

Claremont Colleges

## Scholarship @ Claremont

---

CGU Theses & Dissertations

CGU Student Scholarship

---

Spring 2021

# The Corporate Character of Eudaimonist Virtue Ethics Cautioning the Invisible Environment of Harmful EMFs Resulting from 5G Technology

Joseph Wayne Komrosky  
*Claremont Graduate University*

Follow this and additional works at: [https://scholarship.claremont.edu/cgu\\_etd](https://scholarship.claremont.edu/cgu_etd)

---

### Recommended Citation

Komrosky, Joseph Wayne. (2021). *The Corporate Character of Eudaimonist Virtue Ethics Cautioning the Invisible Environment of Harmful EMFs Resulting from 5G Technology*. CGU Theses & Dissertations, 215. [https://scholarship.claremont.edu/cgu\\_etd/215](https://scholarship.claremont.edu/cgu_etd/215). doi: 10.5642/cguetd/215

This Open Access Dissertation is brought to you for free and open access by the CGU Student Scholarship at Scholarship @ Claremont. It has been accepted for inclusion in CGU Theses & Dissertations by an authorized administrator of Scholarship @ Claremont. For more information, please contact [scholarship@cuc.claremont.edu](mailto:scholarship@cuc.claremont.edu).

**The Corporate Character of Eudaimonist Virtue Ethics Cautioning the  
Invisible Environment of Harmful EMFs Resulting from 5G Technology**

by

**Joseph Wayne Komrosky**

Claremont Graduate University

2021

© Copyright Joseph Wayne Komrosky, 2021 All Rights Reserved

## **APPROVAL OF THE DISSERTATION COMMITTEE**

This dissertation has been duly read, reviewed, and critiqued by the Committee listed below, which hereby approves the manuscript of Joseph Wayne Komrosky as fulfilling the scope and quality requirements for meriting the degree of Doctor of Philosophy in Philosophy.

Darrell Moore, Chair

Claremont Graduate University

Associate Professor of Philosophy

Patricia Easton

Claremont Graduate University

Professor of Philosophy

Executive Vice President and Provost

Grace Kao

Claremont School of Theology

Professor of Ethics

## **Abstract**

The Telecommunications Corporate Character of a Eudaimonist Virtue Ethics Cautioning the Invisible Environment of Harmful EMFs Resulting from 5G Technology

by

Joseph Wayne Komrosky

Claremont Graduate University: 2021

There is a current concern in environmental ethics that stems from the development of cell phone communication technology; namely, do the electromagnetic frequencies (EMFs) linked to the development of technology of 4G and 5G cause harm to the environment (e.g., plants, bees and other insects, the animal kingdom, and human beings)? Do EMFs cause or correlate to the collapse of bee colonies and/or lower sperm counts in men and increased rates of breast cancer in women? This concern deals with EMFs that are inextricably linked to the development of telecommunication technology of current 4G and future 5G. More specifically, there are concerns that these EMFs may cause harm to various members of the environment, such as plants and trees, bees and insects, other members of the animal kingdom, and humans—and that some of these harms are expressed as sperm reduction in men, breast cancer in women, and brain cancer in men and women.

The thesis of this dissertation is that a normative person-based theory of neo-Aristotelian eudaimonistic virtue ethics provides an ethical framework that gives strong support for the conclusion that it is morally impermissible for a telecommunications corporate person with good character, to allow harmful EMFs associated with the implementation of 5G technology. Particularly in light of numerous studies and anecdotal evidence that suggests that this technology might be harmful to humans and the environment. I draw an analogy between persons and “corporate persons” to argue that corporations ought to consider character when making decisions about whether to introduce new technologies—in this case, the EMFs that

accompany 4G and 5G—into the world. Furthermore, the primary point of this dissertation is the application of the practical ethics of character. I am specifically interested in the question of character in relation to the vetting questions, of the introduction, by telecommunications corporations, of new 5G technology into the world.

The normative view developed in this dissertation has real-life practicality that if adopted by a telecommunications corporate person, of good character, would provide a model of practical moral reason sufficient to guide them to act compassionately towards the environment regarding the problem of 5G technology and the potential environmental harm EMF's can bring. Moreover, my argument based on eudaimonistic normative principles does something that utilitarian and deontological action-based normative theories do not do, namely, focus on the nature and role of character. Character is able to provide insight and explanatory power even for an ordinary person to see why their actions are guided a certain way. Finally, I will demonstrate the efficaciousness of the character-based, eudaimonistic normative framework that brings to the application of the problem 5G and potentially harmful EMFs in our environment.

Matthew 18:21-22 (NKJV): Then Peter came up and said to him, "Lord, how often shall my brother sin against me, and I forgive him? As many as seven times?" Jesus said to him, "I do not say to you seven times, but seventy times seven.

## Acknowledgements

First of all, I want to extend my deepest gratitude to my dissertation committee: Dr. Darrell Moore, Dr. Patricia Easton, and Dr. Grace Kao. Without their expertise, patience, wisdom, and availability, the completion of this work would have been an impossibility. Dr. Moore's expertise in political philosophy and virtues ethics as well. His understanding of the field of virtue ethics and the corporate enterprise has proven to be an invaluable resource for both this dissertation and throughout my PhD. Dr. Easton's and Dr. Kao's focus on precision and clarity of argumentation have forevermore transformed my approach to the text as well my approach to all future intellectual endeavors. My interactions with both of these scholars have simply made me a better thinker. Furthermore, a special thanks to Dr. Charles Young for the countless hours spent to ensure that I properly understood, at times, very complex philosophical concepts of philosophical Greek and how they related to my version of neo-Aristotelian virtue ethics, that I have developed in this dissertation, and above all, his insights into the philosopher Aristotle. I would also like to thank Dr. Devra Davis for her insights on the problem of harmful EMFs resulting from 5G technology, and especially her gracious time, in meeting with me.

I also want to thank my dear colleagues Matthew Thompson, Shahram Arshadnejad, Ivan Tircuit, and Melissa Gholamnejad. I have been truly blessed to be surrounded by brilliant and insightful colleagues who, as ones who were and are struggling through the process, could encourage me as well as provide to me further insight so that I could refocus my approach.

Finally, I want to thank my wife, mother, father, and my two dear children for the years of financial, intellectual, and emotional support. To my loving wife Stacey, thank you for the countless hours of emotional and intellectual support you have given me during this time in my life, as I could not have done this without your enduring support. Thank you for your

unfathomable patience in seeing me complete this project with genuine arête and eudaimonia. Thank you for giving me the very idea of this environmental concern of 5G to explore! To this end, you are truly a gem and inspiration in my life. To my mom, thank you for all the many years of my life of believing and supporting me. You have been integral in my emotional and intellectual success. To my dad, thank you for instilling the moral virtues of responsibility and perseverance needed to take on such a massive undertaking in my life. To my wonderful children Chloe and Kye. Chloe, thank you for all of the years of your patience while I spent towards this enduring goal, as it was no small sacrifice on your part. You are truly my Edelweiss flower. Kye, thank you for your support, as Daddy completed his “interstation boot camp”, and all of the times you came out to talk to me while in my study. Your interruptions were precious, and very much needed. It is no small thing to say that I would not be the person I am without all of these people in my life.

I want to give a special thanks to Brother Blaise for sharing his story with me about his beekeeping duties at the Prince of Peace Abbey, in Oceanside, CA. You put this wonderful idea of the possible harmful EMFs, and its impact on the environment, into my mind, when you shared with me about the harm it did to your bees. To that end, I thank you for your wonderful insight about this topic, as I will donating a copy of this dissertation to the Prince of Peace Abbey as a memorial to you. Until I see you in heaven, may you rest in peace brother.

Last, but certainly not least, I want to thank Jesus Christ and my personal Lord and Savior. I could not have done this without Him. It is with His Wonderful Grace, that I was able to complete this dissertation.

It is no small thing to say that I would not be the person I am without them. I owe my very intellectual development to them all. I have always viewed their respective (and often very



different) intellectual interests and capacities in very high esteem. Their example could not help but to have engendered in me an unquenchable thirst for truth.

Finally, I want to thank all of the crickets who sang to me in my office garage, during the many hours of the pandemic, as they were a part of this process. They helped me relax during the countless hours spent in pursuit of this current scholarship. I could not imagine finishing this dissertation without their peaceful music, as I believe they were cheering me on.

## Table of Contents

Abstract	
Dedication	
Acknowledgements .....	vi
Introducing the Environmental Concern of 5G Technology .....	1
Chapter 1: The Corporate Concern of the Invisible Environment of 5G Technology .....	15
1 – Corporate The Concern of Future Invisible Environment of 5G Technology .....	15
1.1 - The Tension of Huawei’s Push for 5G Technology .....	16
1.2 - A Landscape to the Field of Electromagnetic Radiation.....	18
1.21 - We Live in a Sea of Electromagnetic Radiation.....	19
1.22 - Properties of Wavelengths in the EMR Spectrum .....	20
1.23 - The Evolution from 1G to 5G Technology.....	23
1.24 - The World Health Organization (WHO) .....	25
1.25 - The International Commission on Non-Ionizing Radiation Protection (ICNIRP).....	29
1.26 - The International Committee on Electromagnetic Safety (ICES) .....	31
1.27 - The National Institute of Environmental Health Sciences (NIEHS) .....	33
1.28 - The United States Environmental Protection Agency (EPA).....	34
1.29 - The Federal Communications Commission (FCC) .....	37
1.30 - The National Cancer Institute (NCI) .....	40
1.31 - The Health Physics Society (HPS) .....	41

1.32 - The National Council on Radiation Protection and Measurements (NCRP), and hypersensitivity. ....	45
1.3 - The EMF Environmental Harm Towards Bees .....	48
1.4 - The EMF Environmental Harm Towards Trees and Plants .....	52
1.5 - The EMF Environmental Harm Towards Wildlife in General.....	55
1.6 - The EMF Environmental Harm Towards Humans .....	57
1.61 - The EMF Harm Towards Firefighters in California.....	57
1.62 - The EMF Harm in the Form of Severe Headaches.....	59
1.63 - The EMF Harm Towards the Human Brain .....	62
1.64 - The EMF Environmental Harm of Towards Pregnancy.....	64
1.65 - The EMF Environmental Harm Towards Men’s Reproductive Health....	66
1.66 - The EMF Environmental Harm of Breast Cancer .....	69
1.67 - The EMF Environmental Harm of DNA Damage.....	72
1.68 - The EMF Environmental Harm Towards Children Using Virtual Reality .....	74
1.69 - The EMF Environmental Harm of the Military Using Millimeter Waves in the Active Denial System (ADS) for Crowd Control .....	76
1.7 - Allowing the Advancement of EMFs from 5G is Harmful.....	80
Chapter 2: Action Based Normative Theories: Utilitarianism and Deontology.....	82
2 - Introducing Action Based Normative Theories .....	82
2.1 - Action Based Normative Theory of Utilitarianism .....	84
2.2 – Problems with the Application of Utilitarianism to 5G Technology .....	93
2.2.1 – The Moral Reasoning of Utilitarianism Applied to 5G.....	94

2.2.2 – Formulation of the Principle of Utility.....	96
2.2.3 – The Comparative Consequences Objection .....	98
2.2.4 – The Ends Justify the Immoral Means.....	100
2.2.5 – The Person Objection.....	105
2.3 - Action Based Normative Theory of Deontology.....	110
2.4 - Problems with the Application of Deontology to 5G Technology .....	116
2.4.1 – Problem of the Principle of the Laws of Nature.....	117
2.4.2 – Problem of Exceptionless Rules.....	119
2.4.3 – Problem of the Exclusion of Non-Rational Beings.....	124
2.4.4 – Problem of the Missing Person and Character .....	126
2.5 - Conclusion.....	129
Chapter 3: The Person Based Normative Theory: Aristotelian Virtue Ethics.....	131
3 – Introducing a Person Based Normative Theory of Virtue Ethics.....	131
3.1 – The Person-Based Normative Theory of Virtue Ethics .....	132
3.1.1 – Aristotle’s Version of Character .....	137
3.2 – Problems with the Person Based Normative Theory of Virtue Ethics .....	144
3.2.1 – The Problem of Situationism in Virtue Ethics .....	144
3.2.1.1 – Experimental Research that has Challenged Character .....	146
3.2.1.1.1 – Hartshorne and May: Cheating, Lying, and Stealing Experiment (1928) .....	148
3.2.1.1.2 – Darly and Batson: The Good Samaritans Experiment (1973).....	149

3.2.1.1.3 – The Stanford Prison Experiment (1971) .....	151
3.2.1.2 – The Philosophical Interpretation of the Experimental Research .....	151
3.2.1.3 – A Problem for the Situationists – The Lack of Age Specificity .....	153
3.2.1.4 – Age Specificity in the Moral Formation of Character .....	156
3.2.2 – The Problem of the Fundamental Attribution Error .....	160
3.3 – The More Robust Person-Based Virtue Ethics of Aristotle.....	163
Chapter 4: Corporate Person Solution of Aristotle’s Virtue Ethics to the Concern of 5G .....	165
4 – The Application of Aristotelian Virtue Ethics to Concern of 5G.....	165
4.1 – The General Importance of Virtue Ethics .....	166
4.2 – The Application of neoAristotelian Virtue Ethics: Resolving the Concern of 5G.....	171
4.3 – Corporations are Considered Persons .....	173
4.4 – The Character of the Corporate Persons: Correlating Values and Virtues.....	177
The Corporate Person Eudaimonistic Conclusion to the Concern of 5G .....	189
Bibliography .....	193

## **Introducing the Environmental Problem of 5G Technology**

There is a current concern in environmental ethics that stems from the development of communication technology. This problem deals with Electromagnetic Frequencies (EMFs) that are inextricably linked to the development of telecommunication technology 5G. More specifically, these EMFs might cause harm to various members of the animal kingdom, such as bees—killing them and also harm to humans—sperm reduction in men breast cancer in women, and brain cancer in men and women.<sup>1</sup> As a result, I will bring into focus the nature of this potential harm using four primary examples—interference with homing mechanisms in bees, leading to their death, trees and plants, wildlife in general, and physical damage to humans, leading to sub-par functioning or to cancer. Understanding this potential harm will help the reader appreciate and properly grasp the problem at hand. This problem is that there is a concern for the harm caused by or correlated with 5G will shape the development of good corporate character. More simply, a corporation of good character will be concerned when it can be shown that a technology it uses or plans to use is correlated with harms to human beings and to the environment. I will provide a virtue ethics framework well suited to address this environmental problem. Finally, I will apply this neo-Aristotelian virtue ethics normative solution to the telecommunications corporate character for a resolution. This framework will enable me to highlight the importance of character for thinking about how corporations should evaluate its potential use of 5G technology.

In pursuing this understanding, a question of immediate concern now arises, how does one evaluate whether this technology of 5G—as a good—should be allowed or not? Against the

---

<sup>1</sup> “EMFscientist.Org - International EMF Scientist Appeal,” accessed February 2, 2021, <https://emfscientist.org/index.php/emf-scientist-appeal>.

normative views of Utilitarianism and Deontological ethics, I argue that virtue ethics can provide clarity on the question of how corporate persons ought to determine when and how to introduce new technologies, such as 5G, into the world/wide-spread use. Since corporations are (juridical) persons, then we/I conceive of them as having a capacity for character, which enables us/me to think about its development and its motivations. Deontological and utilitarian ethics do not enable us/me to take seriously the practical fact that corporations have the rights of an organic person. The former two ethical theories do not do this. Virtue ethics is a more robust methodologically to be able to provide an answer to this problem of EMFs associated with 5G technology, because it can properly grasp the threat of harm posed by EMFs of 4G now and the future 5G. This threat of harm now poses the question, how would a corporation of good character respond to its capacity to introduce 5G into the world? By analogous reasoning, does having this technology make telecommunications corporations' better persons? Note that these types of questions seem foreign to the analysis provided by utilitarianism and deontology because the former primarily focuses on the consequences of an action, and the latter, the duty of action. Thus, as we will see, the virtue ethics developed here not only answers these questions in a meaningful way, but it also provides a model of moral reasoning that applied to and can guide the actions of corporate persons.

I am motivated to investigate and provide an ethical approach to the environmental problem that 5G technology might pose because of its importance to the health and well-being of the planet and the animals that inhabit it, now and in the future. I think that virtue ethics— analogously applied to corporate persons—provides a significant and robust method to ask whether an act is morally right by measuring the extent to which the act is the result of a person's good character, and morally wrong if it results from a person's bad character. By contrast,

action-based normative views, such as Utilitarianism and Deontological ethics, do not emphasize a focus on the person or character. By emphasizing the person and character, virtue ethics can help come to a more robust resolution to the problem that arises from the development and proliferation of 5G technology.

In the 4th Century BCE, in the Ancient Athens city-state, Aristotle argued that character exists and plays an important role in the explanation of moral decision-making and action. Character, and the proper understanding of it, the role it plays in normative ethics, will influence one to do the morally right action. For Aristotle, character was a collection of habits, good and bad. These habits are what makes a person's character good or bad. He conceived virtue ethics through an evaluation of habit. As a result, when Aristotle was applying his practical ethics to a person, he was essentially evaluating their habits.

Similarly, by using analogous reasoning, this practical application of virtue ethics, by focusing on one's character evaluation—their habitual routine—will be extended to the 5G telecommunications corporations. I extend Aristotle's argument for character to the corporate person through analogy. The analogy is grounded in the fact that corporations are legally considered to be and are accorded all the rights of personhood. If corporations are considered legal persons and act as if they are persons, then we can consider them as entities with character.

This analogy enables me to argue that telecommunications corporations have a responsibility to take seriously the possibility that the EMFs that make 5G possible might be harmful to humans and the environment. For purposes of my argument, I submit that that responsibility is located in character.



This will be done to emphasize the responsibility that these telecommunications corporations ought to have when considering the vetting questions related to the possible harm that could result from the EMFs associated with the further implementation of 5G technology. This is because I will soon show that there are a proliferation of studies provide a relationship between EMFs emitted by 4G and 5G technology and harm. I am not interested in the exact relationship between these two. I interested in the fact that there is a pattern of the relationship between these two, whether this pattern is corollary or casual. This is because this proliferation of studies forces the telecommunications corporate persons to introduce the question of character. In other words, my point will be that if a telecommunications corporate person has good character, it will be concerned about this proliferation of studies that establish a relationship between EMFs and harm to the environment. The possible harms associated with 5G technology, as evidenced by the studies to which I referred above and upon which I will elaborate in chapter one, enables us to ask how ought a corporation with good character respond to this possibility?

Contrary to this, Gilbert Harman has recently argued that character does not exist, and if true, this could be the start of the collapse of virtue ethics as a whole. Instead, he argues that, due to the fundamental attribution error (FAE), there is a tendency to explain someone's behavior based on internal factors, such as character, personality or disposition, and to underestimate the influence that external factors, such as situational influences, have on another person's behavior. For Harman, character is either significantly weakened or dismissed all together. As a result, Harman argued that concept of character, and the virtues associated with it, simply did not exist.<sup>2</sup>

---

<sup>2</sup> Gilbert Harman, "Moral Philosophy Meets Social Psychology: Virtue Ethics and the Fundamental Attribution Error," in *Proceedings of the Aristotelian Society* (JSTOR, 1999), 315–31, <http://www.jstor.org/stable/4545312>.

If Harman's is correct about character and the virtues and associated with it, then my thesis is nullified. That is, if his conclusions are true, these would be undercutting defeaters for the sustainability of virtue ethics, precisely because, character and virtues are essential ingredients for this normative position. In other words, without character and virtues, there is no virtue ethics.

In contradistinction to Harmon's position, I argue that the concept of character, and the virtues and vices associated with it, do in fact exist. The crux of this disagreement stems from the claim that character is something stable and enduring while human experience is in time, temporary and fleeting. How one deals with character such that it includes the experience of life as a temporal component and yet persistent is at the heart of the matter. In what follows, I argue that Aristotle has it right and that Harman is mistaken, but there is a lesson in Harman's critique of character. I advance a neo-Aristotelian view of virtue ethics by developing how temporarily plays an important role in character. I show how one's character is something that changes over a temporal continuum in acquiring intellectual and moral virtues.

What does being virtuous and having good corporate character have to do with moral questions regarding the environment? Does environmental ethics have any use for the notion of corporate character? The current literature on environmental ethics barely mentions character and this concerns me because if persons are moral agents, and character is central to being person, then corporate actions taken in regard to the environment should make reference to character. I argue that when we think about the possible harmful side effects that are associated with the EMFs of 5G, we need to take into account the character of corporate persons as moral agents. I will address this concern in chapter three and will conclude that a corporate person's

character should be the focal point in moral reasoning with regards to the normative position of virtue ethics and any attempts to solve environmental moral questions.

I argue that a normative corporate person-based theory of neo-Aristotelian eudaimonistic virtue ethics opens onto the question of whether a corporate person of good character would introduce 5G technology into the world when there are numerous studies and anecdotal evidence to suggest that it (the technology) might be harmful to humans and the environment. My primary argument is that the practical ethics that emerges from the character of corporate personhood, be taken seriously. Secondly, my argument raises the possibility of a practical ethics that employs character when corporate persons, i.e., telecommunications corporations, vet the introduction of 5G technology into the world.

In arguing for this thesis, I make a modest claim that I hope will advance discussions in environmental ethics regarding how to approach issues of potentially harmful EMF's, specifically 5G technologies. More simply, I am situating the discussion in the field of practical ethics regarding the issue of harm to the environment that 5G brings and will continue to bring. My efforts center on whether or not any telecommunications corporate character should allow this 5G technology locally or globally or should they resist its implementation until we know it is safe for the environment. I am advancing the discussion by expanding beyond what is typically and overwhelmingly a utilitarian set of considerations to one that includes considerations of virtue and character. At the end of the day, I hope that even if discussions continue to be debated in largely utilitarian and deontological frameworks that considerations of virtue and character might begin to influence those discussions.

In summary, the primary purpose of chapter three is to show that the normative person-based theory of neo-Aristotelian eudaimonistic virtue ethics, with an emphasis on the importance

and temporal role character plays in moral decision making over one's lifetime, provides strong support for the conclusion that it is morally impermissible to allow harmful EMF's associated with the implementation of 5G technology unless credible, peer-reviewed scientific testing is done (chapter one). In other words, even though action-based normative theories of utilitarianism and deontology have been employed in environmental ethical debates (chapter two), I argue that virtue ethics is an approach that we ought to take seriously, as demonstrated in the environmental problem of 5G (chapter three). The analogy I develop from Aristotelian virtue ethics enables us to ask a question that will yield a richer and more robust than the action-based normative theories of utilitarianism and deontology. The more robust ethic lead to the question, would a corporation of good character introduce 5G technology into the world without taking the studies that show a harm—either causal or corollary—seriously? In addition, how would a corporation that takes studies that show that EMFs that accompany 5G correlate to or causal harm seriously respond? Consider that my emphasis in these questions here corresponds to and causes tension with the demand to be profitable. Moreover, the virtue ethical view defended here has real-life application that can sufficiently guide a corporate person to act compassionately towards the environment as a flourishing agent by using practical moral reasoning, regarding the problem of 5G technology and the potential environmental harm EMF's can bring (Chapter 4). Moreover, my argument does something that these two normative theories do not do, namely, focus on the role of character. I argue that character provides insight and explanatory power even for a corporate person to see why their actions are guided a certain way. Furthermore, the theory that I am defending would have an efficacious application towards the problem 5G and the harmful EMFs in our environment. Moreover, in using my neo-Aristotelian version of virtue ethics, with its analogy to the moral status of corporate persons, I will answer two questions:

first, ought we allow this technology locally or even globally or should we resist its implementation until we know it is safe for the environment and second, ought any telecommunications corporate actor allow this technology locally or even globally or should they resist its implementation until we know it is safe for the environment? It is important to note that these second question follows from the first by analogous reasoning. The former appeals to a general moral theory founded on virtue and character, and the latter is its application to a telecommunications corporate person. In answering the first question, I will rely on my critique of the normative theories I provide in chapters two and three. This answer will be seen in chapter four. Then I will answer the latter question by applying my neo-Aristotelian virtue ethics to the telecommunications corporate persons additionally in chapter four.

In chapter one, I will provide a detailed discussion of the current invisible environmental problem of 4G we have now and the imminent future technology of 5G (section 1.1). The primary purpose of this is so that the reader can properly grasp the problem we now have with EMFs under the technology of 4G, and the even greater problems of EMFs we will have under 5G, namely that they have been causing physical damage to the insect, plant, animal, and human kingdom—this harm is the focus of my attention. More simply, I establish a strong correlation between harm to the environment and EMFs resulting from 4G and 5G technology. Although correlation is not causation, the strength of the correlation should be taken seriously. In other words, I do not claim to make a causal claim in this dissertation, nor do I believe it is necessary for the environmental argument that I am advancing. Evidence of potential harm is sufficient to cause us to pause and provides moral grounds for demanding more evidence that safety has been fully taken into consideration. Moreover, evidence is emerging that there is good reason to

suspect that real harm is being done by EMFs.<sup>3</sup> The next question is, ought we allow this technology locally or globally or should we resist its implementation until we know it is safe for the environment? In seeking an answer to this moral question, I will critique the widely held action-based normative theories of utilitarianism and deontology.

In chapter two, I will present the action-based theories of Utilitarianism (section 2.1) and Deontology (2.2). In Utilitarianism, grounding morality deals solely with the consequences of an action. Then, in the spirit of charity, I will offer very concise ways that the utilitarian and deontologist can reason morally with regards to the 5G problem in this chapter. However, both theories are not without problems because there is something significant missing that is needed, namely, the person and their character.

Specifically speaking to the environmental problem of harmful EMFs resulting from the 5G technology of Huawei, as long as that company provides the future technology of greater bandwidth—moving from the 4G we have now to 5G, that can provide more data at faster speeds—to customers such as T-Mobile, Verizon, Sprint, etc., it functions as a business entity bringing technological happiness for everyone and great profit to itself. In other words, potentially the vision of Huawei’s imminent technological advancement, globally, will make our day-to-day lives much easier. Think about how much time and money will be saved with this new bandwidth. While this all sounds exciting, what is missing from the advertising of the highly anticipated bandwidth technology is the problem of potential harm to the animal kingdom and humans. It is also notable that this environmental problem is invisible to the public—this new microwave technology is unseen and cannot be detected by the human senses. Since this

---

<sup>3</sup> Meike Mevissen and Dr David Schürmann, “Is There Evidence for Oxidative Stress Caused by Electromagnetic Fields?,” 2021, 9.

technology is invisible to the person, the person is in a disadvantageous position to grasp the environmental problem of harm. My aim in this section is to make the invisible environmental problem more visible by briefly recalling the very concrete examples of harm posed to the animal and human kingdom, in chapter one, and how the normative theory of utilitarianism falls short of providing the correct action-guiding principles for modern people to apply with regards to this new 5G technology. These concrete examples of harm will simplify the problem and make it easier to grasp. In short, the moral reasoning of utilitarianism will seek to justify the maximizing of happiness to the greatest number of people—providing new 5G technological bandwidth—but by overlooking the harm that will not only result in future 5G, but also in our current 4G technology. This potential problem can be overcome for the company of Huawei because the justification for this theory is that even with knowing there may be harm to the animal and human kingdom, utilitarianism endorses lying, suppressing of certain evidence to the public, and even compromising the personal integrity of a particular corporation or business and can still maintain its business position going forward, but this internal conflict within the theory does not seem morally permissible. Therefore, even though the normative theory of utilitarianism is very prevalent throughout the global business world, it seems to still have major problems.

Generally speaking, the action-based theory of Deontology parts ways on this issue of morally impermissible means discussed above, and thus seems to be the more preferred action-based theory to choose from if one were to be stuck solely from within the confines of an action-based theory. Deontology grounds morality in one's intrinsic duty to perform right action. The most commonly adhered to deontological normative theory is that of Immanuel Kant. Kantian theory posits a categorical imperative as an unconditional moral obligation which is binding in

all circumstances and is not dependent on a person's inclination, character, or purpose. Another formulation of the categorical imperative is such that it avoids the previous problem that Utilitarianism struggles with, namely that with grounding morality this way, one never pursues someone as a means to an end, but rather respects them as a valuable end in and of themselves. In this way, Kant provides a more positive theoretical position than utilitarianism, which emphasizes another persons' self-worth in the normative application, but still misses something crucial to the centrality of his normative ethics. What is missing in both deontological and utilitarian accounts, as I hope to show, is the concept and role of character.

Again, as seen above (2.1), specifically speaking to the environmental problem of harmful EMFs resulting from the 5G technology of Huawei, as long as that company provides the future technology of greater bandwidth—moving from the 4G we have now to 5G, that can provide more data at faster speeds—to customers such as T-Mobile, Verizon, Sprint, etc., it functions as a business entity bringing technological happiness for everyone and great profit to itself. My aim in this section is to make the invisible environmental problem more visible by briefly recalling the very concrete examples of harm posed to the animal and human kingdom, in chapter one, and how the normative theory of deontology falls short of providing the correct action-guiding principles for modern people to apply with regards to this new 5G technology. In short, the moral reasoning of deontology will seek to provide principles that promote a good will, and what seem to be good action-guiding principles for a corporation such as Huawei to follow—providing new 5G technological bandwidth—but by overlooking the harm that will not only result in future 5G, but also in our current 4G technology. For deontology, this calls attention to the problem of posterity and the duties to future generations, and as we will see this does not have an easy solution.



In chapter three, I defend virtue ethics over the action-based normative views that we discuss in chapter two. I defend a specific view of virtue ethics that accounts for the temporal aspect of character over one's lifetime and will specify the work that my version of virtue ethics is supposed to do—I will provide a practical model showing one how to use moral reasoning in virtue ethics. More specifically, I will offer a model of good character and the extension of compassion towards the invisible environmental problem of future 5G technology by means of my version of neo-Aristotelian virtue ethics as applied ethics in environmental ethics, analogously to the moral status of corporate persons. In surveying the landscape of environmental ethics (section 3.1), this paper will contribute to the growing body of literature concerning virtue ethics and the environment.

Here is a starting point in the survey of the current environmental literature, and the significance of the need for virtue ethics to offer help: a) “Indeed, the richness of the language of virtues, and the emphasis on moral character, is sometimes cited as a reason for exploring a virtues-based approach to the complex and always-changing questions of sustainability and environmental care (Hill 1983, Wensveen 2000, Sandler 2007); and b) but just as Aristotle has argued that a flourishing human life requires friendships and one can have genuine friendships only if one genuinely values, loves, respects, and cares for one's friends for their own sake, not merely for the benefits that they may bring to oneself, some have argued that a flourishing human life requires the moral capacities to value, love, respect, and care for the non-human natural world as an end in itself (see O'Neill 1992, O'Neill 1993, Barry 1999). From this, I will argue that when one considers tackling the problem of harmful EMFs resulting from 5G technology, through the lens of virtue ethics, one must include the notion of character and human flourishing—such as our feeling that being connected to others at a faster speed as enabled by

5G, one ought to consider the environmental impact it will have and thus the moral permissibility of instituting the technology. In contrast to the other main theories, virtue ethics places at least as much emphasis on being the right kind of person—that is, a virtuous person—as it does on doing the right thing.

In chapter four, the application of my neo-Aristotelian virtue ethics is employed to the problem of 5G with respect to the telecommunication's corporate character. In doing this I will stress the importance of virtue ethics. More specially, I will evaluate the corporate character of some of the top telecommunications persons that currently are implementing 5G technology by assessing their values. These values I will make synonymous with the virtues of their character. This is especially because this normative theory stresses how a corporate person can not only properly flourish, but also should make more virtuous decisions regarding the problem of 5G technology and the EMF harm it has on the environment.

In doing this, I answer the more *general* question; namely, ought we to allow this technology locally or even globally or should we resist its implementation until we know it is safe for the environment? My answer to this is that good corporate character would mean that a corporation would take seriously the studies and the anecdotes that raise a question about harm associated with EMFs. Then I answer the more *specific* question related to particular telecommunications corporate characters, ought any telecommunications corporate character allow this technology locally or globally or should they resist its implementation until we know it is safe for the environment?<sup>4</sup> Not surprisingly, my answer to this will be that one should we resist its implementation until we know it is safe for the environment.

---

<sup>4</sup> Both the *general* and *specific* questions will be answered in the applied ethics section of Chapter four. Chapters two and three will mainly flesh out the answer for the *general* question, which is related to the ordinary person, and Chapter four, by extension, will flesh out the answer for the *specific* question related to the corporate

Finally, I conclude that I have successfully argued for three main claims of my thesis that:

1. The neo-Aristotelian account of virtue ethics developed analogously to the corporate person developed here, using character as a state persisting over time (chapter three, is more robust in its answer to the problem EMFs and their potential harm to the environment than its rival normative theories, deontology and utilitarianism (chapter two); and
2. That this moral theory is also practical in that a compassionate corporate person can act towards the environment using practical moral reasoning with its foundation in virtues (chapter four); and
3. The environmental question regarding the use of 5G technology and the potentially harmful EMFs that are associated with it (chapter one), should not be implemented until the technology is shown to be acceptably safe, a threshold that has not been met.

---

person. It is important to understand my logical progression here because in order to answer the *specific* question, the *general* question has to, first, have the proper normative framework providing a sufficient answer.

## **The Corporate Concern of the Invisible Environment: The Already Harmful EMFs Resulting from 4G Technology and the Future of 5G Technology**

### **1 - The Corporate Concern of the Future Invisible Environment of 5G Technology**

In this chapter, I provide a detailed discussion of the current invisible environmental problem of 4G we have now and the imminent problems ahead with the development of 5G technology. The primary purpose of this is to provide the reader with a description of the problem we now have with electromagnetic frequencies (EMFs<sup>5</sup>) under the technology of 4G, and the damage that is caused to the environment. It also provides the reader a glimpse of the even greater problems of EMFs we will have under 5G, namely, the physical damage to the insect, animal and human kingdoms caused by EMFs—an environmental harm that serves as the primary focus and examination of this environmental ethics research project.

I start by situating the context of the environmental problem associated with the current transitioning—from the EMFs of 4G, to the future technology of the EMFs of 5G—(section 1.1). I initially provide a background explanation so that the reader can have a clearer understanding of the main topic of electromagnetic radiation, and the various international and national organizations that provide more up-to-date knowledge concerning the potential problem (1.2). Then I provide evidence for the claims that the EMFs of 4G may cause environmental harm towards insects such as bees (1.3), towards plants and trees (1.4), towards wildlife in general (1.5), and towards human persons in the form of ailments such as memory problems, sperm reduction in males, breast cancer in females, brain cancer, etc. (1.6). Thus, I argue that allowing

---

<sup>5</sup> Depending on the various research articles used in the paper, I will equate electromagnetic frequencies (EMFs) with electromagnetic radiation (EMR), as all *specific* EMFs, are associated *broadly* with the EMR spectrum. (cite this)

the further advancement of EMFs associated with the implementation of future 5G technology, is harmful to the environment, due to the harm already sustained by 4G technology (1.7).

### **1.1 - The Tension of Huawei’s Push for 5G Technology**

One can see that there is a push for the development and rollout for 5G technology throughout the world. The *Wall Street Journal* recently published an article claiming that the U.S. and China were in a technological race to see which world leader could secure the new advancement of 5G with reference to the telecommunications industry, “As the next era of 5G approaches, promising to again transform the way people use the internet, a battle is on to determine whether the U.S. or China will dominate.”<sup>6</sup> In fact, President Trump of the U.S. has just signed into law two new bills—S.893 - Secure 5G and Beyond Act of 2020—and—S. 1822, the Broadband Deployment Accuracy and Technological Availability Act or the Broadband DATA Act—that will implement 5G technology in the United States.<sup>78</sup>

The telecommunications corporations state the current practical implications, "The need for connectivity is even more critical now that millions of Americans are teleworking and learning from home in response to the coronavirus pandemic."<sup>9</sup> From this urgent justification, it is now just a matter of time until 5G comes to citizens locally. This 5G technology would enable the next generation of wireless networks to be as much as 100 times faster than the current technology of 4G. Huawei’s chairperson, Eric Xu, told the audience at the company event, “As we face the future, we know deep down that the birth of 5G standards represents a new

---

<sup>6</sup> (Strumpf 2018)

<sup>7</sup> “Statement by the President,” The White House, accessed March 25, 2020, <https://www.whitehouse.gov/briefings-statements/statement-by-the-president-36/>.

<sup>8</sup> Marguerite Reardon, “Trump Signs 5G and Broadband Mapping Legislation into Law,” CNET, accessed March 25, 2020, <https://www.cnet.com/news/trump-signs-5g-and-broadband-mapping-legislation-into-law/>.

<sup>9</sup> Reardon.

beginning.”<sup>10</sup> On a similar note, Verizon’s chief executive officer, Hans Vestberg speaks of the technology in equally dramatic terms, “We are strong believers that 5G [will have] a very transformative effect on many things in our society,” he said. “Consumer, media, entertainment...whole industries.”<sup>11</sup> These two quotes support the practical benefits that 5G will seem to bring. I give more specificity later, but for now, I briefly summarize what this means concerning the logistics of this new 5G technology from Huawei. “The faster generation of networks relies on sophisticated technology that allows wireless airwaves to be used more efficiently. Plans call for it to run on high-frequency millimeter waves, which can handle more data but cannot travel as far as lower-frequency waves used by older networks. That means 5G will rely on clusters of antennae as well as decentralized data centers close to consumers and businesses—requiring big investments in infrastructure. The networks are expected to have the speed and responsiveness needed for advances such as driverless cars, which must instantaneously communicate with traffic signals, other cars, and their surroundings.”<sup>12</sup> In short, this means the installation of many more antennas than what any country currently possesses with the current 4G technology. Practically speaking, it seems as though this technology could significantly enhance the lives of global communities throughout the world.

To see the potential applications of 5G technology, just imagine for a moment that you would be able to download any number of items such as a movie, articles, large research files, etc. within seconds. Imagine that your loved one just had a traumatic brain injury from a car accident and has a Computer Tomography (CT) scan with and without contrast in the local

---

<sup>10</sup> Josh Chin Strumpf Sarah Krouse and Dan, “The 5G Race: China and U.S. Battle to Control World’s Fastest Wireless Internet,” *Wall Street Journal*, September 9, 2018, sec. Business, <https://www.wsj.com/articles/the-5g-race-china-and-u-s-battle-to-control-worlds-fastest-wireless-internet-1536516373>.

<sup>11</sup> Strumpf.

<sup>12</sup> Strumpf.

emergency room and needs, these large image files sent to the radiologist on-call, to a remote location. If this 5G technology were instituted, it might only take seconds to send large image files via this new wireless network, thereby getting the appropriate medical attention to your loved one even faster. We can continue to imagine the many advantages this newer and faster technology might offer us. However, it will come with costs as well. Now I turn to show you that there is a counterpoint health factor to consider.

Currently, there is a real sense of fear associated with 5G technology, due to the possible harm associated with it. Recently a large number of Swiss citizens have publicly protested the push for 5G technology.

Thousands of people protested in the Swiss capital Bern Saturday over the roll-out of a 5G wireless technology across the country, which they fear could damage people's health... By early July, 334 antennae stations for 5G were operational across the country, authorities have told AFP... The Swiss Federation of Doctors (FMH) has also argued for a cautious approach to the new technology.<sup>13</sup>

Now a significant concern arises, even though 5G technology can enhance our lives with significantly faster data speeds thereby providing much faster information, we should ask whether this new technology could cause harm to us and our environment? In the next section, I briefly unpack some important terminology associated with the field of electromagnetic radiation overall, so that one can be in a better position to understand the concepts of the EMFs of 4G and 5G technology that are associated with the looming environmental concern.

## **1.2 - A Landscape to the Field of Electromagnetic Radiation**

To understand how various aspects of the animal and human kingdom are being harmed, it is necessary to briefly give a concise and informative explanation of: electromagnetic

---

<sup>13</sup> “Thousands of Swiss Protest 5G Wireless over Health Fears,” accessed September 24, 2019, <https://news.yahoo.com/thousands-swiss-protest-5g-wireless-over-health-fears-201051081.html>.

frequencies (EMFs), radio frequencies (RFs), the brief difference between 1G-5G technology, the current range of frequencies 3kHz-6GHz under 4G technology, the future millimeter ranges of frequencies 6GHz-300GHz under 5G technology, millimeter waves, small cell towers, massive MIMO, beamforming, full-duplex, specific absorption rate (SAR), public exposure limits, power density measurements of (mW/cm<sup>2</sup>) for RF & (mG) for EMF, The World Health Organization (WHO)<sup>14</sup>, the International Commission on Non-Ionizing Radiation Protection (ICNIRP), National Institute of Environmental Health Sciences (NIEHS), United States Environmental Protection Agency (EPA)<sup>15</sup>, National Council on Radiation Protection and Measurements (NCRP), and EMF/RF meters, and how all of these impact you as a reader (1.2). Simply put, once the reader can understand these concepts more clearly—and the national and international governing agencies associated with them—then you can be put into a position of grasping the invisible environmental problem of harm to you and the animal kingdom. In other words, my goal is to take the invisible problem and make it visible and evident.

### **1.21 - We live in a Sea of Electromagnetic Radiation**

To begin, the electromagnetic spectrum is a broad spectrum that contains all electromagnetic frequencies EMFs or EMRs. Think of EMFs as *species* of the overall *genus* of the spectrum of electromagnetic radiation. The electromagnetic spectrum contains all of the possible electromagnetic waves. These electromagnetic waves—whether visible or invisible, are

---

<sup>14</sup> One of the most alarming features of the WHO, which is supposed to be an international governing authority in matters of public health, has extremely outdated research. On their [website](#), just before the “Summary of the ICNIRP exposure guidelines”, it clearly states, “These guidelines were last updated in April 1998”. This is almost 22 years ago! As we will see in this chapter, this is part of the problem insofar as the global citizen can be significantly misled because of outdated research in an ever constantly evolving technological era.

<sup>15</sup> Very similar to my WHO note above, the EPA, which is supposed to be a national governing authority in matters of public health protection for the U.S. citizen, has even more outdated research than on the WHO website. On their [website](#) directing you to an article titled, “Questions And Answers About Electric And Magnetic Fields (EMFs)”, it clearly states, “This article was written in Dec. 1994”. This is where one could go reference their recommended environmental exposure to EMFs and RFs, and yet this research is over 26 years ago.



non-ionizing radio waves, microwaves, infrared, visible light, ultraviolet, and ionizing man-made X-rays and naturally-occurring gamma rays. Non-ionizing radiation means that it does not carry enough power to remove an electron or ionize it by removing it from an atom. However, X-rays and gamma rays do have enough power to remove electrons from an atom thereby causing ionization. This removal of electrons causes damage at the molecular level. The reason this distinction of ionizing and non-ionizing radiation is important is that most people associate ionizing radiation with causing harm to the animal kingdom, but not with non-ionizing radiation, but this is untrue. Non-ionizing radiation, in the form of microwaves, can and do cause harm to the animal kingdom, even if no electrons are removed from their atoms at the molecular level.

### **1.22 - Properties of Wavelengths in the EMR Spectrum**

Now we can talk more in depth about the anatomy of the various wavelengths—basic properties of each type of wave—in the electromagnetic spectrum. These waves have properties unique to them that can be measured in length by frequency—measured in hertz(Hz), which counts the number of waves that pass by a point in one second, and wavelength—measured along a range of meters(M), or in centimeters(cm), or in millimeters(m). These waves also have height to them, known as amplitude, measured in M, cm, or mm as seen above. The highest point of the wave is known as the crest, the equilibrium or rest position as the mid-point, and the trough as the lowest point in the wave. Larger amplitude means higher energy per wave and lower amplitude means lower energy of the wave. In short, wavelength tells you the type of electromagnetic radiation it is and amplitude tells you about the intensity that the electromagnetic radiation has.

The properties of wavelength and amplitude are what individuates one *species* of EMF from another in the *genus* of the EMR spectrum. These waves also have sinusoidal wave

patterns, which means they contain electric and magnetic properties that are 90 degrees perpendicular to each other, when traveling from one point of space to another. Regarding the electric property of the energy of any wavelength of the EMR spectrum the measurement is in electron volts. These electron volts can be measured up as high as 511MeV—seen in gamma rays and Positron Emission Tomography, to 1eV—seen in ultraviolet radiation, down to as low as 1.24 ueV—seen in radio waves.<sup>16</sup> In short 1 MeV is 1 million electron volts, and 1 ueV is equal to the energy of 1 millionth of an electron volt. Regarding the magnetic properties of energy of any wavelength of the EMR spectrum, the measurement is in Gauss. Last, regarding the speed of any electromagnetic wave, this is measured in velocity, in vacuum is  $2.99 \times 10^8$  m/s or 186,282 miles/second<sup>17</sup>. Later, I<sup>18</sup> focus on EMFs in the form of RF, specifically microwaves.

The size of the various wavelengths—amplitude—on the electromagnetic spectrum is directly proportional to the size the matter it interacts with. For example, radio waves interact with various sizes of antennas in the world, such as building themselves, very large antennas reaching  $10^3$  meters, which is 1000 meters high, all the way down to a car antenna that is 2-3 feet tall. Most people these days have not even seen car antennas like that, but they were on most all of the cars sold in the 70', 80's and even early 90's. Next consider microwaves, which are  $10^{-2}$  or 1 hundredth of a meter, that interact with water molecules very well. These are much smaller

---

<sup>16</sup> “Light: Electromagnetic Waves, the Electromagnetic Spectrum and Photons (Article),” Khan Academy, accessed March 20, 2020, <https://www.khanacademy.org/science/physics/light-waves/introduction-to-light-waves/a/light-and-the-electromagnetic-spectrum>.

<sup>17</sup> “Electromagnetic Spectrum | Introduction to Chemistry,” accessed September 7, 2019, <https://courses.lumenlearning.com/introchem/chapter/electromagnetic-spectrum/>.

<sup>18</sup> I also speak from having 20 years experience working in the field of electromagnetic radiation I have an AA degree in Radiologic Technology, a certificate in Nuclear Medicine Technology, and have worked as a Radiologic, Nuclear Medicine, and PET/CT Technologist for over 20 years, am licensed nationally with ARRT and with the state of California, have been a Radiation Safety Officer(RSO) at many of these jobs, and was recently a Radiology Supervisor, and was in charge of many CT, MRI, and PET/CT technologists. As a PET/CT technologist, I have injected patients with FDG—an F-18 highly radioactive isotope—that had the incredible power of 511MeV—resulting from positron annihilation, as described above, so I definitely know the power of the EMR spectrum firsthand, as this was my specialty in the medical field. In short, my job was to deliver radiation to patients and to measure it for safety.

than radio waves. Microwaves shake the water molecules, as this is known as thermionic emission—causing heat, and is how food is cooked in a microwave oven. Now consider the visible light spectrum. Visible light, which is even smaller than microwaves, range from  $10^{-6}$  to  $10^{-8}$ , and interact with photoreceptors in your eyes. This is how a human person sees various colors on the EMR spectrum, because the size of the wavelength is directly proportional to the size of the matter it interacts with. Next consider X-rays—man made from bombarding tungsten with massive amounts of electrons—and gamma rays—which are naturally occurring, come from the nuclear decay of atoms or from the sun, and usually come from the sun and other stars. It is also important to note that when looking at an X-ray and a gamma ray, they look the exact same in nature. The only difference between them is their origin. Both of these are even smaller than visible light, that range from  $10^{-10}$  to  $10^{-12}$ . These are so small that they can interact with subatomic particles: protons, neutrons, and electrons. Now that you can see the difference between these various types of EMR<sup>19</sup>, one is in a better position to properly understand that radio waves do not eject electrons from atoms because their wavelengths are not small enough and that one cannot hear a gamma ray because it is not big enough and one cannot see a microwave because it is not big enough—at least for unaided human senses to detect. Now you can have a clearer picture of how the size of the various wavelengths on the EMR spectrum is directly proportional to the matter they interact with. This fact becomes very important later in this chapter, as the argument focuses on the various spectrums of microwaves themselves and what types of matter they interact with. Now we can move into the next discussion concerning the 1G that we have started from versus the 4G we have now, versus the 5G that is coming soon.

---

<sup>19</sup> Note, that I did not cover infrared or ultraviolet EMR, as it was not necessary for me to exhaust the entire spectrum for purposes of demonstrating clarity.

### 1.23 - The Evolution from 1G to 5G Technology

The telecommunication industry has had different generations of technology over the last several decades. The technology of 1G—first generation, from 1970-1980, consists of using the radio frequencies (RFs), on the EMR spectrum, enabled us to use cell phones for the first time. The technology of 2G—second generation, from 1980-1999, has enabled one to use these cell phones to text message from one to another. The technology of 3G—third generation, from 1990-2002, made it possible for one call, text message, and access the internet online. The technology of 4G—fourth generation, 2000-present,<sup>20,21</sup> has enabled the transitioning from RFs to microwaves, giving us the higher speeds for data transmission, when we go online. Finally, the technology of 5G—fifth generation, from 2018- the present,<sup>22</sup> promises even higher speeds, which are capable of data transmission that is even ten times faster than what we have now with 4G technology, and bandwidth, the capacity to handle exponentially more traffic, considering the billions using wireless technology around the world.<sup>23</sup>

The technology of 5G can deliver things like the “Internet of Things”, virtual reality, driverless cars, faster remote surgical procedures, and significantly advanced Artificial Intelligence. With 5G technology comes new developments that can provide this higher speed and greater bandwidth such as” millimeter waves, small cell towers, Massive MIMO,

---

<sup>20</sup> Roopali Sood and Atul Garg, “Digital Society from 1G to 5G: A Comparative Study” 3, no. 2 (2014): 191.

<sup>21</sup> \*Note: Sood and Garg claim that 5G has started from 2000/2015-2020, but wrote this over 6 years ago. I believe they were predicting the advent of the newer 5G. It is clear that the majority of the world is still using 4G, but some cities in the world actually have the new 5G technology that has already been fully implemented; for example this 5G technology has already been fully implemented various cities within the U.S., Countries in Asia, Europe, ect.

