocidal complicity of ordinary citizens may have resulted, in part, from the fact that this propaganda abounded with text and images that cast Jews explicitly as parasites and vectors of disease.”²¹⁶ It is therefore reasonable to postulate that the emergence of the UDHR is counterfactually linked to the 1918 influenza, with the abundance of disease cues in the 1918-1920 and the subsequent amplification of those cues by the Nazi party driving changes in social values culminating in the atrocities of the holocaust.

At the same time, the UDHR can be characterized as a top-down document, reflecting the reactions of world leaders to the holocaust. But as has been previously argued, individual-level changes in social values ground broader changes in social values. Hence, subsequent decreases in parasitic stress post-1948 may better explain why the human rights movement only came to prominence in the 1970s. The following model represents the emergence of human rights:

²¹³ *Ibid.*

²¹⁴ Blickle (2020: 1).

²¹⁵ Blickle (2020).

²¹⁶ Neuberg (2008: 408).

Conceptual Emergence Model

Trigger Model → extreme abuses of outgroups → retroactive construction of concepts (which are based in previous rights theory) that contest future abuses (UDHR)

8.2. Cross-national emergence of human rights

There are two competing explanations for the emergence of human rights, continuous history accounts and recent history accounts.²¹⁷ While the former emphasizes that the UDHR is derived from the ideals and visions of past thinkers, the latter emphasizes the discontinuity between human rights as they are currently understood and its conceptual antecedents.²¹⁸ For example, Moyn argues that modern human rights are a fundamental challenge to state sovereignty, they are the most widely accepted global “utopian discourse”, they concern “suffering abroad” and they are backed by an international legal system that is fundamentally different than before the 1970s.²¹⁹ Moreover, Moyn argues that most people had not heard of human rights before 1977 when President Carter used it in his inaugural speech, leading to the New York Times using the term five times more frequently in 1977 than in any other year.²²⁰

Some have contested these claims, arguing that Moyn under-emphasizes the gradual development of human rights and their eventual explosion post-1977.²²¹ But these objections mainly constrain Moyn’s claims rather than completely negate them. In fact, Cargas admits that there “is ample evidence for agreeing with him that the idea of human rights took off after 1977, and especially after the Cold War. Human rights nongovernmental organizations (NGOs) exploded

²¹⁷ Cargas (2016).

²¹⁸ Ibid.

²¹⁹ Moyn (2012: 81).

²²⁰ Ibid.

²²¹ Cargas (2016).

in the 1990s, as did scholarly exploration of the topic.”²²² A balanced position can be taken between the historical continuity of human rights and their recent history, by accepting that (a) modern human rights had conceptual antecedents e.g. in the UDHR which are themselves connected to earlier rights discourse (e.g. the French Revolution) and (b) that human rights experienced strong proliferation after 1977.²²³ These two views can be complementary by accepting the veracity of both claims without committing oneself to their more forceful formulations. As McCrudden states, “a more balanced judgment would conclude that the history of human rights is both one of continuity and discontinuity.”²²⁴

The problem with the current literature on the emergence of human rights is that the explanations are confined to social movements and political developments. The 1970s did include important social movements like the civil rights movement, the women’s rights movement, the anti-war movement, the LGBT movement, the environmental movement, and the disability movement. Although these are important contextual foundations from which the human rights movement emerged they are best characterized as “stem” causes. I believe their unified “root” cause lies in degrees of pathogen prevalence. Identifying such a root cause helps respond to Moyn’s assertion that human rights “emerged in the 1970s seemingly from nowhere.”²²⁵ They did not emerge from nowhere, but rather from changes in individual-level values that resulted from disease control efforts.

Varnum and Grossman provide evidence showing “that decreases in pathogen prevalence in the US over 6 decades (1951-2013) are linked to reductions in gender inequality and that such shifts in rates of infectious disease *precede* shifts in gender inequality. Results were robust, holding when controlling for other ecological dimensions and for collectivism and conservative ideological

²²² Ibid.: 423.

²²³ Interestingly, the last case of small-pox (which killed roughly 3/10 persons who contracted it) was recorded in 1977. CDC (2021b).

²²⁴ McCrudden (2015: 179).

²²⁵ Moyn (2012: 3)

identification (indicators of more broadly traditional cultural norms and attitudes).”²²⁶ This implies that the emergence and success of the women’s rights movement in the 1970s can be linked to decreases in pathogen prevalence. Given that the human rights movement emerged from the same ecological context, its emergence is plausibly attributable to the same phenomenon.