<sup>22</sup> Facebook, Twitter, and LinkedIn, “When Will 5G Be Available in Your Country?,” Lifewire, accessed March 23, 2020, <https://www.lifewire.com/5g-availability-world-4156244>.

<sup>23</sup> Some carriers will disagree over the dividing line on whether they are using 4G or 5G right now. This depends on exactly those parameters of technology they offer, the most important being the frequencies they offer. Most 4G carriers right now offer 3kHz-5GHz, and 5G will offer 6GHz and higher.

Beamforming capacity, and Full Duplex<sup>2425</sup>. The current range of frequencies currently used are 3kHz-6GHz with 4G technology, but the future millimeter ranges of frequencies with 5G technology will use millimeter waves under the spectrum of 6GHz-300GHz—these are even smaller microwaves as seen from the previous 4G technology. This increase in the range one the EMR spectrum allows more carriers such as T-Mobile, Sprint, and Verizon to provide more service to more customers precisely because they will be open to the possibility of using more additional frequencies available to them. We can see this here:

5G technology seeks to achieve a 1ms round-trip latency for major use cases and critical applications. In addition, it is anticipated that ultra-connectivity, ultra-high reliability and extremely high availability etc., reflected in everything and/or everyone interconnected and able to seamlessly share information harmoniously, efficiently, reliably and securely irrespective of time or location, whilst also prohibiting overall system uncertainty will be achieved.<sup>26</sup>

The significance of these different aspects or more precise technology is mainly that even though each carrier may have their differences in the exact technology of 5G they use, their efforts will be united in that they are trying to make our day-to-day lives easier and more practical.

This concludes the brief unpacking of the important terminology associated with the field of electromagnetic radiation overall and the more specific properties of wavelengths in the EMF spectrum, and the evolution from 1G to 5G technology, (1.21 - 1.23) that have significant

---

<sup>24</sup> Opeoluwa Tosin Eluwole et al., “From 1G to 5G, What Next?,” 2018, 22.

<sup>25</sup> “5G Cell Towers - What They Are, How They Work, and Why It Matters.,” *EMF Academy* (blog), August 6, 2019, <https://emfacademy.com/5g-cell-towers/>.

<sup>26</sup> Eluwole et al., “From 1G to 5G, What Next?,” 17.

influence on the rest of the primary argument ahead, insofar as this discussion relates to the harm that EMFs pose to the environment.

Now I can explain more about some of the most important governing bodies associated with EMR and the standards of public safety—this is an important addition that contributes to the thesis of this chapter, because these international and national organizations are sources of authority regarding our up-to-date knowledge regarding EMFs. Notably and unfortunately, these organizations have argued that there is no significant worry for the continued rollout of 5G technology (1.24 – 1.32). To examine their claims and show them to be questionable, I start with *international* organizations that have a significant contribution to the discussion of the environmental impact of the EMFs resulting from the already existing wireless 4G & 5G technology, and then provide examples of *national* organizations that do the same.

#### **1.24 - The World Health Organization (WHO)**

The WHO<sup>27</sup> is the largest *international* governing body associated with public health issues globally. The WHO is dedicated to environmental issues and has published suggesting that there are potentially harmful EMFs resulting from 4G & 5G technology. Many believe that they are the Gold Standard for their knowledge of health-related public policy, especially since they are extremely influential, in that they provide the guidelines of normative behavior, supported by scientific research, with many, if not all, of the governments in the world. Take, for example, WHO is viewed as an authority concerning the public safety globally during the

---

<sup>27</sup> One of the most alarming features of the WHO, which is supposed to be an international governing authority in matters of public health, has extremely outdated research. On their [website](#), just before the “Summary of the ICNIRP exposure guidelines”, it clearly states, “These guidelines were last updated in April 1998”. This is almost 22 years ago! As we will see in this chapter, this is part of the problem insofar as the global citizen can be significantly misled because of outdated research in an ever constantly evolving technological era. Moreover, “WHO is conducting a health risk assessment from exposure to radiofrequencies, covering the entire radiofrequency range, including 5G, to be published by 2022.” This is very alarming since this type of study has not been conducted on 1G-4G technology yet, and will be published 2-3 years after the rolling out of the global efforts of 5G.

current pandemic associated with the Covid-19 virus. They define health as, “... a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”.<sup>28</sup> More importantly, their values are as such:

- 1) Trusted to serve public health at all times.
- 2) Professionals committed to excellence in health: We uphold the highest standards of professionalism across all roles and specializations. We are guided by the best available science, evidence and technical expertise. We continuously develop ourselves and innovate to respond to a changing world.
- 3) Persons of integrity: We engage with everyone honestly and in good faith.
- 4) Collaborative colleagues and partners and
- 5) People caring about people: We courageously and selflessly defend everyone’s right to health. We show compassion for all human beings and promote sustainable approaches to health. We strive to make people feel safe, respected, empowered, fairly treated and duly recognized.<sup>29</sup>

As can be seen in the following WHO statement on the potential health risks from 5G demonstrates that they believe that 5G technology poses no concerning health consequences:

To date, and after much research performed, no adverse health effect has been causally linked with exposure to wireless technologies. Health-related conclusions are drawn from studies performed across the entire radio spectrum but, so far, only a few studies have been carried out at the frequencies to be used by 5G. Tissue heating is the main mechanism of interaction between radiofrequency fields and the human body. Radiofrequency exposure levels from current technologies result in negligible temperature rise in the human body. As the frequency increases, there is less penetration into the body tissues and absorption of the energy becomes more confined to the surface of the body (skin and eye). Provided that the overall exposure remains below international guidelines, no consequences for public health are anticipated.<sup>30</sup>

---

<sup>28</sup> “Our Values,” accessed March 23, 2020, <https://www.who.int/about/who-we-are/our-values>.

<sup>29</sup> “Our Values.”

<sup>30</sup> “5G Mobile Networks and Health,” accessed March 25, 2020, <https://www.who.int/news-room/q-a-detail/5g-mobile-networks-and-health>.

Finally, the most concerning update on their website<sup>31</sup>—which seems to contradict the previous quoted section—is the part where they WHO specifically related EMFs to cancer:

Based largely on these data, IARC has classified radiofrequency electromagnetic fields as possibly carcinogenic to humans (Group 2B), a category used when a causal association is considered credible, but when chance, bias or confounding cannot be ruled out with reasonable confidence. While an increased risk of brain tumors is not established, the increasing use of mobile phones and the lack of data for mobile phone use over time periods longer than 15 years warrant further research of mobile phone use and brain cancer risk. In particular, with the recent popularity of mobile phone use among younger people, and therefore a potentially longer lifetime of exposure, WHO has promoted further research on this group. Several studies investigating potential health effects in children and adolescents are underway.

The part where WHO mentions “possibly carcinogenic to humans” comes from the IARC, which is a subdivision of the WHO, whose sole mission is, “to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships.”<sup>32</sup>

More specifically, what they mean by “possibly carcinogenic” is:

This category is used for agents for which there is limited evidence of carcinogenicity in humans and less than sufficient evidence of carcinogenicity in experimental animals. It may also be used when there is inadequate evidence of carcinogenicity in humans but there is sufficient evidence of carcinogenicity in experimental animals. In some instances, an agent for which there is inadequate evidence of carcinogenicity in humans and less than sufficient evidence of carcinogenicity in experimental animals together with supporting evidence from mechanistic and other relevant data may be placed in this group. An agent may be classified in this category solely on the basis of strong evidence from mechanistic and other relevant data.

---

<sup>31</sup> Even though 5G technology is new, 3G and 4G are not, and for any governing body that is authoritative on matters of safety, one would expect for them to have up-to-date scientific research.

<sup>32</sup> “IARC Classifies Radiofrequency Electromagnetic Fields as Possibly Carcinogenic to Humans,” 2011, 6.



The explanation in the above quotation seems vague at best, but there a slightly more specificity from the same article here, “Dr Jonathan Samet (University of Southern California, USA), overall Chairman of the Working Group, indicated that “the evidence, while still accumulating, is strong enough to support a conclusion and the 2B classification. The conclusion means that there could be some risk, and therefore we need to keep a close watch for a link between cell phones and cancer risk.”<sup>33</sup> More technically, this means exposure to radiofrequency electromagnetic fields such as in cell phone use. However, even with this classification from the WHO, their assertion is still problematic at best because it points to another section of their website titled “The International EMF Project”<sup>34</sup>. The EMF Project, started in 1996, claimed to have results of this project by 2016, but there is no official update—or public response—on their website to this research that was supposed to be conducted. What is worse is that attempts to use the email link to request more updated information for *The International EMF Project*, generates the error message, “This page cannot be found... The page or file you are trying to access cannot be found.” This is because the web address is incorrect or the file has been moved or deleted.”<sup>35</sup> There is no clear indicator whether or not this section of the website has not been updated by the WHO’s Information Technology (IT) department or is altogether outdated and discontinued<sup>36</sup>. Regardless, this implies that one cannot get updated information about The International EMF Project from the WHO website, which would seem to contradict their claim previously, “We are guided by the best available science, evidence and technical expertise.” This evidence seems to

---

<sup>33</sup> “IARC Classifies Radiofrequency Electromagnetic Fields as Possibly Carcinogenic to Humans.”

<sup>34</sup> “WHO | The International EMF Project,” WHO (World Health Organization), accessed March 27, 2020, <http://www.who.int/peh-emf/project/en/>.

<sup>35</sup> “404,” accessed March 31, 2020, <https://www.who.int/peh-emf/project/en/emfproject@who.int>.

<sup>36</sup> I am giving them the benefit of the doubt here and have emailed *The International EMF Project* on March 31, 2020 and am awaiting their response for more updated information. If I do not update this footnote, it will mean they have not responded to my request.

show that the WHO do not support my claim that there are potentially harmful EMFs resulting from 4G & 5G technology.

Next, in the pursuit of objectivity—not influenced by personal feelings, interpretations, or prejudice—it will be important to give some details of another organization, The International Commission on Non-Ionizing Radiation Protection (ICNIRP), to examine their position. I also do this for these next sections (1.25 – 1.32) to see if it is possible to arrive at a more solidified agreement between various international and national organizations that are dedicated to providing answers towards this specific environmental issue, based upon scientific research. Then one can be in a better position to grasp whether or not there are harmful EMFs resulting from 4G & 5G technology. In other words, it will be helpful to see if a *collective* conclusion crystalizes between various organizations that can help solve the environmental issue that I am arguing for concerning the potentially harmful EMFs.

### **1.25 - The International Commission on Non-Ionizing Radiation Protection (ICNIRP)**

The ICNIRP is another *international* organization that provides research concerning public health issues and, similar to WHO, is considered a world authority concerning the EMF radiation from 4G and 5G technology, so I will use them as a guide for further information.

They were founded in 1973, as a non-profit organization:

ICNIRP aims to protect people and the environment against adverse effects of non-ionizing radiation (NIR). To this end, ICNIRP develops and disseminates science-based advice on limiting exposure to non-ionizing radiation. Experts from different countries and disciplines such as biology, epidemiology, medicine, physics, and chemistry, work together with and within ICNIRP to assess the risk of NIR exposure and provide exposure guidance. ICNIRP experts base their advice on scientific publications about biological effects and action mechanisms of radiation, for the whole NIR frequency range. ICNIRP's protection advice is formulated in its Guidelines, Reviews and Statements, which are publicly and freely available online. ICNIRP also organizes workshops to inform about current

scientific knowledge and to provide an opportunity to advance the dialogue on NIR protection.<sup>37</sup>

In short, this organization is an authority source used by the WHO to help in matters of expertise regarding matters of public safety with reference to EMFs resulting from the emergence of 5G, and current 4G technology. They also have far-reaching influence in the world, as they collaborate with six other international organizations regarding radiation safety related to public health.<sup>38</sup> The salient feature of this website is their recently published, *ICNIRP RF EMF Guidelines 2020*<sup>39</sup>, as it explicitly identifies the minimum exposure level needed to produce harm to the environment and human persons. For example, they claim that their review of the scientific literature from the last ten years indicate that the only adverse health effects are: 1) nerve stimulation—up to 10MHz, limits from 2010 guidelines—and 2) heating—from 100kHz. They also affirm that there is no current evidence for cancer, electro-hypersensitivity, infertility, or other health effects. Now, I turn to examples of the national organizations that will have a significant contribution to the discussion of the environmental impact of the EMFs resulting from the already existing wireless technology.

Next, in the pursuit of objectivity, it will be important to give some details of another organization, The International Committee on Electromagnetic Safety (ICES) to see whether they support or do not support my claim that there are potentially harmful EMFs that result from 4g & 5G technology.

---

<sup>37</sup> “ICNIRP | Aim, Status & History,” accessed March 24, 2020, <https://www.icnirp.org/en/about-icnirp/aim-status-history/index.html>.

<sup>38</sup> “ICNIRP | Collaboration,” accessed March 24, 2020, <https://www.icnirp.org/en/activities/collaboration/collaboration.html>.

<sup>39</sup> International Commission on Non-Ionizing Radiation Protection (ICNIRP)1,2, “Guidelines for Limiting Exposure to Electromagnetic Fields (100 KHz to 300 GHz);” *Health Physics*, March 2020, 1, <https://doi.org/10.1097/HP.0000000000001210>.

## 1.26 - The International Committee on Electromagnetic Safety (ICES)

The ICES is another *international* organization dedicated to environmental issues and has a stance on the question of potentially harmful EMFs resulting from 4G & 5G technology. The ICES is a subdivision of the Institute of Electrical and Electronics Engineers (IEEE), having more than 419,000 members in over 160 countries, it is the “voice” for engineering, computing, and technology information around the globe. IEEE is the world’s largest technical professional organization and its core purpose is to foster technological innovation and excellence for the benefit of humanity.<sup>40</sup> In their latest article, *IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz*, their recommended SAR for whole-body exposure in unrestricted environments, in the current frequency of 100kHz to 6 GHz—which falls under our current 4G technology today—is .08 (W/kg). Their recommended “local exposure” in unrestricted environments, in the current frequency of 6 GHz—which falls under our current 5G technology today in some parts of the world, and which is rapidly evolving its way into the United States as I write this—is 40 (W/m<sup>2</sup>), and their recommendation for frequencies in the ranges of 6 GHz to 300 GHz is  $55fg^{-0.177}$ .<sup>41</sup>

The first thing to note is that there is a shift in metric here from grams to *fg*, which is a femtogram—unit of mass equal to 0.000 000 000 000 001 grams—which is virtually incomprehensible unless you are a highly trained scientist studying a size that is smaller than the molecular level. Thus, the average person concerned about possible exposure in this range will not even know what this metric means.

---

<sup>40</sup> “Mission & Vision,” accessed April 1, 2020, <https://www.ieee.org/about/vision-mission.html>.

<sup>41</sup> “IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz” (IEEE), 50–54, accessed April 1, 2020, <https://doi.org/10.1109/IEEESTD.2019.8859679>.

The second thing to note is the shift in metric from W/kg to W/m<sup>2</sup> goes from measuring SAR—once again, a possible harmful energy transferred to the biological organism—to the, “incident power density”. One of the footnotes to this metric states, “averaged over 6 min for local exposure”, which adds a helpful temporal element, but another states, “Assessed in air at the location of the body, but the body is absent during assessment.” which is not very helpful insofar as if one wants to know the SAR to the human body. The reason I point out this concern, is that the article itself refers to the “Safety levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields”. But how does the reader apply this metric when they are not directly measuring the impact to a human body? Therefore, at best, I will assume they are “inferring” SAR to this metric, even though the word, “SAR” does not appear here. Once again, I am referring to the frequencies in the ranges of 6 GHz to 300 GHz, as this is of paramount interest to my original concern of EMFs associated with 5G technology, and it appears there is no clear answer to what the exposure should be, “less than”, regarding humans. This evidence is significant because the IEEE & ICES do not support my claim that there are potentially harmful EMFs resulting from 4G & 5G technology, but it seems from the examples they give for their scientific evidence that some of what they report is outdated. It is also important to note that while I am not suggesting that IEEE is deliberately obfuscating the facts, my concern is that there should be more up-to-date scientific data, considering the harm that is possible with the association to EMFs emitted from 5G” or “could be more up-to-date. Next, in the pursuit of objectivity, it will be important to give some details of another national organization, the National Institute of Environmental Health Sciences (NIEHS) to see whether they support or do not support my claim.

### 1.27 - The National Institute of Environmental Health Sciences (NIEHS)

The NIEHS a sub-committee of the National Institutes of Health (NIH), which is an institution that has weighed in on the *national* concern regarding the potentially harmful EMFs emitted from 4G & 5G technology. The NIEHS is an organization headed by the U.S. Department of Health and Human Services that has been in existence for over 50 years now. Their mission and values are such that they provide global leadership for innovative research that improves public health by preventing disease and disability.

Moreover, their research uses state-of-the-art science and technology to investigate the interplay between environmental exposures, human biology, genetics, and common diseases to help prevent disease and improve human health. Their efforts regarding the environment are significantly emphasized, “Sustainability has come to the forefront in the wake of increased global understanding that economics, environmental health and human well-being are interconnected and interdependent. Our institute has taken a leadership role in understanding and promoting sustainability.”<sup>42</sup> This is fully supported by the fact that they publish an annual Sustainability Report which educates the citizens of the U.S. about the potential harms to the environment, and how to overcome them.<sup>43</sup>

More importantly, The National Toxicology Program (NTP), headquartered at NIEHS, has conducted toxicology studies in rats and mice to help clarify potential health hazards, including cancer risk, from exposure to radio frequency radiation like that used in 2G and 3G cell phones, and are very proactive in informing the public about the usages of their cell

---

<sup>42</sup> “Environmental Stewardship,” National Institute of Environmental Health Sciences, accessed March 25, 2020, <https://www.niehs.nih.gov/about/stewardship/index.cfm>.

<sup>43</sup> “NIEHS Sustainability Report 2019,” n.d., 31.

phones.<sup>44</sup> The reason this evidence is significant is that it is the first piece of evidence that is in disagreement with the other two international organizations listed above. Thus, the WHO and ICNIRP, have conflicting information with the NTP via NIEHS, so instead of suspending judgment regarding the environmental issue of potentially harmful EMFs emitted from 4G & 5G technology, I will introduce more evidence, from other organizations, to see if a more unified agreement emerges, one way or another.<sup>46</sup>

Next, in the pursuit of objectivity, it will be important to give some details of another organization, The United States Environmental Protection Agency (EPA), to see whether they support or do not support my claim that there are potentially harmful EMFs that result from 4g & 5G technology.

### **1.28 - The United States Environmental Protection Agency (EPA)**

The EPA<sup>47</sup> is another national organization dedicated to environmental issues with a stance on potentially harmful EMFs resulting from 4G & 5G technology. Concerned about environmental pollution, the EPA was established on December 2, 1970 to consolidate in one agency a variety of federal research, monitoring, standard-setting and enforcement activities to ensure environmental protection. Since its inception, EPA states that it has been working for a cleaner, healthier environment for the American people, but there seems to be a contradiction with this narrative.<sup>48</sup> More specifically, they have an outdated article, by 28 years concerning

---

<sup>44</sup> “Cell Phone Radiation: GSM 08013,” accessed March 25, 2020, [https://ntp.niehs.nih.gov/whatwestudy/testpgm/status/ts-08013.html?utm\\_source=direct&utm\\_medium=prod&utm\\_campaign=ntpgolinks&utm\\_term=ts-08013](https://ntp.niehs.nih.gov/whatwestudy/testpgm/status/ts-08013.html?utm_source=direct&utm_medium=prod&utm_campaign=ntpgolinks&utm_term=ts-08013).

<sup>45</sup> “Cell Phone Radio Frequency Radiation,” National Institute of Environmental Health Sciences, accessed March 25, 2020, <https://www.niehs.nih.gov/health/topics/agents/cellphones/index.cfm>.

<sup>46</sup> It can be argued here that this is how science works though: empirical studies are cumulative and it is expected that there will be conflicting findings until it is sorted out. If more and more evidence is found to support the link to cancer then that enables us to start to make causal claims and set policies to reflect that.

<sup>47</sup> Strumpf, “The 5G Race.”

<sup>48</sup> OA US EPA, “EPA History,” Collections and Lists, US EPA, October 13, 2016, <https://www.epa.gov/history>.

EMFs titled, *EMF in Your Environment: Magnetic Field Measurements Of Everyday Electrical Devices*(Dec. 1992). It is also important to note that while the EPA states, “The draft document reports information that was available only through 1990, and it is therefore of historical interest only in a field that was very active in the subsequent 10 years.”<sup>49</sup>

It is important to note they explain why the document was not updated, and that it is for historical use only: “The draft document reports information that was available only through 1990, and it is therefore of historical interest only in a field that was very active in the subsequent 10 years.” However, if they do not have any further up-to-date research then my concern will be that they pursue more “current” and “up-to-date” research to know if one is safe. When one comes to sites like this and only see “historical” documents, how does one know they are safe or not?

They also outsource to the Federal Communications Commission (FCC) and Specific Absorption Rate (SAR) regarding, “Protecting the public from electronic product radiation” under the category of, “Medications cosmetics, biological products, and other products for human consumption.”<sup>50</sup> Their findings point to a concern but are ultimately inconclusive, “Some recent scientific studies have suggested a link—a statistical association—between exposure to 60

---

<sup>49</sup> “Document Display | NEPIS | US EPA,” accessed March 26, 2020, <https://nepis.epa.gov/Exe/ZyNET.exe/000005EP.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1991+Thru+1994&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C91thru94%5Ctxt%5C00000002%5C000005EP.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL>.

<sup>50</sup> “Does EPA Handle All Environmental Concerns?,” Environmental Knowledgebase, accessed March 26, 2020, <http://publicaccess.zendesk.com/hc/en-us/articles/212071687-Does-EPA-handle-all-environmental-concerns->.



hertz EMFs and specific types of cancer, primarily leukemia and brain cancer. Other studies have found no such association.”<sup>51,52</sup>

At this point, we are not at all sure that exposure to EMFs such as we find in our everyday environment has an adverse effect on our health. However, we cannot say with certainty that such exposure is safe for us, either. More research is needed—and is underway. Meanwhile, many people have expressed an interest in having information about everyday sources of EMF exposure.<sup>53</sup>

With respect to the above information, it is important to note that the research the EPA has on their site, is before the existence of 4G technology we currently have, and at best, is outdated for 3G, back when their article was written. They also state on another page, which is more recently dated (2018):

Electronic devices that send information through the air are everywhere. Between Wi-Fi, cell phones and other networks, people are in a nearly constant cloud of wireless signals. These devices use RF energy to send and receive information... Cell phones and wireless networks also produce RF energy, but not at levels that cause significant heating. Some people are concerned about the potential health effects of RF energy from wireless technology. Most studies haven’t found any health effects from cell phone use. A few studies have connected RF and health effects, but scientists have not been able to repeat the outcomes. This means that they are inconclusive. Scientists continue to study the effects of long-term exposure to low-levels of RF energy.<sup>54</sup>

From this information above, the EPA gives general guidelines to limit use—reduce the number and length of calls, text instead—texting uses a smaller signal than a voice call, resulting in lower RF energy, ensure a good reception—this reduces RF exposure by avoiding signal boosts, and increase distance—add space between your wireless device and your body.<sup>55</sup> Even though

---

<sup>51</sup> “Document Display | NEPIS | US EPA,” 8.

<sup>52</sup> They refer to an article here that is 10 years previous to the one in writing—*Electric and Magnetic Fields from 60 Hertz Electric Power: What do we know about possible health risks?*(Carnegie Melon University, 1989), pg.33--from which pushes the validity of the current research on the EPA website to more than 31 years outdated!

<sup>53</sup> “Document Display | NEPIS | US EPA,” 8.

<sup>54</sup> OAR US EPA, “Non-Ionizing Radiation From Wireless Technology,” Overviews and Factsheets, US EPA, November 26, 2018, <https://www.epa.gov/radtown/non-ionizing-radiation-wireless-technology>.

<sup>55</sup> US EPA.

this seems like positive information, the EPA does not refer to any research to justify these claims—they instead outsource to other agencies main websites. So, even though a US citizen such as myself would think to go here assuming they could help to protect me against this possible environmental threat, I have just pointed out that their research is an outdated<sup>56</sup>, and not useful, in helping to establish if the EMFs that result from 4g & 5G technology are actually harmful or not.

Next, in the pursuit of objectivity, it will be important to give some details of another organization, the Federal Communications Commission (FCC) and the concept of Specific Absorption Rate (SAR), to see whether they support or do not support my claim that there are potentially harmful EMFs that result from 4g & 5G technology.

### **1.29 - The Federal Communications Commission (FCC)**

The FCC is another *national* organization dedicated to environmental issues and have issued statements regarding the potentially harmful EMFs resulting from 4G & 5G technology. The FCC “regulates interstate and international communications by radio, television, wire, satellite, and cable in all 50 states, the District of Columbia and U.S. territories. An independent U.S. government agency overseen by Congress, the Commission is the federal agency responsible for implementing and enforcing America’s communications law and regulations.”<sup>57</sup> In this report, *FCC Policy on Human Exposure to Radiofrequency Electromagnetic Fields* (August 1996), they maintain, “Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the

---

<sup>56</sup> “The EPA Website Changes: EMF Safety Issues Removed,” *Environmental Health Trust* (blog), November 12, 2020, <https://ehtrust.org/the-epa-website-changes-emf-safety-issues-removed/>.

<sup>57</sup> “About the FCC,” Federal Communications Commission, accessed March 31, 2020, <https://www.fcc.gov/about/overview>.

hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube).”<sup>58</sup> This data results from a concept called Specific Absorption Rate (SAR), from *Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields* which is, “... a measure of the rate of energy absorbed by (dissipated in) an incremental mass contained in a volume element of dielectric materials such as biological tissues. SAR is usually expressed in terms of watts per kilogram (W/kg) or milliwatts per gram (mW/g). Guidelines for human exposure to RF fields are based on SAR thresholds where adverse biological effects may occur. When the human body is exposed to an RF field, the SAR experienced is proportional to the squared value of the electric field strength induced in the body.”<sup>59</sup> In short, think of SAR as providing more specific metric—whether from international or national organizations—on how energy is transferred from a specific wavelength—ionizing versus non-ionizing—on the EMR spectrum, to the biological organism, such as a specific animal or human. From the information stated above, one can know to what kind of damage to this biological organism is possible and to what extent the damage may be.

With regards to RF causing cancer, their website states that,

Some studies have also examined the possibility of a link between RF exposure and cancer. Results to date have been inconclusive. While some experimental data have suggested a possible link between exposure and tumor formation in animals exposed under certain specific conditions, the results have not been independently replicated. Many other studies have failed to find evidence for a link to cancer or any related condition.<sup>60</sup>

---

<sup>58</sup> “FCC Policy on Human Exposure,” Federal Communications Commission, November 24, 2015, <https://www.fcc.gov/general/fcc-policy-human-exposure>.

<sup>59</sup> “RF Safety FAQ,” Federal Communications Commission, November 25, 2015, <https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety>.

<sup>60</sup> “RF Safety FAQ.”

The FCC also provide a link to The Food and Drug Administration (FDA) claiming that, “To date, there is no consistent or credible scientific evidence of health problems caused by the exposure to radio frequency energy emitted by cell phones” citing, *Review of Published Literature between 2008 and 2018 of Relevance to Radiofrequency Radiation and Cancer* (Feb. 2020), as the backbone for their research.<sup>61</sup> The evidence I have presented above is significant to my concern, because they do not support my claim that there are potentially harmful EMFs resulting from 4G & 5G technology. Thus, they will be added to the list of organizations in disagreement, such as ICNIRP.

There is also another and more significant worry that I would like to bring to attention. More specially, the FCC’s scientific literature is not up-to-date concerning the technology of 5G. In fact, there has been a recent lawsuit filed in the U.S. Court of Appeals for the District of Columbia Circuit concerning this; see ENVIRONMENTAL HEALTH TRUST (EHT) ET AL. V. FCC. In this lawsuit, the EHT et al. v. the FCC seeks to have the Court order the FCC to remand, vacate and update its 25-year-old exposure guidelines for radio-frequency radiation (RFR) from cell phones, cell towers, Wi-Fi, 5G and other wireless communication devices.<sup>62</sup> After the presentation of the oral arguments,<sup>63</sup> a summary of the concerns by EHT are stated here, “During the oral arguments the Court directed the FCC to address whether or not the Radiofrequency Interagency Work Group [RFIAWG] and the Technical Electronic Product Radiation Safety Standards Committee [TEPRSSC] exist, and “(1) when the committee(s) was

---

<sup>61</sup> Center for Devices and Radiological Health, “Scientific Evidence for Cell Phone Safety,” *FDA*, February 20, 2020, <http://www.fda.gov/radiation-emitting-products/cell-phones/scientific-evidence-cell-phone-safety>.

<sup>62</sup> “Final Response to the FCC Submitted in EHT et al v FCC Historic Case,” *Environmental Health Trust* (blog), February 4, 2021, <https://ehtrust.org/final-response-to-the-fcc-submitted-in-eht-et-al-v-fcc-historic-case/>.

<sup>63</sup> Environmental Health Trust, *EHT et al., v. FCC Court Oral Argument and Press Conference*, 2021, <https://www.youtube.com/watch?v=5oXhnuAkLq4&feature=youtu.be>.

formed (2) who the members of the committee(s) are and (3) whether the committee(s) were in existence during the pendency of the notice of inquiry, and if so, what dates.”<sup>64</sup>

The FCC responded to these claims within 24 hours, and the EHT responded the FCC’s response soon after. After listening to the oral argument, I am of the strong opinion that the judges favored the concern that the EHT had against the FCC in this lawsuit<sup>65</sup>. To see more information about this current lawsuit, the reader can also see the justification for why the lawsuit against the FCC exists in the first place; see latest Op Ed by *The Washington Times*.<sup>66</sup> This case is still pending legal judgment, but it is worth mentioning here, as I have pointed out similar concerns with the WHO above.

Next, in the pursuit of objectivity, it will be important to give some details of another organization, the National Cancer Institute (NCI) to see whether they support or do not support my claim that there are potentially harmful EMFs that result from 4g & 5G technology.

### **1.30 - The National Cancer Institute (NCI)**

The NCI is another *national* organization dedicated to environmental issues that has a position on potentially harmful EMFs resulting from 4G & 5G technology. The NCI is a subdivision of the National Institutes of Health (NIH), the federal government’s principal agency for cancer research and training. NCI leads, conducts, and supports cancer research across the nation to advance scientific knowledge and help all people live longer, healthier lives.

---

<sup>64</sup> “Final Response to the FCC Submitted in EHT et al v FCC Historic Case.”

<sup>65</sup> Dr. Devra Davis (president of the EHT), whom I have interviewed about this case on Feb. 19, 2021, also echoed the same opinion, stressing that the lack of transparency and oversight of the up-to-date scientific evidence of the FCC is lacking.

<sup>66</sup> The Washington Times <http://www.washingtontimes.com>, “Why I’m Challenging the FCC about Antiquated Safety Standards for Wireless Devices,” The Washington Times, accessed February 26, 2021, <https://www.washingtontimes.com/news/2021/feb/23/why-im-challenging-the-fcc-about-antiquated-safety/>.

Moreover, as an organization, they lead cancer research nationally and are the largest funder of cancer research in the world.<sup>67</sup> Their website reports,

Studies of animals have not provided any indications that exposure to ELF-EMFs is associated with cancer... The few high-quality studies in animals have provided no evidence that Wi-Fi is harmful to health... Although there is no known mechanism, by which non-ionizing EMFs could damage DNA and cause cancer, even a small increase in risk would be of clinical importance given how widespread exposure to these fields is... A review of the published literature concluded that the few high-quality studies to date provide no evidence of biological effects from Wi-Fi exposures.<sup>68</sup>

This evidence is significant because this evidence from the NCI does not support my claim that there are potentially harmful EMFs resulting from 4G & 5G technology.

Next, in the pursuit of objectivity, it will be important to give some details of another organization, The Health Physics Society (HPS) to see whether they support or do not support my claim that there are potentially harmful EMFs that result from 4g & 5G technology.

### **1.31 - The Health Physics Society (HPS)**

The HPS is another *national* organization dedicated to environmental issues which has a position on potentially harmful EMFs resulting from 4G & 5G technology. The HPS, formed in 1956, is a scientific organization of professionals who specialize in radiation safety. Its mission is to support its members in the practice of their profession and to promote excellence in the science and practice of radiation safety.

Today its members represent all scientific and technical areas related to radiation safety, including academia, government, medicine, research and development, analytical services, consulting, and industry in all 50 states and the District of Columbia. The Society is chartered in

---

<sup>67</sup> “About NCI - Overview and Mission,” *cgvArticle*, National Cancer Institute, March 18, 2015, [nciglobal,nci enterprise, https://www.cancer.gov/about-nci/overview](https://www.cancer.gov/about-nci/overview).

<sup>68</sup> “Electromagnetic Fields and Cancer,” *cgvArticle*, National Cancer Institute, January 7, 2019, [nciglobal,nci enterprise, https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet](https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet).

the United States as an independent nonprofit scientific organization and, as such, is not affiliated with any government or industrial organization or private entity. Furthermore, they state, they will:

... find information and answers to your questions about radiation and radiation safety/protection. For many years radiation has been beneficial to human beings for medical diagnosis and therapy, scientific research, and generating electrical power. However, when used in unsafe ways, radiation can harm people. Care must be taken to properly use radiation and to minimize unnecessary radiation exposures. The health physicist's job is to manage the beneficial use of radiation.<sup>69</sup>

Thus, the HPS's concern is to oversee the biological impact that radiation such as EMFs have on people and the environment and must be overseen by a physicist. Thus, in reply to the question of health effects anticipated with the advent of 5G wireless telecommunications networks, their response is:

5G is still a developing technology and the operating parameters of 5G systems have not been finalized. While some present 5G systems use frequency bands close to present cellular bands (such as 3–4 gigahertz [GHz]) others use the millimeter-wave band near 30 GHz. It is expected that 5G technology will increasingly use millimeter-wave energy (since that is where the available spectrum lies). The only established health and safety hazards of radio-frequency (RF) energy at these frequencies involve excessive heating of tissue and present safety limits protect against such hazards with a large margin of safety. It is very unlikely that environmental exposures from 5G systems could come close to or exceed US or major international safety limits, but care will be needed when designing millimeter-wave handsets whose antennas are close to the skin. Millimeter waves do not penetrate more than 0.5 mm or so into skin and the obvious potential hazards involve excessive heating of near-surface tissues such as skin or the cornea of the eye. There is a scattering of studies in which humans have been exposed to millimeter waves, some at quite high levels. There have been numerous other studies concerning use of millimeter waves for medical purposes as well as basic biological studies. None of these have convinced health agencies that significant hazards exist from millimeter waves at exposure levels below US and major international safety limits. That said, there have been rather few standard risk studies involving mm-waves and probably none involving specific 5G waveforms. Given the anticipated widespread use of millimeter waves

---

<sup>69</sup> Fred Baes, "Hps.Org," Health Physics Society, accessed April 6, 2020, <http://hps.org/>.

as 5G technology develops, this will undoubtedly be an area of considerable research in the future.<sup>70</sup>

The reason I have cited the above statements at length is because they point to the specificity of how 5G is rapidly evolving, and emphasize the potential damage of millimeter waves due to heating of the tissue, but then conclude there is no concern here. As we will see ahead, if one can show there is non-thermal damage, where heat is not in question, then this would be a problem for their conclusion here. Moreover, I am making a very important distinction here. If the HPS stresses the language related to “thermal” damage, but not to “non-thermal” damage, then the collection of important collection of important scientific data is at stake, and we should be looking into this is non-thermal damage/harm is associated with EMF exposure as well.

With regards to RF frequency and health risks in general, and the issue of hypersensitivity, Kenneth R. Foster, Professor of Bioengineering, from the University of Pennsylvania, concludes:

In 2006 I conducted an industry-supported survey of RF field levels in urban and suburban areas in four countries—the United States, France, Germany, and Sweden (Foster 2007). The survey made 356 measurements of background RF signals at 55 sites: private residences, commercial spaces, health care and educational institutions, and other public spaces. Measurements were conducted in public spaces as close as practical to access points.

The results, which are detailed in "Radiofrequency Exposure From Wireless LANs" (Foster 2007), show that in all cases the measured Wi-Fi signal levels were very far below international safety limits, specifically, those of the Institute of Electrical and Electronics Engineers and the International Commission on Nonionizing Radiation Protection (ICNIRP 2002). These limits were designed to protect against all known hazards of RF energy. In nearly all cases, these signals were also considerably lower than those from other nearby sources of RF energy, including cellular telephone base stations.

Concerns about possible health risks from exposure to low levels of RF fields in ordinary environments have been expressed by a number of individuals over the years in connection with many technologies that use RF energy. To address such concerns, health agencies around the world have repeatedly reviewed the scientific literature and found no convincing evidence of any health

---

<sup>70</sup> Baes.



hazards from RF fields below international safety limits. For example, the World Health Organization (WHO) stated recently in a fact sheet that "no health effects are expected from exposure to RF fields from [cellular] base stations and wireless networks. (WHO 2006)

A few individuals have reported that RF signals from Wi-Fi and other low-level sources of RF fields can trigger allergy-like reactions—a phenomenon called electrical hypersensitivity. This is a complex issue that scientists have studied with respect to low-level RF fields from various sources for a number of years.

While the distress of electrically hypersensitive individuals is very real, controlled studies have failed to connect their symptoms to the exposure to fields. These studies show that the symptoms appear to be associated with whether the individual believes that he or she is being exposed, rather than the actual exposure. The WHO fact sheet quoted above states that electromagnetic fields "have not been shown to cause such symptoms. Nonetheless, it is important to recognize the plight of people suffering from these symptoms" (WHO 2006).<sup>71</sup>

Thus, electrical hypersensitivity is a complex psychosocial phenomenon, not a straightforward toxicity response to RF fields. Indeed, given the presence of RF fields from many sources in the environment, many stronger than fields from wireless networks, it is difficult to imagine that wireless networks by themselves could be a cause of significant health problems or that an electrically hypersensitive individual could reliably identify wireless networks as the cause of his or her problems.

I conclude that levels of exposure of citizens to RF fields from wireless networks is far below international safety limits. Moreover, in nearly all of the places that I surveyed, the Wi-Fi signals were far below other RF signals that were present from other sources. Given the low level of exposure to people from RF fields from wireless networks in comparison to that from other sources of RF energy that are ubiquitous in the modern environment, any health concerns about wireless networks would seem to be moot.<sup>72</sup>

The examples above are significant because they show that HPS do not support my claim that there are potentially harmful EMFs resulting from 4G & 5G technology. Moreover, the HPS are agreement with other *international* organizations, such as the WHO and ICNIRP, in these

---

<sup>71</sup> The concern here can be that this does not mean there will not be a link shown in the future, because after all, this is how science works. Yes, but this is precisely my concern. I am concerned about this having the status of being an international governing authority on this kind of possible environmental damage, so one would hope that their research is not outdated like this. We are talking 14 years and this is concerning to me. Please see my previous concern with the FCC above.

<sup>72</sup> Baes.

regards. Thus, we now see a web forming between the *international* and *national* organizations against my claim.

Next, in the pursuit of objectivity, it will be important to give some details of another organization, the National Council on Radiation Protection and Measurements (NCRP, to see whether they support or do not support my claim that there are potentially harmful EMFs that result from 4g & 5G technology.

### **1.32 - The National Council on Radiation Protection and Measurements (NCRP), and hypersensitivity.**

The NCRP is another *national* organization dedicated to environmental issues and will have information to provide concerning my claim that there are potentially harmful EMFs resulting from 4G & 5G technology. The NCRP, established in 1929, is dedicated to supporting radiation protection by providing independent scientific analysis, information, and recommendations that represent the consensus of leading scientists. It also seeks to formulate and widely disseminate information, guidance and recommendations on radiation protection and measurements which represent the consensus of leading scientific thinking. The Council is always on the alert for areas in which the development and publication of NCRP materials can make an important contribution to the public interest.<sup>73</sup>

In their *Health Physics News* report, titled, *Cell Phones and Rats—Should You Worry?*, conducted by the National Toxicology Program (NTP), the NCRP argues that the study is exceptional but has serious limitations to it— comprehensive peer reviews were included in the report from the NCRP as well. The NCRP claim that the authors of the NTP, “misused statistics” and that, “no result in the paper should be considered statistically significant”. The NCRP argue that any sort of generalizations from studies analyzing rats and dogs with RF

---

<sup>73</sup> “Mission | NCRP | Bethesda, MD,” accessed April 7, 2020, <https://ncrponline.org/about/mission/>.

exposure, cannot be applied to humans, and thus they, “provide no evidence of health effects of RF field exposures”.<sup>74</sup> Moreover:

Exposure limits are set based on thermal properties; the RF waves might jiggle molecules and thus increase heat—when your cell phone gets hot, however, it’s because of the battery, not the RF. Expert agencies in the United States, United Kingdom, and European Community, as well as other nonionizing radiation committees, conclude that the epidemiologic evidence taken together does not link RF waves to cancer in humans.

High-quality human studies are uniformly negative, i.e., there is little to no evidence of brain tumors linked to cell phone use. Notable are the studies in Denmark of 400,000 cell phone subscribers and in the United Kingdom of one million women. Studies in children are also negative, and there is no evidence that brain tumor rates have increased during the past 20 years in the United States, the United Kingdom, Nordic countries, New Zealand, or most recently Australia.

Serious uncertainties exist that hinder interpreting the preliminary findings in the NTP report, determining their applicability to humans, and considering recommendation changes. We will stay tuned for the full NTP report!<sup>75</sup>

From this, it is clear that the NRCP does not think that there is any harmful effects from cell phones. However, in their report they do not specify the difference between 4G to 5G technology—their reference is to cell phones in general, which is rather vague. For the sake of argument, I will assume they are referring to 4G technology when critiquing the study from NTP, as that is what the dates suggest. I have also searched their website for more specificity regarding EMFs, RFs, the health concerns from cellphone radiation, SARS, etc., and found nothing.

This concludes the analysis of the *international* and *national* organizations (1.24 - 1.32) that have significant claims towards the problems of harmful EMFs from cell phone radiation emitted from 4G and 5G technology, and their respective positions regarding this problem. It seems as though, out of the nine organizations mentioned, most hold the position that there is no

---

<sup>74</sup> “Health Physics News,” 2016, pg. 20.

<sup>75</sup> “Health Physics News,” pg. 21.

public safety concern related to my claim that there are potentially harmful EMFs that result from 4g & 5G technology, based upon their scientific research, such as the ICNIRP, the FCC, the NCI, the HPS, and the NCRP. However, recall that I have pointed out that some organizations have presented, what seems to be, outdated research, such as the WHO, EPA, and the FCC.<sup>76</sup> In addition, some organizations were inconclusive regarding my claim, such as the ICES and the EPA. Lastly, only the NIEHS supported my claim but their research was tested regarding 2G & 3G technology, so this seems like outdated research as well, but the NCRP dismissed this research and stated that it could not be used for humans. The reason this is important is that it is not clear at all which, if any organization that I have mentioned in sections 1.24 – 1.32, should be the sole authority source related to the information regarding my environmental claim that there are potentially harmful EMFs that result from 4g & 5G technology. In other words, these *international* and *national* organizations should be where one consults regarding the issue of harmful EMFs in the environment resulting from 4G & 5G technology, as they claim to be the experts. The problem is that these nine organizations are in disagreement, and no clear unified conclusion has crystalized, so it is far from clear what a concerned person should do when trying to find an answer to my claim.<sup>77</sup>

---

<sup>76</sup> It is not entirely necessary that doubt be cast on their reports, their position, or the scientific studies, but I draw attention to this pattern with these agencies, as the recent lawsuit against the FCC is ongoing, and can possibly be related to these other agencies as well.

<sup>77</sup> A possible counter-argument to this position, which will not affect my overall thesis: a reading of the positions of these organizations is that there is a consensus around the state of our knowledge regarding the EMF technology, and that research is ongoing. Some offer practical advice on how to limit exposure, which seems prudent. And there is not, and should not be, a “sole authority” on the matter. A cursory response can be considered. For example, if we were to apply this logic to the current CV-19 pandemic, the WHO wasn’t the sole authority, but certainly was the most major international authority, and for better or worse, most of the world’s population look to them for answers during this time, so it seems as though they do have authority worth considering. The nature of disagreement between these organizations seems to matter because one looks to them for credible information to know if they are safe or not. In other words, it may not be surprising that these organizations have disagreement, but this disagreement itself can lower the confidence levels of the person about the possible harmful EMFs resulting from 4G & 5G technology.

Therefore, it is in the pursuit of objectivity that I now shift away from consulting these organizations for a decision on what to do with the synthesis of the scientific evidence they have used and will focus on the evidence that shows harm towards the environment, in sections 1.3 – 1.6. More specifically, when I refer to the environment, I will refer to its subsets. I will do this by citing evidence of harm towards the bees, plants and trees, wildlife in general, and various damage done to humans. These are examples of harm done collectively to the environment as a whole. This will be done to see if becomes clear whether or not there actually is an environmental problem of harmful EMFs in the environment resulting from 4G, and the future implementation of 5G technology, by ascertaining if the actual evidence can speak for itself.

### **1.3 - The EMF Environmental Harm Towards Bees**

In this section, I will give a *local* example, in San Diego, of how bees can be harmed by EMFs from 4G technology, then will extend this problem out *globally*, showing that this problem has far reaching consequences to the environment. More specifically, here I will begin to support my argument that allowing the further advancement of EMFs associated with the future implementation of 5G technology, is harmful to the environment, due to the harm towards bees already sustained by 4G technology.

Sometime in 2014, I had a long conversation with a man by the name of Brother Blaze Heuke, who was a Benedictine monk, and the head beekeeper for the monastery Prince of Peace Abbey, in Oceanside, CA. I had briefly introduced myself and told him I had stayed at his monastery for a spiritual retreat back in 2011. We instantly found commonality and he asked me what I did for a living. At that time, I told him I was a nuclear medicine technologist—more specifically a PET/CT technologist—that injected radiation into people and scanned them for cancer. He was fascinated by the topic of radiation, so we began discussing various aspects of

the electromagnetic spectrum, and he had told me that he was a bee farmer and had encountered problems with EMFs that almost wiped out his whole bee farm at the monastery where he worked, due to the installation of various 4G cell phone towers on the property.

Concerning this case above, one could argue that even if the installation of the cell towers is correlated/coincident with harm to the bee colony it does not follow that EMFs caused the harm. It is possible that it was the disruption of the builders on the location, maybe it was the towers themselves, maybe it was what the building of the towers did to the environment (not the EMFs), etc. Yes, but one thing was for sure. Brother Blaise informed me that all he knew is that after the towers were installed, his bees died, so understanding how the harm was done was important.

He had petitioned to get the city of Oceanside to remove the cell towers from the monastery, but his request had been denied. Many years later, when I decided to take on this environmental issue, I remembered this conversation that I had with him, did some research, and later discovered that he shared his problem with the local *KPBS News* in San Diego (2017):

Brother Blaise now has 50 hives, with thousands of bees making honey from nearby wild brush like anise, sage, and buckwheat... “All of a sudden all my bees died just almost overnight. They had just constructed four cell phone towers on our property. I didn’t think anything of it. Those towers looked innocent to me,” said Brother Blaise.

The Abbey signed a long-term contract to house the towers on their property. Brother Blaise believed the microwaves from the towers interfered with the bees’ internal navigation system, so they couldn’t find their way home. But the towers were here to stay.

“So, I took my cell phone out. I walked around until I didn’t get any message. Down at the bottom of the hill, you don’t get any signal in that little cul-de-sac. And so I moved my bees there and I have no problem anymore. The microwaves coming off those towers do not interrupt the bees. “

He moved his hives 250 feet down to a clearing at the bottom of the hill. After a few months, his bee colony started to thrive again and so did the honey production.<sup>78</sup>

---

<sup>78</sup> Maya Trabulsi, “Oceanside Monk Leaves A Sweet Legacy Through Beekeeping,” *KPBS Public Media*, accessed March 19, 2020, <https://www.kpbs.org/news/2017/dec/13/prince-peace-abbey-monk-sweet-legacy/>.

Also, later in the *San Diego Union-Tribune* (2018):

Heuke theorized that cellular signals from two newly installed towers had disoriented and disturbed the bees, hastening the hives' collapse. He scouted the property until he found a place where cellphone reception was poor, and moved the remaining hives there, where they began again to thrive. An infusion of nutritious syrup donated by another beekeeper is also helping keep them healthy.<sup>79</sup>

Brother Blaise, using inductive reasoning,<sup>80</sup> was searching for a reasonable explanation to explain why his bees were dying. I am not sure if he ever tested his hypothesis or presented his research further, as he has since passed away, but I will now present more evidence to support his original inquiry of the EMFs from the cell towers, using 4G technology, that originally began killing off his bee colonies.

In, 2017, the *Journal of Entomology and Zoology Studies*, a study conducted on an Indian honey bee called *Apis cerana*, revealed that there was a sharp decline and potential health hazards in honey bee populations due to cell phone radiation and could considerably weaken the infrastructure of food webs, “the EMRs may harm the health of honey bees in the long run”<sup>81</sup> The six-month study placed cell phone towers at a distance of 100, 200, 300, 500, and 1000 meters from the bee hives to observe their impact on bees' flight activity, returning ability, and pollen foraging efficiency. The study showed that the massive amounts of radiation emitted from the cell phone towers interfere with the bee's homing mechanism, resulting in their inability to find their way back to their hives, resulting in their deaths. This article also cites the

---

<sup>79</sup> “Beekeeping Benedictine Brother Noted for His Kindness, Faith,” *San Diego Union-Tribune*, August 26, 2018, <https://www.sandiegouniontribune.com/communities/north-county/sd-no-obituary-brother-blaise-heuke-20180822-story.html>.

<sup>80</sup> It is fair to note here that observation and hypothesis formation is just the start of inductive reasoning in the scientific sense.

<sup>81</sup> Taye, Deka, and Rahman, “Effect of Electromagnetic Radiation of Cell Phone Tower on Foraging Behaviour of Asiatic Honey Bee, *Apis Cerana* F. (Hymenoptera: Apidae),” 3.

terminology of Colony Collapse Disorder (CCD), where there is a sudden disappearance of bees reported all over the world, where the bees simply leave the hive and fail to return, due to electromagnetic pollution.<sup>82</sup> This CCD phenomenon helps to explain what had previously happened in Brother Blaise's *local* situation above. However, this issue extends past the *local* setting.

However, one might resist here by the summary of this study. Here is what the scientists concluded:

4. Conclusion The results from the present investigation revealed that the *Apis cerana* colonies in close proximity to mobile phones towers were most affected by the electromagnetic radiation emitted by the tower. The flight activity and returning ability of worker honey bees were maximum in colonies placed at 500m and minimum at 100m from the tower. There was no significant difference in the pollen foraging behavior of foragers in various treatments. Findings of several works reported sharp decline and potential health hazards in honey bee populations due to cell phone radiation and could considerably weaken the infrastructure of food webs. The EMRs may harm the health of honey bee in the long run; however, the immediate and direct impact is yet need intensive research to draw a firm conclusion.”<sup>83</sup>

Although this might be the case, it does not detract from my overall argument. I remind the reader that the evidence that I present in the paper will have a “cumulative” impact on the reader. This cumulative impact will be a result of a series of correlations between harm and EMFs that I will present in the next sections. I argue that this series of correlations raises environmental concern and should be taken more seriously before the continued implementation

---

<sup>82</sup> Ritu Ranjan Taye, Mukul Kumar Deka, and Ataur Rahman, “Effect of Electromagnetic Radiation of Cell Phone Tower on Foraging Behaviour of Asiatic Honey Bee, *Apis Cerana* F. (Hymenoptera: Apidae),” *Journal of Entomology and Zoology Studies*, n.d., 1.

<sup>83</sup> Ritu Ranjan Taye, Mukul Kumar Deka, and Ataur Rahman, “Effect of Electromagnetic Radiation of Cell Phone Tower on Foraging Behaviour of Asiatic Honey Bee, *Apis Cerana* F. (Hymenoptera: Apidae),” *Journal of Entomology and Zoology Studies*, n.d., 3.



of 5G technology, from the corporate person of good character. In other words, it is not just the bees, it is the bees, plants, trees, animals, human damage, etc.

In the state of California, honeybees are significant pollinators of many things including almonds. The almonds industry is worth about 11 billion dollars<sup>84</sup>, and without honey bees, the almond industry would not flourish, let alone, exist. Moreover, California supplies over 80 percent of the world's almond supply<sup>85</sup> and this would not be possible without the honeybee. Furthermore, honeybees enable the production of at least 90 commercially grown crops in North America and these crops are worth about 24 billion dollars,<sup>86</sup> and about 217 billion US dollars considering their worldwide economic value.<sup>87</sup> As we can see from these figures, bees are vital to our environment, so we should protect them from the harm of existing and future EMFs.

This concern about harm to bees, which adds to the accumulation of my correlative evidence, resonates with the fact that additional scientific research needs to be conducted on living organisms such as humans, in light of the finding of this study, to ensure the safety of continued 4G and advanced 5G technology.

In this next section, I will present additional evidence for my environmental argument that there are harmful EMFs emitted from 4G, and the future implementation of 5G technology, specifically towards trees and plants.

#### **1.4 - The EMF Environmental Harm Towards Trees and Plants**

---

<sup>84</sup> "Industry Economics and Stats," California Almonds - Your Favorite Easy Snack, accessed March 19, 2020, <http://www.almonds.com/processors/resources/industry-economics>.

<sup>85</sup> "Bees for Hire: California Almonds Become Migratory Colonies' Biggest Task | The Bill Lane Center for the American West," accessed March 19, 2020, <https://west.stanford.edu/news/blogs/and-the-west-blog/2018/bees-for-hire-california-almonds-now-are-migratory-colonies-biggest-task>.

<sup>86</sup> "Fact Sheet: The Economic Challenge Posed by Declining Pollinator Populations," whitehouse.gov, June 20, 2014, <https://obamawhitehouse.archives.gov/the-press-office/2014/06/20/fact-sheet-economic-challenge-posed-declining-pollinator-populations>.

<sup>87</sup> "Economic Value Of Insect Pollination Worldwide Estimated At U.S. \$217 Billion," ScienceDaily, accessed March 19, 2020, <https://www.sciencedaily.com/releases/2008/09/080915122725.htm>.

In this section, I will support my argument that allowing the further advancement of EMFs associated with the future implementation of 5G technology, is harmful to the environment, due to the harm towards trees and plants already sustained by 4G technology.

Here is a study regarding plants, “There was a direct relationship between microwave-induced structural and chemical modifications of the three plant species studied. These data collectively demonstrate that human-generated microwave pollution can potentially constitute a stress to the plants.”<sup>88</sup> This is important because it illustrates a mechanism for harm, from the microwaves—which are a type of EMFs, to plants.

Another larger study performed an analysis of the data extracted from the 45 peer-reviewed scientific publications (1996-2016) describing 169 experimental observations to detect the physiological and morphological changes in plants due to the non-thermal RF-EMF effects from mobile phone radiation. Twenty-nine different species of plants were considered in this work:

The available literature on the effect of RF-EMFs on plants to date observed the significant trend of radiofrequency radiation influence on plants. Hence, this study provides new evidence supporting our hypothesis. Nonetheless, this endorses the need for more experiments to observe the effects of RF-EMFs, especially for the longer exposure durations, using the whole organisms. The above observation agrees with our earlier study, in that it supported that it is not a well-grounded method to characterize biological effects without considering the exposure duration. Nevertheless, none of these findings can be directly associated with human; however, on the other hand, this cannot be excluded, as it can impact the human welfare and health, either directly or indirectly, due to their complexity and varied effects (calcium metabolism, stress proteins, etc.). This study should be useful as a reference for researchers conducting epidemiological studies and the long-term experiments, using whole organisms, to observe the effects of RF-EMFs.<sup>89</sup>

---

<sup>88</sup> Maria-Loredana Soran et al., “Influence of Microwave Frequency Electromagnetic Radiation on Terpene Emission and Content in Aromatic Plants,” *Journal of Plant Physiology* 171, no. 15 (September 15, 2014): 1436–43, <https://doi.org/10.1016/j.jplph.2014.06.013>.

<sup>89</sup> Malka N. Halgamuge, “Review: Weak Radiofrequency Radiation Exposure from Mobile Phone Radiation on Plants,” *Electromagnetic Biology and Medicine* 36, no. 2 (2017): 213–35, <https://doi.org/10.1080/15368378.2016.1220389>.

This study resonates with the fact that additional scientific research needs to be conducted on living organisms such as humans, in light of the finding of this study, to ensure the safety of continued 4G and advanced 5G technology.

Another study, conducted over a 9-year period, revealed harm to trees that were exposed to RF radiation:

In the last two decades, the deployment of phone masts around the world has taken place and, for many years, there has been a discussion in the scientific community about the possible environmental impact from mobile phone base stations. Trees have several advantages over animals as experimental subjects and the aim of this study was to verify whether there is a connection between unusual (generally unilateral) tree damage and radiofrequency exposure. To achieve this, a detailed long-term (2006-2015) field monitoring study was performed in the cities of Bamberg and Hallstadt (Germany). During monitoring, observations and photographic recordings of unusual or unexplainable tree damage were taken, alongside the measurement of electromagnetic radiation... The measurements of all trees revealed significant differences between the damaged side facing a phone mast and the opposite side, as well as differences between the exposed side of damaged trees and all other groups of trees in both sides. Thus, we found that side differences in measured values of power flux density corresponded to side differences in damage. The 30 selected trees in low radiation areas (no visual contact to any phone mast and power flux density under  $50\mu\text{W}/\text{m}^2$ ) showed no damage. Statistical analysis demonstrated that electromagnetic radiation from mobile phone masts is harmful for trees. These results are consistent with the fact that damage afflicted on trees by mobile phone towers usually start on one side, extending to the whole tree over time.<sup>90</sup>

In addition, research reveals that, “RF background may have strong adverse effects on growth rate and fall anthocyanin production in aspen, and may be an underlying factor in aspen decline.”<sup>91</sup> Lastly, more research reveals photographic damage to trees from RF radiation with

---

<sup>90</sup> Cornelia Waldmann-Selsam et al., “Radiofrequency Radiation Injures Trees around Mobile Phone Base Stations,” *The Science of the Total Environment* 572 (December 1, 2016): 554–69, <https://doi.org/10.1016/j.scitotenv.2016.08.045>.

<sup>91</sup> Katie Haggerty, “Adverse Influence of Radio Frequency Background on Trembling Aspen Seedlings: Preliminary Observations,” Research Article, *International Journal of Forestry Research* (Hindawi, 2010), <https://doi.org/10.1155/2010/836278>.

the phenomena labeled, “spatially inhomogeneous tree damage” where various parts trees are damage by radiation and other parts or not, all depending of the distance from the parts of the trees to the base towers that emit the harmful RF radiation....” This study shows a conclusive system of strong indications demonstrate a causal relation between tree damage and chronic High Frequency exposure.<sup>9293</sup>

Again, this concern about harm to trees and plants, which adds to the accumulation of my correlative evidence, resonates with the fact that additional scientific research needs to be conducted on living organisms such as humans, in light of the finding of this study, to ensure the safety of continued 4G and advanced 5G technology.

In this next section, I will present more evidence for my environmental argument, that there are harmful EMFs emitted from 4G, and the future implementation of 5G technology, specifically towards wildlife in general.

### **1.5 - The EMF Environmental Harm Towards Wildlife in General**

In this section, I will support my argument that allowing the further advancement of EMFs associated with the future implementation of 5G technology, is harmful to the environment, due to the harm towards wildlife in general already sustained by 4G technology.

One study,

... indicates that exposure at levels that are found in the environment (in urban areas and near base stations) may particularly alter the receptor organs to orient in the magnetic field of the earth. These results could have important implications for migratory birds and insects, especially in urban areas, but could also apply to birds and insects in natural and protected areas where there are powerful base station emitters of radiofrequencies. Therefore, more research on the effects of electromagnetic radiation in nature is needed to investigate this emerging threat. Furthermore, they state that the growth of wireless telecommunication technologies causes increased electrosmog, radio frequency fields in the MHz

---

<sup>92</sup> This study also has many photographs of damaged trees from the RF grounded right next to them.

<sup>93</sup> “PULS-SCHLAG - Studie: Baumschäden Beweisführung,” accessed April 17, 2020, <http://www.puls-schlag.org/dvd-3.htm>.

range disrupt insect and bird orientation, existing guidelines do not adequately protect wildlife, and further research in this area is urgent.<sup>94</sup>

A review of 113 studies from original peer-reviewed publications show that, “RF-EMF had a significant effect on birds, insects, other vertebrates, other organisms and plants in 70% of the studies. Development and reproduction of birds and insects are the most strongly affected endpoints.”<sup>95</sup> Lastly, the conclusion of this study states,

At the present time, there are reasonable grounds for believing that microwave radiation constitutes an environmental and health hazard....Concerning the exposure to electromagnetic fields, the precautionary principle is needed and should be applied to protect species from environmental non-thermal effects (Zinelis, 2010). Controls must be introduced and technology rendered safe to the environment, since this new ubiquitous and invisible pollutant could deplete the efforts devoted to species conservation.<sup>96</sup>

This study is significant because it supports my claim that EMFs may pose an environmental concern and are indeed harmful towards various members of wildlife such as insects, birds, and other invertebrates. Again, this concern about harm to wildlife, which adds to the accumulation of my correlative evidence, resonates with the fact that additional scientific research needs to be conducted on living organisms such as humans, in light of the finding of this study, to ensure the safety of continued 4G and advanced 5G technology.

In this next section, I will present more evidence for my environmental argument, that there are harmful EMFs emitted from 4G, and the future implementation of 5G technology, specifically towards humans.

---

<sup>94</sup> Alfonso Balmori, “Anthropogenic Radiofrequency Electromagnetic Fields as an Emerging Threat to Wildlife Orientation,” *The Science of the Total Environment* 518–519 (June 15, 2015): 58–60, <https://doi.org/10.1016/j.scitotenv.2015.02.077>.

<sup>95</sup> S. Cucurachi et al., “A Review of the Ecological Effects of Radiofrequency Electromagnetic Fields (RF-EMF),” *Environment International* 51 (January 1, 2013): 116–40, <https://doi.org/10.1016/j.envint.2012.10.009>.

<sup>96</sup> Alfonso Balmori, “Electrosmog and Species Conservation,” *The Science of the Total Environment* 496 (October 15, 2014): 314–16, <https://doi.org/10.1016/j.scitotenv.2014.07.061>.

## **1.6 - The EMF Environmental Harm Towards Humans**

I will present evidence that supports the claim that EMFs from cell phones—from 3G technology to 5G technology—that there is environmental harm towards human persons. The reason this new extension of evidence is important is that I am arguing that EMFs have a negative impact on the environment, and it is worth restating here that my evidence, as a collective whole, will be aggregative and summative. In other words, it is one thing to think that bees (1.3), trees and plants (1.4), and wildlife in general (1.5), are being harmed, but it is more alarming when I show you next that humans are being and have been harmed by EMFs. To introduce this new line of evidence, I will start with a local example in Southern California where I live.

### **1.61 - The EMF Harm Towards Firefighters in California**

The firefighter union of southern California had the firefighters section removed from the Senate Bill 649<sup>97</sup> that almost passed two years ago, under previous Governor Jerry Brown, due to the numerous firefighters that suffered brain cancer that seemed to be due to harmful EMFs resulting from the telecommunications antennas placed at their union stations. Jerry Brown, the former governor of California vetoed the legislation that would have allowed the telecommunications companies to install any technology on any local area in Southern California without any permission of the local authorities. It is interesting to note that the firefighter's union had themselves exempted from this possible legislation for reasons stated above, and below we will see why there was serious concern:

---

<sup>97</sup> See: ["California SB649 | 2017-2018 | Regular Session," LegiScan, accessed April 8, 2020, https://legiscan.com/CA/text/SB649/id/1649689;](https://legiscan.com/CA/text/SB649/id/1649689) and, "California: Bill to Ease Permits for Cell Phone Towers Could Affect Health," *The Mercury News* (blog), September 1, 2017, <https://www.mercurynews.com/2017/08/31/california-bill-to-ease-permits-for-cellular-antennas-could-impact-health/>.

Unless Brown vetoes the bill, cell towers will dot the landscape as never before for the questionable purpose of blanketing California neighborhoods, cities and counties with untested 5G millimeter waves. 5G, or 5th generation wireless, is virtually untested on human beings outside the military, although Soviet science is extensive and concerning with respect to heating of the eyes, skin and testes. Electrical equipment the size of refrigerators will be allowed, along with back-up generators filled with diesel fuel.

California firefighters have a strong 17-year history of fighting cell towers on their stations, beginning in 2000 when a small fire department sued Nextel for health damages related to neurological impairment after towers were activated adjacent to their stations. The men suffered from headache, insomnia, brain fog, getting lost in the same town they grew up in, sometimes forgetting protocol in routine medical procedures, mood swings and infertility. In 2004 a SPECT brain pilot study was conducted on California firefighters who had lived in the shadow of a tower for over five years. The study, conducted by Gunnar Heuser, MD, PhD, found brain abnormalities in all six men, including delayed reaction time, lack of impulse control, and cognitive impairment.<sup>98</sup>

This evidence above points to the concern of brain abnormalities of these six firefighters tested, but this evidence does seem a little weak as it could point to a hasty generalization. In other words, just because six firefighters had brain abnormalities, it does not follow that all firefighters in California, who have telecommunication antennas on their sites, have brain abnormalities. Maybe one could point to secondary factors that contributed to these possible brain abnormalities, that have nothing to do with the telecommunications antennas.

Now, one could press and ask where the evidence is of the towers as the sole cause. My response is similar to the one given about the bees. The proximity of living things (bees, plants, and humans) to towers is correlated with measurable negative effects in those living beings. In this case the correlation is found between the erection of the towers and firefighters getting diagnosed with brain cancer afterwards. I remind the reader that I am not trying to establish a

---

<sup>98</sup> “Firefighters Exempt Selves from Calif. Bill to Save Others - Wed., Sep. 13, 2017,” accessed April 8, 2020, <https://www.odwyerpr.com/story/public/9385/2017-09-13/firefighters-exempt-selves-from-calif-bill-save-others.html>.

causal connection with all of the evidence presented. I am trying to argue instead for the strong accumulation of correlative evidence.

In these next sections ahead (1.62 – 1.68), I will present strong scientific evidence—that has been peer reviewed and published—that supports the link between EMF and harm to humans in various ways, ranging from headaches, brain cancer, other forms of cancer, and harm towards children.

In this next section, I will present more evidence from environmental data that EMFs emitted from 4G, and the future implementation of 5G technology, may lead to harm in humans, specifically in the form of severe headaches.

### **1.62 - The EMF Harm in the Form of Severe Headaches**

In this section, I will support my argument that allowing the further advancement of EMFs associated with the future implementation of 5G technology, is harmful to the environment and to humans, in the form of severe headaches, which is already been linked to 4G technology. [

“When the school district rolled out the ipads this year, Aiden Fitchett noticed something new; as he did when seated near the wireless projector any time a teacher used one for a presentation: headaches. Bad ones. Bad enough that the 8-year-old second grader would come home crying from the pain. His mom, biologist Rachel Fitchett, made a connection between Aiden’s headaches and the circumstances: wireless fidelity waves or WiFi, which has been associated with harmful physical effects in a small percentage of the population.”<sup>99</sup>

Like the example above, there have been numerous research studies that have found a link between cell phone radiation and headaches, so I will present more evidence to support the

---

<sup>99</sup> Super User, “Oh My...What’s in WiFi?,” accessed April 9, 2020, <http://safeliving.tamers.biz/index.php/item/83-oh-my-what-s-in-wifi>.



claim that EMF from cell phones have a strong correlation with headaches. There has been a significant association between mobile phone use and headache in children and adults, including a dose-response relationship between risk of headache and call duration and frequency.<sup>100</sup>

Similarly you can see there have been two other studies that report the association between headache severity and the average call frequency.<sup>101102</sup>

One study showed that over 52,000 children with cell phone exposure had higher odds of migraines and headache-related symptoms than children with no exposure.<sup>103</sup> Moreover, replicated studies have also supported this study above in the form of “self-report questionnaires”.<sup>104105</sup>

“Dr. Pierre Aubineau’s theory that EMF exposure leads to inflammation that leads to a severe headache. “He has shown that when rats are exposed to GSM radiation, the dura mater becomes inflamed. Aubineau points to a theory—advanced by Dr. Michael Moskowitz of Harvard Medical School in Boston—that such an inflammation in humans would lead to a severe headache (Microwave News, 2001).

---

<sup>100</sup> Jing Wang et al., “Mobile Phone Use and The Risk of Headache: A Systematic Review and Meta-Analysis of Cross-Sectional Studies,” *Scientific Reports* 7, no. 1 (October 3, 2017): 1–7, <https://doi.org/10.1038/s41598-017-12802-9>.

<sup>101</sup> Yong Min Cho et al., “A Cross-Sectional Study of the Association between Mobile Phone Use and Symptoms of Ill Health,” *Environmental Health and Toxicology* 31 (2016): e2016022, <https://doi.org/10.5620/eh.t.e2016022>.

<sup>102</sup> Agata Szyjkowska et al., “The Risk of Subjective Symptoms in Mobile Phone Users in Poland--an Epidemiological Study,” *International Journal of Occupational Medicine and Environmental Health* 27, no. 2 (April 2014): 293–303, <https://doi.org/10.2478/s13382-014-0260-1>.

<sup>103</sup> Madhuri Sudan et al., “Prenatal and Postnatal Cell Phone Exposures and Headaches in Children,” *The Open Pediatric Medicine Journal* 6, no. 2012 (December 5, 2012): 46–52, <https://doi.org/10.2174/1874309901206010046>.

<sup>104</sup> Nermin Küçer and Tuğba Pamukçu, “Self-Reported Symptoms Associated with Exposure to Electromagnetic Fields: A Questionnaire Study,” *Electromagnetic Biology and Medicine* 33, no. 1 (January 2014): 15–17, <https://doi.org/10.3109/15368378.2013.783847>.

<sup>105</sup> Szyjkowska et al., “The Risk of Subjective Symptoms in Mobile Phone Users in Poland--an Epidemiological Study.”

Another study reported data that affirmed the correlation between mobile phone use and headaches:

Headache is increasingly being reported as a detrimental effect of mobile phone (MP) use. However, studies aimed to investigate the association between MP use and headache yielded conflicting results. To assess the consistency of the data on the topic, we performed a systematic review and meta-analysis of the available cross-sectional studies... We found that the risk of headache was increased by 38% in MP user compared with non-MP user. Among MP users, the risk of headache was also increased in those who had longer daily call duration and higher daily call frequency... Our data indicate that MP use is significantly associated with headache, further epidemiologic and experimental studies are required to affirm and understand this association.<sup>106</sup>

From the evidence above, it should be clear that there is research justifying concern because of the correlation found between mobile phone use and headaches. Where children are concerned, results are even more alarming. A new, peer-reviewed study found that children who used cell phones or were exposed prenatally to cell phone radiation were at higher risk of developing headaches by age 7. According to the study's authors, "... headache is the most common type of pain reported by children," and headaches have become more common over time. "Should RF exposure from cell phones have a harmful effect on health, children may be at the highest risk and should be given high priority in research related to RF [radiofrequency] health effects."<sup>107</sup> Another study reported that, "Children with cell phone exposure had higher odds of migraines and headache-related symptoms than children with no exposure."<sup>108</sup>

The evidence presented above is significant because this shows evidence of harm to humans in the form of severe headaches and supports my environmental argument that there may

---

<sup>106</sup> Wang et al., "Mobile Phone Use and The Risk of Headache."

<sup>107</sup> UC Berkeley Center for Family and Community Health, "Cell Phone Use and Prenatal Exposure to Cell Phone Radiation May Cause Headaches in Children," PRLog, accessed April 9, 2020, <https://www.prlog.org/12269207-cell-phone-use-and-prenatal-exposure-to-cell-phone-radiation-may-cause-headaches-in-children.html>.

<sup>108</sup> Sudan et al., "Prenatal and Postnatal Cell Phone Exposures and Headaches in Children."

be harmful EMFs resulting from 4G technology, and the future implementation of 5G technology. Again, this concern about headaches, which adds to the accumulation of my correlative evidence, resonates with the fact that additional scientific research needs to be conducted on living organisms such as humans, in light of the finding of this study, to ensure the safety of continued 4G and advanced 5G technology.

In this next section, I will present evidence for my environmental argument, that there are harmful EMFs emitted from 4G, and the future implementation of 5G technology, specifically due to the potential link between cell phones and brain cancer in humans.

### **1.63 - The EMF Harm Towards the Human Brain**

In this section, I will support my argument that allowing the further advancement of EMFs associated with the future implementation of 5G technology, may be harmful to the environment, given its association with brain cancer already linked to 4G technology.

A study examined the relation between occupational RF and intermediate frequency (IF) EMF exposure and brain tumor (glioma and meningioma) risk in the INTEROCC multinational population-based case-control study (with nearly 4000 cases and over 5000 controls). The results obtained for recent exposure to RF electric and magnetic fields are suggestive of a potential role in brain tumor promotion/progression and should be further investigated.<sup>109</sup>

Like the example above, there have been numerous research studies that have found a link between cell phone radiation and brain cancer, so I will present more evidence to support the claim that EMF from cell phone use have a strong correlation to brain cancer or brain tumors that can lead to brain cancer:

---

<sup>109</sup> Javier Vila et al., “Occupational Exposure to High-Frequency Electromagnetic Fields and Brain Tumor Risk in the INTEROCC Study: An Individualized Assessment Approach,” *Environment International* 119 (2018): 353–65, <https://doi.org/10.1016/j.envint.2018.06.038>.

Cancers in the head and the neck are increasing in Sweden according to the latest cancer incidence data from the Swedish Cancer Registry. Cancers in the thyroid and the mouth are among the cancers that have seen the sharpest rise during the last decade but also the trend for cancers of the pituitary are on the rise. Among men aged 50 -79 years malignant brain tumors, grade 3-4 are also increasing visibly. The increase of these cancers has coincided with increasing use of mobile phones during the same time period while the increasing trend of malignant brain tumors, gliomas, might be an effect of long-term use of mobile phones.<sup>110</sup>

To add on to what is reported above, another study reports, "... in Sweden brain tumors of unknown type increased from 2007-2015, especially in the age group 20-39 years of age during 2007–2015," and they state, "this may be explained by higher risk for brain tumor in subjects with first use of a wireless phone before the age of 20 years taking a reasonable latency period."<sup>111</sup> Another study by Swedish physician-researcher Lennart Hardell states, "... persons who began using cell phones as teenagers have a four- to five-fold greater risk of brain tumors."<sup>112</sup>

Last, the *International Journal of Epidemiology*, reports a link between the increase of brain neoplasms—tumors and RF radiation where the risk is increased.<sup>113</sup>

The evidence presented above is significant because it shows increased risk for cell phone users in the form of brain cancer and supports my concern that there may be harmful EMFs resulting from 4G technology, and the future implementation of 5G technology. Again, this concern about brain damage that adds to the accumulation of evidence resonates with the fact that additional scientific research needs to be conducted on living organisms such as

---

<sup>110</sup> admin, "Cancers in the head and neck are increasing in Sweden," *Strålskyddsstiftelsen* (blog), January 10, 2018, <https://www.stralskyddsstiftelsen.se/2018/01/cancers-in-the-head-and-neck-are-increasing-in-sweden/>.

<sup>111</sup> Lennart Hardell and Michael Carlberg, "Mobile Phones, Cordless Phones and Rates of Brain Tumors in Different Age Groups in the Swedish National Inpatient Register and the Swedish Cancer Register during 1998-2015," *PLOS ONE* 12, no. 10 (October 4, 2017): e0185461, <https://doi.org/10.1371/journal.pone.0185461>.

<sup>112</sup> "Long-Term Cell Phone Use Linked to Brain Tumor Risk," *Medscape*, accessed April 10, 2020, <http://www.medscape.com/viewarticle/834888>.

<sup>113</sup> Victoria S. Benson et al., "Mobile Phone Use and Risk of Brain Neoplasms and Other Cancers: Prospective Study," *International Journal of Epidemiology* 42, no. 3 (June 2013): 792–802, <https://doi.org/10.1093/ije/dyt072>.

humans, in light of the finding of this study, to ensure the safety of continued 4G and advanced 5G technology.

In this next section, I will present more evidence for my environmental argument, that there are harmful EMFs emitted from 4G, and the future implementation of 5G technology, specifically towards the link between cell phones and the adverse impact it has on pregnancy.

### **1.64 - The EMF Environmental Harm of Towards Pregnancy**

In this section, I will support my claim that we should not allow the further advancement of EMFs associated with the future implementation of 5G technology given the evidence that cell phone use of 4G technology may have adverse effects on pregnant women.

Pregnancy can be a very vulnerable state, but as we will see can be significantly more vulnerable when the fetus is exposed to wireless radiation that is emitted from cell phones.

Kaiser Permanente scientist Dr. De-Kun Li, who specializes in reproductive and prenatal epidemiology has published several research studies which found higher EMF exposure during pregnancy associated with a higher risk of miscarriage<sup>114</sup>, and asthma<sup>115</sup>, obesity<sup>116</sup> in offspring.<sup>117</sup>

Dr. Taylor, Chair of the Department of Obstetrics, Gynecology and Reproductive Sciences at Yale University School of Medicine, authored a study showing significant behavioral changes- lower memory and increased hyperactivity- in the offspring of mice exposed to cell

---

<sup>114</sup> Kaiser Permanente, “New Kaiser Permanente Study Provides Evidence of Health Risks Linked to Electromagnetic Field Exposure,” accessed April 13, 2020, <https://www.prnewswire.com/news-releases/new-kaiser-permanente-study-provides-evidence-of-health-risks-linked-to-electromagnetic-field-exposure-300570458.html>.

<sup>115</sup> De-Kun Li, Hong Chen, and Roxana Odouli, “Maternal Exposure to Magnetic Fields During Pregnancy in Relation to the Risk of Asthma in Offspring,” *Archives of Pediatrics & Adolescent Medicine* 165, no. 10 (October 3, 2011): 945–50, <https://doi.org/10.1001/archpediatrics.2011.135>.

<sup>116</sup> De-Kun Li et al., “A Prospective Study of In-Utero Exposure to Magnetic Fields and the Risk of Childhood Obesity,” *Scientific Reports* 2, no. 1 (July 27, 2012): 1–6, <https://doi.org/10.1038/srep00540>.

<sup>117</sup> “Pregnancy, Wireless and Electromagnetic Fields,” *Environmental Health Trust* (blog), accessed April 13, 2020, <https://ehtrust.org/science/pregnancy-wireless-and-electromagnetic-fields/>.

phone radiation during pregnancy.<sup>118</sup> Another more recent study of over 55,000 mothers and children in four countries found cell phone use during pregnancy linked to shorter pregnancy duration and increased risk for preterm birth. “We have demonstrated clear cause and effect relationships in mice, and we already have studies showing that women who use cell phones have children with more behavioral problems. I think together that’s very powerful evidence.”<sup>119</sup>

Another series of studies, with reference to children, have found that higher cell phone exposure during pregnancy is associated with behavioral issues in children. Researchers from the University of California School of Public Health in Los Angeles have published two studies (2008<sup>120</sup> and 2012<sup>121</sup>) looking at tens of thousands of children. Researchers concluded that children exposed to cell phones both before and after birth were more likely to have emotional or behavior problems than children who were not exposed to phones. In addition, research conducted in 2017, the largest study to date to use data on prenatal cell phone use collected from parents in five countries found a link between high prenatal cell phone use and hyperactivity/inattention problems in children.<sup>122</sup>

The evidence presented above is significant because it shows harm to humans in the form of adverse effects on human pregnancy and supports my environmental argument that there are harmful EMFs resulting from 4G technology, and the future implementation of 5G technology. Again, this concern about harm towards pregnancy that adds to the accumulation of correlative

---

<sup>118</sup> Karen N. Peart, “Cell Phone Use in Pregnancy May Cause Behavioral Disorders in Offspring,” *YaleNews*, March 15, 2012, <https://news.yale.edu/2012/03/15/cell-phone-use-pregnancy-may-cause-behavioral-disorders-offspring>.

<sup>119</sup> Ermioni Tsarna et al., “Associations of Maternal Cell-Phone Use During Pregnancy With Pregnancy Duration and Fetal Growth in 4 Birth Cohorts,” *American Journal of Epidemiology* 188, no. 7 (01 2019): 1270–80, <https://doi.org/10.1093/aje/kwz092>.

<sup>120</sup> Sudan et al., “Prenatal and Postnatal Cell Phone Exposures and Headaches in Children.”

<sup>121</sup> Hozefa A. Divan et al., “Cell Phone Use and Behavioural Problems in Young Children,” *Journal of Epidemiology and Community Health* 66, no. 6 (June 2012): 524–29, <https://doi.org/10.1136/jech.2010.115402>.

<sup>122</sup> Laura Birks et al., “Maternal Cell Phone Use during Pregnancy and Child Behavioral Problems in Five Birth Cohorts,” *Environment International* 104 (July 1, 2017): 122–31, <https://doi.org/10.1016/j.envint.2017.03.024>.

evidence suggests that additional scientific research needs to be conducted on living organisms such as humans, in light of the finding of this study, to ensure the safety of continued 4G and advanced 5G technology

In this next section, I will present evidence that there are harmful EMFs emitted from 4G, and the future implementation of 5G technology, specifically its link to harmful effects on men's reproductive health.

### **1.65 - The EMF Environmental Harm Towards Men's Reproductive Health**

In this section, I claim that we should not allow the further advancement of EMFs associated with the future implementation of 5G technology given the evidence that cell phone use of 4G technology may have adverse effects on men's reproductive health. Specifically, it has been shown that there is a strong correlation between cell phone use and sperm count, motility and velocity that adversely affects their fertility.

A 2017 analysis of over 40,000 men in 50 countries found a 52.4% sperm decline in men from North America, Europe, Australia and New Zealand. Environmental exposures from plastics to chemicals to cell phone and Wi-Fi radiation are likely an important reason for this decline.<sup>123</sup> In another article Masood Sepehrimanesh research reveals,

Our results indicate that exposure to RF-EMF produces increases in testicular proteins in adults that are related to carcinogenic risk and reproductive damage. In light of the widespread practice of men carrying phones in their pockets near their gonads, where exposures can exceed as-tested guidelines, further study of these effects should be a high priority.<sup>124</sup>

---

<sup>123</sup> "Temporal Trends in Sperm Count: A Systematic Review and Meta-Regression Analysis | Human Reproduction Update | Oxford Academic," accessed April 13, 2020, <https://academic.oup.com/humupd/article/23/6/646/4035689>.

<sup>124</sup> Masood Sepehrimanesh et al., "Proteomic Analysis of Continuous 900-MHz Radiofrequency Electromagnetic Field Exposure in Testicular Tissue: A Rat Model of Human Cell Phone Exposure," *Environmental Science and Pollution Research* 24, no. 15 (May 1, 2017): 13666–73, <https://doi.org/10.1007/s11356-017-8882-z>.

Regarding human semen analysis, we see results that show, “Electromagnetic waves (EMWs) emitted from 3G+wi-fi modems cause a significant decrease in sperm motility and velocity, especially in non-progressive motile sperms. Other parameters of semen analysis did not change significantly. EMWs, which are used in communications worldwide, are a suspected cause of male infertility. Many studies evaluated the effects of cell phones and wi-fi on fertility. To our knowledge, no study has yet been done to show the effects of EMWs emitted from 3G+wi-fi modems on fertility. Our study revealed a significant decrease in the quality of human semen after exposure to EMWs emitted from 3G+wi-fi modems.”<sup>125</sup>

Regarding the effects of radiofrequency electromagnetic radiation on sperm function we see conclusions as such:

Among a total of 27 studies investigating the effects of RF-EMR on the male reproductive system, negative consequences of exposure were reported in 21. Within these 21 studies, 11 of the 15 that investigated sperm motility reported significant declines, 7 of 7 that measured the production of reactive oxygen species documented elevated levels and 4 of 5 studies that probed for DNA damage highlighted increased damage, due to RF-EMR exposure. Associated with this, RF-EMR treatment reduced antioxidant levels in 6 of 6 studies that studied this phenomenon, while consequences of RF-EMR were successfully ameliorated with the supplementation of antioxidants in all 3 studies that carried out these experiments... We propose a mechanistic model in which RF-EMR exposure leads to defective mitochondrial function associated with elevated levels of ROS production and culminates in a state of oxidative stress that would account the varying phenotypes observed in response to RF-EMR exposure.<sup>126</sup>

Also, more research reveals DNA damage in exposed sperm which may be due to Wi-Fi exposure:

Significant increases in serum 8-hydroxy-2'-deoxyguanosine levels and 8-hydroxyguanosine staining in the testes of the experimental group indicating

---

<sup>125</sup> Koosha Kamali et al., “Effects of Electromagnetic Waves Emitted from 3G+wi-Fi Modems on Human Semen Analysis,” *Urologia* 84, no. 4 (October 25, 2017): 209–14, <https://doi.org/10.5301/uj.5000269>.

<sup>126</sup> B. J. Houston et al., “The Effects of Radiofrequency Electromagnetic Radiation on Sperm Function,” *Reproduction (Cambridge, England)* 152, no. 6 (2016): R263–76, <https://doi.org/10.1530/REP-16-0126>.



DNA damage due to exposure ( $p < 0.05$ ).<sup>127</sup> Research involving laptops and Wi-Fi reveal, “Ex vivo exposure of human spermatozoa to a wireless internet-connected laptop decreased motility and induced sperm DNA fragmentation by a nonthermal effect.”<sup>128</sup>

This particular kind of damage is not related to any type of thermal effect. Recall that in section 1.31, regarding HPS’s position, as their conclusion was that there was no concern for harmful EMFs resulting from 4G & 5G technology and they rejected my claim. However, it is here that evidence of *nonthermal* damage has been submitted as evidence and the reason this is significant is that it seems to undermine HPS’s support for their conclusion. Moreover, organizations such as the WHO and ICNIRP listed above also are in agreement with the HPS, so this casts tension on their stance against my claim as well.

Lastly, a review of the literature concerning mobile phone use on male reproduction shows,

... human spermatozoa exposed to RF-EMR have decreased motility, morphometric abnormalities, and increased oxidative stress, whereas men using mobile phones have decreased sperm concentration, decreased motility (particularly rapid progressive motility), normal morphology, and decreased viability. These abnormalities seem to be directly related to the duration of mobile phone use.<sup>129</sup>

The evidence presented above is significant because it suggest there may be harm to humans in the form of damage to the sperm in the human male reproductive system and supports my mounting concerns over the potential harmful effects of 4G technology, and the future

---

<sup>127</sup> Halil I. Atasoy et al., “Immunohistopathologic Demonstration of Deleterious Effects on Growing Rat Testes of Radiofrequency Waves Emitted from Conventional Wi-Fi Devices,” *Journal of Pediatric Urology* 9, no. 2 (April 2013): 223–29, <https://doi.org/10.1016/j.jpuro.2012.02.015>.

<sup>128</sup> Conrado Avendaño et al., “Use of Laptop Computers Connected to Internet through Wi-Fi Decreases Human Sperm Motility and Increases Sperm DNA Fragmentation,” *Fertility and Sterility* 97, no. 1 (January 2012): 39–45.e2, <https://doi.org/10.1016/j.fertnstert.2011.10.012>.

<sup>129</sup> Sandro La Vignera et al., “Effects of the Exposure to Mobile Phones on Male Reproduction: A Review of the Literature,” *Journal of Andrology* 33, no. 3 (2012): 350–56, <https://doi.org/10.2164/jandrol.111.014373>.

implementation of 5G technology. Again, this concern about harm towards men's reproductive health, which adds to the accumulation of my correlative evidence, resonates with the fact that more scientific research needs to be conducted on living organisms such as humans, in light of the finding of this study, to ensure the safety of continued 4G and advanced 5G technology.

In this next section, I will present more evidence for the claim that there are harmful EMFs emitted from 4G, and the future implementation of 5G technology, specifically towards breast cancer in women.

### **1.66 - The EMF Environmental Harm of Breast Cancer**

In this section, I claim that we should not allow the further advancement of EMFs associated with the future implementation of 5G technology given the evidence that cell phone use of 4G technology may have adverse effects on females in the form of breast cancer.

It has been shown that there is a strong correlation between cell phone use and the adverse impact it has on breast cancer in women. Basically, the soft fatty tissue of the breast readily absorbs this radiation. There have been case reports showing that young women with no family history getting a diagnosis of breast cancer.<sup>130</sup> The tumors were unusually located directly underneath the skin where they placed their cell phones in their bra. Research has accumulated linking cell phone radiation to cancer.<sup>131</sup> There has also been data linking male

---

<sup>130</sup> John G. West et al., "Multifocal Breast Cancer in Young Women with Prolonged Contact between Their Breasts and Their Cellular Phones," Case Report, *Case Reports in Medicine* (Hindawi, 2013), <https://doi.org/10.1155/2013/354682>.

<sup>131</sup> Anthony B. Miller et al., "Cancer Epidemiology Update, Following the 2011 IARC Evaluation of Radiofrequency Electromagnetic Fields (Monograph 102)," *Environmental Research* 167 (November 1, 2018): 673–83, <https://doi.org/10.1016/j.envres.2018.06.043>.

breast cancer to cell phone radiation.<sup>132</sup> Moreover, Doctors voice this advice: Women should not store their cell phones in their bra.<sup>133</sup>

Here is a study that links breast cancer to cell phone radiation to woman under 40:

Breast cancer occurring in women under the age of 40 is uncommon in the absence of family history or genetic predisposition and prompts the exploration of other possible exposures or environmental risks. We report a case series of four young women—ages from 21 to 39—with multifocal invasive breast cancer that raises the concern of a possible association with nonionizing radiation of electromagnetic field exposures from cellular phones. All patients regularly carried their smartphones directly against their breasts in their brassieres for up to 10 hours a day, for several years, and developed tumors in areas of their breasts immediately underlying the phones. All patients had no family history of breast cancer, tested negative for BRCA1 and BRCA2, and had no other known breast cancer risks. Their breast imaging is reviewed, showing clustering of multiple tumor foci in the breast directly under the area of phone contact. Pathology of all four cases shows striking similarity; all tumors are hormone-positive, low-intermediate grade, having an extensive intraductal component, and all tumors have near identical morphology. These cases raise awareness to the lack of safety data of prolonged direct contact with cellular phones.<sup>134</sup>

This study is important because it links EMFs with the potential harm in the form of breast cancer seen in women. Even though this can be seen as antidotal evidence, this supports my concern with overall harm towards the environment. Once again, I am concerned due to the many instances of evidence I have submitted.

Next, I would like to mention an authority source regarding cell phone radiation and its harmful side effects, as she is internationally recognized for her relentless research and oversight on thousands of articles regarding this:

Dr. Devra Lee Davis, M.P.H., Ph.D., is recognized internationally for her work on environmental health and disease prevention. A presidential appointee

---

<sup>132</sup> “EMF-Portal | Electromagnetic Field Exposure and Male Breast Cancer Risk: A Meta-Analysis of 18 Studies.,” accessed April 15, 2020, <https://www.emf-portal.org/en/article/21996>.

<sup>133</sup> “Cell Phones and Breast Cancer,” *Environmental Health Trust* (blog), accessed April 15, 2020, <https://ehtrust.org/key-issues/cell-phoneswireless/cell-phones-and-breast-cancer/>.

<sup>134</sup> West et al., “Multifocal Breast Cancer in Young Women with Prolonged Contact between Their Breasts and Their Cellular Phones.”

who received bi-partisan Senate confirmation, Dr. Davis was the founding director of the world's first Center for Environmental Oncology and currently serves as president of Environmental Health Trust. She lectures at universities around the world and was the recent winner of the Carnegie Science Medal in 2010 and the Lifetime Achievement Award from Green America in 2012. Her 2007 book, *The Secret History of the War on Cancer*, is being used at major schools of public health, including Harvard University. Her most recent book, *Disconnect*, was awarded the Silver Medal from Nautilus Books for Courageous Reporting and selected by TIME magazine and Amazon editors as a top pick. Dr. Davis' research has appeared in major scientific journals and has been featured on CNN, CSPAN, CBC, BBC, and public radio.

There has not been serious experimental or public health research on the relationship between cellphones and breast cancer in the United States. However, Turkey scientific publications report that breast cancer cell growth quadrupled when exposed them to cellphone radiation. In reviewing the 18-year-old approach to cellphone testing, the US Government Accounting Office noted that phones are not tested as used and recommended more realistic testing scenarios be developed. Modelling studies indicate that phones kept close to the body in the shirt or pants pocket can produce two to six times more microwave radiation than recommended.

The public needs to understand that a cellphone is a two-way microwave radio. In order for it to receive information, it must send signals to the tower for the tower to send signals back to it. Whenever you are moving (e.g., in cars or on bikes) while you are on your phone, the phone operates at full power to maintain connection with one cell tower after another. That means continuous, maximum microwave radiation. On top of that, you have constant microwave radiation plumes generated by Wi-Fi and Bluetooth two-way transmissions as well as notifications and updates of numerous smartphone apps. The mobile industry euphemizes this radiation as "radiofrequency energy," because marketing cellphones as two-way microwave radios used next to the brain would not make them very popular.<sup>135</sup>

This evidence presented above is significant because this shows harm to humans in the form of breast cancer in females and supports my environmental argument that there are harmful EMFs resulting from 4G technology, and the future implementation of 5G technology. The significance of this claim on how corporations of good character respond to this evidence. Your position is not located in the determination of whether women are getting cancer from mobile

---

<sup>135</sup> G. G. Contributor, "HEALTH ISSUES | Save the Girls. Make the Bra a No-Phone Zone," *TheGreenGazette* (blog), April 15, 2015, <http://www.thegreengazette.ca/health-issues-save-the-girls-make-the-bra-a-no-phone-zone/>.

phones, but how corporations of good character ought to respond to claims – from Brother Blaise’s anecdotal experience, to studies that show corollary harm, to studies that show causal harm, etc. I remind the reader, my claim is that corporations of good character will take seriously and respond in a moral way to indications that 5G technology will undermine human and environment health. Again, this concern about breast cancer, which adds to the accumulation of linking evidence, resonates with the fact that additional scientific research needs to be conducted on living organisms such as humans, in light of the finding of this study, to ensure the safety of continued 4G and advanced 5G technology.

In this next section, I will present evidence for my claim that there are harmful EMFs emitted from 4G, and the future implementation of 5G technology, specifically in the form of damaged DNA in humans.

### **1.67 - The EMF Environmental Harm of DNA Damage**

In this section, I claim that we should not allow the further advancement of EMFs associated with the future implementation of 5G technology given the evidence that cell phone use of 4G technology may have adverse effects on humans in the form of damaged DNA.

Cell phones are currently used by 95 percent of American adults. The U.S. Food and Drug Administration (FDA) nominated radio frequency radiation (RFR) used by cell phones for an NTP study because of widespread public use of cell phones and limited knowledge about potential health effects from long-term exposure. NTP conducted two-year toxicology studies in rats and mice to help clarify potential health hazards, including cancer risk, from exposure to RFR like that used in 2G and 3G cell phones which operate within a range of frequencies from about 700–2700 megahertz (MHz). These were published as Technical Reports in November

2018.<sup>136</sup> This study found that there was DNA damage found in the frontal cortex of the brain in male mice, the blood cells of female mice, and the hippocampus of male rats. The NTP webpage now includes the recent publication finding DNA damage from cell phone radiation.<sup>137</sup><sup>138</sup> This study was very significant because it was a 30 million dollar 2-year study, which is one of the largest studies to date regarding cell phone radiation and links to adverse health effects such as tumors and cancer. One might counter at this point wanting to know the link between studies on animals and how this relates to humans. The NTP states, “If scientists can better understand biological changes in animals, they will know more about what to look for in humans. Additional studies could also identify whether the behavior of animals is affected by RFR exposure.”<sup>139</sup>

The evidence presented above is significant because it shows potential harm to humans in the form of damaged DNA and supports my claim that there may be harmful EMFs resulting from 4G technology, and the future implementation of 5G technology. Again, this concern about harmful effects on animal DNA, adds to the accumulation of evidence and calls for the need of additional scientific research to study the effects of EMFs on living organisms such as humans, to ensure the safety of continued 4G and advanced 5G technology.

In this next section, I will present evidence that there may be harmful effects from EMFs emitted from 4G, and the future implementation of 5G technology, specifically towards children using virtual reality.

---

<sup>136</sup> “National Institutes of Health: DNA Damage from Cell Phone Radio-Frequency Radiation,” *Environmental Health Trust* (blog), December 2, 2019, <https://ehtrust.org/national-institutes-of-health-dna-damage-from-cell-phone-radio-frequency-radiation/>.

<sup>137</sup> Stephanie L. Smith-Roe et al., “Evaluation of the Genotoxicity of Cell Phone Radiofrequency Radiation in Male and Female Rats and Mice Following Subchronic Exposure,” *Environmental and Molecular Mutagenesis* 61, no. 2 (February 2020): 276–90, <https://doi.org/10.1002/em.22343>.

<sup>138</sup> null Vijayalaxmi et al., “Comments on the ‘Evaluation of the Genotoxicity of Cell Phone Radiofrequency Radiation in Male and Female Rats and Mice Following Subchronic Exposure’ by Smith-Roe et Al,” *Environmental and Molecular Mutagenesis* 61, no. 2 (February 2020): 291–93, <https://doi.org/10.1002/em.22353>.

<sup>139</sup> Smith-Roe et al., “Evaluation of the Genotoxicity of Cell Phone Radiofrequency Radiation in Male and Female Rats and Mice Following Subchronic Exposure.”

## 1.68 - The EMF Environmental Harm Towards Children Using Virtual Reality

In this section, I support the claim that we should not allow the further advancement of EMFs associated with the future implementation of 5G technology given the evidence that 4G technology may have adverse effects on children and adults who use virtual reality in the classroom setting.

Virtual reality (VR) technology usually consists of wearing a device attached to the head, where the user can experience an artificial reality, completely similar to the real world or all together artificial. Applications of VR can be seen with education, military, gaming, etc. I will keep my critique to the specific use with children, whether in an educational setting or not, particularly given that their eyes and brains are still under development, thereby potentially being more sensitive to the effects of EMFs.

Environmental Health Trust (EHT) scientists are calling on Google to stop the spread into schools of wireless virtual reality system Global Expeditions Pioneer Program where middle-school children hold a cell phone encased in a cardboard box<sup>140</sup> in front of their eyes to take virtual expeditions to Mars, the moon, and other special places.<sup>141</sup> “On January 27, 2016, Google announced that in the platform's first 19 months, over 5 million Cardboard viewers had been shipped, over 1,000 compatible applications had been published, and over 25 million application installs had been made. According to the company, users viewed over 350,000 hours of YouTube videos in VR during that time, and 500,000 students took a VR field trip through the Expeditions program.”<sup>142</sup> Additionally, since November 2019, Google claimed that over 15

---

<sup>140</sup> “Google Cardboard – Google VR,” accessed April 21, 2020, <https://arvr.google.com/cardboard/>.

<sup>141</sup> “Stop Untested Microwave Radiation of Children’s Brains and Eyes Virtual Reality EHT Scientists Urge Google,” *Environmental Health Trust* (blog), July 23, 2017, <https://ehtrust.org/stop-untested-microwave-radiation-childrens-brains-eyes-virtual-reality-ehtrust-scientists-urge-google/>.