Vitally, along with pathogen richness, disease control efforts (measured in terms of per capita spending on healthcare, government spending on healthcare as a percentage of total spending and immunization rates) is the best predictor of pathogen prevalence to date.²²⁷ The 1960s were a critical period for public health amelioration in the U.S., with the first national health examination survey being conducted in 1960.²²⁸ In 1961, the Center for Disease Control established the first field station for fungal and viral diseases in Kansas.²²⁹ In 1965 a large-scale measles campaign was carried out, followed by the first reproductive health activities in 1967, the establishment of the state and community service division for venereal disease in 1968 and a national rubella immunization campaign in 1969.²³⁰ By the 1970s, the healthcare industry was the second largest in the U.S. in terms of size and spending.²³¹ Similar advancements occurred in Europe at roughly the same time.²³²

Taking the 20 best-ranked countries in terms of respect for human rights in the Fragile States Index, we find a very tight grouping of life expectancy close to 70 years in the critical period of 1970.²³³ This is much higher than the average life expectancy 50 years earlier in 1920, where it

²²⁶ Varnum & Grossmann (2016: 2).

²²⁷ Dunn et al. (2010).

²²⁸ CDC (2021a).

²²⁹ Ibid.

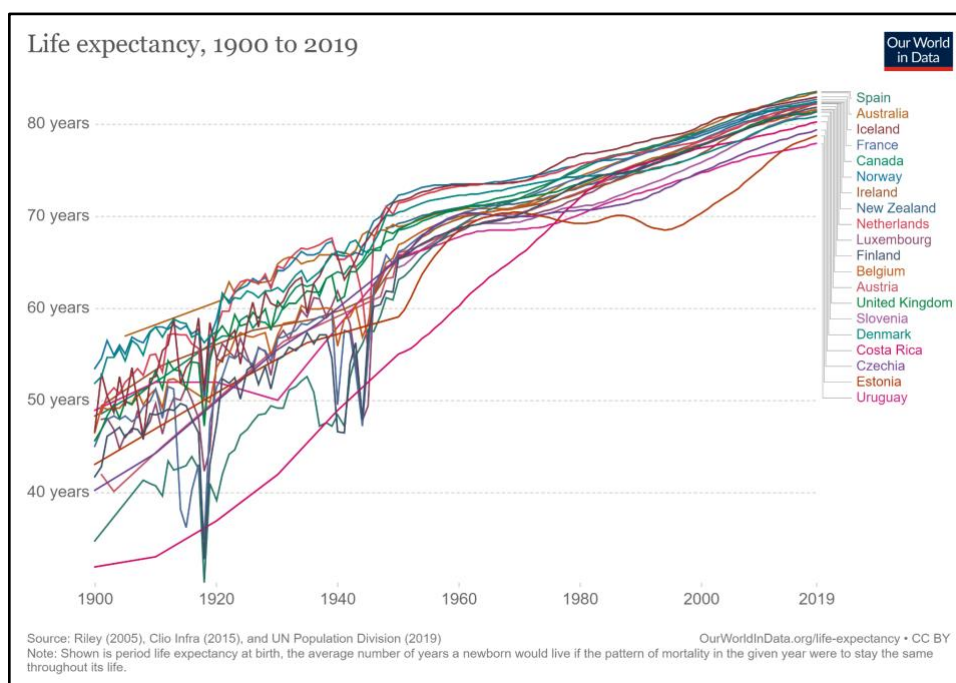
²³⁰ Ibid.

²³¹ Encyclopedia.com (2019).

²³² Rodríguez-Ocaña (2020).

²³³ Our World in Data (2019).

ranged well below 60 years. 17 of these countries are ranked within the top 40 in terms of historical pathogen prevalence, including 8 countries in the top 10.



It may seem as if the evidence of healthcare initiatives in the 1960s contradicts the use of a historical measure from the 1940s-1960s. However, because the countries with the best human rights records currently were among the lowest in pathogen prevalence in the historical measure, it seems that investment in healthcare *further suppressed* the behavioral immune system. We can therefore propose that low cross-national scores of pathogen prevalence help explain the emergence of human rights. Although the literature characterizes the countries with low pathogen prevalence as “Western” and human rights as concepts with limited applicability beyond those nations²³⁴, a parasite stress approach can provide a more forward-looking outlook. Perhaps “non-Western” regions have values inconsistent with human rights because their relatively higher rates of pathogen prevalence are influencing their social values through the activation of the behavioral immune system. It is perhaps for this reason, that exporting “Western” neo-liberal values to other

²³⁴ Pollis et al. (2006).

regions has been only somewhat successful, as “non-Western” regions are not yet ecologically primed for the adoption of such values.