<sup>142</sup> See: [“Google: 5 Million Cardboard Viewers Shipped, 25 Million VR Apps Downloaded | Android Central,” accessed April 21, 2020.](#)

million viewer units had shipped worldwide.<sup>143</sup> This technology was later succeeded by Google's Daydream<sup>144</sup>, and this is now discontinued, but you can still buy both forms of technology online. The point of citing the data above is that the use of this VR technology in kids was untested to see how it would impact the health of their still-forming eyes and brain. To this point, other companies that use VR, such as Samsung, do provide warnings to the users of the safety risks of VR:

The Gear VR headset should not be used by children under the age of 13, as these children may be at increased health and safety risk. Samsung then has a long list of "General Instructions and Precautions" stating that "Warning! You should always follow these instructions and observe these precautions while using the Gear VR headset to reduce the risk of injury or discomfort." Precautions listed include: Use for only a few minutes at a time at first, Do not use when you are tired, are under emotional stress or anxiety, or when suffering from cold, flu, headaches, migraines, or earaches, as this can increase your susceptibility to adverse symptoms. Samsung cautions that "Some people may have severe dizziness, seizures, epileptic seizures or blackouts triggered by light flashes or patterns".<sup>145</sup>

Moreover, studies just published by the Porto Alegre EHT collaboration find that children absorb more radiation than can legally be absorbed into adults, confirming two decades of research.<sup>146</sup> Lastly, preliminary imaging with the cellphone close to the eye and brain of a child shows that such positions result in higher microwave radiation exposures to the eyes. This imaging also shows increased? radiation doses to the brain. These simulations employed an anatomically-

---

<https://web.archive.org/web/20160712090805/http://www.androidcentral.com/more-5-million-google-cardboard-viewers-have-shipped-over-25-million-cardboard-apps-downloaded>. See also, Micah Singleton, "Google Has Shipped over 5 Million Cardboard Headsets," The Verge, January 27, 2016, <https://www.theverge.com/2016/1/27/10842438/google-shipped-5-million-cardboard-headsets>.

<sup>143</sup> Jay Peters, "Google Is Open Sourcing Cardboard Now That the Daydream Is Dead," The Verge, November 6, 2019, <https://www.theverge.com/2019/11/6/20952495/google-cardboard-open-source-phone-based-vr-daydream>.

<sup>144</sup> "Daydream," accessed April 21, 2020, <https://arvr.google.com/daydream/>.

<sup>145</sup> "Stop Untested Microwave Radiation of Children's Brains and Eyes Virtual Reality EHT Scientists Urge Google," July 23, 2017.

<sup>146</sup> Claudio Enrique Fernández-Rodríguez, Alvaro Augusto Almeida De Salles, and Devra Lee Davis, "Dosimetric Simulations of Brain Absorption of Mobile Phone Radiation—The Relationship Between PsSAR and Age," *IEEE Access* 3 (2015): 2425–30, <https://doi.org/10.1109/ACCESS.2015.2502900>.



based model of a six-year-old and generated estimates of how the young brain absorbs cell phone radiation. Researchers are using this state-of-the-art research to understand the radiofrequency dose in children as shown in this recent IEEE Access publication on children's higher absorption.<sup>147</sup>

The evidence presented above is significant because it shows potential harm to humans in the form of children and adults who use virtual reality in the classroom setting and supports my general concerns regarding harmful EMFs resulting from 4G technology, and the future implementation of 5G technology. Again, this concern about harm towards children who use virtual reality, adds to the mounting evidence that additional scientific research needs to be conducted on living organisms such as humans, in light of the finding of this study, to ensure the safety of continued 4G and advanced 5G technology.

In this next section, I will present evidence for the claim that there are harmful EMFs emitted from 4G, and the future implementation of 5G technology, should be further studied, specifically towards humans from the military using millimeter waves in the Active Denial System of Crowd Control.

### **1.69 - The EMF Environmental Harm of the Military Using Millimeter Waves in the Active Denial System (ADS) for Crowd Control**

In this section, I support the claim that we should not allow the further advancement of EMFs associated with the future implementation of 5G technology given the evidence that 4G technology may have adverse effects on humans from the military using millimeter waves in the Active Denial System (ADS) of Crowd Control.

---

<sup>147</sup> "Stop Untested Microwave Radiation of Children's Brains and Eyes Virtual Reality EHT Scientists Urge Google," *Environmental Health Trust* (blog), July 23, 2017, <https://ehtrust.org/stop-untested-microwave-radiation-childrens-brains-eyes-virtual-reality-eh-t-scientists-urge-google/>.

The ADS developed by Raytheon<sup>148</sup>, and has been used by the U.S. Department of Defense<sup>149</sup>, via the U.S. military for crowd control, since it works by heating the surface of targets, such as skin of the targeted human subjects. On August 20, 2010, the Los Angeles Sheriff's Department announced its intent to use this technology on prisoners in the Pitchess Detention Center in Los Angeles, stating its intent to use it in "operational evaluation" in situations such as breaking up prisoner fights.<sup>150</sup> Raytheon has also developed a smaller version of the ADS called the Silent Guardian, and if used by law enforcement, which can target over 250 meters (820 ft) away.<sup>151</sup> As of 2014, the ADS was only a vehicle-mounted weapon, though U.S. Marines and police were both working on portable versions. ADS was developed under the sponsorship of the Department of Defense Non-Lethal Weapons Program with the Air Force Research Laboratory as the lead agency. There are reports that Russia<sup>152</sup> and China are developing their own versions of the Active Denial System<sup>153</sup>.

The effects of the ADS are such:

The ADS works by firing a high-powered beam of 95 GHz waves at a target, which corresponds to a wavelength of 3.2 mm. The ADS millimeter wave energy works on a similar principle as a microwave oven, exciting the water and fat molecules in the skin, and instantly heating them via dielectric heating. One significant difference is that a microwave oven uses the much lower frequency (and longer wavelength) of 2.45 GHz. The short millimeter waves used in ADS only penetrate the top layers of skin, with most of the energy being absorbed

---

<sup>148</sup> "Raytheon Technologies," accessed April 22, 2020, <https://www.rtx.com/>.

<sup>149</sup> "Non-Lethal Weapons Program > About > Frequently Asked Questions > Active Denial System FAQs," accessed April 22, 2020, <https://jnlwp.defense.gov/About/Frequently-Asked-Questions/Active-Denial-System-FAQs/>.

<sup>150</sup> "Lasd-Media Detail," September 4, 2010, [https://web.archive.org/web/20100904180855/http://sheriff.lacounty.gov/wps/portal/lasd/media/detail/?WCM\\_GLOBAL\\_CONTEXT=%2Flasd+content%2Flasd+site%2Fhome%2Fhome+top+stories%2Faid+unvealed](https://web.archive.org/web/20100904180855/http://sheriff.lacounty.gov/wps/portal/lasd/media/detail/?WCM_GLOBAL_CONTEXT=%2Flasd+content%2Flasd+site%2Fhome%2Fhome+top+stories%2Faid+unvealed).

<sup>151</sup> "Popular Mechanics Magazine.," *Popular Mechanics Magazine.*, 2008.

<sup>152</sup> David Hambling, "Why Russia Will Be the First to Use the Pain Ray," *Popular Mechanics*, June 18, 2012, <https://www.popularmechanics.com/technology/military/weapons/why-russia-will-be-the-first-to-use-the-pain-ray-9833954>.

<sup>153</sup> "China's New Long-Range Weapon Causes Non-Lethal Pain From Afar | Popular Science," accessed April 22, 2020, <https://www.popsci.com/chinas-got-pain-beam/>.

within 0.4 mm (1/64 inch),<sup>[14]</sup> whereas microwaves will penetrate into human tissue about 17 mm (0.67 inch).<sup>154</sup>

To get an idea of what-it-feels-like, a spokesman for the Air Force Research Laboratory described his experience as a test subject for the system as such, “For the first millisecond, it just felt like the skin was warming up. Then it got warmer and warmer and you felt like it was on fire. ... As soon as you're away from that beam your skin returns to normal and there is no pain.”<sup>155</sup> Additionally, “Michael Hanlon – who volunteered to experience its effects – described it as “a bit like touching a red-hot wire, but there is no heat, only the sensation of heat.” Raytheon says that pain ceases instantly upon removal of the ray; still, Hanlon reported that the finger he subjected “was tingling hours later.”<sup>156</sup> Thus, the concern here is that while this technology might be used for crowd control, the effects of this radio frequency on humans have been studied by the military for years, and much, but not all of the research has been published openly in peer-reviewed journals.<sup>157</sup> Moreover, Although the effects are described as simply “unpleasant”, the device has the “potential for death”.<sup>158</sup>

While it is claimed not to cause burns under “ordinary use”, it is also described as being similar to that of an incandescent light bulb being pressed against the skin, which can cause severe burns in just a few seconds. The beam can be focused up to 700 meters away and is said to penetrate thick clothing although not walls. At 95 GHz, the frequency is much higher than the 2.45 GHz of a microwave oven. This frequency was chosen because it penetrates less than 1/64 of an inch (0.4 mm), which – in most humans, except for eyelids and babies – avoids the second

---

<sup>154</sup> “Active Denial System,” in *Wikipedia*, January 7, 2020, [https://en.wikipedia.org/w/index.php?title=Active\\_Denial\\_System&oldid=934647337](https://en.wikipedia.org/w/index.php?title=Active_Denial_System&oldid=934647337).

<sup>155</sup> “Active Denial System.”

<sup>156</sup> “Run Away the Ray-Gun Is Coming : We Test US Army’s New Secret Weapon | Daily Mail Online,” accessed April 22, 2020, <https://www.dailymail.co.uk/sciencetech/article-482560/Run-away-ray-gun-coming--We-test-US-armys-new-secret-weapon.html>.

<sup>157</sup> “Joint Non-Lethal Weapons Program Website - ADS,” September 30, 2007, <https://web.archive.org/web/20070930185237/https://www.jnlwp.com/ActiveDenialSystem.asp>.

<sup>158</sup> David Hambling, “Army Orders Pain Ray Trucks; New Report Shows ‘Potential for Death,’” *Wired*, October 10, 2008, <https://www.wired.com/2008/10/army-ordering-p/>.

skin layer (the dermis) where critical structures are found such as nerve endings and blood vessels.<sup>159</sup>

The main point of citing all of this research above is twofold: 1) I have established evidence that connects EMF environmental harm to the military use of ADS for Crowd Control, and 2) future 5G technology has and will indeed be employing millimeter waves. Recall in section 1.2 above, where I have previously stated, “the future millimeter ranges of frequencies 6GHz-300GHz under 5G technology”. The imminent connection is that if this ADS operates in the range of 95 GHz, who is to say that the general public has the guarantee that this range won’t be used in the current and newly formed 5G technology, regarding any and all telecommunication companies throughout the world, due to the potential of it being weaponized?

The evidence presented above is significant because it shows potential harm to humans from use of millimeter waves in the Active Denial System of Crowd Control and adds support to my environmental argument that there are harmful EMFs resulting from 4G technology, and the future implementation of 5G technology. Again, this concern about harm towards humans using ADS, which adds to the accumulation of correlative evidence, suggests that additional scientific research needs to be conducted on living organisms such as humans, in light of the finding of this study, to ensure the safety of continued 4G and advanced 5G technology.

This concludes the evidence for my claim that allowing the further advancement of EMFs associated with the future implementation of 5G technology, should be put on hold pending further study. We have seen potential harm from 4G technology in bees (1.3), plant and trees (1.4), wildlife in general (1.5), and humans (1.6). Thus, I have established that additional

---

<sup>159</sup> “Active Denial System.”

scientific research needs to be conducted on living organisms such as humans, in light of the findings of multiple studies, to ensure the safety of continued 4G and advanced 5G technology.

In this next section, I will summarize the environmental argument that I have made (1.1 – 1.6). It will be important to point to a new trajectory ahead as to what one should do with this evidence, in light of the looming advancement of 5G technology.

### **1.7 - Allowing the Advancement of EMFs from 5G is Harmful**

I remind the reader that I have previously established a tension point in the information presented above. This tension point can be explained as following. On the one hand, regarding the environmental problem of EMFs, the *international* (1.24 – 1.26) and *national* organizations (1.27 – 1.32) as a whole seem to present the case that there are no past and current harmful effects strong enough to warrant a stop to the 4G technology that we currently have—and the 5G that is currently being implemented throughout the world. However, on the other hand, I have just presented evidence of the correlation between potentially harmful EMFs associated with 3G – 5G technology (1.3 – 1.6). I have also put you in the position to have a proper understanding of what electromagnetic radiation is and why it is important to my overall argument, including specifically EMFs (1.21 – 1.22). Furthermore, I have described what it would mean to transition from 4G to 5G technology (1.23) and why this it is important to my environmental argument. Lastly, I have demonstrated the importance of this issue, as the implementation of 5G is globally imminent (1.1). In fact, it has already been imbedded in some cities in the world already. However, on the other hand, I have also presented evidence from multiple scientific sources that show that there is indeed harm to the environment: bees (1.3), plants and trees (1.4), other members of the animal kingdom (1.5), and many aspects of harm towards humans (1.6). Quite simply, we have reason to pause further advancement in the use of EMFs associated with the

current 4G technology, and the implementation of 5G technology, until there is more student of its effects on humans and the environment. Yet, this position is at odds with the collective view of the organizations dedicated to providing one with environmental insights to know how to proceed from here. In other words, what should one do now? This is what is called the descriptive problem in the sense that it shows what is or is happening now in the world. However, this does not inform the reader of what one ought to do for an answer, regarding the above concern of whether the further use of harmful EMFs of 4G, or the future use of 5G, should be allowed to roll out globally. For a proper answer we have to turn to ethics.

In ethics we have normative decision-making models that do in fact help guide one's action in situations like this, and the next and most obvious question here is, ought we allow this technology locally or even globally or should we resist its implementation until we know it is safe for the environment?. In seeking an answer to this moral question, I will critique the widely held action-based normative theories of utilitarianism and deontology first to see if they can shed some light on the tension point identified above. First, I will briefly describe the features of utilitarianism that are pertinent, so that we can apply its model to this environmental problem, to see if it answers the question above sufficiently. Then I will be arguing that even though its model of decision seems helpful, it has limits. In its limitations, I will then be advancing the argument towards deontology to see if it fares any better. I will also be arguing that it has limits as well.

## **Action Based Normative Theories: Utilitarianism and the Deontological Approaches & Solution**

### **2 - Introducing Action Based Normative Theories**

In this chapter, I examine normative ethics in search of a solution to the problem of the harm EMFs may cause to the environment, animals, and humans. Normative ethics is important because it provides a guide in determining right and wrong actions, attitudes and motives.

“Normative ethics proper seeks to formulate and defend basic moral principles, rules, systems and virtues which serve as guides for what actions ought or ought not to be taken, what motives ought or ought not to be embraced, and what kinds of persons we ought or ought not to seek to be.”<sup>160</sup> More specifically, I present the action-based normative theories of Utilitarianism and Deontology and apply their frameworks for moral reasoning to the problem of EMFs and their potential harm, discussed in chapter one. This specific problem previously identified was that there is evidence from multiple scientific sources that shows that there is environmental harm to the environment: bees, plants and trees, other members of the animal kingdom, and many aspects towards humans. The reason for the application of these Utilitarian and Deontological normative decision-making models is to see whether they can help guide us towards right action in this environmental problem. In other words, I will examine their answer the question of, “what action should I take?” More specifically, we will examine their answers to the question of, “ought we allow this 5G technology locally or even globally, due to the environmental harm we have seen with the existing 4G technology, or should we resist its implementation until we know it is safe for the environment?”

---

<sup>160</sup> James Porter Moreland & William Lane Craig, *Philosophical Foundations for a Christian Worldview* (Downers Grove, Ill: InterVarsity Press, 2003), 396–97.

I do not argue in this section versions of utilitarianism cannot provide the right answer to the problem of harmful EMFs, raised in chapter one. Rather, I argue that even if the normative theory of utilitarianism could produce the right answer, it does so in the wrong way. It does so in a way that does not include the concept of character. This is because the concept of corporate character is central to practical ethics that I am defending. I argue that the telecommunication corporate persons should be asking questions of character. This question of character is specific to what ethical criteria should be in place concerning the consideration of new technology. This is my question. I am insisting and demanding that questions of character should be on the table of these corporations, especially since they are treated as corporate persons. It is about responsibility to the world, in which the corporation, as person, exists.

First, I will start with the normative theory of Utilitarianism. I will briefly define this view by presenting more of a historical backdrop so that the reader can appreciate the evolution of this view (section 2.1). In other words, this is the history in the way ethicists understand this normative view. Then, I will give an analysis of what justifies this normative position in ethics. I will then demonstrate the general problems inherent with this view (2.2). Then, as an extension, I will argue that this normative view of utilitarianism does not give us a convincing answer to the more specific problems related to the question of 5G technology. This is because this normative does not focus on the person's character. (2.2.1 – 2.2.4).

Secondly, I will provide a similar analysis of the normative theory of Deontology. I will briefly define this view (section 2.3) and will give an analysis of what justifies this normative position in ethics. I will then demonstrate the general problems inherent with this view (2.4). Then, as an extension, I will argue that this normative position of deontology, although it fares better than its normative rival of utilitarianism, it does not give us a convincing answer to the



more specific problems related to the question of 5G technology. This is not because this normative view cannot provide a correct framework for moral reasoning related to the problem of 5G. It can. This is because this normative does not focus on the person's character. (2.4.1 – 2.4.4).

Lastly, I will argue that Utilitarianism and Deontology ethical frameworks both fall short of giving a robust explanation in their ability to provide an action-guiding prescription, regarding the questions of whether to allow the continued advancement of 5G technology. This is not because this normative view cannot provide a correct framework for moral reasoning related to the problem of 5G. It can. This is because they are missing the crucial element of the person and the concept of character. (2.5).

In this next section I will define the normative view of utilitarianism, illustrate the moral reasoning involved, when one is reasoning with consequences, then will demonstrate the shortcomings of this view. Specifically, I will show that this normative view seems to fall short of providing a robust answer to our question above, ought we allow this 5G technology, locally or even globally, due to the environmental harm we have seen with the existing 4G technology, or should we resist its implementation until we know it is safe for the environment?

### **2.1 - Action Based Normative Theory of Utilitarianism**

In normative ethics, when one thinks about the grounding of morality, the rightness or wrongness of an action can have its weight centered on various aspects such as the person, the action itself, or the consequence of an act. Consequentialism, the most adopted form of Utilitarianism, grounds morality solely in the consequences of an action. “In general

“consequentialism” refers to a family of moral theories that assert that the wrongness of actions is determined entirely by the consequences”.<sup>161</sup>

The earliest influencers of classical utilitarianism were Epicurus, Francis Hutcheson, and Hume. Epicurus (342-270 BCE) gave the example statement, “Pleasure is the goal that nature has ordained for us; it is also the standard by which we judge everything good.” In addition Hutcheson (1694-1746) in a similar context stated, “That action is best, which procures the greatest happiness for the greatest numbers”; and last, Hume (1711-1776) had introduced the term “utility”.<sup>162</sup> We will see that Jeremy Bentham further developed the concept of utility. Moreover, the prevailing consequentialist theory is that of Utilitarianism and was founded by Jeremy Bentham as he developed it in a more systematic way.

It is important to clarify to the reader that the brief synopsis above is provided to set the stage, historically, so that the reader can appreciate that Mill’s view of consequentialism (utilitarianism), is the best possible position that I would take if I were a utilitarian. To invoke the principle of charity, which is to give consequentialism its best case, I draw on Louis P. Pojman’s account, who is revered at giving a great historical and philosophical insight into many subjects in philosophy.

Jeremy Bentham (1748–1832) was a British utilitarian<sup>163</sup> and legal reformer. In his *An Introduction to the Principles of Morals and Legislation*, he argues that pleasure is the only

---

<sup>161</sup> Julian Baggini and Peter S. Fosl, *The Ethics Toolkit: A Compendium of Ethical Concepts and Methods* (Malden, MA ; Oxford: Blackwell Pub, 2007), 56.

<sup>162</sup> Louis P Pojman, *Ethics: Discovering Right and Wrong*. (Place of publication not identified: Wadsworth, 2016), 95.

<sup>163</sup> It is important to note here that I later make a distinction between Bentham and Mill as being utilitarianists. They in fact both were. The debate is over the definition of utility: for Bentham is was *hedonistic* or *quantitative* utilitarianism grounded in happiness or pleasure. For Mill it was more of a *qualitative* hedonism (see Moreland and Craig, 2003, pg. 434, and Pojman, 2017, pgs. 96-97), as he opened up the conceptual space of different/higher forms of pleasure. Mill’s view of utility was more robust than Bentham’s but it is a mistake to say that Bentham was not a utilitarian himself; he was the founder of modern utilitarianism. He in fact coined the term “the principle utility” or “the greatest happiness principle” in his *Principles of Morals and Legislation* (1780). I mention this as a point of clarity, but also to say that pursuing this debate any further is outside of the scope of this paper.

intrinsic value and pain the only intrinsic evil. All other goods and evils are derived from these two qualities. He does this by introducing and fleshing out his concept of utility further than what Epicurus, Hutcheson, and Hume had done:

The principle of utility is the foundation of the present work: it will be proper therefore at the outset to give an explicit and determinate account of what is meant by it. By the principle of utility is meant that principle which approves or disapproves of every action whatsoever, according to the tendency which it appears to have to augment or diminish the happiness of the party whose interest is in question: or, what is the same thing in other words, to promote or to oppose that happiness. I say of every action whatsoever, and therefore not only of every action of a private individual, but of every measure of Government.<sup>164</sup>

Bentham provides a formulation to justify that the concept of utility is the good, and that one should seek to maximize this good by seeking the consequences of our actions that promote this end. This is significant because for Bentham the ends justify the means. Moral rightness and wrongness are defined in his hedonistic utilitarian approach according to their consequences in producing pleasure and pain.<sup>165</sup> Moreover, he argued that pleasure and pain are the only consequences that matter. This was known as a hedonistic view.<sup>166</sup> In short, whatever action it takes to get to the best end that maximizes pleasure, then that is the action you should take; pleasure and the end sought after end result made gave his view two prevailing principles—the consequentialist principle, which has an end or teleological aspect, and the utility principle, which had the hedonic aspect. This hedonistic aspect could come in various forms such as

---

<sup>164</sup> Louis P. Pojman, Lewis Vaughn, and Lewis Vaughn, *The Moral Life: An Introductory Reader in Ethics and Literature*, Fifth edition (New York: Oxford University Press, 2014), 196.

<sup>165</sup> Pojman, Vaughn, and Vaughn, 195.

<sup>166</sup> To be clear, hedonism is not the same as utilitarianism per se. Bentham is mentioned here to serve as a backdrop to a more refined view of utilitarianism. Moreover JS Mill was *not* a hedonist but he was a Utilitarian. I am not conflating Utilitarianism with consequentialism when consequentialism is a specific form of utilitarianism.

welfare, pleasure, or happiness. In this sense, one advantage to his view was that he could generate what he called the *hedonic calculus*:

IV. To a number of persons, with reference to each of whom to the value of a pleasure or a pain is considered, it will be greater or less, according to seven circumstances: to wit, the six preceding ones; viz.,

1. Its intensity.
2. Its duration.
3. Its certainty or uncertainty.
4. Its propinquity or remoteness.
5. Its fecundity.
6. Its purity.

And one other; to wit:

7. Its extent; that is, the number of persons to whom it extends; or (in other words) who are affected by it.<sup>167</sup>

To see an example of how Bentham's hedonistic calculus plays out, consider the following example that illustrates this nicely. Suppose that you somehow find yourself on a deserted island with a dying millionaire that was born and raised in Germany. His final words to you plead with you to donate all of his final assets, of \$7 million to European Bayern Munchen soccer club. After all, he has watched the German soccer league of Bundesliga since he was a kid and Bayern is his favorite soccer team. He points to a briefcase containing the information to his Swiss bank account and gives you the passwords to his account. He say to you, "Would you please withdraw this \$7 million and take it back to Germany and give it to the Bayern Munchen owner so that he can buy better players?" You completely agree to carry out his wish, and at that moment, he takes his last breath. After traveling to Germany, you see an online advertisement by your favorite new website (whose integrity you do not second guess) pleading

---

<sup>167</sup> Jeremy Bentham, *An Introduction to the Principles of Morals and Legislation* (1789), Ch. 1.

for \$7 to donate to crisis victims. These victims managed to survive a tropical hurricane in the South Pacific and this money would not only save their lives, but would also be able to purchase state-of-the-art solar panel and water systems to provide their country with new emergency power and water to survive. At this point, you decide to reconsider your promise to the dying Bayern Munchen fan, in light of this troubling advertisement.

With regard to our example of deciding between giving the dying man's money to Bayern Munchen or to the South Pacific tropical storm victims, we would add up the likely pleasures to all involved, for all seven qualities. If we found that giving the money to the storm victims would cause at least 3 million hedons (units of happiness) but that giving the money to the Bayern would cause less than 1,000 hedons, we would have an obligation to give the money to the storm victims.

This example above is important as it highlights the advantages of his view by showing that by applying Bentham's calculus, one could simplistically determine how to maximize pleasure and minimize suffering.

However, this view of Bentham's is not without its disadvantages. For example, it was criticized as being too simplistic of a view in that pleasure was the only value worth seeking. Moreover, because the hallmark of this view was the seeking of pleasure, here is an example of the negative publicity the view had received, "Bentham's version of utilitarianism was, even in his own day, referred to as the "pig philosophy" because a pig enjoying his life would constitute a higher moral state than a slightly dissatisfied Socrates."<sup>168</sup> Secondly, it was too complex in the sense that there were too many variables to calculate concerning the consequence of seeking

---

<sup>168</sup> Pojman, *Ethics*, 97.

pleasure. Regarding these shortcomings, we can next see how John Stuart Mill further developed Bentham's Utilitarianism into a more sustainable view.

English philosopher John Stuart Mill (1806–1873) has earned a prestigious place in the pantheon of respected philosophers for his work in epistemology (the study of knowledge), deductive and inductive logic, political thought, and ethics. The centerpiece of the latter is, of course, his *Utilitarianism* (1861), in which he articulates a more sophisticated version of Jeremy Bentham's views. Mill tries to improve on Bentham's one-dimensional concept of happiness.<sup>169</sup>

Mill furthered utilitarianism by emphasizing pleasures that had higher qualities, avoiding a purely hedonistic view, by making a critical distinction between happiness itself versus merely sensual pleasure as previously seen with Bentham:

His version of the theory is often called eudaimonistic utilitarianism (from the Greek *eudaimonia*, meaning "happiness"). He defines happiness in terms of certain types of higher-order pleasures or satisfactions such as intellectual, aesthetic, and social enjoyments, as well as in terms of minimal suffering. That is, there are two types of pleasures. The lower, or elementary, include eating, drinking, sexuality, resting, and sensuous titillation. The higher include high culture, scientific knowledge, intellectuality, and creativity. Although the lower pleasures are more intensely gratifying, they also lead to pain when overindulged in. The higher pleasures tend to be more long term, continuous, and gradual.<sup>170</sup>

Mill argued that the higher, or more refined, pleasures are superior to the lower ones: "A being of higher faculties requires more to make him happy, is capable probably of more acute suffering, and certainly accessible to it at more points, than one of an inferior type," but still he is qualitatively better off than the person without these higher faculties. "It is better to be a human being dissatisfied

---

<sup>169</sup> Louis P. Pojman, Lewis Vaughn, and Lewis Vaughn, *The Moral Life: An Introductory Reader in Ethics and Literature*, Fifth edition (New York: Oxford University Press, 2014), 201.

<sup>170</sup> Pojman, *Ethics*, 97.

than a pig satisfied; better to be Socrates dissatisfied than a fool satisfied.”

Humans are the kind of creatures who require more to be truly happy. They want the lower pleasures, but they also want deep friendship, intellectual ability, culture, the ability to create and appreciate art, knowledge, and wisdom.<sup>171</sup>

Mill believed that he could avoid the previous pitfalls of his predecessor Bentham, because of his focus on higher versus lower pleasures, when fleshing out his specific concept of happiness. In other words, things like knowledge, intelligence, freedom, friendship, love, and health are higher qualities and are more important than the mere lower sensual pleasures. Furthermore, Mill argued that in morality the good were consequences that maximized pleasure and reduced pain for the greatest number of people involved in a specific action. In fact, one might even say that his litmus test for happiness really has little to do with actual pleasure and more to do with a non-hedonic cultivated state of mind.<sup>172</sup> In the next section, I will draw attention to two important types of utilitarianism that have resulted from Mill. These are act and rule utilitarianism. Act and rule utilitarianism relates to consequentialism in the sense that they are different formulations of utility that differ in their aim to achieve the desired consequence. For example, act utilitarianism is such that an act is right if and only if no other act available to the agent maximizes utility more than the act in question. Rule utilitarianism is such that an act is right if and only if it falls under a correct moral rule that covers that generic type of act.<sup>173</sup>

Bentham held to the view of act utilitarianism. Once again, act utilitarianism is the view that act is right if and only if it results in as much good as any available alternative. This view is criticized for not allowing very important calculations to achieve the appropriate end-result, and

---

<sup>171</sup> J.S. Mill, *Utilitarianism* (1861), Ch. 2

<sup>172</sup> Pojman, *Ethics*, 105.

<sup>173</sup> James Porter Moreland and William Lane Craig, *Philosophical Foundations for a Christian Worldview* (Downers Grove, Ill: InterVarsity Press, 2003), 442–442.

it runs contrary to one's intuitions about what seems to be minimally correct behavior. For example, let us say as a current scholar, I really want to buy a \$500 book set that will help me with my academic progress and research in finishing this dissertation. According to act utilitarianism, if I can find a better alternative to spending this \$500, then I should pursue this route instead. So, if I, in a roundabout way discover that my next-door neighbor just got laid off from his job and needed extra money to provide for meals, then I must give them the \$500 that I wanted to spend on books. Better yet, I could donate that \$500 to starving children in a third world country by simply going online and filling out a webpage donation section that would take me one minutes time! Moreover, act utilitarianism seems to strip one's self-indulgence completely away, as one could always think of a better use for money outside of oneself.

Mill held to rule utilitarianism. Rule utilitarianism is the view that an act is right if and only if it is required by a rule that is itself a member of a set of rules whose acceptance would lead to greater utility for society than any available alternative.<sup>174</sup> At first glance, this definition seems to be consistent with the fact that humans are rational animals and generally do well in rule following. Therefore, action-guiding rules would seem quite at home to use in times where the application of morality is needed. Rule utilitarianists will recommend, especially when under time pressure, generally to follow a set of rules that can produce the most desirable result or maximizing utility.<sup>175</sup> There are first-order rules—rules of thumb such as, not stealing or lying. There are second-order rules—these are conflict-resolving rules. One example of this would be where it is more important to avoid being honest and telling the truth to avoid causing serious harm. In other words, a person might lie to avoid someone else ending up in a very uncomfortable state of well-being. Last, there are third-order rules—the remainder rule when no

---

<sup>174</sup> Pojman, *Ethics*, 105–6.

<sup>175</sup> Pojman, 99.



other rules apply. Think of this as using your best judgement with regards to a particular action that you think will maximize utility. An example of this might be the following: Two of our first-order rules might be “Keep your promises” and “Help those in need when you are not seriously inconvenienced in doing so.” Suppose you promised to meet your employer at 8:00 am to clock in for your job—suppose even further that your employer has called you in early because another employee has called in sick at the last minute and your business is very behind on this day. On your way there, you come upon a stranded car in the middle on an intersection, and the person is standing outside of the car looking frantic and desperately needs help. It doesn’t take you long to decide to break the promise you made to your employer to come to work at 8:00 am because it seems obvious in this case that the rule to help others overrides the rule to keep promises. In fact, one could say that there is a second-order rule prescribing that the first-order rule of helping people in need when you are not seriously inconvenienced in doing so overrides the rule to keep promises, so it seems as though you’re rationally justified in pursuing this course of action. However, now imagine that there may be some situation where no obvious rule of thumb applies to you in a time of need concerning an action making decision. Say you have \$100 that you do not really need now. How should you use this money? Should you put it into your savings account? Should you give it to your local thrift store? Should you use it to take your family out to the beach, as you have wanted to do for a while? Here is the exception, on the third level, the general act-utility principle applies without any other primary rule; that is, do what in your best judgment will do the best.<sup>176</sup> This example is important because like the previous example I gave with Bentham, we can see how the ethics of rule utilitarianism can play itself out in practical application. In any case, rule utilitarians agree that there are enough similar

---

<sup>176</sup> Pojman, 99.

human motives, actions, and situations, like the one I have just illustrated, to justify setting up rules that will apply to all human beings and situations.<sup>177</sup>

Thus, the strengths of utilitarianism are such that one can have a simplistic action guiding principle, which is grounded morally in the consequences of our actions. As a result, the utilitarian has a duty to maximize happiness for the greatest number of people, whether it be our current or future generations.

In this next section , I will show a couple of the most significant of these general problems pertinent to our current discussion, that the normative theory of utilitarianism faces, and will map them onto our 5G example.

## **2.2 – Problems with the Application of Utilitarianism to 5G Technology**

Generally speaking, the action-based normative theory of Utilitarianism has numerous problems that it faces as a normative view. In this section, for the sake of time, I will demonstrate how the Utilitarianist goes about conducting moral reasoning. Then, I will pick out only four of the most significant problems that the utilitarian faces and will describe *why* they are problems. I will also provide a philosophical analysis of each individual problem. This analysis will include a brief discussion of the more general problem, and then a very specific application of this to the specific problem of 5G. These will be first, the comparative consequences objection, and secondly, the consistency objection to rule-utilitarianism, and thirdly, the relativism objection, and fourthly and finally, the problem of the ends justifying the immoral means.

Then in the last section, I will specifically start to map on each general problem specifically to *The Utilitarian 5G Moral Argument* constructed in previous section. I will do this

---

<sup>177</sup> Jacques P. Thiroux, *Ethics: Theory and Practice*, 6th ed (Upper Saddle River, N.J: Prentice Hall, 1998), 50.

to make the argument collectively. The sole purpose of this collective argument will emphasize the concern of allowing the implementation of 5G as problematic according to the normative view of utilitarianism. Let me begin with the more general problems.

### 2.2.1 - The Moral Reasoning of Utilitarianism Applied to 5G

In order to construct a moral argument—one that has an inferential chain of moral reasoning embedded within it—it is important to know that one must have at least one moral premise in the argument. Along with at least one *moral* premise, one needs at least one *non-moral* premise as well. This avoids the possible “is/ought” fallacy that Hume was famously known for.<sup>178</sup> Hume claimed that one could not have a *moral* conclusion derived solely from *non-moral* premises because it committed a category error if attributing the realm of the descriptive—the way the world *is* to the prescriptive—the way the world *ought to be*. This was important because he argued that stating strictly *non-moral* premises do not entail a *moral* conclusion. Thus, if the moral argument is structured the right way, the moral conclusion will be sound if the argument is valid and all of the premises are true. For example, here is a moral argument that I will construct to see if an answer can be given concerning our earlier question of allowing the further implementation of 5G technology:

#### *The Utilitarian 5G Moral Argument*

1. It is wrong to harm to the environment.
2. The further implementation of 5G technology throughout the globe would cause harm to the environment.
3. The specific harm to the environment is damage to various plants, trees, insects, wildlife in general, and damage to human in many different forms.<sup>179</sup>

---

<sup>178</sup> See: For original source see: Hume, David. Section 1. *A Treatise of Human Nature*. Book III, Part i, Section 1. See also: Julian Baggini and Peter S. Fosl, *The Ethics Toolkit: A Compendium of Ethical Concepts and Methods* (Malden, MA ; Oxford: Blackwell Pub, 2007), 177.

<sup>179</sup> For the remainder of this chapter I will refer to this as the 5G argument, for the sake of brevity.

4. Therefore, it is wrong to allow the further implementation of 5G technology throughout the globe.

It is important to note here that there are many different forms or moral arguments that one can use to reason with consequences insofar as it captures the spirit of utilitarianism. I have just given one to show you what it would be like to do this, to make it more practical for the reader to understand.<sup>180</sup>

This argument is important because it illustrates that the first premise is a *moral* claim, and the second and third premises are *non-moral* claims. The moral claim is justified by normative utilitarian framework demonstrated above (2.1). This is the case insofar as it reasons using the *consequences* of an action. Let me give you further explanation:

This kind of moral reasoning relies on the consequences of an action to make a moral claim about that action. That is, it uses premises about what will happen as a result of performing some action to show that the action is morally forbidden, permissible, obligatory, or supererogatory. The key normative premises in this kind of argument claim that one state of affairs is better than another state of affairs. These premises matter because, other things being equal, if one action leads to a better state of affairs than another action, the first action is morally better.<sup>181</sup>

This example is important because it shows the weight of the first premise, which is *moral* in nature, which leads to an undesirable consequence of harm. As previously mentioned, utilitarianism is in the business of reasoning solely with consequences. In other words, it seems

---

<sup>180</sup> This section can also be applied to the moral reasoning involved with deontology. Instead of consequences, deontology would focus on duties to perform action grounded in principles. I will not include it there for the sake of undo repetition.

<sup>181</sup> David R. Morrow, *Moral Reasoning: A Text and Reader on Ethics and Contemporary Moral Issues* (Oxford ; New York: Oxford University Press, 2018), 36.

obvious that it is not good or wrong to harm the environment on purpose when one can avoid doing so. Simply put, one should minimize harm to the environment as much as possible. Furthermore, in chapter one, I have already given an enormous amount of statistical data to support the truthfulness of the second and third premises. So therefore, if one follows the inferential chain of reasoning from the first through third premises that the moral conclusion indeed follows.

However, the normative theory of utilitarianism has a possible explanation that might negate the undesirable conclusion to this moral argument. In other words, this theory might actually be able to provide a way to allow 5G technology, harm to the environment at the same time, and be consistent in doing so using the mode of rule utilitarianism. Recall the employer example that I gave above. In this next section, we can see how the trajectory of reasoning with rule utilitarianism specific to 5G can be demonstrated, to see if it can provide an answer to our environmental question. First I will show a couple of the most significant of these general problems pertinent to our current discussion, that the normative theory of utilitarianism faces, and will map them onto our 5G example.

### **2.2.2 – Formulation of the Principle of Utility**

The first general problem with utilitarianism is the problem with the very formulation of utilitarianism. As we have previously seen, there are two variables that seem to come together to maximize the consequences of utilitarianism that could satisfy the principle of utility. This means that the person ought to do the action that brings about the consequence of *the greatest happiness to the greatest number of people involved*. The problem is determining which variable above has the higher order ranking. We can see an illustration of this problem here: I will award \$100 prize money to the person who eats a dozen doughnuts in the shortest amount of time. My two kids will participate: Chloe eats 8 of the doughnuts in 20 minutes, and Kye eats 10

doughnuts in 30 minutes. Whom should I award the prize too? Chloe has fulfilled one part of the requirement—eating in the shortest amount of time, but Kye has also fulfilled one part of the requirement as well—eating the most doughnuts. This points to a calculus dilemma as Pojman explains:

On the one hand, we might concern ourselves with spreading happiness around so that the greatest number obtain it (in which case, we should get busy and procreate a larger population). On the other hand, we might be concerned that the greatest possible amount of happiness obtains in society (in which case, we might be tempted to allow some people to become far happier than others, as long as their increase offsets the losers' diminished happiness). So should we worry more about total happiness or about highest average?<sup>182</sup>

Thus, regarding the nature of the principle of utility, there are at least two different ways to interpret this principle. We can see this problem even further with the following analysis of this principle where we can see that utilitarians are still at odds with regards to the decision of exactly how to characterize this principle:

- a. It produces only good consequences.
- b. It maximizes good consequences.
- c. It avoids all bad consequences.
- d. It minimizes bad consequences.
- e. It produces the greatest happiness for the greatest number.
- f. It maximizes the net balance of good versus bad consequences.<sup>183</sup>

---

<sup>182</sup> Pojman, *Ethics*, 109.

<sup>183</sup> Moreland, *Philosophical Foundations for a Christian Worldview*, 436–37.

The reason that each of the following characterizations of the principle of utility are important is because they are at odds with one another. To see this fleshed out, just imagine applying these to my doughnut eating case with my kids above. Which characterization is most important? Even further, which characterization would be used to formulate the nonmoral premise in my previous 5G argument above? In other words, which characterization of a.– f. above would you use to end the second premise, "The further implementation of 5G technology throughout the globe..." would you use to finish off the statement? It is hard to say, hence this problem. An even deeper problem is the question of how a utilitarian can start to formulate any moral argument like the 5G one above. This problem is significant in this chapter because it lends credence to the fact that utilitarianism does not seem to give a satisfactory answer to my normative 5G question<sup>184</sup>. Next, I will investigate the problem of *The Comparative Consequences Objection*.

### **2.2.3 – The Comparative Consequences Objection**

The second general problem with utilitarianism is the comparative consequences objection. This objection makes it clear that we simply cannot have the proper perspective to be in the position to calculate all of the consequences of our actions adequately. In other words, nobody possesses the extraordinary ability to see into the future to calculate the overwhelming number of possibilities of the consequences of our actions. One author put it well, "Of course, we normally do not know the long-term consequences of our actions because life is too complex and the consequences go on into the indefinite future. One action causes one state of affairs, which in turn causes another state of affairs, indefinitely, so that calculation becomes impossible".<sup>185</sup>

---

<sup>184</sup> For future research, I would love to test each of the possibilities of a. – f. regarding this question, but this would be for possible future research, as exploring this philosophical trajectory is not essential, I believe, for the advancement of my current argument.

<sup>185</sup> Pojman, Ethics, 100.

Utilitarians have come up with two types of consequences in order to help with this problem. There are the actual consequences of an act—this is where an act is *absolutely* right if it has the best actual consequences. There are also the consequences that could reasonably have been expected to occur—this is where an act is *objectively* right if it is reasonable to expect that it will have the best consequences. To see how these two types of consequences can be fleshed out, consider this illustration below:

Only objective rightness, that based on reasonable expectations, is central here. Actual rightness, based on actual consequences, is irrelevant because this can only be determined after an action is performed and we sit back and watch the series of actual consequences unfold. But when an agent is trying to determine in advance how to act, the most that she can do is to use the best information available and do what a reasonable person would expect to produce the best overall results. Suppose, for example, that while Hitler's grandmother was carrying little Adolph up the stairs to her home, she slipped and had to choose between either dropping infant Adolph and allowing him to be fatally injured or breaking her arm. According to the formula just given, it would have been absolutely right for her to let him be killed because history would have turned out better. But, it would not have been within her power to know that. She did what any reasonable person would do—she saved the baby's life at the risk of injury to herself. She did what was objectively right. The utilitarian theory holds that by generally doing what reason judges to be the best act based on likely consequences, we will, in general, actually promote the best consequences.<sup>186</sup>

The reason that this dramatic example of Hitler was used to illustrate the claim that using the *objectively* right act versus the *absolutely* right act, is because this example of trying to calculate the negatives consequences of the grandmother's actions is too complex. Moreover, this

---

<sup>186</sup> Pojman, Ethics, 103.



calculation is impossible to predict. Similarly, we find that allowing the implementation of 5G technology is far too complex as well because of the incalculable complexities that would have to be considered for this normative view to hold any weight concerning its ability to justify a reasonable action-guiding consequence. In other words, it is far too complex for any governing body, that oversees the possible environmental health impact regarding 5G technology (1.24 – 1.32), any specific telecommunications company—Verizon, T-Mobile, Spring, etc.—, or even any individual—scientist, major, governor, doctor, president, world leader, etc., to have the proper perspective to be able to calculate any and all foreseeable damage to the insect, plants, trees, animal, and human kingdoms, that I have provided evidence for in the previous chapter (1.3 – 1.68). Thus, *The Comparative Consequences Objection* demonstrates how problematic it would be to use this normative position of utilitarianism in guided one's actions to the problem of 5G. Next, I will turn to the next problem of utilitarianism, called *The Ends Justify the Immoral Means*.

#### **2.2.4 – The Ends Justify the Immoral Means**

The fourth and what I find to be the most significant problem with the normative theory of utilitarianism is that the ends may justify the immoral means. That is, if the consequence of an action is all that matters for the ultimate good, then the ends can justify any number of morally impermissible means such as lying, murder, compromising personal integrity, etc. Furthermore, this theory allows for using people as a means to an end, which lacks valuing a person's inherent worth.

These concerns above can be summed up succinctly in this argument:

- 1) If a moral theory justifies actions that we universally deem impermissible, then that moral theory must be rejected.
- (2) Utilitarianism justifies actions that we universally deem impermissible.

(3) Therefore, utilitarianism must be rejected.

With the above argument and what we know so far about this normative view, it seems like utilitarianism can justify things like lying, compromising personal integrity, and even compromising justice, as long as it serves the greater good.<sup>187</sup> In other words, things like truth telling, personal integrity, and justice are not absolutes in this normative theory and may be dismissed as long as the greater good warrants this. For purposes of demonstration, I will provide an illustration of just one of these possible immoral means. Below is an example of how the value of integrity can be compromised as a utilitarian:

Jim finds himself in the central square of a small South American town. Tied up against the wall are a row of twenty Indians, most terrified, a few defiant, in front of them several armed men in uniform. A heavy man in a sweat-stained khaki shirt turns out to be the captain in charge and, after a good deal of questioning of Jim which establishes that he got there by accident while on a botanical expedition, explains that the Indians are a random group of inhabitants who, after recent acts of protest against the government, are just about to be killed to remind other possible protesters of the advantages of not protesting. However, since Jim is an honored visitor from another land, the captain is happy to offer him a guest's privilege of killing one of the Indians himself. If Jim accepts, then as a special mark of the occasion, the other Indians will be let off. Of course, if Jim refuses, then there is no special occasion, and Pedro here will do what he was about to do when Jim arrived, and kill them all. Jim, with some desperate recollection of schoolboy fiction, wonders whether if he got hold of a gun, he could hold the captain, Pedro and the rest of the

---

<sup>187</sup> To be clear, I am not saying that all utilitarians do this. This reveals an internal problem within utilitarianism that *could* be used to justify an end—the greater good—that uses immoral means, and that concerns me.

soldiers to threat, but it is quite clear from the setup that nothing of that kind is going to work: any attempt of that sort of thing will mean that all the Indians will be killed, and himself. The men against the wall, the other villagers, understand the situation, and are obviously begging him to accept.<sup>188</sup>

The reason this example above is important is that it brings into focus the intuition of sacrificing one person for the greater good of the whole village—one’s integrity can be sacrificed for the greater good. Some alienation may be necessary for the moral life, and the utilitarian can take this into account in devising strategies of action. Even when it is required that we sacrifice our lives or limit our freedom for others, we may have to limit or sacrifice something of what is our integrity. “We may have to do the “lesser of evils” in many cases. If the utilitarian doctrine of negative responsibility is correct, we need to realize that we are responsible for the evil that we knowingly allow, as well as for the evil we commit.”<sup>189</sup>

The reason this illustration and explanation is important because we can now map this onto the example of 5G. In my chapter one, I have present numerous examples of environmental harm due to the harmful EMFs rays that have been emitted from 4G and now 5G technology. Specifically, I have shown how harm can come to plants, trees, animals, and humans, in various forms. Now imagine that the utilitarian factors all of that into play when contemplating the continued rollout of 5G. The utilitarian could always proceed with confidence that even if environmental harm came to plant, trees, animals, and humans, that is just a small price to pay for the advancement of technology that could revolutionize the world.<sup>190</sup> In other words, some

---

<sup>188</sup> Pojman, *Ethics*, 115.

<sup>189</sup> Pojman, 116.

<sup>190</sup> This can be viewed as me assuming there is a simple calculus and shared notion of the good; but consequentialists disagree about many things including what criteria inform the calculus; what “maximizing” happiness consists in, added principles such as “do no harm,” etc. This is a good point, however, I could simply

environmental harm—the means, are all right, so long as the continued rollout of 5G technology—the end, is implemented so that world can enjoy the benefits of this far-reaching technology. However, something seems very wrong with this picture as it provides you an example of where utilities can justify the harm and possibly death towards humans to achieve the greater goal of 5G. In this next section, I will offer a modified and more charitable Utilitarian 5G Moral Argument that incorporates the tension above.

We have previously seen that *The Utilitarian 5G Moral Argument* has a conclusion that is morally wrong. However, the utilitarian can modify that argument by simply adding the ends versus means premise. I will call this *The Modified Ends Justify the Means Utilitarian 5G Moral Argument*:

1. It is wrong to harm to the environment.
2. The further implementation of 5G technology throughout the globe would cause harm to the environment.
3. The specific harm to the environment is damage to various plants, trees, insects, wildlife in general, and damage to human in many different forms.<sup>191</sup>
4. However, 5G will maximize the net balance of good versus bad consequences.
5. Therefore, it is good to allow the further implementation of 5G technology throughout the globe.

The above argument is important because it could be taken to represent a Utilitarian position of moral reasoning with regards to the rollout of 5G technology,<sup>192</sup> and seems problematic. In other

---

conclude that this “in-house” disagreement does not make this normative outlook any clearer, thereby opening the way for another normative view, such as virtue ethics, as we will see in the next chapter.

<sup>191</sup> For the remainder of this chapter I will refer to this as the 5G argument, for the sake of brevity.

<sup>192</sup> In the above argument, I am simply trying to play out a possible argument to see the possible shortcomings with the Utilitarianist position. In fact, this argument does *not* represent and defeat all consequentialist arguments. Robert Nozick, for one, would not agree with this. I am simply exploring the negative possibility that the moral reasoning of Utilitarianism could allow for, even though seemingly very undesirable. Again, this points to the normative view of Virtue Ethics and highlights the importance of the person.

words, the normative position of utilitarianism allows for the possibility of some means what will justify the end. Therefore, the utilitarian could argue well within their normative framework that the fourth premise allows the possible environmental harm to come, and this would be consistent with their moral reasoning. However, that is precisely the problem because any moral theory that justifies using humans as a means to the end of the continued rollout of 5G, should be deemed insufficient for a robust action guiding system of ethics. To this point, the normative theory of Utilitarianism “allows for this possible moral reasoning” and that is concerning to me at this point of my quest for a normative answer. In other words, using a utilitarian framework to justify the continued rollout of 5G, knowing that harm will come to humans, is morally wrong.