A novel contribution to the debate between the continuous history accounts and recent history accounts is implied by a pathogen prevalence approach. While the concept of human rights has emerged slowly and continuously between thinkers, changes in pathogen prevalence have only recently produced the right ecological conditions for the flourishing of international human rights *practice*. The explosion of the human rights movement post-1977 required a sufficient support system consisting of individuals whose value systems were aligned with human rights. The top-down effects of the UDHR were arguably less profound than the bottom-up effects from investment in health-care post 1948.

8.3 Redefining human rights

We can begin by stating what human rights are not; they are not effective at changing the universal status of human well-being unconditionally, they are not a set of abstract objects to which we have access through reason alone, they are not merely principles that serve political functions at the international level, they are not necessarily or fundamentally minimal, and they are not unconditionally accepted by all persons and societies. Rather, human rights are a set of principles that reflect a realistic utopianism which is conditional upon the ecological status of the world, specifically when ecological pressures are lifted such that individualism supplants collectivism.

Human rights are response-dependent in that they require certain psychological antecedents for their realization. Response-dependent properties require responses on the part of certain populations, for example some groups of people may characterize an object as *icky* or *fun* while others may not.²³⁵ In the same manner, some persons may object that another group of persons (or an individual person) do not have human rights (or a particular set of human rights), because of their psychological orientation. By extension, cross-national differences in human rights practice should decrease and the list of human rights will continue to grow (tend toward maximalism) if the global status of pathogen prevalence is decreased, because it will lead to

²³⁵ Nichols & Folds-Bennett. (2003).

changes in response-dependent attitudes toward human rights. Hence, human rights maximalism reflects a realistic utopianism which can be actualized by ameliorating the physical state of the world.

9. Conclusion

This thesis has aimed to integrate a complex body of scientific literature into the study of human rights. While the human rights movement has made laudable attempts to find “root” causes, the causes hitherto identified are themselves dependent on a further set of causes. The natural sciences may help provide the genuine “roots” of human rights, shedding light on the complex and contested literature on human rights. Furthermore, the few authors that have attempted to link human rights to the natural sciences have not emphasized the importance of the broader environment within which human biology is embedded. The behavioral immune system was presented as a response to such a “grounding problem”, showing that human values are influenced by changes in environmental cues. These values ground (bottom-up) the cultural values that influence human rights practice cross-nationally.

The parasite stress hypothesis of human rights was supported by statistically significant findings in four cross-national studies. The studies satisfied two important conditions for causality: (a) having a statistically significant relationship and (b) the causal variable being temporally prior but could not satisfy the further condition (c) that no other factors can account for the differences. Hence, the results are very promising but insufficient for causal inference.

Lastly, evidence was presented in support of a “recent” history perspective on human rights through the investment in disease-control efforts in low-pathogen contexts. It was argued that although the conceptual emergence of human rights is consistent with a “continuous” perspective, the emergence of genuine human rights *practice* is not. Rather, decreases in pathogen prevalence in the 1960s and 1970s help explain why the *concept* of human rights did not independently inspire changes in 1948.

What is the future of the PSHHR? At the individual level, establishing a direct connection between the behavioral immune system and beliefs about human rights would support the theory. This could be done through psychological laboratory experiments conducted in a similar manner to prior BIS studies. At the cross-national level, replicating the findings with controls and more

sophisticated statistical methods, improved human rights data, along with more longitudinal data on pathogen prevalence could help further validate the hypothesis. If more support can be gathered for it, then many crucial issues in human rights studies can be analyzed from a completely new perspective. These include the Asian values debate of the 1990s, the challenges to intergenerational equity through global warming and its effects on pathogen prevalence globally²³⁶, the role of disease control investment on the status of human rights globally, optimizing human rights practice through ecological interventions, studying other ecological variables and their effects on human rights, and the effects of COVID-19 on human rights. The findings of this study can be considered an important first step in the integration of the natural sciences with human rights studies. It is hoped that it can help inspire a unified leap.

²³⁶ Lafferty (2009).