However, my dissertation primarily focuses on the practical application of ethical theory, and it seems as though I can employ an *even more charitable* argument that gets me the answer that I want, concerning 5G. In other words, I will offer another, more charitable argument, using the practical application of Utilitarianism, to get me the answer that I want, concerning the problem of 5G. I will call this The Most Charitable Utilitarian Moral Argument to Suspend the Use of 5G:

1. It is wrong to harm to the environment.
2. The further implementation of 5G technology throughout the globe would cause harm to the environment.
3. The specific harm to the environment is damage to various plants, trees, insects, wildlife in general, and damage to human in many different forms.
4. Not allowing the further implementation of 5G would minimize harm to the environment, and this consequence is the best for the greatest number of people.
5. Therefore, it is not good to allow the further implementation of 5G technology throughout the globe.

This argument shows that Utilitarianism can provide the right conclusion, that satisfies the answer to the problem of harm seen in chapter one. It grounds the reasoning in the consequence of mitigating harm to the environment. Yet, this reasoning overlooks a very important moral feature. This is the moral feature of character of the person, and the virtues associated with it. More simply, even though the Utilitarianist can come to the right ethical conclusion, it does so in the wrong way. In other words, Utilitarianism focuses only on the right action that leads to the best consequences, that it avoids the needed focus of the *person* committing the action. In the next section, I will demonstrate why the *person* committing the action is very significant. I will call this *The Person Objection*.

### 2.2.5 – The Person Objection

The third problem with the normative theory of utilitarianism is *The Person Objection*. What is lacking with utilitarianism is simply the person. When one is motivated by consequence alone, one is lacking moral value. More simply, one is motivated by the wrong thing. Michael Stoker in his article *The Schizophrenia of Modern Ethical Theories* emphasizes this point well here. “For, love, friendship, affection, fellow feeling, and community all require that the other person be an essential part of what is valued. The person – not merely the person’s general values nor even the person-qua-producer-or-possessor-of-general-values- must be valued.”<sup>193</sup>

Furthermore, this objection and Stoker’s emphasis regarding it, points to the oversimplification of one’s action-guiding criteria based on the sole of consequences. More simply, other components make up the person that are of importance as well such as *motivational attitude*. In other words, action-based ethics such as utilitarianism has the deficiency of a motivational component. I will stress this concept of the motivational attitude a person has—the

---

<sup>193</sup> Michael Stoker, “The Schizophrenia of Modern Ethical Theories,” *The Journal of Philosophy* 73, no. 14 (1976): 459.

mental state or states a person has before committing to a specific action—by giving you three examples to consider.

Example 1: HERO. Soldier X saves fellow soldiers while putting himself into harm's way and taking out enemy combatants in a time of war, and is later awarded a congressional medal of honor by the President of the US. This seems like prima face courage on the part of soldier X; this is also from a descriptive account of courage, merely due to the soldier's actions.

Example 2: PSYCHOPATH. It turns out that this case is identical to HERO in every aspect except for one, *his motivational attitude*. The soldier revealed that he was/is a psychopath and only enlisted in the military to legally be able to kill other people. It turns out that in HERO, this particular person loved his fellow soldier; he even showed love towards his enemy and only killed them if he absolutely had to. For PSYCHOPATH, going into harm's way was not really about saving his fellow soldiers' lives at all. It was an excuse for him to kill as many enemy combatants as he could, because this, he found to be an addictive rush, when he harmed other people. Now, and ask yourself, how would you know the difference between HERO and PSYCHOPATH without knowing more about the details of their *motivational attitudes*, which stem from their character? Even more problematic, now let us say I told you that you could not have any information on motivational attitudes to evaluate possible cases of courage. It seems like, to not have motivational attitudes included in the factor of evaluating an instance of courage, would violate one's common sense notions. In other words, in evaluating descriptive (insert Mill and Kant here) examples of courage, one presupposes 'motivational attitude' details. Moreover, one can construct endless examples of what seems to be instances of courage from a purely descriptive point of view, but I believe that you also need a first-person perspective (this gives us the motivational attitudes) to be able to properly evaluate the situation at hand. Even

more simply, one could have all the descriptive knowledge in the world that pertain to instances which seem to be courage , but that person would still be missing something in which to evaluate properly. One could raise the question that if a person had a very significant amount of knowledge they might be aware of all possible motivational attitudes, and could still have courage. I'll show this to be problematic in the next section.

Example 3: LAWNMOWER MAN. In a Stephen King movie, Jobe is a man that mows people's lawns. He is in his early 30's with the mind of an 8-year-old and is constantly being made fun of. A scientist takes a liking to Jobe and offers him the ability to increase his intelligence so that others would not be able to take advantage of him too easily. Jobe agrees and is given neurotropic drugs and massive A.I. stimulation so that his capacity to learn is significantly advanced (e.g., he can learn the entire language of Latin in 2 hours). Eventually he becomes smarter than any human being alive; he has knowledge of the entire natural world and logical possibilities that lie therein. What is significant about this case is that he is the type of person that can tell us the motivational attitudes that people have in possible instances of courage; he can actually read other people's minds. The problem is that even with all of this knowledge, his actions are eventually used to hurt people, even people that he previously cared for; he takes revenge and becomes power hungry. What this shows us is that even with all the knowledge in the world, it does not follow that one would be in the right position for courage. This suggests context specificity, and a correct reading on the situation at hand. More simply, in order to avoid LAWNMOWER MAN and PSYCHOPATH to get HERO (a real instance of



courage), it seems that we need the right action, motivational attitude, and knowledge of the situation at hand, whether in a wartime situation or not.<sup>194</sup>

Here, I find strong commonality with the *moral schizophrenia* that Michael Stocker has previously argued for<sup>195</sup>, as he chips away at these features as well as I, when he says that the person is simply missing from these previous theories. What he means by this is that the other person is of no special value according to these three modern theories because even though one's motives or motivational attitude may show essential concern for the other person, one's reasons—according to their normative theory—do not refer to the other person. This is because features such as motivational attitude and character, which have their genesis in the person, are not stressed enough in the normative theories of hedonistic egoism, utilitarianism, and deontology. I also believe that my example, of HERO, PSYCHOPATH, and LAWNMOWER MAN bring to light this exact concern, and until these personal features that stress the motivational attitude of the person are brought out and expanded upon, the normative theories referred to by Stocker will remain in their moral schizophrenia. In addition, others have shared similar concerns when it comes to utilitarianism lacking the motivational attitude of persons. Moreland and Craig state:

... both rule and act utilitarianism are inadequate in their treatment of motives. We rightly praise good motives and blame bad ones. But utilitarianism implies that motives have no intrinsic moral worth. All that matters from a moral point of view are the consequences of actions, not the motives for which they are done.<sup>196</sup>

---

<sup>194</sup> I will use Aristotle's theory could help here more in my chapter 3 on virtue ethics as the solution. This is because it offers a way to evaluate a person's motivational attitude that arise from one's character; an attitude focused on the constant pursuit of obtaining virtue.

<sup>195</sup> Stocker, "The Schizophrenia of Modern Ethical Theories."

<sup>196</sup> Moreland & Craig, *Philosophical Foundations for a Christian Worldview*, 443.

The utilitarian could respond here by reminding the reader, that the praising and blaming of the motives of persons precisely because the actions of praise and blame themselves, would maximize utility. This line of reasoning would seem to bypass using motives themselves in the normative calculus because of the primary focus on utility. To this, again, I will summon a response with which I find agreement:

At this point, the real difficulty with utilitarianism seems obvious: it misconstrues the real nature and source of our moral obligations. Contrary to what utilitarianism implies, some acts just appear to be intrinsically right or wrong (torturing babies for fun), some rules seem to be intrinsically right or wrong (punishing only guilty people), some areas of life to be intrinsically trivial (what to eat for breakfast)... From a moral point of view, some motives (morally) should be blamed or praised for what they are intrinsically and not because such acts of praise or blame produce utility, and humans seem to have intrinsic value and rights, which ground what is just and unjust treatment regarding them. In our opinion, utilitarianism fails to explain adequately these features of the moral life.<sup>197</sup>

The reason that these examples about the missing motivational component of the person are important is that they cast further doubt on the ability of utilitarianism, as a normative theory, to answer our question regarding the further implementation of 5G technology. More simply, if the person has no special value in utilitarianism, and technological corporations such as Verizon, T-Mobile, Sprint, etc. operated from this normative mindset, a problem arises. The problem being that anyone, if not all of these corporations primary motive could be profit margin. These profit margins might even be at the expense of the side effects to the person's health, and this goes right back into the environmental concern from the first chapter. So, it seems that since

---

<sup>197</sup> Moreland and Craig, 443–44.

utilitarianism could hold the consequences of primary value and not a human person, so well-being of the human person could be in jeopardy<sup>198</sup>. This point leads me into the next problem with utilitarianism. The fourth problem with the normative theory of utilitarianism that I will turn to next is *The Ends Justify the Immoral Means*.

Recall when I previously mentioned that if a moral theory justifies actions that we universally deem impermissible, then that moral theory must be rejected. Therefore, even though the normative theory of utilitarianism is very prevalent throughout the global business world<sup>199</sup>, it still concerns me because of its lack of focus on the character. In this next section, we will see if Deontology fares any better.

### **2.3 - Action Based Normative Theory of Deontology**

The normative theory of deontology is concerned with certain features in the act itself. The wrongness or rightness, according to deontology is grounded in the action itself, and not according to the consequences, as we have seen in the previous section.

I do not argue that deontology cannot provide the right answer to the problem of harmful EMFs, raised in chapter one. Rather, I argue that even if deontological thinking could produce the right answer, it does so in the wrong way. Deontology does not engage the concept of character. To reiterate, I argue that the telecommunication corporate persons should be asking questions of character, because this question of character is specific to what ethical criteria should be in place concerning the consideration of new technology. Questions of character

---

<sup>198</sup> This criticism could be seen as overly simplistic. For example, if the right action is understood entirely in terms of consequences produced, why can't poor health outcomes of those exposed serve as good reasons, and be included in the utility calculus? Depending upon what view of "The Good" is adopted, it might well be that the utilitarian concludes that the effects of 5G on the environment and health of animals including humans is sufficient to say that use of 5G is a wrong action. In one sense, I think I might agree with this criticism and have no easy answer. However, in a second sense, I lay out in the upcoming sections why I think the utilitarian mindset of the telecommunication companies do not seem to be taking this route, sense there is no hesitation in the rollout of 5G technology. In fact, various telecommunication companies seem to be racing for who will have 5G rolled out first!

<sup>199</sup> It is also worth noting that Consequentialism is also alive and well in the philosophical circles across the globe as well.

should be on the table of these corporations, especially since they are treated as persons. It is about responsibility to the world, in which the corporation, as person exists; rational and non-rational, in terms of the environment at large. In other words, it makes us a better corporate person, when we think about the safety of rational and non-rational creatures—this environmental network. More simply, I bring character to the fore because character is an indication of an individuated subject's—organic or corporate—responsibility to contribute to the sustenance of a healthy planet, which includes the health of humans, animals, insects, oceans, skies, and landscapes.

Immanuel Kant (1724-1804) is famous for his particular account of duty, but deontological theories do not begin or end with him. The word deontology derives from the Greek words for duty (*deon*) and science (*logos*). In contemporary moral philosophy, deontology is one of those kinds of normative theories regarding which choices are morally required, forbidden, or permitted. In this broad sense, Plato and Aristotle have deontological accounts (in contrast to consequentialist ones).

More specifically, Kant rejects the utilitarian account of ethics. He argues that ethics is not contingent but absolute, and its duties or imperatives are not hypothetical but categorical—not based upon conditions. It is because we are rational beings that we are valuable and capable of discovering moral laws binding on all persons at all times. As such, our moral duties are dependent on pure reason alone. They are unconditional, universally binding, and necessary. In other words, our consequences or opposition to our inclinations do not factor into Kant's account of right and wrong action.

Deontology grounds morality in the duty of an action instead of focusing attention on the consequences. In other words, the consequences do not determine the rightness or wrongness of

an action, but the particular characteristic of the action itself. The particular characteristic that Kant puts major emphasis on is pure rationality. More simply, he argued that using pure reason is necessary to develop a set of moral principles to guide one's actions. Moreover, he argued that if one had a good will, then it was his duty to follow pure reason—not emotion, passion, or feeling—to instantiate a particular action required of him. In following pure reason, he developed a set of categorical imperatives that would inevitably guide one's actions.

Kant, using three formulations of his categorical imperatives, would determine if an action was morally impermissible not just for a particular person, but for all persons, at all places, and at all times. Specifically, the formulation of these categorical imperatives are called the principle of law of nature, the principle of ends, and the principle of autonomy:

1. *Principle of the Law of Nature*: “Act as though the maxim of your action were by your will to become a universal law of nature.”
2. *Principle of Ends*: “So act as to treat humanity, whether in your own person or in that of any other, in every case as an end and never as merely a means.”
3. *Principle of Autonomy*: “So act that your will can regard itself at the same time as making universal law through its maxims.”<sup>200</sup>

The *Principle of the Laws of Nature* has a distinct quality to it insofar as it has the feature of universalizability to it. This means that this formulation is equally binding to all people at all times and places in very similar situations. In other words, things like, “Do not steal” or “Tell the truth” are not conditional rules but are imperatives. As such, one must act upon them as it is their duty to do them. This is fundamentally why deontological derives from the Greek word

---

<sup>200</sup> Pojman, *Ethics*, 119–20.

*deon*, which literally is defined as “binding duty”. More simply, moral imperatives are dictums that one is obligated to do necessarily.

The way this maxim is applied is when one takes an action to see if it can be universalized without having any internal conflicts. Now imagine the example of a student applying this maxim with regards to actually cheating on their class exam. This would require that all students cheat on their exams, and this would lead to the internal conflict of the demise of the educational system as a whole. Thus, with this application it would seem as if you have a swift objective answer to the moral question of whether it is morally permissible to cheat on an exam. More simply, students should not cheat on their exams based upon the application of this formulation of the categorical imperative. In conclusion, this maxim would have the converse effect to where the principle that students should not cheat on their exams would be the duty to follow, as it does not seem to lead to any internal conflicts.

The *Principle of Ends* makes it clear that one should not treat any person merely as a means to an end, no matter what the end may be. It is in this sense that human persons are ends in and of themselves and have inherent worth and value. Thus, they should not be treated against their will for the sake of someone else’s end. Furthermore, this characteristic of this maxim is such that it deals with the problem in *The Modified Ends Justify the Means Utilitarian 5G Moral Argument* that we have seen in the previous section (2.2.4). This is because, for Kant, the ends—the further implementation of 5G technology—does not justify the means—the environmental harm that it has and currently causes. In other words, the intentional harm embedded in the fourth premise, “maximize the net balance of good versus bad consequences” has no place in Kant’s ethics because it violates the internal consistency of the formulation of this particular categorical imperative. Therefore, the further implementation of 5G, based upon *The Modified*

*Ends Justify the Means Utilitarian 5G Moral Argument*, would be seen as an immoral action because it intentionally allows for the possibility of harm to human persons. It is also worth mentioning here that Kant's action-based normative theory already fares better than its rival utilitarianism because of this specific feature of his ethical system. Consequently, this I will consider as progress towards his ability to answer the 5G question I have previously raised.

The *Principle of Autonomy* asserts that one can discover the moral laws of nature ourselves without relying on any external presence or authority. In this sense, Kant's maxim has the practical applicability of self-legislation or self-rule. Again, this places rationality and not the emotions at the foundation of ethics, and for a more objective self-rule when it comes to deliberating on moral actions. As Pojman illustrates:

The final formulation of the categorical imperative is the principle of autonomy: "So act that your will can regard itself at the same time as making universal law through its maxims." That is, we do not need an external authority—be it God, the state, our culture, or anyone else—to determine the nature of the moral law. We can discover this for ourselves. And the Kantian faith proclaims, everyone who is ideally rational will legislate exactly the same universal moral principles.

The opposite of autonomy is heteronomy: The heteronomous person is one whose actions are motivated by the authority of others, whether it is religion, the state, his or her parents, or a peer group. The following illustration may serve as an example of the difference between these two states of being.<sup>201</sup>

The summary above is important because it clearly explains that the quest for normativity, for Kant, is essentially up to us. Furthermore, in legislating morality individually this is objective in its approach and not subjective. This is because the legislation of morality binds to all people

---

<sup>201</sup> Pojman, 128.

equally, when faced with similar situations. Next, I will illustrate the practical outcome of this normative way of thinking.

Kant's three formulations of the categorical imperatives generates what seems are very practical principles that can help guide one's actions. These principles are one's duties to perform. These are things like:

*Autonomy*: the duty to maximize the individual's right to make his or her own decisions.

*Beneficence*: promoting other people's good.

*Equality*: the duty to view all people as moral equals.

*Finality*: the duty to keep promises.

*Gratitude*: the duty to do good or to express thanks to those who benefit us.

*Justice*: the duty to treat people fairly.

*Nonmaleficence*: the duty to not cause bad outcomes.

*Publicity*: the duty to take actions based on ethical standards that must be known and recognized by all who are involved.

*Reparation*: the duty to making amends for wrongs done.

*Respectfulness*: the duty to treat other with respect.

*Respect for persons*: the duty to honor others, their rights, and their responsibilities. Showing respect others implies that we do not treat them as a mere means to our end.

*Universality*: the duty to take actions that hold for everyone, regardless of time, place, or people involved. This concept is similar to the Categorical Imperative.<sup>202</sup>

The above list<sup>203</sup> is important because it highlights features of Kant's action based normative theory that seem very practical. After all we use these general principles to guide our actions all

---

<sup>202</sup> Most of these were taken from the chart in David Morrow's chart in *Moral Reasoning* (2018), but there are many more that can be added as well.

<sup>203</sup> Morrow, *Moral Reasoning*, 30.



of the time. However, next I will further illustrate how Kant's normative view is not without its own set of internal problems.

#### **2.4 - Problems with the Application of Deontology to 5G Technology**

The action-based normative theory of deontology, like we have seen in the previous sections regarding utilitarianism, has a few concerns that it faces as a normative view as well. In this section, for the sake of time, I will pick out only three of the most significant problems that the deontologists face and will describe *why* they are problems. I will also provide a philosophical analysis of each individual problem. This analysis will include a brief discussion of the more general problem, and then a very specific application of this to the specific problem of 5G. These will be first, the *Principle of the Laws of Nature*, second, the Problem of Exceptionalness Rules, and third, The Person Objection.

Before I begin to give analysis of these three concerns above, I want to set the table with an overall view. To start with a more general illustration of how Kant's system of deontology is not without its own setbacks, I will refer to Louis Pojman and James Fieser as they represent their concern with Kant here:

Kant thought that he could generate an entire moral law from his categorical imperative. The above test of universalizability advocated by Kant's principle of the law of nature seems to work with such principles as promise keeping and truth telling and a few other maxims, but it doesn't seem to give us all that Kant wanted. It has been objected that Kant's categorical imperative is both too wide and too unqualified. The charge that it is too wide is based on the perception that it seems to justify some actions that we might consider trivial or even immoral.<sup>204</sup>

The above statements describe the concern with Kant's deontology, such that it can justify immoral action. Thus, I will start by highlighting the above critique and giving a few examples of the *Principle of the Laws of Nature*, the *Principle of Ends*, and the *Principle of Autonomy*.

---

<sup>204</sup> Pojman, *Ethics*, 123.

After each critique above, I will also apply its moral trajectory to the question about 5G to see if it gives a sufficient answer. In this next section, I will reveal the problems with the *Principle of the Laws of Nature*.

#### 2.4.1 – Problem of the Principle of the Laws of Nature

The *Principle of the Laws of Nature* endorses trivial actions, cheating, prohibiting permissible action, and even more absurdly, it could mandate things like genocide. For purposes of time, I will take only one of these examples and focus on the mandating of something like genocide, as it seems to have very undesirable results. But, I will conclude that all of these actions function in the same way and are undesirable because they are immoral.

The categorical imperative appears to suffer from the fault of being able to justify acts that one would consider to be immoral. Pojman echoes this problem by stating, “More serious is the fact that the categorical imperative appears to justify acts that we judge to be horrendously immoral. Suppose I hate people of a certain race, religion, or ethnic group.”<sup>205</sup> Furthermore, let us say that I hate Antarticans, and I am not even from Antarctica. My maxim could be frames as such: Maxim: Let me kill anyone who is Antartican. If, according to Kant, we were to universalize this maxim, we would get P. P equals: always kill Antarticans. Now on the surface of it, this seems completely and absurdly outlandish and immoral. However, this is the trajectory of Kant’s categorical imperative. After all, is there anything contradictory about this prescription? It does not seem so. For example, if I was Antartican when this maxim was instituted, I would not be around to write this dissertation, but it seems that the world would still be moving on without me in it, just fine. In order to remain consistent with this maxim, if I were to suddenly discover that I was somehow Antartican from a distant relative, then I would have to

---

<sup>205</sup> Pojman, 125.

commit suicide to remain consistent. But as long as I am willing to remain consistent, then I do not see anything wrong with the legislation of this principle, even though as absurd as it may seem. This is because the categorical imperative being used here has this consistency.

I will now bring in the concerns of Pojman and Fieser and they summarize the negative features of this principle:

We conclude, then, that even though the first version of the categorical imperative is an important criterion for evaluating moral principles, it still needs supplementation. In itself, it is purely formal and leaves out any understanding about the content or material aspect of morality. The categorical imperative, with its universalizability test, constitutes a necessary condition for being a valid moral principle, but it does not provide us with a sufficiency criterion. That is, if any principle is to count as rational or moral, it must be universalizable; it must apply to everyone and to every case that is relevantly similar. If I believe that it's wrong for others to cheat on exams, then unless I can find a reason to believe that I am relevantly different from these others, it is also wrong for me to cheat on exams. If premarital heterosexual coitus is prohibited for women, then it must also be prohibited for men (otherwise, with whom would the men have sex—other men's wives?). This formal consistency, however, does not tell us whether cheating itself is right or wrong or whether premarital sex is right or wrong. That decision has to do with the material content of morality, and we must use other considerations to help us decide about that.<sup>206</sup>

The reason that this summary is important is that when applied to my hypothetical example of me hating Antarticans, it is not clear exactly what is intrinsically wrong with me hating Antarticans while legislating Kant's categorical imperative at the same time. This is important in my overall discussion of deontology because it seems like this is a concern overall regarding the soundness of a normative theory. Remember, my goal is for us to decide on a more robust normative theory so that we can answer the questions of 5G that I have raised at the beginning of the chapter.

---

<sup>206</sup> Pojman, 125.

Taking this inconsistency of the *Principle of the Laws of Nature* into account regarding our 5G question, we can see that it may pass the universalizable test. Simply put, one can generate the maxim: Let 5G be implemented for all people across the globe. Universalizing this maxim we get the prescription: Always allows the implementation of 5G. In other words, as previously mentioned, even though one can universalize this 5G maxim—this constitutes a necessary condition for this maxim being a valid moral principle, we are still not sure why exactly what makes the 5G rollout good or bad—this does not constitute the grounds for our 5G maxim having a sufficient criterion. As such, I have shown that this seems somewhat problematic in Kant’s deontology concerning its ability to answer my 5G question. In this next section, I will illustrate the second concern I have with Kant’s deontology and that is concerning the problem of exceptionless rules objection.

#### **2.4.2 – Problem of Exceptionless Rules**

In this section, I will give a brief illustration of the problem of exceptionless rules lodged against Kant’s normative theory of deontology. This problem reveals itself clearly with the fact that Kant’s categorical imperatives yields unqualified absolutes—these generated rules are universally binding and are without exception. Pojman and Fieser give us a nice illustration of this below:

Suppose an innocent man, Mr. Y, comes to your door, begging for asylum, because a group of gangsters is hunting him down to kill him. You take the man in and hide him in your third-floor attic. Moments later the gangsters arrive and inquire after the innocent man: “Is Mr. Y in your house?” What should you do? Kant’s advice is to tell them the truth: “Yes, he’s in my house.” What is Kant’s reasoning here? It is simply that the moral law is exceptionless.

It is your duty to obey its commands, not to reason about the likely consequences. You have done your duty: hidden an innocent man and told the truth when asked a straightforward question. You are absolved of any responsibility for the harm that comes to the innocent man. It’s not your fault that there are gangsters in the world.

To many of us, this kind of absolutism seems counterintuitive. One way we might alter Kant here is simply to write in qualifications to the universal principles, changing the sweeping generalization “Never lie” to the more modest “Never lie, except to save an innocent person’s life.” The trouble with this way of solving the problem is that there seem to be no limits on the qualifications that would need to be attached to the original generalization—for example, “Never lie, except to save an innocent person’s life (unless trying to save that person’s life will undermine the entire social fabric),” or “Never lie, except to save an innocent person’s life (unless this will undermine the social fabric),” or “Never lie, except to spare people great anguish (such as telling a cancer patient the truth about her condition).” And so on. The process seems infinite and time consuming and thus impractical.<sup>207208</sup>

This is an important problem for Kant to resolve as it demonstrates the possibility of a clear tension point between two principles: 1) telling the truth, and 2) saving life. For Kant, his categorical imperative forces him to “only” tell the truth in this situation, so he is not left with the luxury of being able to tell a lie to save life. Here an ally to Kant can help exhaust this tension point and allow certain principles to be overridden. Next we can see how William D. Ross attempted to reconcile this problem with Kant’s deontology.

Unlike Kant’s principles, however, these principles are not absolutes—that is, duties that must never be overridden by more binding moral duties. Moral principles are *prima facie* duties. This term *prima facie* is Latin for “at first glance”. That is, while their intrinsic value is not dependent on circumstances, their application is. They can be overridden by other *prima facie* duties. Essentially, these principles are the outcomes of generations of reflection on our duty, and

---

<sup>207</sup> Pojman, 129–30.

<sup>208</sup> The “Nazi” objection to Kant can be seen as an oversimplification and a possible misrepresentation on Kant’s behalf: for Kant, what is singular about motivation by duty is that it consists of bare respect for the moral law. A case that exhibits clear disrespect for the moral law would NOT dictate that you reveal the location of the Jews hiding in your home. However, the point of me using this example is simply to highlight the tension between differing moral intuitions here: 1) telling the truth, and 2) saving life. I merely use this example of Kant’s as a springboard to the advanced deontological adaptation of Kant’s theory by William D. Ross.

their holistic schema has been internalized within us, so that ultimately, as Aristotle said, the “decision lies in the perception.”<sup>209</sup>

The reason that this brief illustration is important is that Ross, unlike Kant, is not an absolutist. For him, a basic moral principle can be overridden by another moral principle. The way one can know which moral duty is or more concern than another conflicting moral principle is by consulting our moral intuitions. These moral intuitions of ours may differ, depending on each situation we find ourselves in. Thus, in applying these modified features to Kant’s deontology, Ross’s moral trajectory empowers one with the ability to be able to choose life, at the expense of having to lie to do so. This does not mean that telling the truth is not a valid moral principle, in the situation above, it just means that it does not hold as much weight as saving life, in that particular situation. The only problem with Ross’s view is that even though it helps Kant’s deontology to be able to navigate through various moral dilemmas, Ross uses one’s intuitions, and they point back to the “person” that is doing the intuiting. In other words, one person may intuit—have an intuition—something entirely different than someone else, giving a particular situation and circumstance. One can also raise the question of whether one’s motivational attitudes, character, etc. factor into the person having various moral intuitions. Moreover, the person is not a luxury that Kant affords us with to be able to ground his morality. These concerns of mine are not addressed by Ross. So, even though he attempts to help Kant’s deontology, I believe that without Ross knowing it, he has actually pointed to person, of which this will be my next concern that deontology does not make space for. The other problem is that even if one allowed the deontological distinction of prima facie duties, it is not clear that this action-based normative view would help with our question of 5G.

---

<sup>209</sup> Pojman, Vaughn, and Vaughn, *The Moral Life*, 259–72.

Recall the above scenario when we had two conflicting duties. These two conflicting duties were adhering to the principles: 1) telling the truth, and 2) saving life. If we were to map this onto our 5G question, it is not clear which acting guiding principle the deontologist is committed to taking. For example, telecommunication companies such as Verizon, T-Mobile, Sprint, etc. are obligated to their shareholders to make profits. They are obligated to the citizens of the world with respect to offering safe wireless communication technology. We can simplify these two principles as follows: 1) the corporation making a profit, and 2) producing safe 5G wireless communication technology. Now, if we take my data in Chapter 1, it is clear that I have presented data that shows that this technology is not safe at all, but this depends on which governing body has presented this data. In other words, any particular telecommunications company seems obligated to both, but would take the principle 1) over 2) because that is the primary function of business corporations. Now, you would think that all telecommunication corporations would have safe products very high on the list of principles to be governed by, but I can give you an example where this is not the case. Take for example information that Verizon put out on their United States Securities and Exchange Commission Form 10-K Annual Report, for the fiscal year ending on December 31, 2014:

We are subject to a significant amount of litigation, which could require us to pay significant damages or settlements... our wireless business also faces personal injury and consumer class action lawsuits relating to alleged health effects of wireless phones or radio frequency transmitters, and class action lawsuits that challenge marketing practices and disclosures relating to alleged adverse health effects of handheld wireless phones. We may incur significant expenses in

defending these lawsuits. In addition, we may be required to pay significant awards or settlements.<sup>210</sup>

This information above is alarming indeed because it seems clear that at least one telecommunication corporation already sacrifices one prima facie principle—safety over another—profit. Moreover, they are prepared in advance to do just that! Thus, this does not seem right when considering the health and welfare of the environment at large, concerning the further implementation of 5G technology. This normative application is seen from the perspective of the corporation, but it can also be applied to the average person on the street.

We can imagine the average person on the street considering 5G technology and attempting to apply this modified normative deontology to their situation—Ross’s prima facie addition to Kant’s view. Again, recall the above scenario when we had two conflicting duties. These two conflicting duties were adhering to the principles: 1) telling the truth, and 2) saving life. If we were to map this onto our 5G question, it is not clear which acting guiding principle the average-person-off-the-street is committed to taking. Just imagine the person considering the possible duty of adhering to these two conflicting principles: 1) Faster wireless communication technology for music, movies, schoolwork, etc. versus, 2) Safe wireless communication technology. I submit to you that most of the young generation today would take principle 1 over 2 above. Even worse, most do not really care to evaluate the evidence for principle 2, but even if they did, would not even care to look into it if they had to time to do so.

---

<sup>210</sup> “Telecom and Insurance Companies Warn of Liability and Risk,” Environmental Health Trust (blog), accessed October 12, 2020, <https://ehtrust.org/key-issues/cell-phoneswireless/telecom-insurance-companies-warn-liability-risk-go-key-issues/>.



So, in light of these examples above, it seems that the action-guiding normative view of deontology, whether from Kant or Kant/Ross, doesn't convince me that this provides a satisfying answer to one ought to do concerning the 5G problem. This is because there are internal problems within the normative theory that are still unresolved. However, I will say that so far, considering that Kant's moral law has respect for human life and the autonomy of the person, it does fair better than Utilitarianism.<sup>211</sup> However, even if the normative theory of deontology could also agree with the argument I am making against the technology of 5G, it still does not emphasize the concept of character in a person. Next, I will return to the previously mentioned Person Objection raised in section 2.2.3. This will be the last concern that I explore concerning the action-based normative theory of deontology.

### **2.4.3 – Problem of the Exclusion of Non-Rational Beings**

The third problem with the normative theory of deontology is the *Problem of the Exclusion of non-Rational Beings*. In his practical theory, Kant argues for the self-legislation of the categorical imperative, related only to “rational” beings. To see the distinction between rational and non-rational beings for Kant, consider this passage:

... every rational being, exists as an end in himself and not merely as a means to be arbitrarily used by this or that will...Beings whose existence depends not on our will but on nature have, nevertheless, if they are not rational beings, only a relative value as means and are therefore called things. On the other hand, rational beings are called persons inasmuch as their nature already marks them out as ends in themselves.<sup>212</sup>

---

<sup>211</sup> I will also suggest a future merge with deontology and virtue ethics as future research, as I believe deontology has very good things to contribute to the normative question I am seeking here. For example, deontology is a moral engine that can crank out very useful principles in ethics. These principles can go hand in hand with virtues.

<sup>212</sup> Immanuel Kant. *Foundations for the Metaphysics of Morals, (Grundlegung zur Metaphysik der Sitten)*, Mary J. Gregor (trans.), Cambridge: Cambridge University Press. [1785] 1998.

And:

The fact that the human being can have the representation “I” raises him infinitely above all other beings on earth. By this he is a person... that is, a being altogether different in rank and dignity from things, such as irrational animals, with which one may deal and dispose at one’s discretion.<sup>213</sup>

From the passage above, it is clear that Kant excludes non-rational beings from the moral universe. My argument takes up the question harm among non-rational as well as rational beings in relation to corporate character. My argumentative concerns exceeds those of Kant.

Non-rational beings are not a part of the moral universe for Kant and are not to be protected. Yet, there is the moral feature of pain towards non-rational beings. Let me provide a brief argument so that the inferential chain of reasoning can be clearer here. Some non-rational creatures such as animals can feel pain. Unnecessary pain towards non-rational creatures is wrong. Thus, it is wrong to cause unnecessary pain toward non-rational creatures. Kant ignores this line of argument and this is a mistake in his normative view. In other words, I believe that this is a major problem for deontology or at least Kant’s version of it. For example, there might be other deontologists that reject Kant’s position towards these non-rational creatures.<sup>214</sup> I will

---

<sup>213</sup> Immanuel Kant. *Anthropology from a Pragmatic Point of View* (1798), in *Anthropology, History, and Education*, (Cambridge Edition of the Works of Immanuel Kant), Robert Louden and Gunter Zoller (eds. and trans.), Cambridge: Cambridge University Press, 227–429. Original is *Anthropologie in pragmatischer Hinsicht*, published in the standard *Akademie der Wissenschaften* edition, volume 7. doi:10.1017/CBO9780511791925. [1798] 2010.

<sup>214</sup> For various viewpoints on Kant’s distinction towards the rational and non-rational beings, see: Allen W. Wood and Onora O’Neill’s “Kant on Duties Regarding Nonrational Nature.” [Proceedings of the Aristotelian Society, 72 (1998)]. See also, Christine Korsgaard. “Fellow Creatures: Kantian Ethics and Our Duties to Animals”, in *The Tanner Lectures on Human Values*, Grethe B. Peterson (ed.), Volume 25/26, Salt Lake City: University of Utah Press, (2004). Also, see her article, “Getting Animals in View”, *The Point*, 6, (2013). See also, Mark Rowlands. *Can Animals Be Moral?* New York: Oxford University Press, (2012).

not further elaborate on this issue as I have made my point. However, there is also another point that can be made against other non-rational creatures that cannot feel pain. These non-rational creatures are bees.

I do not except the hard and fast distinction that Kant makes towards the rational and non-rational beings. My point can easily be seen when we consider the significant impact that bees have on the rational population of the environment. If bees are harmed by the implementation of 5G technology (1.3), and massive food shortages result from this, then the bees, which are non-rational creatures, would have a detrimental impact on rational beings. This relationship—interconnection network—between the bees and rational beings substantiates a more robust moral community, and this type of community is missing from Kant’s normative view. Again, it is not that Kant’s deontology is wrong. It is that his deontology, non-rational beings simply do not matter. However, as I have just shown, they do indeed matter. Next, I will return to the previously mentioned Person Objection raised in section 2.2.4. This will be the last concern that I explore concerning the action-based normative theory of deontology.

#### **2.4.4 – Problem of the Missing Person and Character**

The fourth problem with the normative theory of deontology is *The Person Objection*. What is lacking with deontology is simply the person. When one is motivated by pure duty-based rationality in alone, one is lacking moral value. More simply, one is motivated by the wrong thing. Recall that I have already given my argument for the Missing Person in the section on Utilitarianism above (2.2.3), but I will still briefly add here that deontology is in no better position concerning this problem. I will further illustrate this concept of the mission person by giving you an example to consider:

But now suppose you are in a hospital, recovering from a long illness. You are very bored and restless and at loose ends when Smith comes in once again. You

are now convinced more than ever that he is a fine fellow and a real friend... You are so effusive with praise and thanks that he protests that he always tries to do what he thinks is his duty... the more you two speak, the clearer it becomes that he was telling the truth... surely there is something lacking here.<sup>215</sup>

This example above is important because it illustrates that when one is motivated solely by duty—consisting of adhering to universalized rational principles when caring for supposedly caring for someone, something important seems to be missing. Imagine, as in the case with the example above, that I am visiting my wife Stacey in the hospital, and she is very excited that I was by her side in a time of need—a potential health crisis. I then tell her in a very cool and collected voice, “yes babe, I am here solely out of my duty to adhering to the rational principles that all should be governed by”. She would most likely look at me like I am not human anymore. This is precisely what Stoker was referring to in his schizophrenia of modern moral theories because when one is motivated purely out of a sense of duty, one is motivated by the wrong thing.

This is much the same reaction that Spock got from his frequent interactions in the original series of Star Trek. But, that is just the point here. We *are* human and we are motivated by much more than duty grounded in pure rationality as Kant/Ross would have us self-legislate. It seems like we as human persons act out of motivational attitudes and virtues of character. In other words, imagine a much different example of me telling my wife that I was by her side because I love and care for her—virtues of character—and her health is very important to me—motivation attitude. More simply, one is motivated by the wrong thing. For, love, friendship, affection, fellow feeling, and community all require that the other person be an essential part of what is valued... The person – not merely the person’s general values nor even the person-qua-

---

<sup>215</sup> Stoker, “The Schizophrenia of Modern Ethical Theories,” 462.

producer-or-possessor-of-general-values- must be valued.<sup>216</sup> However, here is the problem with deontology. This action-based view just does not allow these important concepts to come into play concerning action-guiding features of this normative view. It is important to note that I have not shown that a duty-based ethics cannot defend the conclusion that 5Gs are not justified because they are dangerous (this grants that they have been shown to be sufficiently dangerous in chapter one). I can, however, emphasize my concern of the missing concept of character and the virtues from the person, associated in the next chapter for a more robust answer to the problem of 5G.<sup>217</sup> This can be understood more simplistically by considering that deontology focuses on the doing the right things instead of being a better person. This focus on being a better person—focusing more on a person’s character by emphasizing the pursuit of virtue, I argue, seems more robust.

At this point, we can take this problem of the missing person and apply it to the question of letting the further advancement of 5G to continue. Based upon the adverse side effects I have presented in chapter one, we might be in the position to better appreciate the fact the maybe the wrong question is being asked in this chapter. In other words, instead of asking, what ought we do with regards to allowing the further implementation of 5G, maybe we should be asking a more robust question, does allowing the further implementation of 5G make me a better person? The former question is action-based and the latter is person based concerning normative views. Furthermore, this later question will pivot off this concept of person and more specifically the character of a person. Answering this question will be the focus of chapter three.

---

<sup>216</sup> Stocker, 459.

<sup>217</sup> This leaves the room for more exploration of deontology in the future, which I suggest in the next chapter: a merge between deontology and virtue ethics, called *The Complementary Thesis* (see Moreland & Craig, 2003).

## 2.5 - Conclusion

In summary, this is why these two normative views are called action-based theories because with Utilitarianism one is solely focused on the action that leads to the most desirable consequence, and with Deontology, one is solely focused on the action itself, which leads to a good will.

For both Mill and Kant, the action, whether it be good in and of itself or good because of the consequences is the sole focus and grounding of morality. These two normative theories have been very successful for many decades in providing practical solutions to moral problems. In the spirit of charity, I have offered very concise ways that the utilitarian and the deontologist can reason morally with regards to the 5G problem in this chapter and I have leaned towards deontology as the better view, but still lacking. However, I have also argued that both of these theories are not without problems because there is something significant missing that is needed. What is missing here is the person and the concept of character and I believe that this is central to our question with reference to 5G because it is more robust and provides more explanatory power concerning our environmental decision. It is also important for me to state here that I have not argued that the action-based normative theories of utilitarianism and deontology do not work. I have just pointed out that I am not fully convinced of their efficacy when trying to apply their normative model to our 5G problem. More specifically, it could be more robust by focusing on a person's character. After all, I am after a normative solution to this problem of the further advancement of 5G technology, and the environmental side effects that come with it.

As I have shown above, the main problem with both action-based normative theories of utilitarianism and deontology in the grounding of morality is that they leave out the person, more specifically, one's character. I can further summarize the central points of this chapter

concerning the two action-based theories that were analyzed and point to the third option, by forming an argument:

- (1) An ethical theory that focuses on the person and their character is more robust one that does not; this is because the absence of these moral features leads to moral schizophrenia.
- (2) Modern ethical theories such as utilitarianism (2.1 – 2.2) and deontological normative systems (2.3 – 2.4) do not focus on the person and their character.
- (3) Virtue ethics does focus on the person and their character.
- (4) Therefore, virtue ethics is better than modern moral theories; this avoids moral schizophrenia.
- (5) Thus, virtue ethics might be a more viable option for our normative application to the problem of the further implementation of 5G technology.

It is for this very reason that I will now argue for the plausibility of a person-based normative view in this next chapter. More specifically, I will argue that the neo-Aristotelian virtue ethics I develop is more robust than the two action-based views of utilitarianism and deontology. More simply, this next chapter will flesh out a positive normative view of virtue ethics that does have one's person and character as a central role in grounding morality. Then, I believe that we will be put into a better position to apply this normative view to the problem of allowing the further implementation of 5G technology.

## **Person Based Normative Theory: The neo-Aristotelian Virtue Ethics Approach & Solution to the Problem of 5G Technology**

### **3 – Introducing a Person-Based Normative Theory of Virtue Ethics**

In this chapter, I will examine another normative ethical theory for a solution to our environmental-ethical problem. More specifically, I will present the person-based normative theory of neo-Aristotelian Virtue Ethics and will apply its moral reasoning to the problem of the use of 5G technology. In chapter one I showed that there is evidence from multiple scientific sources that showed that there is environmental harm to the environment: bees, plants and trees, other members of the animal kingdom, and many aspects towards humans. The reason for the application of this Aristotelian Virtue Ethics decision-making model is to see whether it can help guide one's right action in the 5G case. In other words, will the neo-Aristotelian moral theory help to answer the question of, what action I should take? More specifically, they will help to answer the question of, ought we allow this 5G technology locally or even globally, due to the environmental harm we have seen with the existing 4G technology, or should we resist its implementation until we know it is safe for the environment?

Also, as I have suggested at the end of the previous chapter, an additional and more deep question will also be answered, what kind of person does this make me, by allowing the advancement of this 5G technology locally or even globally, due to the environmental harm we have seen with the existing 4G technology? In addition to this question, another complementary question will also be answered, by completing the aim of this dissertation. Simply, would I be a better person of character if I temporarily resisted its implementation until we know it is safe for the environment?

In pursuing these questions, I will briefly define this view of virtue ethics (section 3.1) and will give an analysis of what justifies this normative position in ethics. Moreover, I will



illustrate the moral reasoning involved, when one is reasoning with virtues of character. Then I will demonstrate the strongest and most significant critiques of this view, and will show that they fail (3.2). Then, I will conclude that this Aristotelian person-based view is more robust than its rivals, utilitarianism and deontology (3.3).

Then, as an extension, I will conclude that this normative position of virtue ethics does in fact give us a convincing and more robust answer to the more specific problems related to the question of 5G technology laid out in Chapter 1. Specifically I will show that the Aristotelian person-based viewpoints us to the following chapter, where I provide a more robust answer to our question above, ought we allow this 5G technology, locally or even globally, due to the environmental harm we have seen with the existing 4G technology, or should we resist its implementation until we know it is safe for the environment?

### **3.1 – The Person-Based Normative Theory of Virtue Ethics**

Virtue ethics was very prominent from the ancient times right up until the early modern period. It began its decline in popularity because its rival normative views seemed to have more simplicity and explanatory power overseeing what one ‘ought’ to do. However, virtue ethics has made a recent comeback in normative ethics and this matters for the concept of character. .

One can see that virtues ethics dates all the way back to Confucius (551 - 479 B.C.) in his *Confucian Texts*. Virtue theory was thriving during this time in the ancient Chinese traditions. Then we have Aristotle (384 – 322 BC), who famously created the first systematic treatise on virtue ethics in his *Nicomachean Ethics*. Then came Elizabeth Anscombe (1919 – 2001) in her *Modern Moral Philosophy*. Here after centuries of being in the normative background, virtue theory started to make a comeback throughout the philosophical enterprise as a viable option in contrast diction to utilitarianism and deontology. Following suit, Philippa Foot (1920 – 2010) in her *Virtues and Vices* also added to persuasiveness of virtue ethics in England. Then, Alasdair

MacIntyre in his *After Virtue* (1929) had great influence regarding virtue theory making a comeback in the philosophical world of the United States.

I follow suit with the great contributions above and agree that a return to person-agent based theory—virtue ethics—is better than only action based, as it is more robust and have more explanatory power than its rival theories, such as utilitarianism and deontology. Ahead, I will sketch and defend my own neo-Aristotelian virtue theory—my modest contribution to the enterprise of virtue ethics—and argue that *character*, and the proper understanding of it, the role it plays in normative ethics, will *cause* one to do the morally right action. Moreover, following this morally right action is possible without having to follow Aristotle’s doctrine of the mean to get there. Last, and very importantly, it will lead one to a life of eudaimonia. Then I will demonstrate how the moral account can be applied to questions of environmental ethics—the *invisible* environment of 5G technology and how EMF’s can pose a potential harm to the animal kingdom, including humans, and that it is too great to ignore. Due to moral reasoning based on virtues, my thesis is that 5G technology is morally impermissible unless further credible scientific research is conducted.

There is a sharp contrast between the normative ethical systems represented in the last chapter compared to virtue ethics. More simply, action-based normative systems stress that we should act properly by following moral rules and principles. This means that we judge people, not on whether or not they are virtuous or not, but on how they act. Conversely, with virtue ethics, it is the case that we should acquire good character traits. We should acquire virtues as opposed to vices, and not simply act according to moral rules and principles. In short, morality involves the character of the person. To see why the formation of character is important for

virtue ethics, let me briefly unpack Aristotle’s line of reasoning with regards to the political role of the human person.

Aristotle argues that *ethos* (ἦθος), which translates as, “custom or habit”, forms the root of *ethikos* (ἠθικός), which translates as, “morality, showing moral character”<sup>218</sup>. Moreover, the word morality itself is derived from the Latin *mores*, which is the same above for “custom or habit”. Therefore, for Aristotle, when one is conducting an investigation of ethics, one is investigating one’s habitual routine. This is simple because one’s character is habitual formed over time, and it is important for a person to have dispositions that lead to virtues. Think of this habituation process like repeating the same behavior or action over time until the frequency of this particular behavior or action becomes so consistent, that it becomes solidified into one’s character.

To understand what this habituation of good character traits—virtues—may be like in ordinary life, consider the movie *Groundhog Day* (1993), where the main character, Phil, gradually realizes that he is trapped in a time loop that no one else is aware of. He literally wakes up to reliving Groundhog Day each consecutive day. He confides his situation to Rita because he lusts after her and wants to do everything in his power to bring-it-about that she actually falls in love with him through various means of manipulating the actions in his time loop from day to day. After many repeated attempts of trying to manipulate these circumstances in his favor, the movie takes a better turn. “That night, Rita witnesses Phil's expert piano-playing skills as the adoring townsfolk regale her with stories of his good deeds. Impressed with Phil's apparent overnight transformation, Rita successfully bids for him at a charity bachelor auction. Phil carves an ice sculpture in Rita's visage and tells her that no matter what happens, even if he

---

<sup>218</sup> Aristotle, *Nicomachean Ethics*, Book II (1103a17).

is doomed to continue waking alone each morning forever, he wants her to know that he is finally happy because he loves her. They retire to Phil's room.”<sup>219</sup> The point of this movie is that it was not natural at all for Phil to practice a sort of unconditional love for Rita. All he knew how to do was to practice a selfish kind of manipulation towards her so that she would magically fall in love with him. In order to the plot to turn in his favor, he had to practice a sacrificial love, so that no matter what happened, he still loved her. This kind of love had to be habituated in his character, over a long period of time, until it was solidified into his character and became second nature to act this way. Thus, as a result of this new disposition, his character overall became better.

Now if this seems farfetched because I have provided you with nothing more than a hopeful fiction, I will give you another real-life example for the moral exemplar none other than the historical Jesus of Nazareth. This example comes from the *Parable of the Unforgiving Servant*. Let us look to this particular teaching lesson here from Jesus to Peter. “Then Peter came to Him and said, “Lord, how often shall my brother sin against me, and I forgive him? Up to seven times?” Jesus said to him, “I do not say to you, up to seven times, but up to seventy times seven.”<sup>220</sup> The point of this parable is that one should practice forgiving others for their transgressions until it becomes second nature for them to forgive others. In other words, the point of this parable is to not keep count at all but to always be willing to forgive others. This means forgiving over and over without condition, without any other consideration being factored in. Peter’s forgiveness must be limitless. It is at this point of his habituation, that the virtue of forgiveness becomes habituated into his character. In other words, he does without hesitation,

---

<sup>219</sup> “Groundhog Day (Film),” in *Wikipedia*, November 16, 2020, [https://en.wikipedia.org/w/index.php?title=Groundhog\\_Day\\_\(film\)&oldid=989072309](https://en.wikipedia.org/w/index.php?title=Groundhog_Day_(film)&oldid=989072309).

<sup>220</sup> Thomas Nelson, *Nelson Study Bible New King James Version* (Thomas Nelson, 1997), 1607–8.

without any forethought. This is what Aristotle means by his *ethos*. One's habitual routine was foundational to character overall. Moreover, as seen with the two examples above concerning sacrificial love and forgiveness, obtaining particular moral virtues such as these by habit, does not come natural to some of us. It takes much practice to solidify in our character.

Thus, for Aristotle, one's *ethos*, is the highest form of reason. Recall, this is similar thinking that we have seen with Kant above, where he argues that the "good will" is the highest form of reason. The difference now appears that Aristotle's view of the highest form of reason regarding the human person is based in their character, which is simply a collection of habituated virtues and vices. Think of these virtues and vices a collection or bundle of collective mental states that a person has. In addition, these collection of mental states—one's character—are important for a citizen living in a community because their ultimate aim is a political one. Let us call this the rule of reciprocity. This general rule would dictate that what is good for the citizen is good for the community and what is good for the community is good for the citizen. This is important, because for Aristotle, the job of the *polis*—the city state—is to make good citizens. Therefore, when one asks why a citizen is good, the answer is because they are virtuous. Simply put, they have excellence of character afforded to them by the community in which they live.

Character, and the virtues that are associated with it, are major concepts in virtue ethics. Character is important to virtue ethics: it holds together the virtues and vices that a person may or may not possess at different times. By a character, I mean, a collection of typical ways of responding, on the level of thought, feeling, and action, to the various situations one meets in the world. This terminology being introduced, as I understand it<sup>221</sup>, asserts that an individual's

---

<sup>221</sup> Here I provide a brief definition of character, and how it relates to the virtues and vices. In the last section of this chapter, I will provide a very specific definition that will resist the so-called Situationist problem.

character<sup>222</sup> is made up of a collection of character traits. Examples of these traits would include the virtues and vices as traditionally understood. The Aristotelian virtues include: courage, temperance, justice, liberality, patience, truthfulness, etc. The vices include: cowardice, insensibility, stinginess, irascibility, buffoonery, etc. There are also other states that are, neither virtues nor vices, fortitude, for example. There is also a very important distinction in the type of virtue or vice one might obtain. These are the intellectual versus moral virtues. The intellectual virtues pertain to one's thinking and can be taught. The moral virtues pertain to one's character and cannot be taught to a person. They have to be experienced and habituated by the person in order to solidify in one's character. In this next section I will give a more detailed explanation of Aristotle's version of character.

### 3.1.1 – Aristotle's Version of Character

I believe Aristotle has a more robust notion of character.<sup>223</sup> The philosophical concept of character, this section has been concerned with, has its genesis in Aristotle's *Nicomachean Ethics*; namely the Greek *êthikai aretai*, the moral virtues or excellences. "The Greek *êthikos* (ethical) has the same origin as *ethos* (character)<sup>224</sup>. Excellence [of character], then, is a state concerned with choice, lying in a mean relative to us, this being determined by reason and in the way in which the man of practical wisdom would determine it. Now it is a mean between two vices, that which depends on excess and that which depends on defect. (1106b36–1107a3). More simply, the morally virtuous life consists in living in moderation.

---

<sup>222</sup> For more up to date research, concerning the concept of character, under the John Templeton Foundation, recently lead by Christian Miller, see <http://www.thecharacterproject.com/about.php>

<sup>223</sup> We will see in the upcoming sections that the concept of character tested by the Situationists (3.2.1.1.2 – 3.2.1.1.3) is *narrower* in scope, than what Aristotle defines it as here.

<sup>224</sup> Aristotle and Terence Irwin, *Nicomachean Ethics*, 2nd ed. (Indianapolis, Ind: Hackett Pub. Co, 1999) (I will find pages numbers for this citation, and will do more in depth work with Chuck here).

This is known as Aristotle’s doctrine of the mean or “Golden Mean”. I will give a further analysis of this below.

Aristotle, in the *Nicomachean Ethics* in general, and more specifically in Book V, Chapter 5, uses two words that mean slightly different things; μέσον (*meson*) is an adjective and μεσότης (*mesotes*) is a noun. Rackham translates *mesotes* as “mean state” and *meson* as “mean”, whereas, Ross translates *mesotes* as “mean” and *meson* as “intermediate”. It should be clear now why someone reading from these two different translations might be confused as to which meaning is the best for interpreting the answers to Aristotle’s questions. Young addresses this issue more specifically in drawing attention to confusion one might have with taking virtue as a *mesotes* or whether virtue itself aims at what is *meson* in action and passion.<sup>225</sup> For the rest of this chapter, I borrow the interpretation from both Rackham and Ross, where I translate *mesotes* (n.) to be a “mean state” and *meson* (adj.) to be an “intermediate state”. I believe that this translation makes a more precise distinction between the two terms at play when making reference to Aristotle’s Doctrine of the Mean:

*Doctrine of the Mean*

μεσότης (*mesotes*, noun)                      μέσον (*meson*, adjective)

	μεσότης ( <i>mesotes</i> , noun)	μέσον ( <i>meson</i> , adjective)
Rackham	Observance of a mean state	mean
Ross	Mean	intermediate
Komrosky	Mean state	intermediate

So, for Aristotle, when one is applying ethics to specific situations, one is talking about moral character, and moral character itself is in the business of examining whether one is embodying *arête* (virtue) or not. When one is considering virtue, then one will be thinking

---

<sup>225</sup> Charles M. Young, “Aristotle on Temperance,” *The Philosophical Review* 97, no. 4 (October 1, 1988): 522, <https://doi.org/10.2307/2185414>.

about this mean state above when assessing a particular moral situation. This mean state will itself be considered the virtue. To see this illustrated with more detail, below is an example of how Charles Young, in his *Doctrine of the Mean*, gives the logical progression in Aristotle's *Nicomachean Ethics*, proving that a virtue is a mean state:

*Stage 1*, 1106a14-26, appeals to general connections between function (ἔργον) and virtue (ἀρετή) to argue that virtue of character renders both those who have it and their activities good.

*Stage 2*, 1106a26-b5, distinguishes between what is intermediate in itself and what is intermediate relative to us, claiming that only the latter is relevant to the present discussion.

*Stage 3*, 1106b5-14, claims that in the case of activities (e.g., craft activities) that admit of excess, deficiency, and intermediacy what is good proves to be what is intermediate.

*Stage 4*, 1106b14-27, maintains that the result of Stage 3 applies to virtue of character: the activities characteristic of the virtues do admit of excess, deficiency, and intermediacy; and in this sphere, too, what is good is what is intermediate.

*Stage 5*, 1106b28, implicitly concludes that, since the virtues aim at what is good (Stage 1), and what is good is what is intermediate (Stage 4), the virtues aim at what is intermediate.

*Stage 6*, 1106b27-28, concludes that, since the virtues aim at what is intermediate (το μέσον), the virtues are mean states (μεσότητες).

This summary should make the movement of Aristotle's thought clear. In its essentials, his argument to the conclusion that virtues of character are mean states is straightforward:

- (1) Virtue realizes itself in good agents and good activities. (Stage 1)
- (2) In the activities in which virtue is realized, what is good is what is intermediate. (Stage 4)



(3) So, virtue aims at what is intermediate. (Stage 5)

(4) So, virtue is a mean state. (Stage 6)<sup>226227</sup>

For a practical understanding of how a person can obtain the mean state of virtue above, I will give a clear? example. Consider the soldier in combat who is influenced by the sphere of fear, because this person is engaging in an unexpected firefight. This person happens to avoid the defect of cowardice, and the excess of foolhardiness, which are both vices. This soldier also thinks about his action before doing so—he is consciously aware of his moral deliberation before he acts. Consider further that this soldier acts courageously in battle and protects and saves his fellow comrade. This act of courage is considered the virtue in this case because it is the mean state between two vices. In addition, for Aristotle it is not enough to act with courage to have virtue, but one must also *know* that they are acting courageously. Simply put, they must know that their mental action of courage is in fact the mean state between two vices. Thus, this person has completed the Stages 1 – 6 above and has exemplified moral virtue in an act. Now that we have seen a detailed explanation of how an example of virtue is obtained, I will further illustrate the role it plays in one's character.

As I have argued in the previous sections, character is something that results from early habituation, with the correct use of rational deliberation, while have a good sense of *phronesis*—practical wisdom. Character itself is the collection of mental states that a person has. A helpful illustration is to imagine a stamp or mark impressed upon a coin. This stamp, mark, or impression conveys the reality behind the image of the coin. Think of the coin as you. Your

---

<sup>226</sup> Charles M Young, "The Doctrine of the Mean," n.d., 93.

<sup>227</sup> It is also worth noting that Kant himself in *The Metaphysical Principles of Virtue* makes an argument against Aristotle's *Doctrine of the Mean*. He uses the example of prodigality and liberality to argue this the principle of this Doctrine is false. However, Young accuse Kant's criticism of missing a significant point Aristotle makes about certain *patterns* that are characteristic of these attributes. For more on this, see Young's *Doctrine of the Mean*, pg. 95.

stamp, mark, or impression are a collection of the good and bad states you have—your virtues and vices, or your dispositions to act in certain ways, based upon habit. “In respect of the excellences and the vices we are said ... to be disposed in a particular way” (NE, 1106a6). These components are what individuates you from someone else; your dispositions to act in certain situations, based upon a specific age, by correctly employing phronesis, and rational deliberation—by keeping your emotions properly calibrated—in other words, not too much emotion and not too little, but just the right amount.

That is why it is also hard work to be excellent. For in each case, it is hard work to find the intermediate... So also, getting angry, or giving and spending money, is easy and everyone can do it; but doing it to the right person, in the right amount, at the right time, for the right end, and in the right way is no longer easy, nor can everyone do it. Hence doing these things well is rare, praiseworthy, and fine. (NE, 110925a-30).

This is what makes you unique from any other person, and this stamp, mark, or impression is *your* character. By dispositions—*hexeis*, Aristotle means: “the things in virtue of which we stand well or badly with reference to the passions, e.g., with reference to anger we stand badly if we feel it violently or too weakly, and well if we feel it moderately; and similarly to the other passions.” (NE, 1105b25-8).<sup>228</sup> Moreover, the uniqueness that persons can have with regards to their set of virtues and vices can vary. To understand this better we can see that philosophers other than Aristotle have also contributed additional virtues as well:

---

<sup>228</sup> As we will see below, this definition, and way of thinking, according to Aristotle, is far more robust and nuanced than what the Situationist’s have provided. Moreover, the specific components of this definition also highlights what the Situationists have missed, and what the Globalists will want to pay attention to, in furthering their position in Virtues Ethics.

**Table 5.1.** Lists of Virtues and Vices from Various Philosophers

Aristotle	Mencius	Aquinas	Alfano	
courage	benevolence	prudence	altruism	greatness of soul
moderation	righteousness	justice	beauty	honesty
justice	propriety	temperance	benevolence	hope
generosity	wisdom	courage	charity	humanity
hospitality		faith	chastity	humility
greatness of soul		hope	cleanliness	industry
mildness of temper		charity	compassion	justice
truthfulness			consideration	magnanimity
grace			contentment	mercy
friendliness			cooperativeness	modesty
good judgment			courage	obedience
intellectual virtue			courteousness	patience
practical wisdom			dignity	piety
			empathy	prudence
			endurance	reverence
			fairness	severity
			faith	sincerity
			fidelity	tact
			filial piety	temperance
			friendliness	tenacity
			frugality	trustfulness
			generosity	trustworthiness
			gravitas	valor

The list above<sup>229</sup> is not exhaustive<sup>230</sup>, but certainly gives one the impression that there are many different virtues to master in one’s character. It is also important to note that because Aristotle’s list of virtues is not exhaustive, and that I believe that the many more that are not from his set, are worth pursuing. It is in this sense that I will consider myself a neo-Aristotelian for the remainder of the dissertation. This are also more reasons that I can also use to justify this distinction away from Aristotle’s view of virtue ethics<sup>231</sup>, but suffice it to say for the sake of

<sup>229</sup> Morrow, *Moral Reasoning*, 50.

<sup>230</sup> For example, there are other famous philosophers who have their additional lists of virtues as well. Take for example Confucius, Kant and Hume: Confucius, in the *Analects* has the unique virtue of filial piety (Chinese: 孝, xiào) relating specifically to taking care of one’s family. Kant, does this in his *Metaphysics of Morals*, and Hume contributes to virtues in Book 3 of his *Treatise of Human Nature*, “Of Morals”. In fact, Hume’s list is more than all of these philosophers combined. With this being said, it is simply not necessary to include the list from Confucius, Kant, or Hume to make my point here. It is also worth noting that some of the virtues from philosopher to philosopher overlap as well. A great example of this is the virtue of courage, as Aristotle, Aquinas, and Alfano all mention it in their lists.

<sup>231</sup> For example, I also disagree with Aristotle in his view that one also need a bit of luck, with a virtuous character, to achieve eudaimonia. Here I take a modified Stoic position, and argue that even if one were in prison, can completely shackled in chains, one could still pursue a virtuous character and achieve eudaimonia, but making

brevity, this is still sufficient to maintain my neoAristotelian position. That is, for the most part, I am an Aristotelian virtue ethicist at heart, but do have slight disagreements as well. Lastly, in providing a more robust set of virtues above, I will draw attention to the fact that in the final chapter, I will use Alfano's virtue of compassion to make my applied ethics argument with reference to arriving at a conclusion to the problem of 5G. I will further add to the spirit of this virtue and name it "environmental compassion" when relating to the character of the corporate person.

To summarize Aristotle's position with respect to virtue ethics, the virtues are needed to obtain a good character. A good character is needed for objective happiness. For Aristotle, this objective happiness, well-being, or human flourishing is called *Eudaimonia*. So, if one is truly happy in life, who genuinely flourishes, and who obtains the virtues has eudaimonia. This is what a good person does. So, for example, to see it the way Aristotle does, this good person with eudaimonia doesn't ask what kind of wife should I marry? Instead, the good person considers what kind of husband he should be. This person doesn't ask what kind of job I should have, but what kind of worker shall he be. This person doesn't ask what kind of house he should buy and in what neighborhood should he live, but what kind of neighbor will he be. This are all deeper ways of thinking about the more general question of, does this action make me a better person. Does this action obtain virtue and is it good for the person's character overall? This was the question that I have considered at the end of Chapter 2 with respect to the problem of 5G, that I will answering here shortly in the sections ahead. However, before we get there, I will next consider two major problems that virtue ethics has to contend with.

---

that argument here is not necessary for the task of this current dissertation. This is just one example beyond noting the many more virtues that Aristotle has not included in his list.

### **3.2 – Problems with the Person-Based Normative Theory of Virtue Ethics**

Generally speaking, the person-based normative theory of virtue ethics has problems that it faces as a normative view. In this section, for the sake of time, I will pick out only two of the most significant problems that the virtue ethicists face and will describe *why* they are problems. I will also provide a philosophical analysis of each individual problem. These will be first, the Situationist objection and secondly, the fundamental attribution error.

#### **3.2.1 – The Problem of Situationism in Virtue Ethics**

The Globalist says that character is a stable set of dispositions across a variety of situations. In this regard, I consider Aristotle as a Globalist. By contrast, the Situationist says that there are no dispositions that are stable across a variety of situations. According to Situationism, there are no stable dispositions—no character—that is stable across situations and circumstances. There are other variables that dictate, beyond one's character, what one will be most likely to do in various situations. Furthermore, the Situationist's position has been supported by current research in psychology and experimental philosophy.

This section examines some major findings of the empirical data from studies that psychology and experimental philosophy have provided and finds the results misleading. From this, I will argue that the Globalists have it right: first, I will argue that Aristotle's Globalist view of character can stand firmly against the Situationist's research, and the philosophical interpretation of it, by focusing my efforts on the *age specific* criteria, which the Situationists fail to account for, and secondly, I will show that Gilbert Harman's criticism that the globalists suffer from a *fundamental attribution error* is no problem at all for Aristotle's virtue ethics.

Imagine one day that, just before you exit a shopping mall, you find a \$20 dollar bill on the ground. Excited by finding this free money, you are instantly put into a better mood. Seconds later, a woman's car has stalled in the middle of an intersection, very close to you, and

she needs help pushing it to a safe spot. It just so happens that you show an act of kindness and run to help her. Now the question arises, “Did you help her because you were put into a better mood by finding money or would you have helped her no matter what your day was like before seeing her?” The significance of this type of question has put virtue ethics on trial, precisely because the question of one’s *character* is at stake. In other words, if the *situational variable* represented above—being put into a better mood by finding money—is the only real reason for running to help the lady, then invoking the concept of character as a cause explanation for one’s act of kindness, it turns out, is not needed and turns amiss.

The Globalist vs. Situationist debate bears on character overall, and the virtues and vices. Philosophical Situationism is skeptical about the possibility of human virtue, and the stable character associated with it; this is because neither can be firmly grounded by empirical psychology<sup>232</sup>. More simply, either one’s character, according to the Globalists, is a firm and stable set of dispositions that guides one’s action, or as the Situationists see things, one’s character is *not* a firm and stable set of dispositions and can instead be represented by different independent variables. These independent variables could be, assuming a certain role of authority over other individuals, getting lucky and finding money, being late to a class, etc. The fields of psychology and experimental philosophy have provided empirical data to support their conclusion that these independent variables explain one’s action and not the concept of character.

In order to challenge the Situationists’ position, an assessment of the empirical data is required. That is, the strength of their argument stands or falls on the significance of their results, based upon the data that they have collected, and the philosophical interpretation of that data. I will do this by focusing my efforts on the *age specific* criteria, regarding the moral

---

<sup>232</sup> John R. Williams, “Virtue as Social Intelligence: An Empirically Grounded Theory. By A1 - Nancy E. Snow . Pp. X, 134, New York, PB - Routledge , 2010.

formation of character that the Situationists fail to account for in their experiments. I will then illustrate what is at stake regarding the objection regarding a *fundamental attribution error* and argue that it is no problem at all for the Globalists. In other words, the Globalist position is more than capable of addressing this problem. Last, but not least, I will provide a more robust Aristotelian definition character. This new definition will be a more accurate and will be a more positive contribution to the contemporary movement of virtue ethics, thereby concluding that the Globalists have it right.

### 3.2.1.1 – Experimental Research that has Challenged Character

To provide a brief landscape with regards to what has been at stake concerning character, I will give concise summaries of the findings from five hallmark studies conducted in the past century, that have influenced significantly the field of experimental philosophy. The form of these studies was such that these psychologists collected certain empirical data that question the concept of character. That is, the findings of their studies seemed to render the concept of character null and void. The first of these studies is from Stanley Milgram<sup>233</sup>, in his *Obedience to Authority Study Experiment* (1963), showed that the independent variable of submission to authority could explain certain actions one could perform, without needing character. Second, John Darley and Daniel Batson<sup>234</sup>, in their *Good Samaritans Experiment*, (1973), showed that a certain variable in a particular situation, like being on time or late to one's class, and not one's

---

<sup>233</sup> Stanley Milgram, "Behavioral Study of Obedience.," *The Journal of Abnormal and Social Psychology* 67, no. 4 (1963): 371.

<sup>234</sup> John M. Darley and C. Daniel Batson, "'From Jerusalem to Jericho': A Study of Situational and Dispositional Variables in Helping Behavior.," *Journal of Personality and Social Psychology* 27, no. 1 (1973): 100.

character variable—such as *kindness*<sup>235236</sup>—was the major factor responsible for determining whether a participant helped someone. Third, Paula Icsen and Alice Leben<sup>237</sup>, in their *Helping for a Dime and Cookies Experiments*, conducted in Philadelphia and San Francisco (1972), showed that participants were put in a good mood by very strong correlations between things like finding the free dime or receiving free cookies, which were the situational variables at play, versus showing an act of kindness by helping the woman, which was the character variable. Fourth, Hugh Hartshorne and Mark May<sup>238</sup>, in their *Cheating, Lying, and Stealing Experiment* (1928), provided research that challenged the character variable such as honesty, and instead showed that the children had very specific behaviors of cheating, lying, and stealing, that were based upon the situational factors that they were in. Finally, Philip Zimbardo<sup>239</sup>, in his *Stanford Prison Experiment* (1971), provided evidence to suggest that it was not the participant’s character that was responsible for the extreme psychological torture that was inflicted on the mock inmates of the study, but the situational variable, of submission to authority, that was observed in an institutionalized setting. It is worth mentioning that a third party terminated this study after only one week, due to the extreme nature of the conduct of the study. Interestingly enough<sup>240</sup>, a very similar type of occurrence related to the conclusions of this experiment, but not

---

<sup>235</sup> It is important to note that Darby retrospectively evaluates this study and assumes that most people would have the virtue of *kindness*, which would have been considered a character variable. While this is not *explicit* form the original study, it is *implicit* in Darby’s interpretation of the study, and overall criticism of the concept of character.

<sup>236</sup> Kamtekar attributes the “character variable” as whether the participants saw religion as, either a. quest, b. means, or c. an end, in their life. Rachana Kamtekar, “Situationism and Virtue Ethics on the Content of Our Character\*,” *Ethics* 114, no. 3 (2004): 15.

<sup>237</sup> Paula F. Levin and Alice M. Isen, “Further Studies on the Effect of Feeling Good on Helping,” *Sociometry* 38, no. 1 (1975): 141–47, <https://doi.org/10.2307/2786238>.

<sup>238</sup> Columbia University et al., *Studies in the Nature of Character*, (New York: The Macmillan Company, 1928).

<sup>239</sup> “Home,” Stanford Prison Experiment, accessed February 15, 2016, <http://www.prisonexp.org/>.

<sup>240</sup> Even more interesting, it is also worthy of mention here that Zimbardo and Milgram went to the same high school class in the Bronx and knew each other; this is especially interesting because their research has overlap in that both of them stress the importance of the independent variable of *submission to authority*.



under an experimental setting, was seen not too long ago in Abu Ghraib, in Iraq, where prisoners underwent unbelievable humiliation, extreme psychological torture, and some even tortured to death<sup>241 242</sup>.

In the studies just mentioned, the main tension point under philosophical investigation illustrated in these five examples, point to a simple distinction between an *internal* vs. *external* component that explains those participant's behaviors. The former concerns a component *inside* the person, and is dispositional in nature, which consists of character. Conversely, the latter concerns a component, which is *external* to the person and is situational, which consists of independent variable factors that can be altered depending on the hypothesis being tested.

In this next section—due to the sake of time constraint—I will critique only three of these five previous research studies, in more detail, and eventually demonstrate that their findings are problematic.<sup>243</sup>

### **3.2.1.1.1 – Hartshorne and May: Cheating, Lying, and Stealing Experiment (1928)**

This study consisted of over 8,000 school children, in grades five through eight, that were placed in tempting situations in which they had the opportunity to: (a) cheat on tests, (b) cheat on homework, or by falsifying a record in an athletic contest, or by faking, peeping, or stealing in party games, (c) steal money from a box that was used in a test, (c) to lie about what their conduct was in general or about cheating in the tests from (a) above. The results showed that the correlation between behaviors given within the groups above (a) – (d) was very high.

---

<sup>241</sup> [https://www.ted.com/talks/philip\\_zimbardo\\_on\\_the\\_psychology\\_of\\_evil?language=en#t-229227](https://www.ted.com/talks/philip_zimbardo_on_the_psychology_of_evil?language=en#t-229227)

<sup>242</sup> “Abu Ghraib Torture and Prisoner Abuse,” in *Wikipedia, the Free Encyclopedia*, February 25, 2016, [https://en.wikipedia.org/w/index.php?title=Abu\\_Ghraib\\_torture\\_and\\_prisoner\\_abuse&oldid=706906961](https://en.wikipedia.org/w/index.php?title=Abu_Ghraib_torture_and_prisoner_abuse&oldid=706906961).

<sup>243</sup> I will show how the situationists might have been using a “thin” account of character, and then in my next section, show how Aristotle’s account is much more robust and how his account of character can explain what the Situationists miss.... So go from negative critique to positive conclusion and further show how virtue ethics as a whole still has its own set of internal problems.

The point of this study was that if the children exhibited a certain type of cheating, lying, or stealing behavior, it wasn't the case that they would perform that same behavior in any situation, but situations that were similar; the correlation was even higher with cheating, lying, or stealing a particular way, and doing this again, in that same particular way. In essence this study challenged the notion that if someone was a cheat, that they would cheat and be dishonest in all situations. They might only cheat in a particular way, or in particular situations. In other words, the salient feature of this study was that maybe “narrow” dispositions or traits are the best thing we can do when attributing character traits to these children. In any case, only the situational variables, not their characters, in any substantial way, could predict their behaviors.

### **3.2.1.1.2 – Darly and Batson: The Good Samaritans Experiment (1973)**

This study consisted of testing 40 students from Princeton Theology Seminary. The participants were divided into three groups: a) those who went to seminary as a *means*, and saw it as a smart career move, b) those who thought religious work was valuable as an *ends*, and those whether or not they saw religion as a means for salvation as an end in itself or a quest for meaning – more or less, people who had psychological issues to work out for themselves. Either way, this was supposed to test the importance of theology in their lives—from this theology, it was expected that they would have the virtue of *kindness*—and this was the main character variable that was measured. The two groups were told to read a pamphlet on vocational alternatives to ministry and the parable of the Good Samaritan; to summarize the parable, those who do good works are the true followers of Christ and they should help people in need, regardless of the particular background they may or may not have. These groups were even further divided: one group was supposed to be in a hurry, because they were expected to give a talk that they were already going to be late to, and the other group was told to go to a particular building “right now”, but that there was no particular worry, and the last group was told that they

could take their time and not have to hurry. All of groups of participants, while on the way to their building, encountered a man who was slumped over, while coughing and groaning. Some of the participants of the study stopped and helped and some did not:

	<i>helped</i>	<i>helped</i>	<i>didn't help</i>
<i>high hurry</i>	10%	1	9
<i>intermediate hurry</i>	45% (45.4%)	10	12
<i>low hurry</i>	63% (62.5%)	5	3

Figure 3<sup>244</sup>

The conclusion was that there was no correlation between the acts of kindness from the participants, the character variable that may have been reinforced by the role that religion played in their life, and whether or not they actually helped. This study once again seems to suggest that it was the particular situation, something *external*, and not one's character, something *internal*, that was the major factor responsible for determining whether or not one helped. Furthermore, very few people, who were told that they were in a hurry, stopped and helped the man. This indicates that character variables, such as acts of kindness, didn't play as significant of a role that one might have expected it to.

---

<sup>244</sup> These specific numbers and findings of their study were pointed out by, Charles Young, from *Claremont Graduate University*, in a response to an early unpublished draft of his later paper, Miller, Christian. "Social Psychology and Virtue Ethics." *Journal of Ethics: An International Philosophical Review* 7, no. 4 (January 1, 2003): 365–92. Dr. Young points out three things that are overlooked by research gathered here: 1) Arguably there doesn't seem to be a difference between the "high hurry" group and the rest. 2) Some of the "high hurry" participants didn't even see the person in need of help (pp. 107-8), and 3) Some of the participants were conflicted by other obligations, e.g. to the experimenter or to the people waiting for the talk (p. 108).

### 3.2.1.1.3 – The Stanford Prison Experiment (1971)

This experiment tested the hypothesis that the reason prisons were so bad, was the personalities of the prison guards. 24 participants were divided randomly into groups of 12 guards and 12 prisoners; this experiment was designed to last only 2 weeks, under the supervision of the head researcher. The study was terminated by a 3<sup>rd</sup> party, after only 1 week due to the extreme nature of the empirical data collected: the guards took on their roles so seriously, there were extreme signs of psychological torture<sup>245</sup>. Again, instead of these people's characters, it's the situations that they are put in that determine the kinds of behavior that would follow as a consequence. More specifically, the importance of the independent variable of *submission to authority*<sup>246</sup>, in an institutionalized setting, was at stake here. Interestingly enough, a very similar type of occurrence related to the conclusions of the very famous *Stanford Prison Experiment*, but not under an experimental setting, was seen not too long ago in Abu Ghraib, in Iraq, where prisoners underwent unbelievable humiliation, endured extreme psychological torture, and were sometimes tortured to death<sup>247</sup>.

### 3.2.1.2 – The Philosophical Interpretation of the Experimental Research

In summation, according to the empirical research conducted by psychologists in the past, and continuing to be conducted in the field of experimental philosophy in the present, the question is not, *who* or *what person* is responsible but, *what* is responsible for the conclusion of the results above (3.2.1.1.1 – 3.2.1.1.3)? In the former, the dismissal of a person's character is at hand, and in the latter, the plausibility of situationism is at hand. In other words, what independent variable was used to influence one's behavior? To be sure, one can easily see the

---

<sup>245</sup> "Home."

<sup>246</sup> It is also worthy of mention here that Zimbardo and Milgram went to the same high school class in the Bronx and knew each other; this is especially interesting because their research has overlap in that both of them stress the importance of the independent variable of *submission to authority*.

<sup>247</sup> "Abu Ghraib Torture and Prisoner Abuse."

problem now more clearly: that is, variables such as the power of authority, being late to one's class, getting lucky and finding a dime, or receiving a cookie, have nothing to do with one's character, and are not properties of persons. Instead, these variables are external to persons.

Furthermore, Gilbert Harman and John Doris have also interpreted these studies philosophically. That is, character is either significantly weakened or dismissed all together. Their conclusions are as follows: 1) there is no such thing as character, and 2) there are no such things as virtues. If these conclusions are true, these would be undercutting defeaters for the sustainability of virtue ethics, precisely because, character and virtues are essential ingredients for this normative position. In other words, without character and virtues, there is no virtue ethics. The reason that the following conclusions are important, is that according to Harman and Doris, they are the philosophical interpretation of the previous empirical data (3.2.1.1.2 – 3.2.1.1.3), and form the backbone of their position of Situationism, which is contrary to Globalism.

However, this philosophical interpretation of the empirical data only holds its weight if the studies themselves have validity<sup>248</sup>. In these regards, there seems to be a problem that the situationists have overlooked, namely the lack of any *age specific* variable, when conducting these studies. As a result, I will demonstrate that this oversight on their part proves that their studies are not valid at all. In other words, from the results of empirical research above, and the philosophical interpretation of them, it does not follow that things like virtues, vices, and character do not exist.

---

<sup>248</sup> Edward Slingerland, "The Situationist Critique and Early Confucian Virtue Ethics," *Ethics* 121, no. 2 (2011): 390–419. For further information regarding this point, Slingerland argues that the, "supposedly fatal situationists argument is not nearly as lethal as advertised... and that "personality traits (virtues) are alive and well". Pg. 4

### 3.2.1.3 – A Problem for the Situationists – The Lack of Age Specificity

In reading the *Hartshorne and May: Cheating, Lying, and Stealing Experiment (1928)*, the ages of the school children ranged from, “9 or 10 to 15 or 16 for all populations except D and K—the two orphan homes and also R and S—two private schools, where the range is from 8 to 18. All age distributions represent children as they are found in public schools, private schools, or institutions.”<sup>249</sup> In looking at the data of their original study, one cannot even see exactly what ages are included in groups A - S. One can only see how many *children* are in a particular group. This is a weakness in the generalization of the results. In other words, it is misleading to take the results of a sample size and use it to predict the behavior of the general population, when critical independent variables, such as age, are very inconsistent in this study. More simply, to generalize from the sample population of children and map that onto adults is quite a stretch, in dealing with dispositions, of any kind, concerning character.

In reading the *Darby and Batson: The Good Samaritans Experiment (1973)*, there is no mention of how old the participants are. This is a weakness in the generalization of the results<sup>250</sup>. In other words, it is misleading to take the results of a sample size and use it to predict the behavior of the general population, when critical independent variables, such as age, are overlooked, and as a result, not reported in the data.

---

<sup>249</sup> Columbia University et al., *Studies in the Nature of Character: Chapter 8 - The relations of intelligence, age, and school status to deception*, 11-12.

<sup>250</sup> Even though I find the results, and the interpretation of them problematic, I still believe that the data obtained from these studies can still help the neoAristotelian because it raises the problem of *prima facie* conflicting virtues. In other words, in some of the studies, that were previously conducted, the participants could have pursued an avenue of approach that may have look like they were acting contrary to one specific virtue in the experiment, while adhering to another virtue that wasn't even being considered. This is to say, it's not that only *one* virtue was possibly present in the experiment, and wasn't being detected in association with one's character, it's that multiple virtues might have actually been possible. For example, it seems as though in the Good Samaritan experiment, with respect to the “late group”, one could have passed the person in need (seems to lack the virtue of *compassion*), while adhering another virtue of *faithfulness* to their students, by showing up on time. Once again, the participant could have worked out ahead of time, a procedure or repertoire, by which to use one virtue over another one, depending on the circumstances they might be in. This is a process by which the agent has to use *phronesis* (practical wisdom) to work this out in their life, either during the actual event or ahead of time, and this might not be an easy task at all.

Again, in *The Stanford Prison Experiment (1971)*, there is no mention of how old the participants were. The reason that the age variable may be of significance is that in order to test to the character variable, one might have to consider the variable of age. In other words, if you are missing an age-specific criteria for the presence of character, such that you would expect to see and act of kindness, you might not see acts of kindness, which is a character trait, if a certain age hasn't been reached.

Moreover, the study itself is more deeply problematic, as seen with the article, *The Lifespan of a Lie*, where many psychologists actually condemn the validity and reliability of the most famous psychology study of all time, "There's just one problem: Korpi's breakdown was a sham".<sup>251</sup> Korpi participated as a prisoner in the study and admitted in an interview that he was faking. This is significant evidence because the results of the study were largely based upon events like his. There are other problems with this study but for purposes of time, I will probe any deeper. In summary, given the age variable problem that I have pointed to, the study itself can be thrown out as evidence because of the scrutiny cast upon its legitimacy.

This line of reasoning, that I have provided, in the cases above (3.2.1.3) can now be contrasted with what we saw in the previous section (3.2.1.1). The researchers were testing for the presence of traits such as honesty, kindness, and compassion within the participants of the study, where age was not a factor at all. However, what if age was a significant factor? What if good character traits could be in those same participants, but not at the ages, when they were being tested? I believe that I can give plausible answers to these probing questions if I provide a *more* robust definition of character than the previous researchers did. For example, the definition of character that Aristotle gives can demonstrate that the variable that the researchers

---

251 Ben Blum, "The Lifespan of a Lie," Medium, September 6, 2019, <https://gen.medium.com/the-lifespan-of-a-lie-d869212b1f62>.

were testing for, such as honesty, kindness, and compassion, might not have been there at all, or at least was not well solidified in the subject's character, because of a lack of age<sup>252</sup>. This would undercut the conclusion of their research study, namely that the character variable wasn't responsible for predicting their behavior<sup>253</sup>. If true, this would seem to give a stronger foothold for the field of virtue ethics in attempting to provide a normative account for what one ought to do in certain situations. More simply, if you have a good character, composed of the right virtues, such as honesty, kindness, and compassion, these are the things that are responsible for causing the right sort of behavior. More simply, I am arguing that the right character causes the right sort of behavior or right action.

To see this, consider first this summary of character, "Character is the sum total of an individual's habits, and a habit is a disposition to think, feel, desire and act in a certain way without having to will consciously to do so."<sup>254</sup> If this is correct, and I believe, it to be so, than it seems like character causes us to act in everyday situations very practically. This relationship between character and one's behaviors is also confirmed by the merge between virtue ethics and moral psychology, in the sense that there are theories that collect empirical data regarding this.<sup>255</sup> Consider just this claim alone, "Many philosophers, especially those working in the Aristotelian tradition, understand character traits to be metaphysically real dispositions with causal powers of their own that give rise to relevant thoughts and, in turn, to trait relevant actions. The trait of

---

<sup>252</sup> Later I will offer a more explicit neo-Aristotelian definition of character.

<sup>253</sup> Now one might object here and mention, "so what?!" In their research they didn't control for age. Nor did they control for serial preference, national origin, or hair color. The difference is that age can have a significant effect on one's practical wisdom or *phronesis*, as Aristotle would define it, that this is critical in assessing the situation one might be in. In other words, the other variables do not have an effect on character like age does. At least, I will argue for this in the upcoming sections.

<sup>254</sup> Moreland & Craig, *Philosophical Foundations for a Christian Worldview*, 455–56.

<sup>255</sup> Please see entries on *Stanford Encyclopedia of Philosophy* under *Empirical Approaches to Moral Character*: "cognitive-affective personality system" (CAPS) model; (see Mumford 1998: 182; Kamtekar 2004: 472, 477; Adams 2006: 131–138; Badhwar 2009: 279; Russell 2009: xii, 172, 292–293, 330; Sosa 2009: 279; Lukes 2009: 292 "to better understand the acceptance of character traits understood as *causal* dispositions to think, feel, and act in various ways").



honesty, for example, is a real feature of an honest person's psychology which, when triggered, can lead to the formation of honest occurrent thoughts and feelings. It can figure into causal explanations for action, and can be a reliable basis for predicting future behavior.”<sup>256</sup> If one were to resist this line of thought, than it seems as though the notion of character would seem to lose its significant functional role in our everyday language, and that does not seem very practical. This is because we do in fact judge people based upon their character all of the time. This is why our prisons seems to be full—a reflection of people with bad character—and why people get job promotions and Noble Peace Prizes—a reflection of good character. This is not to say that character is the sole cause for one's actions, but it is a significant part of the cause for one's actions as it has the moral aspect to it like good and bad. In other words, human persons have good and bad character.

I will provide this definition of character in the last section of this chapter to complete my argument against the Situationists, but first, I will offer further analysis between the relationship of age specificity and character to further advance my claim.

#### **3.2.1.4 – Age Specificity in the Moral Formation of Character**

Mortimer Adler has argued<sup>257</sup> that a person isn't even in the position of correct understanding and comprehension, with regards to the Great Ideas—this is a syntopical collection of one of the most powerful systematic integration of significant Western ideas, from pre-Socratic to modern times, such as: philosophy, logic, being, happiness, nature, good and evil, science, truth, physics, man, soul, temperance, will, law, justice, idea, hypothesis, metaphysics,

---

<sup>256</sup> Christian B. Miller, “Empirical Approaches to Moral Character,” in *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta, Spring 2021 (Metaphysics Research Lab, Stanford University, 2021), *Philosophical Relevance of the Big Five*, <https://plato.stanford.edu/archives/spr2021/entries/moral-character-empirical/>.

<sup>257</sup> “The Great Ideas, Vol. I by Mortimer J. Adler on Audio Cassette,” accessed September 5, 2017, <http://www.learnoutloud.com/Catalog/Philosophy/Modern-Philosophy/The-Great-Ideas-Vol-I/6377>.

and wisdom; these are naming just a few of the 102 total Great Ideas<sup>258</sup>—until at least the age of 40 years old. This point relates to an Aristotelian<sup>259</sup> component of *phronesis*, which is practical wisdom gained by experience in the world. This is because one needs practical wisdom in order to understand grand ideas, such as virtues and vices. Now, if practical wisdom is a virtue itself, and if character is composed of the virtues, then one can make the argument that unless one has the right amount of *phronesis* first, one does not have character. Why is this significant? Well, it seems that in the few examples above (2.1-2.4), the participants either do not have or do not correctly employ *phronesis*<sup>260</sup> to the particular situations in which they have found themselves. In other words, they have not correctly assessed the situation and have chosen poorly, and they have also not correctly assessed the situation because they lack “life experience”, or *phronesis*, and they lack *phronesis* because they are young. If this is the case, the results of these experiments are misleading because one might not expect to find proper accounts of character based upon the *age* of the participants tested. A *modus tollens* argument can be given as follows:

- (1) If one has properly formed character, then one will be of the right age, thereby having the right amount of *phronesis*.
- (2) One is *not* of the right age, thereby not having the right amount of *phronesis* (Sections 2.2 – 2.6).
- (3) Therefore, one does *not* have properly formed character.

---

<sup>258</sup> “The Great Ideas,” accessed August 13, 2018, <https://www.thegreatideas.org/greatideas1.html>.

<sup>259</sup> It is also worthy of noting that Aristotle himself has contributed literature to more of these 102 Great Ideas than any other philosopher in the history of Western thought. This can be easily verified by looking at the back of *The Great Conversation*, by author, in the *Great Books of the Western World*, 2<sup>nd</sup> ed.

<sup>260</sup> Here I would like to draw attention to Aristotle’s concept of *phronesis* and how important it is to properly access the situation at hand when making a moral decision: in this sense, one could think about the consequences of one’s actions and also the obligation to one’s principles/duties as well. This incorporates Utilitarianism and Deontology into one’s moral deliberation, without making them the sole grounds for one’s decisions. This is important because, again, I am not trying to refute/disregard these two normative theories altogether. I am instead arguing that my account of virtue ethics is more robust than they are. This is especially apparent when taking into account the point I have just made about using them in *phronesis* to properly access any and all situations at hand that one is morally deliberating over. In this sense, I am highlighting aspects of Aristotle’s virtue ethics that have seen to have been disregarded in normative literature, but are certainly not without merit

This argument, if sound—that is, both valid and all of its premises true—indicates that the conclusion is necessarily true. Once again, this is important because if the participants did not have properly formed character at the time of the study, the experimenters were testing for something that was not expected to be there.

Aristotle himself makes direct reference to the lack of right age, “This is why a youth is not a suitable student of political science; for he lacks experience of the actions in life, which are the subject and premises of our arguments. Moreover, since he tends to follow his feelings, his study will be futile and useless; for the end—of political science—action, not knowledge” (NE, 1095a2). Moreover, Irwin gives commentary on this passage as such, “youths *neos* are excluded from the study of ETHICS because they follow their FEELINGS. A youth is older than a child, but Aristotle does not say when, for these purposes, someone stops being a youth. Perhaps he is thinking of people under eighteen (see OCD, s.v. ‘Ephēbio’).<sup>261</sup> Ephebus, in ancient Greece, any male who had attained the age of puberty<sup>262263</sup>, in the stage of adolescence. Thus, it now seems clear that to conduct experimental research on anyone, lacking a certain age (3.2.1.1.1 – 3.2.1.1.3), and to interpret these studies philosophically (3.2.1.2), expecting stable character attributes to show up, is very unreasonable indeed.

The possible counter to my example would be to argue that, in fact, a character variable *did* exist in the three experiments above, but then the claim that the character variable might have been there, but that it was not fully formed or that it was not fully manifest, is there for further

---

<sup>261</sup> Aristotle and Irwin, *Nicomachean Ethics*, 354.

<sup>262</sup> “Ephebus | Ancient Greek Institution,” Encyclopedia Britannica, accessed September 7, 2017, <https://www.britannica.com/topic/ephebus>.

<sup>263</sup> Simon Hornblower and Antony Spawforth, “Ephēboi,” December 22, 2015, <https://doi.org/10.1093/acrefore/9780199381135.013.2420>.

evaluation. This would be a weaker version of my argument. More simply, it could be the case that any specific virtue such as kindness was currently undergoing moral formation<sup>264</sup>, and as a consequence, wasn't detectable by those specific research standards or wasn't consistent or stable by any means. In other words, there might have been a fragmented trait that either does not show up or shows up inconsistently. My suggestion for the Situationists at this point, is instead conducting one-time studies or single-case studies, to instead conduct *longitudinal* studies<sup>265</sup> in order to have a more significant reliability and validity in the experimental research. For example, test participants in their youth, repeatedly, until they are into they are 50 years of age, with regards to their ability to act compassionately, in the form of kindness, to see if they have a global character trait—a trait that is stable. In any case, I believe that the Situationists cannot overlook my concern with regards to age specificity, because to do so would weaken the validity and reliability of their research as a whole.

Now that I have presented my line of reasoning above, the fact that the age specific criteria are not given proper weight in these studies, it would be unfair to stop here without an investigation of another problem for character: *the fundamental attribution error*. Next we will see whether or not this is a factor against my developing Globalist position.

Thus, I conclude that an Aristotelian position, with respect to one's character has it right and that the Situationist critique—the 3 landmark cases in 3.2.1.1—that were examined, fall short of causing significant trouble for the Globalist position, as Harman and Doris would have us believe. In other words, I've argued that character, an *internal* component of a person, can

---

<sup>264</sup> I will right an entire chapter, giving an analysis of moral formation, from a neo-Aristotelian perspective, in my forthcoming dissertation, by drawing a parallel account from Edward Slingerland, "The Situationist Critique and Early Confucian Virtue Ethics," *Ethics* 121, no. 2 (2011)

<sup>265</sup> The *Up* Series is a series of documentary films produced by Granada Television that have followed the lives of 20 British children since 1964, when they were seven years old, until recently, when they are into the age of 50+. <https://www.netflix.com/title/70073793>

indeed cause certain behaviors, such as a compassionate act of kindness, to manifest in any particular situation, but that the variable of *age specificity* must be taken into account, to more accurately portray whether or not stable dispositions—virtues—are actually present. This is where more accurate *longitudinal* studies can help the enterprise of virtue ethics.

Finally, let us return to one of my original questions, “Did you help her because you were put into a better mood by finding money or would you have helped her no matter what your day was like before seeing her?” We can now answer “yes,” if one has a properly formed character, manifesting itself in the form of a virtue, such as compassion, which can show up as an act of kindness. But this requires properly assessing the situation, using *phronesis*, and correctly deliberating, in the proper emotional state—all of these components will be consistent after a certain *age* has been reached. These components, in a person, will be responsible for causing one to help someone else, regardless of what kind of mood this person has been put in, due to a new external variable, such as an unexpected increase in monetary status.

The above sections are important for the overall thesis of this chapter, and that is that the position of virtue ethics indeed has not been negated by the Situationists. However, there is another problem to address. In this next section I will address the problem of the *fundamental attribution error* to see if it poses a problem for the normative position of virtue ethics.

### **3.2.2 – The Problem of the Fundamental Attribution Error**

Lee L. Ross first coined the concept of the fundamental attribution error (FAE).<sup>266</sup> Since then, Gilbert Harman has argued that the *fundamental attribution error* is in play here. Roughly, the error as Harman applies it here is that we tend to explain someone's behavior based on

---

<sup>266</sup> Ross, L. (1977). "The intuitive psychologist and his shortcomings: Distortions in the attribution process". In Berkowitz, L. (ed.). *Advances in experimental social psychology*. 10. New York: Academic Press. pp. 173–220

*internal* factors, such as personality or disposition, and to underestimate the influence that *external* factors, such as situational influences, have on another person's behavior.

Harman defines Aristotle's *moral* virtues pretty accurately, but forgets to mention Aristotle's *intellectual* virtues, like phronesis, which is practical wisdom<sup>267268</sup>. In doing so, Harman distorts Aristotle's view, because one simply cannot isolate the intellectual virtue of phronesis from a moral virtue, like kindness, because in order to rationally deliberate about being kind in a particular situation and circumstance, the agent "first" must correctly assess the situation that he or she is in, and by doing this, this agent has actually made a step in the right direction of applying the intellectual virtue of practical wisdom—phronesis. In making this first act of applying phronesis—the *intellectual* virtue, the second act of kindness—the *moral* virtue follows and is applied to the situation at hand. Consequently, the agent has most likely avoided falling victim to things like:

1. Confirmation bias – more simply, the agent is purposefully assessing the "situation" at hand, and in doing so, trying to avoid being caught up by his/her own biases.
2. Fundamental attribution error – the agent here would be purposefully trying to assess, not only the virtues and vices of other agents—the actor—, but also the situation that the other agents are in, including the agent him/herself—the ground or situational variables. More simply, the virtuous agent does not ignore the situational variables, as Harman suggests, but has to take them into account before acting virtuously, out of his/her good character<sup>269</sup>.

---

<sup>267</sup> Harman, "Moral Philosophy Meets Social Psychology."

<sup>268</sup> Recall that I drew attention to this important distinction that Aristotle makes of *moral* versus *intellectual* virtues back in section 3.1.

<sup>269</sup> This is what it means for Aristotle to *assess* the situation. For more detail on this, see: Kamtekar, "Situationism and Virtue Ethics on the Content of Our Character\*."

In summary, if Harman understood the robust nature of how Aristotle defined his enterprise of character, the virtues—intellectual and moral—and vices, he might have understood that Aristotle himself, would have agreed with Harman, that the *fundamental attribution* error is indeed something to be avoided, but in no way does it follow from that, that things like character, the virtues and the vices don't exist at all. This is just a plain fallacy on Harman's part, a false dichotomy. There is a third option—incorporating character and situational variables into play at all times. Thus, it seems as if Harman himself has fallen victim to a confirmation bias by ignoring other parts of Aristotle's text, to reinforce what he was already trying to eliminate, namely character, the virtues and the vices.

Last, but not least, he has also guilty of not invoking the *principle of charity* when analyzing Aristotle's text. In other words, he has not given Aristotle the benefit of the doubt, which Aristotle's entire work, could actually explain and shed light on the complexities that Harman himself struggled with as a philosopher—things like character, virtues, vices, confirmation bias, and fundamental attribution error.<sup>270</sup>

There is an even deeper issue though. It is one thing to suggest that there is an overestimation of attributing the cause of a person's action to dispositional factors, such as character traits, like virtues and vices. Even if this is true, it does not follow that character and the virtues and vices do not exist. It could be a false dichotomy to either choose external factors—situational variables vs. internal factors—dispositions—to explain the cause of one's actions. Why not both, but on a provisional scale. To understand this better, imagine a person

---

<sup>270</sup> Maybe this is because on a deeper metaethical level, Harman himself is an outspoken moral relativist. Maybe this is why he glosses over the representation that Aristotle offered, with regards to the enterprise of virtue ethics.

undergoing moral formation—the process of using phronesis or practical wisdom to guide and calibrate character, which is a combination of virtues and vices or good or bad emotions—in order to adjust in everyday life. This person may not actually have the virtue of kindness habituated in them, and therefore, can easily be swayed by situational factors, making it *seem* like there is no virtue at play, when that virtue is instead, being learned and tested in different situations. In other words, it is not that a virtue isn't present, it's that while under moral development, it might be very difficult to detect, because it's not yet stable. In this sense, it seems like there are external and internal factors at play at the same time, in order to morally develop. Now this is entirely different from what Harman wants you to think. He wants you to dismiss the *internal* from the *external*, but what I am suggesting is that there are both, and both are important components in virtue ethics. This moral development presupposes a component of *age specificity*. In other words, if character exists, at what *age* does one achieve the proper collection of virtues and vices, in order to properly give an account of an instance of virtues ethics? For example, broadly speaking, the virtue ethicists will say that an act is morally right, to the extent that it results from a person's good character. Well if this is the case, when does the person actually *have* good character? This probes the question of character being fully developed at a certain age. As we have seen previously in 3.2.1.4, Aristotle is clear that the youth certainly don't have fully formed character. If this is the case, then maybe things like character actually do exist, but not until a certain age is reached, and the empirical studies that were a hallmark problem for the Globalists, aren't a problem at all.