Bibliography:

- Akoglu, H. (2018). User's guide to correlation coefficients. *Turkish journal of emergency medicine*, 18(3), 91-93.
- Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., & Walter, P. (2002). The generation of antibody diversity. In *Molecular Biology of the Cell. 4th edition*. Garland Science.
- Alon, I., Farrell, M., & Li, S. (2020). Regime type and COVID-19 response. *FIIB Business Review*, 9(3), 152-160.
- Ansart, S., Pelat, C., Boelle, P. Y., Carrat, F., Flahault, A., & Valleron, A. J. (2009). Mortality burden of the 1918–1919 influenza pandemic in Europe. *Influenza and other respiratory viruses*, 3(3), 99-106.
- Andersson, S. G., & Kurland, C. G. (1999). Origins of mitochondria and hydrogenosomes. *Current opinion in microbiology*, 2(5), 535-541.
- Atkins, E. (1960). Pathogenesis of fever. *Physiological Reviews*, 40(3), 580-646.
- Baynes, K. (2009). Toward a political conception of human rights. *Philosophy & social criticism*, 35(4), 371-390.
- Beall, A. T., Hofer, M. K., & Schaller, M. (2016). Infections and elections: Did an Ebola outbreak influence the 2014 US federal elections (and if so, how)?. *Psychological Science*, 27(5), 595-605.
- Bennett, D. L., & Nikolaev, B. (2021). Historical disease prevalence, cultural values, and global innovation. *Entrepreneurship Theory and Practice*, 45(1), 145-174.
- Bernstein, Sara (2016). Grounding Is Not Causation. *Philosophical Perspectives* 30 (1):21-38.
- Blickle, K. (2020). Pandemics change cities: municipal spending and voter extremism in Germany, 1918-1933. *FRB of New York Staff Report*, (921).
- Brems, E. (2009). Human rights: Minimum and maximum perspectives. *Human Rights Law Review*, 9(3), 349-372.
- Brady, H. E. (2008). *Causation and explanation in social science*. The Oxford Handbook of Political Methodology (pp. 217-70).
- Cargas, S. (2016). Questioning Samuel Moyn's Revisionist History of Human Rights. *Hum. Rts. Q.*, 38, 411.

Cao, C., Li, N., & Liu, L. (2020). Do national cultures matter in the containment of COVID-19?. *International Journal of Sociology and Social Policy*.

Chiao, J. Y., & Blizinsky, K. D. (2010). Culture–gene coevolution of individualism–collectivism and the serotonin transporter gene. *Proceedings of the Royal Society B: Biological Sciences*, 277(1681), 529-537.

CDC (2020). History of Quarantine. *Center for Disease Control and Prevention*.
<https://www.cdc.gov/quarantine/historyquarantine.html>

CDC (2021a). CDC Timeline 1940s - 1970s. *Center for Disease Control and Prevention*.
<https://www.cdc.gov/museum/timeline/1940-1970.html#1960>

CDC (2021b). History of Smallpox. *Center for Disease Control and Prevention*.
<https://www.cdc.gov/museum/timeline/1940-1970.html#1960>

Chalmers, D. J. (1996). *The conscious mind: In search of a fundamental theory*. Oxford Paperbacks.

Chiao, J. Y., & Blizinsky, K. D. (2010). Culture–gene coevolution of individualism–collectivism and the serotonin transporter gene. *Proceedings of the Royal Society B: Biological Sciences*, 277(1681), 529-537.

Chomsky, N. (1986). *Knowledge of language: Its nature, origin, and use*. Greenwood Publishing Group.

Cingranelli, David L & David L Richards (1999) Respect for human rights after the end of the Cold War. *Journal of Peace Research* 36(5): 511–534

Cingranelli, D., Richards D, & Clay, C (2013). Short Variable Descriptions for Indicators in the CIRI Human Rights Dataset. *CIRI Human Rights Data Project*.
<https://drive.google.com/file/d/0BxDpF6GQ-6fbY25CYVRIOTJ2MHM/edit?resourcekey=0-jRhZKkKrORBDM4IbqqnleQ>

Clarke, Steven. "Mortality trends in prehistoric populations." *Human Biology* (1977): 181-186.

Clark, A. M., & Sikkink, K. (2013). Information effects and human rights data: Is the good news about increased human rights information bad news for human rights measures?. *Human Rights Quarterly*, 539-568.

Clark, A., & Chalmers, D. (1998). The extended mind. *analysis*, 58(1), 7-19.

Cole, W. M., & Perrier, G. (2020). Is Religion Really the Enemy of Human Rights? A Reply to Cingranelli and Kalmick. *Human Rights Quarterly*, 42(4), 902-932.