### **3.3 – The More Robust Person-Based Virtue Ethics of Aristotle**

This debate between the Globalists vs. Situationists, one may argue, has been dead for quite some time now, precisely because, “causal efficacy of personality



traits can no longer be plausibly denied.”<sup>271</sup> The reason that I argue for the lack of *age specificity*, is that the Globalists and Situationists alike, have not mention it as something important, in recent discussion. However, I am arguing that it is indeed important in this debate, and is an extra nail on the coffin to blunt the force of the Situationist attack, while strengthening the Globalist’s position.

Now that I have offered a defense of Aristotle’s Virtue Ethics, in this next Chapter, I will provide a practical application of Aristotle’s Virtue Ethics to our problem of 5G raised in Chapter 1. More specifically, I will illustrate the moral reasoning that can be used to provide a more robust answer to the problem of 5G than the two-rival action-based theories we have seen in Chapter 2. Once again, the reason for the application of this Aristotelian Virtue Ethics decision-making model is to see whether it can help guide one’s action regarding my environmental problem. In other words, they will help to answer the question of, what action should I take? More specifically, they will help to answer the question of, ought we allow this 5G technology locally or even globally, due to the environmental harm we have seen with the existing 4G technology, or should we resist its implementation until we know it is safe for the environment?

---

<sup>271</sup> Slingerland, “The Situationist Critique and Early Confucian Virtue Ethics,” 6.

## **The Final Application of the Person Based Normative Theory: The neo-Aristotelian Virtue Ethics Approach & Solution to the Problem of 5G Technology**

### **4 – The Application of Aristotelian Virtue Ethics to Problem of 5G**

In this final chapter, I will show that a normative person-based theory of neo-Aristotelian eudaimonistic virtue ethics provides an ethical framework that gives strong support for the conclusion that it is morally impermissible for a telecommunications corporate person with good character, to allow harmful EMFs associated with the implementation of 5G technology, when there are numerous studies and anecdotal evidence to suggest that this technology might be harmful to humans and the environment. I remind the reader, this is because of the analogous reasoning applied to the character of the telecommunications corporate persons. The analogy that I draw will enable me to argue that corporations ought to consider character when making decisions about whether to introduce new technologies—in this case, the EMFs that accompany 4G and 5G—into the world. Furthermore, the primary point of this dissertation is the application of the practical ethics of character. I am specifically interested in the question of character in relation to the vetting questions, of the introduction, by telecommunications corporations, of new 5G technology into the world.

In arguing for my person-based neo-Aristotelian eudaimonistic virtue ethics being more robust than its rivals of the action-based Utilitarianism and Deontology, I want to give an illustration of how one might apply this view to situations that happen in everyday life (section 4.1). This is so that the reader can understand that the point is not about individuals making decisions *per se*, but due to the application of analogous reasoning, it is about corporate persons making decisions about introducing technology into the world. In other words, the examples that I provide are rooted in the individual person and his character. When I locate these examples of character in the individual, I will remind the readers to think about those examples in terms of

telecommunications corporate persons involved in the further implementation of 5G technology. Once this illustration is given, then I will specifically apply this to finally resolve our more specific question of 5G, ought any telecommunications corporate persons with good character, allow harmful EMFs associated with the implementation of 5G technology, when there are numerous studies and anecdotal evidence to suggest that this technology might be harmful to humans and the environment (4.2 – 4.4)?

#### **4.1 – The General Importance of Virtue Ethics**

In the previous two chapters, I have compared the action-based normative theories to a person based normative theory and argued that virtue ethics was the most robust normative system due to the focus of a person’s character. Now I will apply this character to the problem of 5G. Below I will refer to a scene recounted from Disney film collaborators Lasseter and Ranft from a movie that wonderfully describes this stark contrast between action-based versus person-based normative ethics:

Moments before winning a historic racing victory in the animated children’s film *Cars*, Lightning McQueen comes to a screeching halt at the finish line. He has just realized that long-time champion Strip “The King” Weathers has suffered a terrible crash and is lying, battered, near the race track. As his rival Chick Hicks speeds past him to win the coveted Piston Cup, McQueen backs up to push The King across the finish line, explaining that “The King should finish his last race.” The crowd goes wild, showering McQueen with attention and ignoring Hicks.<sup>272</sup>

What makes McQueen’s actions so admirable? It is not that he had any obligation to help The King. It is not just that his actions have the good consequence of making everyone feel better about The King’s last race. It is that McQueen’s actions demonstrate an impressive degree of compassion. He gives up the Piston Cup, which he’s dreamed about his entire life, in order to help someone else in a time of great need. His action also demonstrates significant wisdom, as he

---

<sup>272</sup> John Lasseter and Joe Ranft, *Cars* (Emeryville, CA: Pixar, 2006).

recognizes that in the grand scheme of things, the Piston Cup is not that important. In short, McQueen’s actions demonstrate morally admirable character traits—the kind of character traits that make someone an excellent person. These good character traits are excellent habits or virtues obtained over time. Philosophers call such traits virtues. Because of having a good collection of moral habits, you have the moral virtues of character. By contrast, McQueen’s rival demonstrates morally deplorable character traits—a collection of bad moral habits or vices over time: He cruelly caused The King’s crash to avoid finishing behind him yet again. He selfishly exploited McQueen’s compassion to win the race himself. Afterward, he thoughtlessly demanded that everyone celebrate his victory rather than McQueen’s sacrifice. These traits—cruelty, selfishness, thoughtlessness—are the kind of character traits that makes someone a bad person.

Philosophers call such undesirable traits vices. Virtues and vices provide yet another important way to reason about what to do. In their simplest forms, virtue- or vice-based arguments rely on normative premises like “You should act compassionately” or “You should not act cruelly.” More generally, the fact that a particular action would demonstrate one or more virtues is a reason to do it, and the fact that an action would demonstrate one or more vices is a reason not to do it.<sup>273</sup>

The above illustration is important because it emphasizes not only what action a person should take (Chapter 2), but what a good person does (Chapter 3). For example, sometimes a good person may override what is fair in a particular situation—McQueen could have won the race easily. Instead, he applied the virtue of compassion. He applied the virtue to go beyond what is fair and reasonable—McQueen sacrificing his win, by instead helping the King cross the finish line one last time before retiring, thereby letting the cheater, Chick Hicks, take the undeserving win. Moreover, the reaction of the audience when McQueen sacrificed his win for the

---

<sup>273</sup> Morrow, *Moral Reasoning*, 46.

betterment of another person, was massive booing towards Chick Hicks, and massive cheering towards McQueen. It also turns out that after this scene, McQueen went on to win many championship races. So, he acted upon the virtue of compassion. This act was praiseworthy because McQueen's actions demonstrate an impressive degree of compassion. It was also praiseworthy because McQueen acted as a role model to others, so that they may think of acting virtuously as good persons in the communities in which they lived.

It may also be important to note that the quotation above is careful to say that McQueen did indeed sacrifice something, namely his first-place prize, which would have been well deserved had he crossed the finish line first. In this sense, he did not perform an obligation. So, in one sense, McQueen was not morally obligated to help the King at all. However, thinking like this is thinking like a utilitarianist or a deontologist, because of something someone “must” do or is “obligated” to do based upon one's duty or the consequences involved.<sup>274</sup> However, virtue ethics goes beyond this normative view grounds morality in virtue of character. This is because being a better person—exercising virtues of character, such as compassion—is sometimes more important than meeting the standards of minimal moral obligations. Now let us apply the analogous reasoning to this individual example of McQueen to the telecommunications corporate character. Again, the analogy that I draw will enable me to argue that corporations ought to consider character when making decisions about whether to introduce new technologies—in this case, the EMFs that accompany 4G and 5G—into the world.

McQueen's actions of a temporary sacrifice—*virtue of compassion*—demonstrated that he used practical reasoning—*phronesis*—to ensure that in the long run he might win more cups,

---

<sup>274</sup> It is also important to note the utilitarian and deontological ethics *does* allow for supererogatory actions, but they are not morally obligated to perform them. There is also debate on *why* these two normative theories allow the possibility of these type of actions into their normative framework, but this discussion is beyond the scope of this paper.

but would do so with a good conscience—*resulting from good character*—and would have genuine happiness—*eudaimonia* throughout his racing life—*the lasting temporal aspect*. Similarly, let us consider the moral status of corporate persons of good character, when considering the new implementation of technology. The corporate person could temporarily sacrifice the implementation of new 5G technology—*virtue of compassion towards the environment*—demonstrating that it used practical reasoning—*phronesis*—to ensure that in the long run it might obtain more financial profit, but would do so with a good conscience—*resulting from good character*—and would have genuine happiness—*eudaimonia*—throughout its corporate life—*the lasting temporal aspect*. This is because one could look at the lifespan of this corporate person to see that the collections of good habits—values/virtues—were reflected not only towards its shareholders, but also towards the environmental impact at large—a result of its good character. Moreover, this temporary sacrifice of the corporate person would also be at the avoidance of the possible vice of character—allowing harmful EMFs associated with the implementation of 5G technology, when there are numerous studies and anecdotal evidence to suggest that this technology might be harmful to humans and the environment.

Let us now consider another example of an individual being a better person—exercising virtues of character, such as compassion—being more important than meeting the standards of minimal moral obligations.

To see an illustration of this, imagine that you marry an individual and assume that you will see eye-to-eye with this person and have a majority of happy days together versus unhappy days. In this sense, you commit to the long-haul of marriage in very hopeful expectations. This is actually, what most of us think before going into marriage. Now further imagine that your spouse becomes addicted to drugs and alcohol and starts displaying abusive behavior towards

you. Now, most of us at this point would have proper justification to terminate marriage or at least separate from this individual. After all, one is not morally obligated to stay in this abusive environment at all, because for one, this is simply not fair, but also that there is no duty nor obligation to have to stay. The utilitarianist and deontologist could both be completely justified in doing no more for the abusive individual. Now further imagine that this healthy person X makes a decision to exercise the virtue of character called compassion. This person decides to stay in this abusive environment to have compassion on the person Y, which is addicted to drugs and alcohol. This person is committed to staying in possible abusive relationships with unhealthy people, because they themselves are healthy and can see beyond their temporary situation at hand; they temporarily suffer or sacrifice something of value to help someone else. They reason that their habitual acts of compassion will actually help the unhealthy person Y. Long story short, years pass, and unhealthy and abusive person Y becomes sober and thanks person X for staying the course. In this sense their acts of compassion helps not only themselves to become better person of character, but that they also help others to do the same. This may seem like normative hyperbole, but these scenarios happen all the time, as in the case of the McQueen. People sacrifice something temporal to rise to a higher level of virtues of character in the end and this seems like a more robust normative way of thinking. Think of it also this way, for the virtue ethicist it is not about who you marry, but what kind of spouse you will be. It is not about what kind of car you get, but what kind of driver you will be. It is not about where you will live, or what kind of house you will buy, but about what kind of neighbor you will be.

These examples home in on what kind of person you will be. In other words, you will be more focused on not just moral actions themselves, but also whether or not they make you a better person of character in the end. Similarly, it is not about what kind of technology the

corporate person is considering, but what kind of character would the corporate person have if they implemented a certain technology like 5G.

Specifically by using analogous reasoning above, we can also see this individual mapped onto our problem of 5G, by thinking that even if we allowed the current implementation of 5G technology by utilitarian and deontic standards, would it make us better people of character to have this technology? What is the rush? Why not sacrifice the immediate gratification of higher internet speeds and connectivity from 5G, for the long haul, of having more compassion on our environment, until 5G was known to be safer? Moreover, it does not seem consistent with a corporate person of good character to allow harmful EMFs associated with the implementation of 5G technology, when there are numerous studies and anecdotal evidence to suggest that this technology might be harmful to humans and the environment. It would be prudent of a corporate person of good character to temporarily suspend the implementation of 5G technology until a new threshold was met to ensure additional, credible, peer-reviewed, up-to-date scientific testing was done to demonstrate an attempt of the virtue of compassion towards the environment. This is type of sacrifice related to 5G is very similar to the example of McQueen's' sacrifice. In the end, it would make us better people of virtuous character. Specifically, it would make better corporate persons of virtuous character. This brings me to my next point, where I address the practical way in which one can use the moral reasoning of virtue ethics.

#### **4.2 – Corporations are Considered Persons**

In this section, I will make the connection to corporations considered legally as persons. This is important to a central question in my dissertation thesis. This is because once a telecommunications organization has corporate personhood, and can be treated legally as such, then one can, so to speak evaluate the corporate "character." This is relevant to my overall thesis because I would evaluate the top telecommunications corporate persons to see if their actions as



indicated by their overall character are consistent with the environmental safety promised by the 5G technology they are providing. This is important because in chapter one, I have provided evidence and reasons showing that this 5G technology causes harm to the environment and to the health of animals including humans.

Why corporations should be treated as persons has been widely known and established since the 1886 Supreme Court case *Santa Clara County v. Southern Pacific Railroad Co.* Some more pertinent details are:

Corporate personhood is the legal notion that a corporation, separately from its associated human beings (like owners, managers, or employees), has at least some of the legal rights and responsibilities enjoyed by natural persons. In the United States and most countries, corporations, as legal persons, have a right to enter into contracts with other parties and to sue or be sued in court in the same way as natural persons or unincorporated associations of persons. In a U.S. historical context, the phrase "corporate personhood" refers to the ongoing legal debate over the extent to which rights traditionally associated with natural persons should also be afforded to corporations.<sup>275</sup>

Telecommunications corporations are considered and treated as natural persons. Natural persons have character. Character consists of traits that are considered either admirable or not admirable. A collection of admirable character traits will collectively be considered good character. Thus, if a telecommunications "corporate person" has a collection of admirable character traits, then this person will have the reflection of good character. If we treat telecommunications corporations as persons, this is what we should naturally expect. Now that connection has been made, in the next section I will apply my neo-Aristotelian account of virtue ethics towards a

---

<sup>275</sup> "Corporate Personhood," in *Wikipedia*, November 3, 2020, [https://en.wikipedia.org/w/index.php?title=Corporate\\_personhood&oldid=986840481](https://en.wikipedia.org/w/index.php?title=Corporate_personhood&oldid=986840481).

telecommunications corporate character to see if we can solve the problem of harm towards the environment identified in chapter one.

### 4.3 – The Application of neo-Aristotelian Virtue Ethics: Resolving the Concern of 5G

The practical way in which one can use the moral reasoning of virtue ethics. In order to construct a moral argument—one that has an inferential chain of moral reasoning embedded within it—it is important to know that one must have at least one moral premise in the argument. Along with at least one *moral* premise, one needs at least one *non-moral* premise as well. This avoids the possible “is/ought” fallacy that Hume was famously known for.<sup>276</sup> Hume claimed that one could not have a *moral* conclusion derived solely from *non-moral* premises because it committed a category error if attributing the realm of the descriptive—the way the world *is* to the prescriptive—the way the world *ought to be*. This was important because he argued that stating strictly *non-moral* premises do not entail a *moral* conclusion. Thus, if the moral argument is structured the right way, the moral conclusion will be sound if the argument is valid and all of the premises are true.

There are a few ways to construct a moral argument that reasons with virtues and vices. One way of doing this is to see the example of Rosalind Hursthouse’s applied virtue ethics, where she demonstrates moral reasoning that emphasizes a serious vice, in her famous abortion example below:

#### SHALLOW ABORTION<sup>277</sup>

1. Aborting a pregnancy just so that one can carry on “having a good time” is shallow and immature.

---

<sup>276</sup> For original source see: Hume, David. Section 1. *A Treatise of Human Nature*. Book III, Part i, Section 1. See also, Bagini and Fosl, *The Ethics Toolkit*, 177.

<sup>277</sup> I’ll state to the reader that I am only using this to illustrate that one can reason clearly by using virtues, that are apart of one’s character. I also avoiding taking a side here with respect to soundness of the conclusion being offered. Once again, I am using this case to remind that reader of the famous case where she uses “applied virtue ethics” in attempts to solve a bioethics issue. Up until this point, virtue ethics was not well known for being used in applied ethics. So, in this sense, Hursthouse is a philosophical pathfinder for the rest of us applied virtue ethicists.

2. One should not act shallowly, especially with respect to something as important as the creation of a human life.
3. One should not act immaturely, especially with respect to something as important as the creation of a human life.
4. It is morally wrong to abort a pregnancy just so that one can carry on “having a good time.”

Notice that this argument focuses on a very specific type of action—namely, getting an abortion just for the sake of continuing “having a good time,” rather than on abortions in general. The argument doesn’t imply that it’s always shallow or immature to get an abortion or that abortion is always wrong. Instead, the argument focuses on performing a particular action for a particular reason. This is very common in arguments about virtues or vices, since an action done for one reason can reflect a very different set of character traits than the same action done for a different reason. Nor does SHALLOW ABORTION say that it is always morally forbidden to act shallowly or immaturely. Instead, the second and third premise emphasize that being shallow and immature is especially bad in this context because it involves something very serious—namely, the creation of a human life.<sup>278</sup>

Hursthouse’s example and explanation above is important because it provides an excellent template for one to construct a similar moral argument using her reasoning with a vice. For example, here is a moral argument that I will construct to see if an answer can be given concerning our earlier specific question of allowing the further implementation of 5G technology, by using the spirit of Hursthouse’s argument above:

*The Virtue Ethics 5G Moral Argument*

1. Implementing the rollout of 5G technology just so that a telecommunications corporation can carry on “making a good profit because of offering more bandwidth” is shallow and immature.
2. One should not act shallowly, especially with respect to something as important as the health and wealth fare of the environment.
3. One should not act immaturely, especially with respect to something as important as the health and wealth fare of the environment.

---

<sup>278</sup> Morrow, *Moral Reasoning*, 47.

4. It is morally wrong to allow the implementation of 5G technology just so that a telecommunications corporation can carry on “making a good profit because of offering more bandwidth”.

The reason this argument<sup>279</sup> is important is that it satisfies my ability to show you that I can provide an instance of moral reasoning grounded in avoiding a vice and pursuing a virtue. In addition to this argument above, I will provide yet another to emphasize the application of my neo-Aristotelian virtue ethics below. I will do this by choosing to apply the virtue of compassion that was given to us by Alfano above:

*Corporate neo-Aristotelian Virtue Ethics 5G Moral Argument*

1. A corporate person with good character should act out of the virtue of compassion, posing no intentional harm towards the environment (Chapter 3; Chapter 4.1 – 4.2).
2. Corporate person X, by installing 5G antennas in location Y, will pose specific harm to the environment by causing harm to various plants, trees, insects, wildlife in general, and damage to humans in many different forms (Chapter 1.3 – 1.6).
3. Therefore, corporate person X should act out of the virtue of compassion and not install 5G in location Y (local/global), until credible scientific research shows that this would not pose harm to the environment.

The extension of this conclusion is that it is modest. It does not argue in finality "not to install". It argues not to install "until" further credible scientific research has been conducted. This argument is important because it too resembles the scene from Cars above. For example, the telecommunication companies such as Verizon, Spring, T-Mobile, etc. could choose chose to embody the virtue of compassion and instead of winning the race right before them—continuing

---

<sup>279</sup> One could argue that I have stacked the analogy here. Is “having a good time” = to “making a profit on 5G”? What if the motivation is to provide a service, yes that people are willing to pay for, that advances our activities and quality of life? These are viable questions that would offer resistance to my argument, but I submit that I one could run a series of arguments that are better than this one. I only run this argument to highlight the pursuit of virtue over vice in moral reasoning. This can be done with many different examples.

the rollout of 5G technology and making a massive profit off of it. They could sacrifice the seeming immediate win and wait until the technology is safe towards the environment—pushing King across the victory line. This is a safer and more compassionate route. Moreover, this is what a corporate person with good character ought to do.

It is important to note here that there are many different forms or moral arguments that one can use to reason with consequences insofar as it captures the spirit of virtue ethics. I have just given one to show you what it would be like to do this, to make it more practical for the reader to understand.

This argument is important because it illustrates that the first premise as a *moral* claim, and the second premise is a *non-moral* claim. The moral claim is justified by normative virtue ethics framework demonstrated above (3; 4.1 – 4.2). This is the case insofar as it reasons using the *virtue* of an action. This argument is also important because it shows the weight of the first premise, which are *moral* in nature, which leads to an undesirable consequence of harm towards the environment. As previously mentioned, virtue ethics is in the business of reasoning solely with either pursuing a virtue or avoiding a vice or both. In other words, it seems obvious that it is not good or wrong to harm the environment on purpose when one can avoid doing so. Simply put, one should minimize harm to the environment as much as possible according to both of my arguments above. Furthermore, in chapter one, I have already given an enormous amount of statistical data to support the truthfulness of the second premise. So therefore, if one follows the inferential chain of reasoning from the first through second premises that the moral conclusion indeed follows.

It is here that I have given a sufficient answer to my original questions—the *general* and *specific*—back in Chapter 1, ought the corporate person allow this technology locally or even

globally or should this person resist its implementation until we know it is safe for the environment? I remind the reader that the corporate person X should act out of compassion and not install 5G in location Y (local/global), until credible scientific research shows that this would not pose harm to the environment. Thus, the answer to both the *general* and *specific* questions are no.

However, it seems as though something can be added to support my last and most significant argument above. More specifically, one can problem deeper into the first moral premises of the argument. I will do this in the next section. That is, I will probe deeper into a few telecommunications corporations to see what their current state of character actually is. That is, I will look for a specific trait of character that should be considerate towards the environment. This consideration is especially important since the 5G technology that these telecommunication corporate persons are providing cause significant harm.

#### **4.4 – The Character of the Corporate Persons: Correlating Values and Virtues**

In this section, I will make the connection between values of corporations and virtues of persons. I will justify the correlation of the two. This will be important to my overall defense of my dissertation thesis. This is because values are very important to corporations. More specifically, the values that a corporation holds are analogous to the embodied virtues of

persons.<sup>280</sup> Thus, corporate persons embody their values.<sup>281</sup> In fact, Robert Solomon, states this concept of mine very well, “Virtues are values turned into action”.<sup>282</sup> Applying the wisdom of his, we can see that when corporate persons embody their values, there are turning them into action. If these corporate persons do not embody their values, there is a disconnect. In other words, it is ideal for a corporation to have values that they stand by, but if they do not have actual strategic plans to implement these values—turn them into actions over the lifespan of their existence, they hold no weight. Once the corporation implements a particular value, they become virtues because they are then attributable to the character of that particular company. The reason this collection of values and virtues are significant to each particular corporate person is that this collection is what individuates them from any other corporate person. The reason that this is very important is that I am treating corporate persons as persons, and by doing this, I am concluding that persons act out of a possible set of virtues or vices. This is key because when one thinks of the various ways that character can be composed of a possible set of virtues, one wonders why certain corporations are distinctly different from one other, and similar some corporations are very similar to one another. This is because they have different values—ideal

---

<sup>280</sup> William K. Frankena in his *A Critique of Virtue-Based Ethical Systems*, defends a deontological duty-based ethic, and agrees with the virtue ethicist on the importance of traits (virtues), but argues that all of the virtues can be derived from principles. “Traits without principles are blind.” For every virtue there must be some possible action to which the virtue corresponds and from which it derives its virtuousness. For example, the virtue of truthfulness corresponds to the principle “Tell the truth,” and the virtue of being benevolent derives from the general principle to act beneficently. There is a close corresponding relationship between all of the virtues and all of the principles. In this sense, I happen to agree with Frankena here, in that it seems as though one could argue that the values that I am talking about with respect to corporate persons are themselves principles. These principles correlate to virtues of character. This is a very insightful relationship that Frankena put his finger on, and this important overlap between virtue ethics and deontology is also known as the *complementary thesis*. That is, virtue ethics can complement the normative theory of deontology and visa versa. Exploring this connection is outside of the scope of my dissertation, but is nonetheless important to note, for considering further possible exploration.

<sup>281</sup> From this point on, I may use these terms *virtues* and *values* interchangeably. To the point, if *values* are properties of corporations and corporations are considered persons, and persons have character composed of *virtues*, then by extension, *values* and *virtues* have overlap here and can mean essentially the same thing—have the same semantic range.

<sup>282</sup> Robert C. Solomon, *A Better Way to Think about Business: How Personal Integrity Leads to Corporate Success* (New York: Oxford University Press, 1999), 63.

virtues of persons that may overlap with corporation bodies. To see this, I will give a list of values from telecommunication corporate persons to see what kind of character traits they embody. That is, what kind of embodied virtues results from the values that they promote. This is important to my overall argument because I am treating these telecommunication corporations as persons. Persons should have a set of character traits that can be derived from their values. More simply, I will let the snapshots of take from their unique character speak for themselves. More specifically, these snapshots are their corporate values—virtues of character—from the companies who are engaged in 4 and 5G technologies. In other words, their corporate character will tell us what is important to them. Their character will show us how their actions are guided, how important their products are and why. In doing this, I will briefly consult Huawei, Verizon, Sprint, T-Mobile, and AT&T, as they are considered some of the top global telecommunications corporations that have already provided 4G and are currently implementing 5G technology. This will be done to provide a sketch, to justify my concern from the moral premise I have previously given in my *Corporate neo-Aristotelian Virtue Ethics 5G Moral Argument*.

Huawei’s character consists of these values that can be seen online. More specifically, this is called the “essence of Huawei”:

Core values are driving Huawei forward. By providing employees with a clear direction and a sense of ownership, they are key to understanding the rise of Huawei in recent years and decades. Huawei founder Ren Zhengfei puts it as follows: “The essence of Huawei’s culture can be described with one word: **integrity**. As our most valuable intangible asset, integrity is the key to our survival and the source of individual and corporate growth.” At Huawei, our customers always come first. Huawei can only exist thanks to its customers. Logically, **customer centricity** is the goal. We achieve this goal through **inspiring dedication**. Dedication can be achieved through **perseverance**, i.e. maintaining course when the going gets tough, and not losing sight of strategic objectives, even if short-term obstacles come along. **Growth by reflection** refers to employing wisdom accumulated through experience (sharing) and thinking,



positively impacting on the other core values. As a truly international company, Huawei values **openness** as a key factor for continued success.<sup>283</sup>

Thus, Huawei's six values are very straightforward here. They are integrity, customer centricity, inspiring dedication, perseverance, growth by reflection, and openness. These six values are what is important to them. They are principles that motivate them. It is a reflection of the way they want the world to be, with respect to their telecommunication products. Thus, these six values are virtuous character traits that they want their employees to embody. Notice what is lacking from their attributes of character though. They do not mention anything that is sensitive towards protecting the environment. This is significant because they have promoted 4G and are currently promoting the implementation of 5G technology. This kind of technology has an impact on the environment and should be of concern to all customers. Next, I will state the character traits from Verizon.

Verizon's character consist of these values that can be seen online from their formal document *Living Our Values: Verizon Corporate Responsibility Report 2005*. In this report their values are as follows:

**Integrity:** Integrity is at the heart of everything we do. We are honest, ethical, and upfront because trust is at the foundation of our relationships with our customers, our communities, our stakeholders and each other.

**Accountability:** We take responsibility for our actions as individuals, as team members, and as an organization. We work together, support one another and never let the customer—or our co-workers—down.

---

<sup>283</sup> "Our Core Values," Huawei, accessed November 17, 2020, <https://huawei.eu/who-we-are/our-core-values>.

Respect: We know it is critical that we respect everyone at every level of our business. We champion diversity, embrace individuality and listen carefully when others speak.

Performance Excellence: We hold ourselves to a very high standard of performance. We prize innovative ideas and the teamwork it takes to make them realities. We never stop asking ourselves how we can make the customer experience better, and every day, we find an answer.<sup>284</sup>

Thus, Verizon's four values are very straightforward here. They are integrity, accountability respect, and performance excellence. These four values are what is important to them. They are principles that motivate them. It is a reflection of the way they want the world to be, with respect to their telecommunication products. Thus, these four values are virtuous character traits that they want their employees to embody. Notice what is lacking from their attributes of character though. They do not mention anything that is sensitive towards protecting the environment. This is significant because they have promoted 4G and are currently promoting the implementation of 5G technology. This kind of technology has an impact on the environment and should be of concern to all customers. Next, I will state the character traits from T-Mobile and Sprint. I will mention these two together because as of April 20, 2020, Sprint was bought out by T-Mobile.<sup>285</sup>

T-Mobile's character consists of the values of diversity and inclusion. This is stated on their website, "T-Mobile is a values-driven company that believes in diversity and inclusion for our people, our customers, and the communities we serve – and we are putting action behind our

---

<sup>284</sup> "Code of Conduct and Credo," accessed November 17, 2020, <https://www.verizon.com/about/our-company/code-conduct>.

<sup>285</sup> "About Us | Sprint Newsroom," accessed November 17, 2020, <https://newsroom.sprint.com/about-us/>.

words.”<sup>286</sup> Thus, T-Mobile’s two values are very straightforward here. These two values are what is important to them. They are principles that motivate them. It is a reflection of the way they want the world to be, with respect to their telecommunication products. Thus, these two values are virtuous character traits that they want their employees to embody. Notice what is lacking from their attributes of character though. They do not mention anything that is sensitive towards protecting the environment. This is significant because they have promoted 4G and are currently promoting the implementation of 5G technology. This kind of technology has an impact on the environment and should be of concern to all customers.

It is also worth mentioning that I could not find any clear vision, mission statement or even their values on their website. Moreover, it was very difficult to find the two values that I eventually found. The important point behind this is that it is hard to know exactly what the corporate character is from T-Mobile, as two values—embodied virtues seem very minimal to meet the qualifications of a person’s character. Next, I will state the character traits from AT&T. AT&T’s character consists of eight values, which can be seen online. I will list their eight values below. Again, I will do this to be consistent with the other telecommunication corporations that I have listed above. Here are AT&T’s corporate values:

Live true. Do the right thing, no compromise. This underpins all our other values, and it begins with how we treat our customers and each other. None of us is perfect. But when we make a mistake, we have the character and courage to make it right and learn from it.

Think big. Innovate and get there first. AT&T is where people come to invent the future. That’s been our legacy since the very beginning. In everything we do, we aim to set the pace for everyone else.

---

<sup>286</sup> “Career Diversity | Join the Un-Carrier | T-Mobile,” accessed November 17, 2020, <https://www.t-mobile.com/careers/culture-and-benefits/diversity>.

Pursue excellence. In everything, every time. We work tirelessly to make sure that everything we deliver represents our very best. We may not be perfect, but we always learn from our experiences and constantly improve.

Inspire imagination. Give people what they don't expect. Each day is an opportunity to create something that changes the way people see the world. And no one does that better than AT&T, from the stories created by Warner Media and throughout every other part of our company. We deliver the unexpected.

Be there. When customers & colleagues need you most. That's when we're at our best. Whether it's restoring service during a natural disaster, helping a community recover from hardship or reporting the news from dangerous locations, our people rise to the occasion.

Stand for equality. Speak with your actions. Whatever a person's race, ethnicity, gender, sexual orientation, religion, physical ability or other characteristic, we respect and value them. We know that building a greater understanding of our differences makes us stronger.

Embrace freedom. Press, speech, beliefs. Free speech, a free press and freedom of beliefs are vital to a healthy democracy. That's why we commit our full weight and resources to support our reporters wherever they operate.

Make a difference. Impact your world. This defines who we are, both as a company and as individuals. We can each make a difference in our communities and for the people around us.<sup>287</sup>

Thus, AT&T's eight values are very straightforward here. They are living true, thinking big, and pursuing excellence, inspiring imagination, being there, standing for equality, embracing freedom, and making a difference. These eight values are what is important to them. They are principles that motivate them. It is a reflection of the way they want the world to be, with respect to their telecommunication products. Thus, these four values are virtuous character traits that they want their employees to embody. Notice what is lacking from their attributes of character though. They do not mention anything that is sensitive towards protecting the environment. Again, this is significant because they have promoted 4G and are currently promoting the implementation of 5G technology. This kind of technology has an impact on the

---

<sup>287</sup> "AT&T Core Company Values," accessed November 17, 2020, <https://about.att.com/pages/values>.

environment and should be of concern to all customers. Now I will summarize the results of my search for instances of corporate character amongst some of the top telecommunications corporations.

I have shown that the character attributes—embodied virtues—from the corporate values of Huawei, Verizon, T-Mobile (Sprint), and AT&T are all missing something of significant importance to my overall thesis. They are all missing character virtues that are sensitive towards protecting the environment. In fact, these corporate persons make no mention of the environment in their values at all. Again, this is significant because they have promoted 4G and are currently promoting the implementation of 5G technology. If they are currently releasing the telecommunications product that can potentially harm the environment (1.3 – 1.6) even more than 4G, then how are we to know that this is safe for us? In other words, an impression of their character, based upon the virtues they have given us, do not lead us to any sort of confidence with respect to their 5G product.

With no clear answer to this question, another question arises. Do these telecommunications corporate persons have a character defect? In other words, because they do not have the virtue of compassion towards the environment, is this considered a vice of character? Does this further suggest that they all have a vicious character? The swift answer to this is probably not, but the reason I highlight this aspect of character is because it brings into focus what traits of character are important to corporate persons. In other words, the traits that define a unique corporate character will individuate them from another corporate character that is separate and distinct.

Again, if we are to treat corporations as persons, we can evaluate their current state of character. This is because all persons have character, and character is of moral value. This

moral value has very significant implications of right and wrong actions, and good and bad character. If we can evaluate their current state of character and see no regard for the environment, we are left with the troubling justification in the first two premises of my *Corporate neoAristotelian Virtue Ethics 5G Moral Argument* above. Therefore, it is the final position of this chapter is that these corporate persons should act out of virtue? and not install 5G in location Y (local/global), until credible scientific research shows that this would not pose harm to the environment. This particular corporate person may at this point require character recalibration at this point. This simply means that if they lack a virtue of character—an embodied corporate value—they simply add it to their corporate character. This also means that they not only make it public knowledge to their shareholders—add it as a value to their websites—but they actively pursue this virtue until it is habituation into their teams member’s behaviors. In other words, it is not enough just to say that corporate persons *have* a particular set of virtues, but it also needs evidence that they in fact have long term strategy of implementing this virtue in their workforce. Otherwise, this potential virtue is devoid of its meaning.

A telecommunications corporate character can achieve this *environmental sensitivity* by simply included this new virtue—adding a new value to their corporate character. They could even enforce this new virtue of character by providing some sort of technology—RF and/or EMF measuring device—to the customer to be able to detect how much exposure they are receiving from their wireless devices. This service could be an independent third-party service for the sake of transparency. This or include this device or even the possibility of purchasing this technology in alignment with the support of a third-party corporation that could provide this to them.

For example, telecommunications corporate character X is such that it can provide assistance to concerned customer Y by offering this optional service. This would increase profit

to the telecommunications corporation and also adhere to the new virtue—embodied value—of environmental sensitivity while reconsidering the rollout of 5G technology. Again, this is extra work for the character of the corporation, but that is the point of virtue ethics. It is the constantly develop better character. Recall that in chapter three this longitudinal or temporal aspect of a person’s character is such that any particular action is not committed in a vacuum. Instead, any and all particular actions, including the pursuit of virtuous character, is seen over the lifetime of the corporate person. Recall, this was just one of the robust features that justifies the appeal over a person-based normative ethics (Chapter 3) over an action-based normative ethics (Chapter 2).

This development of good character would increase the trust between the telecommunications corporations and the customer. This would not only be significant with regards to the 5G technology this chapter is concerned with but for all products that any and all corporate characters are concerned with. In other words, if any corporate person would take consider and adopt the framework for virtue ethics, they would be more concerned with the question of, does this make me a better person, instead of just having their focus on, “can I take this action on releasing this product”? The former is more robust and much more considerate of the customer and the environment than the latter. Just imagine the impact this could have to the profit of a particular telecommunications corporation, such that if they made a standby including this new virtue of *environmental sensitivity*<sup>288</sup> by waiting for the safe implantation of the 5G technology. For example, instead of being the first telecommunications company to release 5G, how about being the first corporation to release *safe* 5G technology. Moreover, this *safe* release

---

<sup>288</sup> Note that this exact term may not be necessary as other terminology can be used to represent the same meaning. For example, one could use *community sensitivity*, *community safety awareness*, *environmental safety approved*, etc. There are many ways this can be fleshed out depending on the target audience and marketability of the product that corporate person X is advertising.

of 5G technology would result from a good corporate character that is concerned about the environmental impact of their 5G product. Next, I will demonstrate that my dissertation thesis has very practical implications in the business world. In other words, the active pursuit of good corporate character does not entail that this normative ethic is only related to the specific topic of 5G technology.

Take for example the international corporate person of Lush. “Lush is a cosmetics retailer headquartered in Poole, Dorset, United Kingdom, founded by Mark Constantine and Liz Weir. It produces and sells creams, soaps, shampoos, shower gels, lotions, moisturizers, scrubs, masks and other cosmetics for the face, hair, and body using only vegetarian recipes...”<sup>289</sup> One very particular virtue—embodied value—they adhere to is *ethical buying*. This is where they source the best, safest and most sustainable ingredients possible... We believe that every ingredient we buy should have a positive impact on the community from which it is harvested. Buying from small-scale producer groups gives us the opportunity to drive positive change, encourage sustainability and form long-lasting relationships with people all over the world.”<sup>290</sup> In other words, it is clear from this value that they are concerned about the *safety* of their products, which extends to their compassion to their community, or environment at large.

It is important here to note that I am not advertising for Lush in any way or promoting their products. I am not even suggesting that they are actually successful in implementing this virtue—embodied value—in their workforce. I am simply providing an instance of evidence of a company who actually states that they are pursuing this virtue of character. The reason this is important is that they seem to be actively concerned about the environment because you can see

---

<sup>289</sup> “Lush (Company),” in *Wikipedia*, November 18, 2020, [https://en.wikipedia.org/w/index.php?title=Lush\\_\(company\)&oldid=989384006](https://en.wikipedia.org/w/index.php?title=Lush_(company)&oldid=989384006).

<sup>290</sup> “Ethical Buying | Lush Fresh Handmade Cosmetics,” accessed November 24, 2020, [https://www.lushusa.com/stories/article\\_our-values-ethical-buying.html](https://www.lushusa.com/stories/article_our-values-ethical-buying.html).



this particular virtue reflected in the character of their corporate person. Also, and this is unique to my dissertation efforts, they are pursuing a neo-Aristotelian person-based normative ethics, whether they are aware of this or not. This is because they seem to be pursuing the virtue of *compassion* towards the environment. This virtue would be between the vice of deficiency—not enough compassion or lack thereof—and the vice of excess—too much compassion at the expense of the corporation. Moreover, they have claimed to want a positive impact on the community. This reflects Aristotle’s concept of *eudaimonia*, which translates to well-being or flourishing. Recall that this means that what is good for the community—environment is good for the citizen—person, and vice versa. This means that when corporate person such as this pursue this virtue of character, it will have a positive cyclical impact on the community at large, and all persons in it. Once again, I am showing you how my neo-Aristotelian applied ethics works practical in the world around you. It is not necessarily some lofty normative ideal that is unreachable. It is very practical and can be easily implemented into the character of any corporate person.

This example from Lush above is important because it is an example of what any and all telecommunications corporate characters could do as well. All it takes at this point is the *character recalibration* of the particular telecommunications corporate persons mentioned above. This indeed requires a choice though. More simply, this requires a well thought out decision on whether or not a corporation wants to participate in person-based normative aspect of *character recalibration*. I repeat, instead of being the first telecommunications company to release 5G, how about being the first corporation to release *safe* 5G technology. Moreover, this *safe* release of 5G technology would result from a good corporate character that is concerned about the environmental impact of their 5G product.

## **The Corporate Eudaimonistic Conclusion to the Problem of 5G**

We began our inquiry by identifying a past and current problem in environmental ethics that stemmed from the development of communication technology. This problem dealt with Electromagnetic Frequencies (EMFs) that are inextricably linked to the development of telecommunication technology of 5G. More specifically I demonstrated that these EMFs caused harm to various members of the animal kingdom, such as bees—killing them and also harm to humans—sperm reduction in males, breast cancer in females, and brain cancer in males and females. Therefore, I brought into focus the nature of this harm by using four primary examples—interference with homing mechanisms in bees, leading to their death, trees and plants, wildlife in general, and physical damage to humans, leading to sub-par functioning or to cancer. Understanding this potential harm helped the reader appreciate and properly grasp the problem at hand. After the reader properly grasped the problem at hand, I then provided a solution to this environmental problem in the form of virtue ethics. Finally, I applied this neo-Aristotelian virtue ethics normative solution to the telecommunications corporate character for a resolution.

In chapter one, I provided a detailed discussion of the current invisible environmental concern of 4G we have now and the imminent future technology of 5G. The primary purpose of that was so that the reader could properly grasp the concern we now have with EMFs under the technology of 4G, and the even greater potential problems of EMFs we will have under 5G, namely that they have been causing physical damage to the insect, plant, animal, and human kingdoms—this harm was the focus of my attention. I will give a brief recap on my methodology below.

In chapter two, I presented the action-based theories of Utilitarianism and Deontology. In Utilitarianism, grounding morality deals solely with the consequences of an action. Then, in the spirit of charity, I will offered very concise ways that the utilitarians and deontologists could reason morally with regards to the 5G problem in that chapter. However, both of these theories were not without problems because there was something significant missing that was needed. What was missing was the person and the concept of character.

In chapter three, I defended virtue ethics over the action based normative views that we saw in chapter two. I also defended my specific view of neo-Aristotelian virtue ethics that stressed the temporal aspect of character over one's lifetime and specified the work that my version of virtue ethics was supposed to do—I provided a practical model showing one how to use moral reasoning in virtue ethics.

In chapter four, the application of my neo-Aristotelian virtue ethics was applied to the problem of 5G with respect to the telecommunications corporate character. This was done by using analogous reasoning—from the examples of the character of individuals that was extended to the character of corporate persons. In doing this, I stressed the importance the importance of virtue ethics. More specially, I evaluated the corporate character of some of the top telecommunications persons that currently are implementing 5G technology by assessing their values. These values I made synonymous with the virtues of their character. This was especially because this normative theory stresses how a corporate person can not only properly flourish, but also make more virtuous decisions regarding the problem of 5G technology and the EMF harm it has on the environment.

In the end, this investigation provided a solid and more robust framework to answer two main questions that I set out to investigate. The more *general* question was, ought we allow this

technology locally or globally, or should we resist its implementation until we know it is safe for the environment? My answer to this was that we should resist its implementation until we know it is safe for the environment. Then I will answered the more specific question related to particular telecommunications corporate characters, ought any telecommunications corporate character allow this technology locally or even globally or should they resist its implementation until we know it is safe for the environment? Additionally, my answer to this was that one should we resist its implementation until we know it is safe for the environment.

There are harmful EMFs associated with the implementation of 5G technology, when there are numerous studies and anecdotal evidence to suggest that this technology might be harmful to humans and the environment. Telecommunication corporations with good character ought to consider character when making decisions about whether to introduce new technologies—in this case, the EMFs that accompany 4G and 5G—into the world. Any telecommunications corporate person with good character should not be implemented until the technology is shown to be acceptably safe, a threshold that has not been met. Moreover, I have argued that it would be prudent of a corporate person of good character to temporarily suspend the implementation of 5G technology until a new threshold was met to ensure additional, credible, peer-reviewed, up-to-date scientific testing was done to demonstrate an attempt of the virtue of compassion towards the environment.

Finally, my conclusion was that I have successfully argued for my thesis that my neo-Aristotelian account of Virtues Ethic, using character (chapter 3), is more robust than its rival normative theories deontology and utilitarianism (chapter 2) and that it is also practical in that a compassionate corporate person can act towards the environment using practical moral reasoning

with its foundation in virtues (chapter 4) towards an environmental issue such as 5G technology and the harmful EMFs that are associated with it (chapter 1).

## Bibliography

- “5G Cell Towers - What They Are, How They Work, and Why It Matters.” 2019. EMF Academy (blog). August 6, 2019. <https://emfacademy.com/5g-cell-towers/>.
- “5G Mobile Networks and Health.” n.d. Accessed March 25, 2020. <https://www.who.int/news-room/q-a-detail/5g-mobile-networks-and-health>.
- “(20) Untested 5G Wireless Coming To The United States. You Have No Control Over Where The Antennas Are - YouTube.” n.d. Accessed September 14, 2019. [https://www.youtube.com/watch?v=l43\\_b8oEmzM](https://www.youtube.com/watch?v=l43_b8oEmzM).
- “404.” n.d. Accessed March 31, 2020. <https://www.who.int/peh-emf/project/en/emfproject@who.int>.
- “404 Not Found | Tri City Times.” n.d. Accessed April 9, 2020. <https://tricitytimes-online.com/Articles-News-i-2014-04-02-218015.112113-Oh-mywhats-in-WiFi.html>.
- “1973 A Study of Prisoners and Guards, Naval Research Reviews.Pdf.” n.d.
- “2005-Verizon-Corporate-Responsibility-Supplement.Pdf.” n.d. Accessed November 17, 2020. <https://www.verizon.com/about/sites/default/files/2005-verizon-corporate-responsibility-supplement.pdf>.
- “A Case Against Microwave Science.” 2017. Natural Blaze. February 19, 2017. <https://www.naturalblaze.com/2017/02/a-case-against-microwave-science.html>.
- “About NCI - Overview and Mission.” 2015. CgvArticle. National Cancer Institute. Nciglobal,ncienterprise. March 18, 2015. <https://www.cancer.gov/about-nci/overview>.
- “About the FCC.” n.d. Federal Communications Commission. Accessed March 31, 2020. <https://www.fcc.gov/about/overview>.

“About Us | Sprint Newsroom.” n.d. Accessed November 17, 2020.

<https://newsroom.sprint.com/about-us/>.

“Abu Ghraib Torture and Prisoner Abuse.” 2016. In Wikipedia, the Free Encyclopedia.

[https://en.wikipedia.org/w/index.php?title=Abu\\_Ghraib\\_torture\\_and\\_prisoner\\_abuse&oldid=706906961](https://en.wikipedia.org/w/index.php?title=Abu_Ghraib_torture_and_prisoner_abuse&oldid=706906961).

“Active Denial System.” 2020a. In Wikipedia.

[https://en.wikipedia.org/w/index.php?title=Active\\_Denial\\_System&oldid=934647337](https://en.wikipedia.org/w/index.php?title=Active_Denial_System&oldid=934647337).

“———.” 2020b. In Wikipedia.

[https://en.wikipedia.org/w/index.php?title=Active\\_Denial\\_System&oldid=934647337](https://en.wikipedia.org/w/index.php?title=Active_Denial_System&oldid=934647337).

admin. 2018. “Cancers in the head and neck are increasing in Sweden.” Strålskyddsstiftelsen

(blog). January 10, 2018. <https://www.stralskyddsstiftelsen.se/2018/01/cancers-in-the-head-and-neck-are-increasing-in-sweden/>.

“Agents Classified by the IARC Monographs, Volumes 1–125 – IARC Monographs on the Identification of Carcinogenic Hazards to Humans.” n.d. Accessed March 31, 2020.

<https://monographs.iarc.fr/agents-classified-by-the-iarc/>.

Alfano, Mark, and Don Loeb. 2016. “Experimental Moral Philosophy.” In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta, Spring 2016.

<http://plato.stanford.edu/archives/spr2016/entries/experimental-moral/>.

Annas, Julia. 2004. “Being Virtuous and Doing the Right Thing.” *Proceedings and*

*Addresses of the American Philosophical Association* 78 (2): 61.

<https://doi.org/10.2307/3219725>.

Anscombe, G E M. n.d. “Modern Moral Philosophy,” 20.

- Appiah, Kwame Anthony. 2009. *Experiments in Ethics*. 1. Harvard Univ. Press paperback ed. The Mary Flexner Lectures. Cambridge, Mass.: Harvard Univ. Press.
- Aristotle, and Terence Irwin. 1999. *Nicomachean Ethics*. 2nd ed. Indianapolis, Ind: Hackett Pub. Co.
- Aristotle, H. Rackham, Aristotle, and Aristotle. 1934. *The Nicomachean Ethics*. Second edition. Loeb Classical Library 73. Cambridge, Massachusetts: Harvard University Press.
- Atasoy, Halil I., Mehmet Y. Gunal, Pinar Atasoy, Serenay Elgun, and Guler Bugdayci. 2013. "Immunohistopathologic Demonstration of Deleterious Effects on Growing Rat Testes of Radiofrequency Waves Emitted from Conventional Wi-Fi Devices." *Journal of Pediatric Urology* 9 (2): 223–29. <https://doi.org/10.1016/j.jpuro.2012.02.015>.
- "AT&T Core Company Values." n.d. Accessed November 17, 2020. <https://about.att.com/pages/values>.
- Austin, Michael W., ed. 2013. *Virtues in Action: New Essays in Applied Virtue Ethics*. New York: Palgrave Macmillan.
- Avendaño, Conrado, Ariela Mata, César A. Sanchez Sarmiento, and Gustavo F. Doncel. 2012. "Use of Laptop Computers Connected to Internet through Wi-Fi Decreases Human Sperm Motility and Increases Sperm DNA Fragmentation." *Fertility and Sterility* 97 (1): 39-45.e2. <https://doi.org/10.1016/j.fertnstert.2011.10.012>.
- Baes, Fred. n.d. "Hps.Org." Health Physics Society. Accessed April 6, 2020. <http://hps.org/>.
- Baggini, Julian, and Peter S. Fosl. 2007. *The Ethics Toolkit: A Compendium of Ethical Concepts and Methods*. Malden, MA ; Oxford: Blackwell Pub.