- Correia, F., & Schnieder, B. (Eds.). (2012). *Metaphysical grounding: Understanding the structure of reality*. Cambridge University Press.
- Cronk, L. (1991). Human behavioral ecology. *Annual Review of Anthropology*, 20(1), 25-53.
- Crowson, H. M. (2007). Authoritarianism, perceived threat, and human rights attitudes in US law students: A brief look. *Individual Differences Research*, 5(4).
- Culpepper, P. D., Havlíček, J., Leongómez, J. D., & Roberts, S. C. (2018). Visually activating pathogen disgust: a new instrument for studying the behavioral immune system. *Frontiers in psychology*, 9, 1397.
- Donnelly, J. (1982). Human rights as natural rights. *Hum. Rts. Q.*, 4, 391.
- Dunn, R. R., Davies, T. J., Harris, N. C., & Gavin, M. C. (2010). Global drivers of human pathogen richness and prevalence. *Proceedings of the Royal Society B: Biological Sciences*, 277(1694), 2587-2595.
- Encyclopedia.com (2019). The 1970s Medicine and Health: Overview. *Encyclopedia.com*. <https://www.encyclopedia.com/social-sciences/culture-magazines/1970s-medicine-and-health-overview>
- Engle, K. (1999). Culture and human rights: The Asian values debate in context. *NYUJ Int'l L. & Pol.*, 32, 291.
- Fessler, D. M. T., Eng, S. J., & Navarrete, C. D. (2005). Elevated disgust sensitivity in the first trimester of pregnancy: Evidence supporting the compensatory prophylaxis hypothesis. *Evolution and Human Behavior*, 26, 344–351.
- Fincher, C. L., Thornhill, R., Murray, D. R., & Schaller, M. (2008). Pathogen prevalence predicts human cross-cultural variability in individualism/collectivism. *Proceedings of the Royal Society B: Biological Sciences*, 275(1640), 1279-1285.
- Fincher, C. L., & Thornhill, R. (2012). Parasite-stress promotes in-group assortative sociality: The cases of strong family ties and heightened religiosity. *Behavioral and Brain Sciences*, 35(2), 61-79.
- Forgas J.P., M.G. Haselton, W. von Hippel (Eds.), *Evolution and the social mind*, Psychology Press, New York (2007), pp. 293-307
- Fruehwald, E. (2009). A Biological Basis of Rights. *S. Cal. Interdisc. LJ*, 19, 195.
- Gangl, M. (2010). Causal inference in sociological research. *Annual review of sociology*, 36, 21-47.

Gelfand, M. J., Triandis, H. C., & CHAN, D. K. S. (1996). Individualism versus collectivism or versus authoritarianism?. *European Journal of Social Psychology*, 26(3), 397-410.

Gewirth, A. (1981). Are there any absolute rights?. *The Philosophical Quarterly* (1950-), 31(122), 1-16.

Gibbons, H., & Skinner, N. (2003). The biological basis of human rights. *BU Pub. Int. LJ*, 13, 51.

Griffin, J. (2001). Discrepancies between the best philosophical account of human rights and the international law of human rights. In *Proceedings of the Aristotelian Society (Hardback)* (Vol. 101, No. 1, pp. 1-28). Oxford, UK and Boston, USA: Blackwell Science Ltd.

Golec de Zavala, A., Bierwiazzonek, K., Baran, T., Keenan, O., & Hase, A. (2020). The COVID-19 pandemic, authoritarianism, and rejection of sexual dissenters in Poland. *Psychology of Sexual Orientation and Gender Diversity*.

Hafner-Burton, E. M. (2014). A social science of human rights. *Journal of Peace Research*, 51(2), 273-286.

Hartman, T. K., Stocks, T. V., McKay, R., Gibson-Miller, J., Levita, L., Martinez, A. P., ... & Bentall, R. P. (2020). The authoritarian dynamic during the COVID-19 pandemic: effects on nationalism and anti-immigrant sentiment. *Social Psychological and Personality Science*, 1948550620978023.

Hecht, S. S. (2012). Lung carcinogenesis by tobacco smoke. *International journal of cancer*, 131(12), 2724-2732.

Hobbes, T., & Missner, M. (2016). *Thomas Hobbes: Leviathan (Longman Library of Primary Sources in Philosophy)*. Routledge.

Inbar, Y., Pizarro, D., Iyer, R., & Haidt, J. (2012). Disgust sensitivity, political conservatism, and voting. *Social Psychological and Personality Science*, 3(5), 537-544.

Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987). Positive affect facilitates creative problem solving. *Journal of personality and social psychology*, 52(6), 1122.

Keane, D. (2010). Survival of the Fairest? Evolution and the Geneticization of Rights. *Oxford Journal of Legal Studies*, 30(3), 467-494.

Kemphorne, J. C., & Terrizzi Jr, J. A. (2021). The Behavioral Immune System and Conservatism as Predictors of Disease-Avoidant Attitudes During the COVID-19 Pandemic. *Personality and individual differences*, 110857.

Kemmelmeier, M., Burnstein, E., Krumov, K., Genkova, P., Kanagawa, C., Hirshberg, M. S., ... & Noels, K. A. (2003). Individualism, collectivism, and authoritarianism in seven societies. *Journal of Cross-Cultural Psychology*, 34(3), 304-322.

Kurzban R, M.R. Leary (2001). Evolutionary origins of stigmatization: the functions of social exclusion. *Psychological Bulletin* (Vol. 127, pp. 187-208).

Lafferty, K. D. (2009). Calling for an ecological approach to studying climate change and infectious diseases. *Ecology*, 90(4), 932-933.

Laland, K. N. & Brown, G. (2011). *Sense and nonsense: Evolutionary perspectives on human behaviour*. Oxford University Press.

Lillich, R. B. (1995). The growing importance of customary international human rights law. *Ga. J. Int'l & Comp. L.*, 25, 1.

MacIntyre, A. (2013). *After virtue*. A&C Black.

Makhanova, A., & Shepherd, M. A. (2020). Behavioral immune system linked to responses to the threat of COVID-19. *Personality and Individual Differences*, 167, 110221.

Manson, J. H. (2020). Right-wing Authoritarianism, Left-wing Authoritarianism, and pandemic-mitigation authoritarianism. *Personality and individual differences*, 167, 110251.

Marks, S. (2011). Human rights and root causes. *The Modern Law Review*, 74(1), 57-78. P. 60

McEvedy, C. (1988). The bubonic plague. *Scientific American*, 258(2), 118-123.

McCrudden, C. (2015). Human rights histories. *Oxford Journal of Legal Studies*, 35(1), 179-212

Moghaddam, F. M., & Vuksanovic, V. (1990). Attitudes and behavior toward human rights across different contexts the role of right-wing authoritarianism, political ideology, and religiosity. *International Journal of Psychology*, 25(2), 455-474.

Mortensen, C. R., Becker, D. V., Ackerman, J. M., Neuberg, S. L., & Kenrick, D. T. (2010). Infection breeds reticence: The effects of disease salience on self-perceptions of personality and behavioral avoidance tendencies. *Psychological Science*, 21, 440-447.

Morsink, J. (2019). *The Universal Declaration of Human Rights and the Holocaust: an endangered connection*. Georgetown University Press.

Moyn, S. (2012). *The last utopia: human rights in history*. Harvard University Press.

Murray, D. R., Fessler, D. M., Kerry, N., White, C., & Marin, M. (2017). The kiss of death: Three tests of the relationship between disease threat and ritualized physical contact within traditional cultures. *Evolution and Human Behavior*, 38(1), 63-70.

- Murray, D. R., & Schaller, M. (2010). Historical prevalence of infectious diseases within 230 geopolitical regions: A tool for investigating origins of culture. *Journal of Cross-Cultural Psychology*, *41*(1), 99-108.
- Murray, D. R., & Schaller, M. (2012). Threat (s) and conformity deconstructed: Perceived threat of infectious disease and its implications for conformist attitudes and behavior. *European Journal of Social Psychology*, *42*(2), 180-188.
- Murray, D. R., Schaller, M., & Suedfeld, P. (2013). Pathogens and politics: Further evidence that parasite prevalence predicts authoritarianism. *PloS One*, *8*(5), e62275.
- Murray, D. R., Jones, D. N., & Schaller, M. (2013). Perceived threat of infectious disease and its implications for sexual attitudes. *Personality and Individual Differences*, *54*, 103–108.
- Murray, D. R., & Schaller, M. (2016). The behavioral immune system: Implications for social cognition, social interaction, and social influence. In *Advances in experimental social psychology* (Vol. 53, pp. 75-129). Academic Press.
- Murray, D. R. (2014). Direct and indirect implications of pathogen prevalence for scientific and technological innovation. *Journal of Cross-Cultural Psychology*, *45*(6), 971-985.
- Navarrete, C. D., Fessler, D. M. T., & Eng, S. J. (2007). Elevated ethnocentrism in the first trimester of pregnancy. *Evolution and Human Behavior*, *28*, 60–65.
- Nesse, R. M. (2005). Natural selection and the regulation of defenses: A signal detection analysis of the smoke detector principle. *Evolution and human behavior*, *26*(1), 88-105.
- Neuberg, S. L. (2008). Intergroup prejudices and intergroup conflicts. *Foundations of evolutionary psychology*, 401.
- Nussbaum, M. C. (1997). Capabilities and human rights. *Fordham L. Rev.*, *66*, 273.
- Nickel, James (2019). Human Rights, *The Stanford Encyclopedia of Philosophy*. Edward N. Zalta (ed.). <https://plato.stanford.edu/archives/sum2019/entries/rights-human/>.
- Nichols, S., & Folds-Bennett, T. (2003). Are children moral objectivists? Children's judgments about moral and response-dependent properties. *Cognition*, *90*(2), B23-B32.
- Nikolaev, B., & Salahodjaev, R. (2017). Historical prevalence of infectious diseases, cultural values, and the origins of economic institutions. *Kyklos*, *70*(1), 97-128.
- Bonum, O (1360). Leprosy victims taught by bishop. *Wikipedia Commons*. https://commons.wikimedia.org/wiki/File:Leprosy_victims_taught_by_bishop.jpg