- Balmori, Alfonso. 2014. "Electrosmog and Species Conservation." *The Science of the Total Environment* 496 (October): 314–16. <https://doi.org/10.1016/j.scitotenv.2014.07.061>.
- . 2015a. "Anthropogenic Radiofrequency Electromagnetic Fields as an Emerging Threat to Wildlife Orientation." *The Science of the Total Environment* 518–519 (June): 58–60. <https://doi.org/10.1016/j.scitotenv.2015.02.077>.
- . 2015b. "Anthropogenic Radiofrequency Electromagnetic Fields as an Emerging Threat to Wildlife Orientation." *Science of The Total Environment* 518–519 (June): 58–60. <https://doi.org/10.1016/j.scitotenv.2015.02.077>.
- Barry, John. 1999. *Rethinking Green Politics: Nature, Virtue and Progress*. SAGE.
- Bentham, Jeremy. *An Introduction to the Principles of Morals and Legislation* (1789), Ch. 1.
- "Beekeeping Benedictine Brother Noted for His Kindness, Faith." 2018. *San Diego Union-Tribune*. August 26, 2018. <https://www.sandiegouniontribune.com/communities/north-county/sd-no-obituary-brother-blaise-heuke-20180822-story.html>.
- "Bees for Hire: California Almonds Become Migratory Colonies' Biggest Task | The Bill Lane Center for the American West." n.d. Accessed March 19, 2020. <https://west.stanford.edu/news/blogs/and-the-west-blog/2018/bees-for-hire-california-almonds-now-are-migratory-colonies-biggest-task>.
- Benson, Victoria S., Kirstin Pirie, Joachim Schüz, Gillian K. Reeves, Valerie Beral, Jane Green, and Million Women Study Collaborators. 2013. "Mobile Phone Use and Risk of Brain Neoplasms and Other Cancers: Prospective Study." *International Journal of Epidemiology* 42 (3): 792–802. <https://doi.org/10.1093/ije/dyt072>.
- Berkowitz, Leonard. 1977. *Advances in Experimental Social Psychology*.

- Besser-Jones, Lorraine, and Michael Slote, eds. 2015. *The Routledge Companion to Virtue Ethics*. Routledge Philosophy Companions. New York: Routledge, Taylor & Francis Group.
- Birks, Laura, Mònica Guxens, Eleni Papadopoulou, Jan Alexander, Ferran Ballester, Marisa Estarlich, Mara Gallastegi, et al. 2017. "Maternal Cell Phone Use during Pregnancy and Child Behavioral Problems in Five Birth Cohorts." *Environment International* 104 (July): 122–31. <https://doi.org/10.1016/j.envint.2017.03.024>.
- Bishop, Sophy, November 18, and 2011. n.d. "At Center for Ethics Event, Cell Phone Radiation and Institutional Corruption Addressed (Video)." *Harvard Law Today*. Accessed September 14, 2019. <https://today.law.harvard.edu/at-center-for-ethics-event-cell-phone-radiation-and-institutional-corruption-addressed-video/>.
- Blum, Ben. 2019. "The Lifespan of a Lie." *Medium*. September 6, 2019. <https://gen.medium.com/the-lifespan-of-a-lie-d869212b1f62>.
- Blum, Lawrence. 2003. Review of *Review of Lack of Character: Personality and Moral Behavior*, by John M. Doris, August. <http://ndpr.nd.edu/news/23601-lack-of-character-personality-and-moral-behavior/>.
- Brennan, Andrew, and Yeuk-Sze Lo. 2016. "Environmental Ethics." In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta, Winter 2016. Metaphysics Research Lab, Stanford University. <https://plato.stanford.edu/archives/win2016/entries/ethics-environmental/>.
- Cahn, Steven M., and Peter J. Markie, eds. 2016. *Ethics: History, Theory, and Contemporary Issues*. SIXTH EDITION. New York: Oxford University Press.

- “California: Bill to Ease Permits for Cell Phone Towers Could Affect Health.” 2017. The Mercury News (blog). September 1, 2017.  
<https://www.mercurynews.com/2017/08/31/california-bill-to-ease-permits-for-cellular-antennas-could-impact-health/>.
- “California SB649 | 2017-2018 | Regular Session.” n.d. LegiScan. Accessed April 8, 2020.  
<https://legiscan.com/CA/text/SB649/id/1649689>.
- “Career Diversity | Join the Un-Carrier | T-Mobile.” n.d. Accessed November 17, 2020.  
<https://www.t-mobile.com/careers/culture-and-benefits/diversity>.
- “Cell Phone Radiation: GSM 08013.” n.d. Accessed March 25, 2020.  
[https://ntp.niehs.nih.gov/whatwestudy/testpgm/status/ts-08013.html?utm\\_source=direct&utm\\_medium=prod&utm\\_campaign=ntpgolinks&utm\\_term=ts-08013](https://ntp.niehs.nih.gov/whatwestudy/testpgm/status/ts-08013.html?utm_source=direct&utm_medium=prod&utm_campaign=ntpgolinks&utm_term=ts-08013).
- “Cell Phone Radio Frequency Radiation.” n.d. National Institute of Environmental Health Sciences. Accessed March 25, 2020.  
<https://www.niehs.nih.gov/health/topics/agents/cellphones/index.cfm>.
- “Cell Phones and Breast Cancer.” n.d. Environmental Health Trust (blog). Accessed April 15, 2020. <https://ehtrust.org/key-issues/cell-phoneswireless/cell-phones-and-breast-cancer/>.
- “Cellphone Radio Frequency Radiation Studies.” n.d., 4.
- “Chapter 8 - The Relations of Intelligence, Age, and School Status to Deception. .Pdf.” n.d.
- “China Is Launching Its 5G Network Ahead of Schedule and on a Spectrum the U.S. Can’t Yet Match.” n.d. Fortune. Accessed March 23, 2020.  
<https://fortune.com/2019/10/31/china-5g-rollout-spectrum/>.

“China’s New Long-Range Weapon Causes Non-Lethal Pain From Afar | Popular Science.”

n.d. Accessed April 22, 2020. <https://www.popsci.com/chinas-got-pain-beam/>.

Cho, Yong Min, Hee Jin Lim, Hoon Jang, Kyunghee Kim, Jae Wook Choi, Chol Shin, Seung Ku Lee, Jong Hwa Kwon, and Nam Kim. 2016. “A Cross-Sectional Study of the Association between Mobile Phone Use and Symptoms of Ill Health.” *Environmental Health and Toxicology* 31: e2016022. <https://doi.org/10.5620/eht.e2016022>.

“Cia-Millimeter-Waves-1.Pdf.” n.d.

“Code of Conduct and Credo.” n.d. Accessed November 17, 2020.

<https://www.verizon.com/about/our-company/code-conduct>.

Columbia University, Teachers College, Hugh Hartshorne, Mark A May, Julius Bernard Maller, Frank K Shuttleworth, and Institute of Social and Religious Research. 1928. *Studies in the Nature of Character*. New York: The Macmillan Company.

Contributor, G. G. 2015. “HEALTH ISSUES | Save the Girls. Make the Bra a No-Phone Zone.” *TheGreenGazette* (blog). April 15, 2015. <http://www.thegreengazette.ca/health-issues-save-the-girls-make-the-bra-a-no-phone-zone/>.

Cornyn, John. 2020. “Amendments - S.893 - 116th Congress (2019-2020): Secure 5G and Beyond Act of 2020.” Webpage. 2019/2020. March 23, 2020.

<https://www.congress.gov/bill/116th-congress/senate-bill/893/amendments>.

“Corporate Personhood.” 2020. In Wikipedia.

[https://en.wikipedia.org/w/index.php?title=Corporate\\_personhood&oldid=986840481](https://en.wikipedia.org/w/index.php?title=Corporate_personhood&oldid=986840481).

Cucurachi, S., W. L. M. Tamis, M. G. Vijver, W. J. G. M. Peijnenburg, J. F. B. Bolte, and G. R. de Snoo. 2013. “A Review of the Ecological Effects of Radiofrequency

Electromagnetic Fields (RF-EMF).” *Environment International* 51 (January): 116–40.  
<https://doi.org/10.1016/j.envint.2012.10.009>.

Darley, John M., and C. Daniel Batson. 1973. “‘From Jerusalem to Jericho’: A Study of Situational and Dispositional Variables in Helping Behavior.” *Journal of Personality and Social Psychology* 27 (1): 100.

“Daydream.” n.d. Accessed April 21, 2020. <https://arvr.google.com/daydream/>.

De Luca, Chiara, Jeffrey Chung Sheun Thai, Desanka Raskovic, Eleonora Cesareo, Daniela Caccamo, Arseny Trukhanov, and Liudmila Korkina. 2014. “Metabolic and Genetic Screening of Electromagnetic Hypersensitive Subjects as a Feasible Tool for Diagnostics and Intervention.” Research article. *Mediators of Inflammation*. 2014.  
<https://doi.org/10.1155/2014/924184>.

“Deceit as an Object of Study.Pdf.” n.d.

“Devra Davis PhD, MPH Letter to Assembly Chair Aguiar-Curry in Opposition To California SB 649 Small Cell Wireless Facilities.” 2017. Environmental Health Trust (blog). June 30, 2017. <https://ehtrust.org/opposition-sb-649-small-cell-wireless-facilities/>.

Divan, Hozefa A., Leeka Kheifets, Carsten Obel, and Jørn Olsen. 2008. “Prenatal and Postnatal Exposure to Cell Phone Use and Behavioral Problems in Children.” *Epidemiology (Cambridge, Mass.)* 19 (4): 523–29.  
<https://doi.org/10.1097/EDE.0b013e318175dd47>.

———. 2012. “Cell Phone Use and Behavioural Problems in Young Children.” *Journal of Epidemiology and Community Health* 66 (6): 524–29.  
<https://doi.org/10.1136/jech.2010.115402>.

“Document Display | NEPIS | US EPA.” n.d. Accessed March 26, 2020.

<https://nepis.epa.gov/Exe/ZyNET.exe/000005EP.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1991+Thru+1994&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C91thru94%5CTxt%5C00000002%5C000005EP.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL.>

“Does EPA Handle All Environmental Concerns?” n.d. Environmental Knowledgebase.

Accessed March 26, 2020. <http://publicaccess.zendesk.com/hc/en-us/articles/212071687-Does-EPA-handle-all-environmental-concerns->.

Doris, John M. 2002. *Lack of Character: Personality and Moral Behavior*. Cambridge, U.K. ; New York: Cambridge University Press.

“Dr. Devra Davis.” n.d. Environmental Health Trust (blog). Accessed April 2, 2020.

<https://ehtrust.org/about/dr-devra-davis/>.

Dürrenberger, Gregor. n.d. “Electromagnetic Fields, Science and Policy,” 48.

“Economic Value Of Insect Pollination Worldwide Estimated At U.S. \$217 Billion.” n.d.

ScienceDaily. Accessed March 19, 2020.

<https://www.sciencedaily.com/releases/2008/09/080915122725.htm>.

“Electromagnetic Fields and Cancer.” 2019. CgvArticle. National Cancer Institute.

Nciglobal,ncienterprise. January 7, 2019. <https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet>.

“Electromagnetic Fields and Public Health: Mobile Phones.” n.d. Accessed January 23, 2020. <https://www.who.int/news-room/fact-sheets/detail/electromagnetic-fields-and-public-health-mobile-phones>.

“Electromagnetic Radiation.” 2013. Chemistry LibreTexts. October 2, 2013.

[https://chem.libretexts.org/Bookshelves/Physical\\_and\\_Theoretical\\_Chemistry\\_Textbook\\_Maps/Supplemental\\_Modules\\_\(Physical\\_and\\_Theoretical\\_Chemistry\)/Spectroscopy/Fundamentals\\_of\\_Spectroscopy/Electromagnetic\\_Radiation](https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Supplemental_Modules_(Physical_and_Theoretical_Chemistry)/Spectroscopy/Fundamentals_of_Spectroscopy/Electromagnetic_Radiation).

“Electromagnetic Spectrum | Introduction to Chemistry.” n.d. Accessed September 7, 2019.

<https://courses.lumenlearning.com/introchem/chapter/electromagnetic-spectrum/>.

Eluwole, Opeoluwa Tosin, Nsima Udoh, Mike Ojo, Chibuzo Okoro, and Akintayo Johnson Akinyoade. 2018. “From 1G to 5G, What Next?,” 22.

“EMF and EMR Conversion Formulas.” n.d. Healthy Building Science. Accessed April 1, 2020. <http://healthybuildingscience.com/2013/02/18/emf-and-emr-conversion-formulas/>.

“EMF Electric and Magnetic Fields Associated with the Use of Electric Power.” n.d., 65.

“Emf\_brochure\_webversion.Pdf.” n.d. Accessed March 27, 2020. [https://www.who.int/peh-emf/about/emf\\_brochure\\_webversion.pdf?ua=1](https://www.who.int/peh-emf/about/emf_brochure_webversion.pdf?ua=1).

“EMF-Portal | Electromagnetic Field Exposure and Male Breast Cancer Risk: A Meta-Analysis of 18 Studies.” n.d. Accessed April 15, 2020. <https://www.emf-portal.org/en/article/21996>.

“EMFscientist.Org - International EMF Scientist Appeal.” n.d. Accessed February 2, 2021.

<https://emfscientist.org/index.php/emf-scientist-appeal>.

Environmental Health Trust. 2021. EHT et al., v. FCC Court Oral Argument and Press

Conference. <https://www.youtube.com/watch?v=5oXhnuAkLq4&feature=youtu.be>.

“Environmental Stewardship.” n.d. National Institute of Environmental Health Sciences.

Accessed March 25, 2020. <https://www.niehs.nih.gov/about/stewardship/index.cfm>.

“Ephebus | Ancient Greek Institution.” n.d. Encyclopedia Britannica. Accessed September 7,

2017. <https://www.britannica.com/topic/ephebus>.

“Ethan Frome: Edith Wharton: 9781512393798: Amazon.Com: Gateway.” n.d. Accessed

June 14, 2019. [https://www.amazon.com/Ethan-Frome-Edith-Wharton/dp/1512393797/ref=sr\\_1\\_1\\_sspa?gclid=Cj0KCQjwi43oBRDBARIsAExSRQHwxGU--eUQ7m8WJKiZzsx6f5z03mMDsL04wvgO89ZZ2MFLyCb2c5YaAt\\_fEALw\\_wcB&hvadid=241649277769&hvdev=c&hvlocphy=9031520&hvnetw=g&hvpos=1t1&hvqmt=e&hvrnd=16132315053141933428&hvtargid=kwd-1394930042&hydadcr=10028\\_10352831&keywords=ethan+frome+by+edith+wharton&qid=1560571851&s=gateway&sr=8-1-spons&psc=1](https://www.amazon.com/Ethan-Frome-Edith-Wharton/dp/1512393797/ref=sr_1_1_sspa?gclid=Cj0KCQjwi43oBRDBARIsAExSRQHwxGU--eUQ7m8WJKiZzsx6f5z03mMDsL04wvgO89ZZ2MFLyCb2c5YaAt_fEALw_wcB&hvadid=241649277769&hvdev=c&hvlocphy=9031520&hvnetw=g&hvpos=1t1&hvqmt=e&hvrnd=16132315053141933428&hvtargid=kwd-1394930042&hydadcr=10028_10352831&keywords=ethan+frome+by+edith+wharton&qid=1560571851&s=gateway&sr=8-1-spons&psc=1)

“Ethical Buying | Lush Fresh Handmade Cosmetics.” n.d. Accessed November 24, 2020.

[https://www.lushusa.com/stories/article\\_our-values-ethical-buying.html](https://www.lushusa.com/stories/article_our-values-ethical-buying.html).

Facebook, Twitter, and LinkedIn. n.d. “When Will 5G Be Available in Your Country?”

Lifewire. Accessed March 23, 2020. <https://www.lifewire.com/5g-availability-world-4156244>.



“Fact Sheet: The Economic Challenge Posed by Declining Pollinator Populations.” 2014.

Whitehouse.Gov. June 20, 2014. <https://obamawhitehouse.archives.gov/the-press-office/2014/06/20/fact-sheet-economic-challenge-posed-declining-pollinator-populations>.

“FCC Policy on Human Exposure.” 2015. Federal Communications Commission. November 24, 2015. <https://www.fcc.gov/general/fcc-policy-human-exposure>.

Fernández-Rodríguez, Claudio Enrique, Alvaro Augusto Almeida De Salles, and Devra Lee Davis. 2015. “Dosimetric Simulations of Brain Absorption of Mobile Phone Radiation—The Relationship Between PsSAR and Age.” *IEEE Access* 3: 2425–30. <https://doi.org/10.1109/ACCESS.2015.2502900>.

“Final Response to the FCC Submitted in EHT et al v FCC Historic Case.” 2021.

Environmental Health Trust (blog). February 4, 2021. <https://ehtrust.org/final-response-to-the-fcc-submitted-in-eh-et-al-v-fcc-historic-case/>.

“Firefighters Exempt Selves from Calif. Bill to Save Others - Wed., Sep. 13, 2017.” n.d.

Accessed April 8, 2020. <https://www.odwyerpr.com/story/public/9385/2017-09-13/firefighters-exempt-selves-from-calif-bill-save-others.html>.

“Fixed Wireless Communications at 60GHz Unique Oxygen Absorption Properties.” n.d.

Accessed April 21, 2020. <https://www.rfglobalnet.com/doc/fixed-wireless-communications-at-60ghz-unique-0001>.

Funder, David C. 2006. “Towards a Resolution of the Personality Triad: Persons, Situations, and Behaviors.” *Journal of Research in Personality* 40 (1): 21–34.

<https://doi.org/10.1016/j.jrp.2005.08.003>.

- “GEN\_SM-R320\_GEAR-VR\_English\_User-Manual\_KK\_R5.Pdf.” n.d. Accessed April 21, 2020. [http://www.redstar.co.jp/GEN\\_SM-R320\\_GEAR-VR\\_English\\_User-Manual\\_KK\\_R5.pdf](http://www.redstar.co.jp/GEN_SM-R320_GEAR-VR_English_User-Manual_KK_R5.pdf).
- “Google: 5 Million Cardboard Viewers Shipped, 25 Million VR Apps Downloaded | Android Central.” n.d. Accessed April 21, 2020. <https://web.archive.org/web/20160712090805/http://www.androidcentral.com/more-5-million-google-cardboard-viewers-have-shipped-over-25-million-cardboard-apps-downloaded>.
- “Google Cardboard – Google VR.” n.d. Accessed April 21, 2020. <https://arvr.google.com/cardboard/>.
- “Google Daydream.” 2020. In Wikipedia. [https://en.wikipedia.org/w/index.php?title=Google\\_Daydream&oldid=942398433](https://en.wikipedia.org/w/index.php?title=Google_Daydream&oldid=942398433).
- “Groundhog Day (Film).” 2020. In Wikipedia. [https://en.wikipedia.org/w/index.php?title=Groundhog\\_Day\\_\(film\)&oldid=989072309](https://en.wikipedia.org/w/index.php?title=Groundhog_Day_(film)&oldid=989072309).
- Haggerty, Katie. 2010. “Adverse Influence of Radio Frequency Background on Trembling Aspen Seedlings: Preliminary Observations.” Research Article. *International Journal of Forestry Research*. Hindawi. 2010. <https://doi.org/10.1155/2010/836278>.
- Halgamuge, Malka N. 2017a. “Review: Weak Radiofrequency Radiation Exposure from Mobile Phone Radiation on Plants.” *Electromagnetic Biology and Medicine* 36 (2): 213–35. <https://doi.org/10.1080/15368378.2016.1220389>.
- . 2017b. “Review: Weak Radiofrequency Radiation Exposure from Mobile Phone Radiation on Plants.” *Electromagnetic Biology and Medicine* 36 (2): 213–35. <https://doi.org/10.1080/15368378.2016.1220389>.

- Hambling, David. 2008. "Army Orders Pain Ray Trucks; New Report Shows 'Potential for Death.'" *Wired*, October 10, 2008. <https://www.wired.com/2008/10/army-ordering-p/>.
- . 2012. "Why Russia Will Be the First to Use the Pain Ray." *Popular Mechanics*. June 18, 2012. <https://www.popularmechanics.com/technology/military/weapons/why-russia-will-be-the-first-to-use-the-pain-ray-9833954>.
- Hardell, Lennart, and Michael Carlberg. 2017. "Mobile Phones, Cordless Phones and Rates of Brain Tumors in Different Age Groups in the Swedish National Inpatient Register and the Swedish Cancer Register during 1998-2015." *PLOS ONE* 12 (10): e0185461. <https://doi.org/10.1371/journal.pone.0185461>.
- Harman, Gilbert. 1999. "Moral Philosophy Meets Social Psychology: Virtue Ethics and the Fundamental Attribution Error." In *Proceedings of the Aristotelian Society*, 315–31. JSTOR. <http://www.jstor.org/stable/4545312>.
- . 2000. "The Nonexistence of Character Traits." In *Proceedings of the Aristotelian Society (Hardback)*, 100:223–26. Wiley Online Library. <http://onlinelibrary.wiley.com/doi/10.1111/j.0066-7372.2003.00013.x/full>.
- Health, Center for Devices and Radiological. 2020. "Scientific Evidence for Cell Phone Safety." FDA, February. <http://www.fda.gov/radiation-emitting-products/cell-phones/scientific-evidence-cell-phone-safety>.
- "Health Physics News." 2016, 2.
- Health, UC Berkeley Center for Family and Community. n.d. "Cell Phone Use and Prenatal Exposure to Cell Phone Radiation May Cause Headaches in Children." *PRLog*. Accessed April 9, 2020. <https://www.prlog.org/12269207-cell-phone-use-and-prenatal-exposure-to-cell-phone-radiation-may-cause-headaches-in-children.html>.

“High Exposure to Radio Frequency Radiation Associated With Cancer in Male Rats.” n.d.

National Institute of Environmental Health Sciences. Accessed April 2, 2020.

<https://www.niehs.nih.gov/news/newsroom/releases/2018/november1/index.cfm>.

“Home.” n.d. Stanford Prison Experiment. Accessed February 15, 2016.

<http://www.prisonexp.org/>.

Homiak, Marcia. 2015. “Moral Character.” In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta, Spring 2015.

<http://plato.stanford.edu/archives/spr2015/entries/moral-character/>.

Hornblower, Simon, and Antony Spawforth. 2015. “Ephēboi,” December.

<https://doi.org/10.1093/acrefore/9780199381135.013.2420>.

Houston, B. J., B. Nixon, B. V. King, G. N. De Iuliis, and R. J. Aitken. 2016. “The Effects of Radiofrequency Electromagnetic Radiation on Sperm Function.” *Reproduction* (Cambridge, England) 152 (6): R263–76. <https://doi.org/10.1530/REP-16-0126>.

<http://www.washingtontimes.com>, The Washington Times. n.d. “Why I’m Challenging the FCC about Antiquated Safety Standards for Wireless Devices.” *The Washington Times*. Accessed February 26, 2021.

<https://www.washingtontimes.com/news/2021/feb/23/why-im-challenging-the-fcc-about-antiquated-safety/>.

Hursthouse, Rosalind. 1991. “Virtue Theory and Abortion.” *Philosophy & Public Affairs* 20 (3): 223–46.

Hursthouse, Rosalind, and Glen Pettigrove. 2016. “Virtue Ethics.” In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta, Winter 2016. *Metaphysics*

Research Lab, Stanford University.

<https://plato.stanford.edu/archives/win2016/entries/ethics-virtue/>.

“IARC Classifies Radiofrequency Electromagnetic Fields as Possibly Carcinogenic to Humans.” 2011, 6.

“ICNIRP | Aim, Status & History.” n.d. Accessed March 24, 2020.

<https://www.icnirp.org/en/about-icnirp/aim-status-history/index.html>.

“ICNIRP | Collaboration.” n.d. Accessed March 24, 2020.

<https://www.icnirp.org/en/activities/collaboration/collaboration.html>.

“IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz.” n.d. IEEE. Accessed April 1, 2020.

<https://doi.org/10.1109/IEEESTD.2019.8859679>.

“Industry Economics and Stats.” n.d. California Almonds - Your Favorite Easy Snack.

Accessed March 19, 2020. <http://www.almonds.com/processors/resources/industry-economics>.

International Commission on Non-Ionizing Radiation Protection (ICNIRP)1,2. 2020.

“Guidelines for Limiting Exposure to Electromagnetic Fields (100 KHz to 300 GHz):” Health Physics, March, 1. <https://doi.org/10.1097/HP.0000000000001210>.

“Iran Finishes Preparations to Launch 5G Internet: Minister.” n.d. MSN. Accessed May 4, 2020. <https://www.msn.com/en-xl/middleeast/top-stories/iran-finishes-preparations-to-launch-5g-internet-minister/ar-BBZYXjB>.

“Joint Non-Lethal Weapons Program Website - ADS.” 2007. September 30, 2007.

<https://web.archive.org/web/20070930185237/https://www.jnlwp.com/ActiveDenialSystem.asp>.

- Kamali, Koosha, Mohammadmehdi Atarod, Saeedeh Sarhadi, Javad Nikbakht, Maryam Emami, Robab Maghsoudi, Hormoz Salimi, et al. 2017. "Effects of Electromagnetic Waves Emitted from 3G+wi-Fi Modems on Human Semen Analysis." *Urologia* 84 (4): 209–14. <https://doi.org/10.5301/uj.5000269>.
- Kamtekar, Rachana. 2004. "Situationism and Virtue Ethics on the Content of Our Character." *Ethics* 114 (3): 458–91.
- Kant, Immanuel, [1785] 1998, *Groundwork of the Metaphysics of Morals (Grundlegung zur Metaphysik der Sitten)*, Mary J. Gregor (trans.), Cambridge: Cambridge University Press.
- , [1798] 2010, "Anthropology from a Pragmatic Point of View (1798)", in *Anthropology, History, and Education, (Cambridge Edition of the Works of Immanuel Kant)*, Robert Louden and Gunter Zoller (eds. and trans.), Cambridge: Cambridge University Press, 227–429. Original is *Anthropologie in pragmatischer Hinsicht*, published in the standard *Akademie der Wissenschaften* edition, volume 7.  
doi:10.1017/CBO9780511791925
- Kant, Immanuel. 1993. *Grounding for the Metaphysics of Morals: With On a Supposed Right to Lie Because of Philanthropic Concerns*. Translated by James W. Ellington. Third Edition, 3 edition. Indianapolis: Hackett Publishing Company, Inc.
- Krupansky, Jack. 2019. "Relationship Between Virtues and Values." *Medium*. March 4, 2019. <https://jackkrupansky.medium.com/relationship-between-virtues-and-values-5f6b90861165>.

- Küçer, Nermin, and Tuğba Pamukçu. 2014. "Self-Reported Symptoms Associated with Exposure to Electromagnetic Fields: A Questionnaire Study." *Electromagnetic Biology and Medicine* 33 (1): 15–17. <https://doi.org/10.3109/15368378.2013.783847>.
- "Lasd-Media Detail." 2010. September 4, 2010. [https://web.archive.org/web/20100904180855/http://sheriff.lacounty.gov/wps/portal/lasd/media/detail/?WCM\\_GLOBAL\\_CONTEXT=%2Flasd+content%2Flasd+site%2Fhome%2Fhome+top+stories%2Faid+unvealed](https://web.archive.org/web/20100904180855/http://sheriff.lacounty.gov/wps/portal/lasd/media/detail/?WCM_GLOBAL_CONTEXT=%2Flasd+content%2Flasd+site%2Fhome%2Fhome+top+stories%2Faid+unvealed).
- Levin, Paula F., and Alice M. Isen. 1975. "Further Studies on the Effect of Feeling Good on Helping." *Sociometry* 38 (1): 141–47. <https://doi.org/10.2307/2786238>.
- Li, De-Kun, Hong Chen, and Roxana Odouli. 2011. "Maternal Exposure to Magnetic Fields During Pregnancy in Relation to the Risk of Asthma in Offspring." *Archives of Pediatrics & Adolescent Medicine* 165 (10): 945–50. <https://doi.org/10.1001/archpediatrics.2011.135>.
- Li, De-Kun, Jeannette R. Ferber, Roxana Odouli, and Charles P. Quesenberry. 2012. "A Prospective Study of In-Utero Exposure to Magnetic Fields and the Risk of Childhood Obesity." *Scientific Reports* 2 (1): 1–6. <https://doi.org/10.1038/srep00540>.
- "Light: Electromagnetic Waves, the Electromagnetic Spectrum and Photons (Article)." n.d. Khan Academy. Accessed March 20, 2020. <https://www.khanacademy.org/science/physics/light-waves/introduction-to-light-waves/a/light-and-the-electromagnetic-spectrum>.
- "Long-Term Cell Phone Use Linked to Brain Tumor Risk." n.d. Medscape. Accessed April 10, 2020. <http://www.medscape.com/viewarticle/834888>.

“Lush (Company).” 2020. In Wikipedia.

[https://en.wikipedia.org/w/index.php?title=Lush\\_\(company\)&oldid=989384006](https://en.wikipedia.org/w/index.php?title=Lush_(company)&oldid=989384006).

MacIntyre, Alasdair. 2007. *After Virtue: A Study in Moral Theory*, Third Edition. 3rd edition. Notre Dame, Ind: University of Notre Dame Press.

Makarov, D. S., M. Yu. Tretyakov, and P. W. Rosenkranz. 2011. “60-GHz Oxygen Band: Precise Experimental Profiles and Extended Absorption Modeling in a Wide Temperature Range.” *Journal of Quantitative Spectroscopy and Radiative Transfer* 112 (9): 1420–28. <https://doi.org/10.1016/j.jqsrt.2011.02.018>.

Marmodoro, Anna. 2012. “Moral Character versus Situations: An Aristotelian Contribution to the Debate.” *Journal of Ancient Philosophy* 5 (2): 1–24.

Matthes, Rüdiger, and Jürgen H. Bernhardt, eds. 1999. *Guidelines on Limiting Exposure to Non-Ionizing Radiation: A Reference Book Based on the Guidelines on Limiting Exposure to Non-Ionizing Radiation and Statements on Special Applications*. ICNIRP 7. Oberschleißheim: International Commission on Non-Ionizing Radiation Protection.

Mevissen, Meike, and Dr David Schürmann. 2021. “Is There Evidence for Oxidative Stress Caused by Electromagnetic Fields?,” 9.

Milgram, Stanley. 1963. “Behavioral Study of Obedience.” *The Journal of Abnormal and Social Psychology* 67 (4): 371.

Mill, John Stuart, and George Sher. 2001. *Utilitarianism*. 2nd ed. Indianapolis: Hackett Pub.

Miller, Anthony B., L. Lloyd Morgan, Iris Udasin, and Devra Lee Davis. 2018. “Cancer Epidemiology Update, Following the 2011 IARC Evaluation of Radiofrequency Electromagnetic Fields (Monograph 102).” *Environmental Research* 167 (November): 673–83. <https://doi.org/10.1016/j.envres.2018.06.043>.



- Miller, Christian. 2003. "Social Psychology and Virtue Ethics." *Journal of Ethics: An International Philosophical Review* 7 (4): 365–92.
- Miller, Christian B. 2021. "Empirical Approaches to Moral Character." In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta, Spring 2021. Metaphysics Research Lab, Stanford University.  
<https://plato.stanford.edu/archives/spr2021/entries/moral-character-empirical/>.
- Mischel, Walter. 2009. "From Personality and Assessment (1968) to Personality Science, 2009." *Journal of Research in Personality* 43 (2): 282–90.  
<https://doi.org/10.1016/j.jrp.2008.12.037>.
- "Mission | NCRP | Bethesda, MD." n.d. Accessed April 7, 2020.  
<https://ncrponline.org/about/mission/>.
- "Mission & Vision." n.d. Accessed April 1, 2020. <https://www.ieee.org/about/vision-mission.html>.
- "Moral Character (Stanford Encyclopedia of Philosophy)." n.d. Accessed September 7, 2017. <https://plato.stanford.edu/entries/moral-character/#WhyChaMat>.
- Moreland, James Porter, and William Lane Craig. 2003. *Philosophical Foundations for a Christian Worldview*. Downers Grove, Ill: InterVarsity Press.
- Morrow, David R. 2018a. *Moral Reasoning: A Text and Reader on Ethics and Contemporary Moral Issues*. Oxford ; New York: Oxford University Press.
- . 2018b. *Moral Reasoning: A Text and Reader on Ethics and Contemporary Moral Issues*. Oxford New York: Oxford University Press.
- Nadelhoffer, Thomas, Eddy Nahmias, and Shaun Nichols. 2010. *Moral Psychology: Historical and Contemporary Readings*. John Wiley & Sons.

“National Council on Radiation Protection & Measurements | Bethesda, MD.” n.d. Accessed April 7, 2020. <https://ncrponline.org/>.

“National Institutes of Health: DNA Damage from Cell Phone Radio-Frequency Radiation.” 2019. Environmental Health Trust (blog). December 2, 2019. <https://ehtrust.org/national-institutes-of-health-dna-damage-from-cell-phone-radio-frequency-radiation/>.

“N-D01issue.Pdf.” n.d. Accessed April 9, 2020. <https://microwavenews.com/sites/default/files/sites/default/files/backissues/n-d01issue.pdf>.

“NIEHS Sustainability Report 2019.” n.d., 31.

“Non-Lethal Weapons Program > About > Frequently Asked Questions > Active Denial System FAQs.” n.d. Accessed April 22, 2020. <https://jnlwp.defense.gov/About/Frequently-Asked-Questions/Active-Denial-System-FAQs/>.

“OET - Bulletins On-Line.” 2011. Federal Communications Commission. May 10, 2011. <https://www.fcc.gov/general/oet-bulletins-line>.

O’Neill, John. 1993. *Ecology, Policy and Politics: Human Well-Being and the Natural World*. Routledge.

O’Neill, John, Alan Holland, Andrew Light, Alan Holland, and Andrew Light. 2008. *Environmental Values*. Routledge. <https://doi.org/10.4324/9780203495452>.

“Our Core Values.” n.d. Huawei. Accessed November 17, 2020. <https://huawei.eu/who-we-are/our-core-values>.

“Our Values.” n.d. Accessed March 23, 2020. <https://www.who.int/about/who-we-are/our-values>.

“Pall\_5G\_Risk\_The\_Scientific\_Perspective.Pdf.” n.d.

Peart, Karen N. 2012. “Cell Phone Use in Pregnancy May Cause Behavioral Disorders in Offspring.” YaleNews. March 15, 2012. <https://news.yale.edu/2012/03/15/cell-phone-use-pregnancy-may-cause-behavioral-disorders-offspring>.

Permanente, Kaiser. n.d. “New Kaiser Permanente Study Provides Evidence of Health Risks Linked to Electromagnetic Field Exposure.” Accessed April 13, 2020.

<https://www.prnewswire.com/news-releases/new-kaiser-permanente-study-provides-evidence-of-health-risks-linked-to-electromagnetic-field-exposure-300570458.html>.

Peters, Jay. 2019. “Google Is Open Sourcing Cardboard Now That the Daydream Is Dead.” The Verge. November 6, 2019. <https://www.theverge.com/2019/11/6/20952495/google-cardboard-open-source-phone-based-vr-daydream>.

Pojman, Louis P. 2016. *Ethics: Discovering Right and Wrong*. Place of publication not identified: Wadsworth.

Pojman, Louis P., Lewis Vaughn, and Lewis Vaughn. 2014. *The Moral Life: An Introductory Reader in Ethics and Literature*. Fifth edition. New York: Oxford University Press.

“Popular Mechanics Magazine.” 2008. Popular Mechanics Magazine.

“Pregnancy, Wireless and Electromagnetic Fields.” n.d. Environmental Health Trust (blog). Accessed April 13, 2020. <https://ehtrust.org/science/pregnancy-wireless-and-electromagnetic-fields/>.

PreventDisease, Marco Torres via. 2019. “Neurosurgeon: EMF Radiation Can Cause Leak In Blood Brain Barrier.” Technocracy News. October 16, 2019.

<https://www.technocracy.news/neurosurgeon-low-levels-of-emf-radiation-can-cause-leak-in-blood-brain-barrier/>.

Publishers, Thomas Nelson. 1997. The Nelson Study Bible NKJV. Lea edition. Nelson Bibles.

“PULS-SCHLAG - Gesundheitsgefahren Durch Mobile Kommunikation.” n.d. Accessed April 17, 2020. <http://www.puls-schlag.org/>.

“PULS-SCHLAG - Studie: Baumschäden Beweisführung.” n.d. Accessed April 17, 2020. <http://www.puls-schlag.org/dvd-3.htm>.

“Raytheon Technologies.” n.d. Accessed April 22, 2020. <https://www.rtx.com/>.

Reardon, Marguerite. n.d. “Trump Signs 5G and Broadband Mapping Legislation into Law.” CNET. Accessed March 25, 2020. <https://www.cnet.com/news/trump-signs-5g-and-broadband-mapping-legislation-into-law/>.

Reuters. 2020. “China’s IT Ministry Urges Faster 5G Rollout: Government Document,” March 24, 2020. <https://www.reuters.com/article/us-health-coronavirus-china-5g-idUSKBN21B0WY>.

“RF Safety FAQ.” 2015. Federal Communications Commission. November 25, 2015. <https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety>.

“Run Away the Ray-Gun Is Coming : We Test US Army’s New Secret Weapon | Daily Mail Online.” n.d. Accessed April 22, 2020. <https://www.dailymail.co.uk/sciencetech/article-482560/Run-away-ray-gun-coming--We-test-US-armys-new-secret-weapon.html>.

- Russell, Daniel C., ed. 2013. *The Cambridge Companion to Virtue Ethics*. Cambridge ; New York: Cambridge University Press.
- Santhosh Kumar, Sundar. 2018. "Colony Collapse Disorder (CCD) in Honey Bees Caused by EMF Radiation." *Bioinformation* 14 (9): 521–24.  
<https://doi.org/10.6026/97320630014521>.
- Sepehrimanesh, Masood, Nasrin Kazemipour, Mehdi Saeb, Saeed Nazifi, and Devra Lee Davis. 2017. "Proteomic Analysis of Continuous 900-MHz Radiofrequency Electromagnetic Field Exposure in Testicular Tissue: A Rat Model of Human Cell Phone Exposure." *Environmental Science and Pollution Research* 24 (15): 13666–73.  
<https://doi.org/10.1007/s11356-017-8882-z>.
- Singleton, Micah. 2016. "Google Has Shipped over 5 Million Cardboard Headsets." *The Verge*. January 27, 2016. <https://www.theverge.com/2016/1/27/10842438/google-shipped-5-million-cardboard-headsets>.
- Slingerland, Edward. 2011. "The Situationist Critique and Early Confucian Virtue Ethics." *Ethics* 121 (2): 390–419.
- "SmartMetersMurder." n.d. Accessed November 9, 2019.  
<http://www.smartmetersmurder.com/>.
- Smith-Roe, Stephanie L., Michael E. Wyde, Matthew D. Stout, John W. Winters, Cheryl A. Hobbs, Kim G. Shepard, Amanda S. Green, et al. 2020. "Evaluation of the Genotoxicity of Cell Phone Radiofrequency Radiation in Male and Female Rats and Mice Following Subchronic Exposure." *Environmental and Molecular Mutagenesis* 61 (2): 276–90.  
<https://doi.org/10.1002/em.22343>.
- Snow, Nancy E. 2018. *The Oxford Handbook of Virtue*. Oxford University Press.

- Solomon, Robert C. *A Better Way to Think about Business: How Personal Integrity Leads to Corporate Success*. New York: Oxford University Press, 1999.
- Sood, Roopali, and Atul Garg. 2014. "Digital Society from 1G to 5G: A Comparative Study" 3 (2): 9.
- Soran, Maria-Loredana, Manuela Stan, Ülo Niinemets, and Lucian Copolovici. 2014. "Influence of Microwave Frequency Electromagnetic Radiation on Terpene Emission and Content in Aromatic Plants." *Journal of Plant Physiology* 171 (15): 1436–43. <https://doi.org/10.1016/j.jplph.2014.06.013>.
- "Stanford Prison Experiment | Simply Psychology." n.d. Accessed February 28, 2016. <http://www.simplypsychology.org/zimbardo.html>.
- "Statement by the President." n.d. The White House. Accessed March 25, 2020a. <https://www.whitehouse.gov/briefings-statements/statement-by-the-president-36/>.
- "———." n.d. The White House. Accessed March 25, 2020b. <https://www.whitehouse.gov/briefings-statements/statement-by-the-president-36/>.
- Stocker, Michael and The Journal of Philosophy, Inc. 1976. "The Schizophrenia of Modern Ethical Theories:" *Journal of Philosophy* 73 (14): 453–66. <https://doi.org/10.2307/2025782>.
- "Stop Untested Microwave Radiation of Children's Brains and Eyes Virtual Reality EHT Scientists Urge Google." 2017a. Environmental Health Trust (blog). July 23, 2017. <https://ehtrust.org/stop-untested-microwave-radiation-childrens-brains-eyes-virtual-reality-ehtrust-scientists-urge-google/>.

“———.” 2017b. Environmental Health Trust (blog). July 23, 2017. <https://ehtrust.org/stop-untested-microwave-radiation-childrens-brains-eyes-virtual-reality-ehtrust-scientists-urge-google/>.

Strumpf, Josh Chin, Sarah Krouse and Dan. 2018. “The 5G Race: China and U.S. Battle to Control World’s Fastest Wireless Internet.” *Wall Street Journal*, September 9, 2018, sec. Business. <https://www.wsj.com/articles/the-5g-race-china-and-u-s-battle-to-control-worlds-fastest-wireless-internet-1536516373>.

*Studies in the Nature of Character: Studies in Deceit*. 1975. New York: Ayer Co Pub.

Sudan, Madhuri, Leeka Kheifets, Onyebuchi Arah, Jorn Olsen, and Lonnie Zeltzer. 2012a. “Prenatal and Postnatal Cell Phone Exposures and Headaches in Children.” *The Open Pediatric Medicine Journal* 6 (2012): 46–52.

<https://doi.org/10.2174/1874309901206010046>.

———. 2012b. “Prenatal and Postnatal Cell Phone Exposures and Headaches in Children.” *The Open Pediatric Medicine Journal* 6 (2012): 46–52.

<https://doi.org/10.2174/1874309901206010046>.

Szyjkowska, Agata, Elżbieta Gadzicka, Wiesław Szymczak, and Alicja Bortkiewicz. 2014a.

“The Risk of Subjective Symptoms in Mobile Phone Users in Poland--an Epidemiological Study.” *International Journal of Occupational Medicine and Environmental Health* 27 (2): 293–303. <https://doi.org/10.2478/s13382-014-0260-1>.

———. 2014b. “The Risk of Subjective Symptoms in Mobile Phone Users in Poland--an Epidemiological Study.” *International Journal of Occupational Medicine and Environmental Health* 27 (2): 293–303. <https://doi.org/10.2478/s13382-014-0260-1>.

<https://doi.org/10.2478/s13382-014-0260-1>.

Taye, Ritu Ranjan, Mukul Kumar Deka, and Ataur Rahman. n.d. "Effect of Electromagnetic Radiation of Cell Phone Tower on Foraging Behaviour of Asiatic Honey Bee, *Apis Cerana F.* (Hymenoptera: Apidae)." *Journal of Entomology and Zoology Studies*, 3.

"Telecom and Insurance Companies Warn of Liability and Risk." n.d. Environmental Health Trust (blog). Accessed October 12, 2020. <https://ehtrust.org/key-issues/cell-phoneswireless/telecom-insurance-companies-warn-liability-risk-go-key-issues/>.

"Temporal Trends in Sperm Count: A Systematic Review and Meta-Regression Analysis | Human Reproduction Update | Oxford Academic." n.d. Accessed April 13, 2020. <https://academic.oup.com/humupd/article/23/6/646/4035689>.

"Thank You for Joining the Summit! (Read on for Access to Your Free Bonuses) | 5G Crisis Summit." n.d. The 5G Crisis Summit. Accessed April 28, 2020. <https://the5gsummit.com/reg-thank-you/>.

"The EPA Website Changes: EMF Safety Issues Removed." 2020. Environmental Health Trust (blog). November 12, 2020. <https://ehtrust.org/the-epa-website-changes-emf-safety-issues-removed/>.

"The Great Ideas." n.d. Accessed August 13, 2018. <https://www.thegreatideas.org/greatideas1.html>.

"The Great Ideas, Vol. I by Mortimer J. Adler on Audio Cassette." n.d. Accessed September 5, 2017. <http://www.learnoutloud.com/Catalog/Philosophy/Modern-Philosophy/The-Great-Ideas-Vol-I/6377>.

"The Internet Classics Archive | On the Soul by Aristotle." n.d. Accessed June 14, 2019. <http://classics.mit.edu/Aristotle/soul.2.ii.html>.



- Thiroux, Jacques P. 1998. *Ethics: Theory and Practice*. 6th ed. Upper Saddle River, N.J.: Prentice Hall.
- “Thousands of Swiss Protest 5G Wireless over Health Fears.” n.d. Accessed September 24, 2019. <https://news.yahoo.com/thousands-swiss-protest-5g-wireless-over-health-fears-201051081.html>.
- Trabulsi, Maya. n.d. “Oceanside Monk Leaves A Sweet Legacy Through Beekeeping.” KPBS Public Media. Accessed March 19, 2020. <https://www.kpbs.org/news/2017/dec/13/prince-peace-abbey-monk-sweet-legacy/>.
- “Tree-Health-Radiation-Schorpp-2011-02-18.Pdf.” n.d. Accessed April 17, 2020. <https://ehtrust.org/wp-content/uploads/tree-health-radiation-Schorpp-2011-02-18.pdf>.
- Tsarna, Ermioni, Marije Reedijk, Laura Ellen Birks, Mònica Guxens, Ferran Ballester, Mina Ha, Ana Jiménez-Zabala, et al. 2019. “Associations of Maternal Cell-Phone Use During Pregnancy With Pregnancy Duration and Fetal Growth in 4 Birth Cohorts.” *American Journal of Epidemiology* 188 (7): 1270–80. <https://doi.org/10.1093/aje/kwz092>.
- US EPA, OA. 2016. “EPA History.” Collections and Lists. US EPA. October 13, 2016. <https://www.epa.gov/history>.
- US EPA, OAR. 2014. “Radiation Resources Outside of EPA.” Collections and Lists. US EPA. September 16, 2014. <https://www.epa.gov/radiation/radiation-resources-outside-epa>.
- . 2018. “Non-Ionizing Radiation From Wireless Technology.” Overviews and Factsheets. US EPA. November 26, 2018. <https://www.epa.gov/radtown/non-ionizing-radiation-wireless-technology>.

User, Super. n.d. “Oh My...What’s in WiFi?” Accessed April 9, 2020.

<http://safeliving.tamers.biz/index.php/item/83-oh-my-what-s-in-wifi>.

“Verizon Mission, Vision & Values.” n.d. Comparably. Accessed November 16, 2020.

<https://www.comparably.com/companies/verizon/mission>.

Vignera, Sandro La, Rosita A. Condorelli, Enzo Vicari, Rosario D’Agata, and Aldo E.

Calogero. 2012. “Effects of the Exposure to Mobile Phones on Male Reproduction: A Review of the Literature.” *Journal of Andrology* 33 (3): 350–56.

<https://doi.org/10.2164/jandrol.111.014373>.

Vijayalaxmi, null, Kenneth R. Foster, Junji Miyakoshi, and Luc Verschaeve. 2020.

“Comments on the ‘Evaluation of the Genotoxicity of Cell Phone Radiofrequency Radiation in Male and Female Rats and Mice Following Subchronic Exposure’ by Smith-Roe et Al.” *Environmental and Molecular Mutagenesis* 61 (2): 291–93.

<https://doi.org/10.1002/em.22353>.

Vila, Javier, Michelle C. Turner, Esther Gracia-Lavedan, Jordi Figuerola, Joseph D.

Bowman, Laurel Kincl, Lesley Richardson, et al. 2018. “Occupational Exposure to High-Frequency Electromagnetic Fields and Brain Tumor Risk in the INTEROCC Study: An Individualized Assessment Approach.” *Environment International* 119: 353–65. <https://doi.org/10.1016/j.envint.2018.06.038>.

*Virtue as Social Intelligence: An Empirically Grounded Theory*. 2009. 1 edition. New York:

Routledge.

“Virtue Ethics and the Situationist Challenge « The Situationist Good Summary.Pdf.” n.d.

“Virtue Ethics (Stanford Encyclopedia of Philosophy).Pdf.” n.d.

- Waldmann-Selsam, Cornelia, Alfonso Balmori-de la Puente, Helmut Breunig, and Alfonso Balmori. 2016. "Radiofrequency Radiation Injures Trees around Mobile Phone Base Stations." *The Science of the Total Environment* 572 (December): 554–69. <https://doi.org/10.1016/j.scitotenv.2016.08.045>.
- Wang, Jing, Hui Su, Wei Xie, and Shengyuan Yu. 2017a. "Mobile Phone Use and The Risk of Headache: A Systematic Review and Meta-Analysis of Cross-Sectional Studies." *Scientific Reports* 7 (1): 1–7. <https://doi.org/10.1038/s41598-017-12802-9>.
- . 2017b. "Mobile Phone Use and The Risk of Headache: A Systematic Review and Meta-Analysis of Cross-Sectional Studies." *Scientific Reports* 7 (1): 1–7. <https://doi.org/10.1038/s41598-017-12802-9>.
- Wasserman, Todd. 2020. "Why the Coronavirus Pandemic May Fast-Forward 5G Adoption in the US." CNBC. March 20, 2020. <https://www.cnbc.com/2020/03/20/why-the-coronavirus-pandemic-may-fast-forward-5g-adoption-in-the-us.html>.
- West, John G., Nimmi S. Kapoor, Shu-Yuan Liao, June W. Chen, Lisa Bailey, and Robert A. Nagourney. 2013. "Multifocal Breast Cancer in Young Women with Prolonged Contact between Their Breasts and Their Cellular Phones." *Case Reports in Medicine*. Hindawi. 2013. <https://doi.org/10.1155/2013/354682>.
- "WHO | The International EMF Project." n.d. WHO. World Health Organization. Accessed March 27, 2020. <http://www.who.int/peh-emf/project/en/>.
- "WHO | What Are Electromagnetic Fields?" n.d. WHO. Accessed January 23, 2020. <http://www.who.int/peh-emf/about/WhatisEMF/en/>.
- Young, Charles M. n.d. "The Doctrine of the Mean," 11.

Zimbardo, Philip. 2008. *The Lucifer Effect: Understanding How Good People Turn Evil*.

Reprint edition. New York: Random House Trade Paperbacks.