O'Shea, B. A., Watson, D. G., Brown, G. D., & Fincher, C. L. (2020). Infectious disease prevalence, not race exposure, predicts both implicit and explicit racial prejudice across the United States. *Social Psychological and Personality Science*, 11(3), 345-355.

Our World in Data (2019). Life expectancy, 1543 to 2015. *Our World in Data*.
<https://ourworldindata.org/grapher/life-expectancy?tab=chart>

Oyserman, D., Coon, H. M., & Kimmelmeier, M. (2002). Rethinking individualism and collectivism: evaluation of theoretical assumptions and meta-analyses. *Psychological bulletin*, 128(1), 3.

Parfit, D. (1984). *Reasons and persons*. OUP Oxford.

Patterson, K. B., & Runge, T. (2002). Smallpox and the native American. *The American journal of the medical sciences*, 323(4), 216-222.

Tielt, P (1353). The Strasbourg Massacre: Jews Burned to Death in Strasbourg during the Black Death. *The Journal of Humanities in Rehabilitation*.
<https://www.jhrehab.org/2020/11/17/historical-perspectives-in-art-the-value-of-art-history-in-a-pandemic-teaching-as-a-healing-force/>

Poe, Steven C & C Neal Tate (1994) Repression of human rights to personal integrity in the 1980s: A global analysis. *American Political Science Review* 88(4): 853–900

Pollis, A., Schwab, P., & Koggel, C. M. (2006). Human rights: A western construct with limited applicability. *Moral issues in global perspective. Vol. 1: Moral and political theory*.

Rajan, R., & Zingales, L. (2003). *The emergence of strong property rights: speculation from history* (No. w9478). National Bureau of Economic Research.

Rawls, J. (2009). *A theory of justice*. Harvard university press.

Reese, R. (1919). Germicide rush. *Science Photo Library*.
<https://www.sciencephoto.com/media/548422/view>

Robinson, C. A. (2013). Biological foundations of human rights. In *The Oxford handbook of international human rights law*.

Rodríguez-Ocaña, E. (2020). Global health in the making: health demonstration areas in Europe, 1950s and 1960s. *História, Ciências, Saúde-Manguinhos*, 27, 165-185.

Santos, H. C., Varnum, M. E., & Grossmann, I. (2017). Global increases in individualism. *Psychological science*, 28(9), 1228-1239.

Schaffer, J. (2012). Grounding, transitivity, and contrastivity. *Metaphysical grounding: Understanding the structure of reality*, 122-138.

Scientific Advisory Group for Emergencies (2020). Options for increasing adherence to social distancing measures. *SAGE*. <https://www.gov.uk/government/publications/options-for-increasing-adherence-to-social-distancing-measures-22-march-2020>

Sekalala, S., Forman, L., Habibi, R., & Meier, B. M. (2020). Health and human rights are inextricably linked in the COVID-19 response. *BMJ Global Health*, *5*(9), e003359.

Sender, R., Fuchs, S., & Milo, R. (2016). Revised estimates for the number of human and bacteria cells in the body. *PLoS biology*, *14*(8), e1002533.

Shook, N. J., Sevi, B., Lee, J., Oosterhoff, B., & Fitzgerald, H. N. (2020). Disease avoidance in the time of COVID-19: The behavioral immune system is associated with concern and preventative health behaviors. *PloS one*, *15*(8), e0238015.

Schaffer, J. (2016). Grounding in the Image of Causation. *Philosophical studies*, *173*(1), 49-100.

Schaller, M., & Duncan, L. A. (2007). *The behavioral immune system: Its evolution and social psychological implications*. In J. P. Forgas, M. G. Haselton, & W. von Hippel (Eds.), *Sydney symposium of social psychology. Evolution and the social mind: Evolutionary psychology and social cognition* (p. 293–307). Routledge/Taylor & Francis Group.

Schaller, M., & Murray, D. R. (2008). Pathogens, personality, and culture: disease prevalence predicts worldwide variability in sociosexuality, extraversion, and openness to experience. *Journal of personality and social psychology*, *95*(1), 212.

Schaller, M., & Park, J. H. (2011). The behavioral immune system (and why it matters). *Current directions in psychological science*, *20*(2), 99-103.

Schnakenberg, K. E., & Fariss, C. J. (2014). Dynamic patterns of human rights practices. *Political Science Research and Methods*, *2*(1), 1-31.

Singer, P. (1995). *Animal liberation*. Random House.

Sobel, M. E. (2000). Causal inference in the social sciences. *Journal of the American Statistical Association*, *95*(450), 647-651.

Tasioulas, John, 'The Moral Reality of Human Rights', in Pogge, Thomas (ed.), *Freedom from Poverty as a Human Right: Who Owes What to the Very Poor?*, Oxford: Oxford University Press, 2007.

Terrizzi Jr, J. A., Shook, N. J., & McDaniel, M. A. (2013). The behavioral immune system and social conservatism: A meta-analysis. *Evolution and Human Behavior*, *34*(2), 99-108.

The Fund For Peace (2018a). Human Rights and the Rule of Law. *Fragile States Index*. <https://fragilestatesindex.org/indicators/p3/>

The Fund For Peace (2018b). Methodology. *Fragile States Index*.
<https://fragilestatesindex.org/methodology/>

The Political Terror Scale (2020). Documentation: Coding Rules. *Political Terror Scale*.
<http://www.politicalterrorsscale.org/Data/Documentation.html#PTS-Levels>

Thede, N. (2001). Human rights and statistics: Some reflections on the no-man's-land between concept and indicator. *Statistical Journal of the United Nations Economic Commission for Europe*, 18(2-3), 259-273.

Thornhill, R., & Fincher, C. L. (2014). *The parasite-stress theory of values and sociality: Infectious disease, history and human values worldwide*. Springer.

Thornhill, R., & Fincher, C. L. (2011). Parasite stress promotes homicide and child maltreatment. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 366(1583), 3466-3477.

Thornhill, R., Fincher, C. L., & Aran, D. (2009). Parasites, democratization, and the liberalization of values across contemporary countries. *Biological Reviews*, 84(1), 113-131.

Triandis, H. C. (2001). Individualism-collectivism and personality. *Journal of personality*, 69(6), 907-924.

Trogdon, K., & Witmer, D. G. (2021). Full and partial grounding. *Journal of the American Philosophical Association*, 7(2), 252-271.

Tybur, Joshua M., Debra Lieberman, Robert Kurzban, and Peter DeScioli. "Disgust: evolved function and structure." *Psychological review* 120, no. 1 (2013): 65.

Varnum, M. E., & Grossmann, I. (2016). Pathogen prevalence is associated with cultural changes in gender equality. *Nature Human Behaviour*, 1(1), 1-4.

Weiss, E. B. (2008). Climate change, intergenerational equity, and international law. *Vermont Journal of Environmental Law*, 9(3), 615-627.

Wenar, Leif (2021). Rights. *The Stanford Encyclopedia of Philosophy*. Edward N. Zalta (ed.).
<https://plato.stanford.edu/archives/spr2021/entries/rights/>.

Unknown (1918). Mrs Bennett, afflicted with a skin disease. *Wikipedia Commons*.
[https://commons.wikimedia.org/wiki/File:Mrs Bennett, afflicted with a skin disease. Wellcome L0051292.jpg](https://commons.wikimedia.org/wiki/File:Mrs_Bennett,_afflicted_with_a_skin_disease._Wellcome_L0051292.jpg)

Unknown (1819). Mrs Bennett, cured of skin disease. *Wikipedia Commons*.
[https://commons.wikimedia.org/wiki/File:Mrs Bennett, cured of skin disease. Wellcome L0051293.jpg](https://commons.wikimedia.org/wiki/File:Mrs_Bennett,_cured_of_skin_disease._Wellcome_L0051293.jpg)

Christoffer Gundersen & Eskil Wie (2013). *Universitas*. <https://universitas.no/sak/58818/slar-brannalarm-om-studentboliger/>

Varnum, M. E., & Grossmann, I. (2016). Pathogen prevalence is associated with cultural changes in gender equality. *Nature Human Behaviour*, 1(1), 1-4.

Wolfe, N. D., Dunavan, C. P., & Diamond, J. (2007). Origins of major human infectious diseases. *Nature*, 447, 279– 283.

World Health Organization. (2020). *Addressing human rights as key to the COVID-19: response, 21 April 2020* (No. WHO/2019-nCoV/SRH/Rights/2020.1). World Health Organization.