

Sustainable Capitalism Under Lockean Ethics

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Introduction

Humanity has struggled to remedy the conflict between environmental sustainability and capitalism since the privatization of resources and overconsumption of resources creating a shortage of natural resources. Due to improper market pricing, capitalism undervalues natural resources which discourages entrepreneurs from investing in technology to improve the yield of natural resources or to limit their consumption of natural resources. The positive externalities of natural resources are unaccounted for in modern capitalism, creating a shortage in natural resources. Since the production of natural resources is limited by Nature's capacity to reproduce, the current capitalist framework promotes a permanent shortage of natural resources where the demand for natural goods is always in excess to the supply of goods obtainable.

Unlike other producers, Nature is a limited producer in that its ability to reproduce goods available in the commons for all individuals to access is dependent on the natural resources that remain in the common. Natural goods are both the final product as well as the initial input where a certain quantity of the resources needs to remain in Nature untouched by mankind so those resources can reproduce to increase the quantity of that resource for future populations. Given that humanity's goal is to exist in the long run, it is in the best interest for humanity to regulate their consumption levels and to appropriate resources to meet their own needs while maintaining a base level of supply in Nature so that future generations can enjoy the same resources as our current generation.

Unfortunately, modern environmental philosophy is divided on how to define "sustainability," let alone the method with which society can hope to achieve a sustainable society. Modern environmental philosophy is currently debating between basic definitions given the feasibility on how sustainability can be assessed. Modern definitions are torn between

“weak” sustainability and “strong” sustainability, the difference between definitions contingent on the substitutability of resources and the mechanisms available to society to value those resources in question. Economists strongly defend weak sustainability, arguing that resources can be substituted with other resources and that weak sustainability is the only feasible definition society can adopt to maintain a capitalist society that encourages innovation and entrepreneurship to promote growth while being “sustainable.” Environmentalists advocate strong sustainability however, arguing that natural resources possess various functions that cannot be substituted by manufactured goods that only possess single functions. Due to differences in the value of natural resources as well as the practicality of measuring sustainability, advocates for both are divided by definitions of sustainability.

The method through which sustainability could be achieved is also heavily debated between both sides with no sign of reconciliation. On one side, Cornucopians believe that no action needs to be taken to remedy environmental sustainability where the pressures of environmental shortages and the fear of extinguishing resources will encourage entrepreneurs to invent new technologies or attempt to discover appropriate substitutes for these resources. Cornucopians cite history, showing that shortages in natural resources encourage humanity to discover new resources for adequate substitutes.¹ On the other side, Green theorists argue that substitutes for resources cannot be discovered since these resources possess innate values that cannot be substituted with manufactured substitutes. To ensure sustainability and remedy the environmental issues that plague society, mankind must revert from capitalism back to a pre-industrial society of small local communes where society will be able to coexist in harmony with

¹ Cornucopians argue that the search for substitutes actually benefits humanity since the substitutes discovered are often superior to the resources they are going to replace. One example is the discovery of iron to replace copper. It was only when copper was in short supply that society searched for a replacement, finding iron which was a more durable and efficient substitute for their needs.

Nature. Since the threats to the local ecosystem come from mankind's desire to maximize wealth and privatize resources for their own wealth, there is no incentive for mankind in a capitalist society to limit their consumption. A sustainable society can only come to fruition by reverting back to natural society.

The conflict between sustainability and capitalism arises from the degeneration of social ties and obligations among humans. Capitalism encourages individuals to labor for their own sustenance but does not encourage them to consider the welfare of their fellow man. Rather than offer charity and ensure the sustenance of his fellow man, modern capitalism encourages individuals to focus on maintaining their own wealth with the state ensuring basic sustenance. Due to these mechanisms, there is no incentive for man to consider the welfare of his fellow man or of society in general since man, recognizing that his own welfare is not considered by others, must labor to ensure that his sustenance is not threatened by unforeseen circumstances. Furthermore, capitalism believes in its ability to quantify the value of all resources to determine the optimal basket of goods that society should consume to maximize welfare. Although the concept of valuation itself can be conducive to sustainability, the inability to implement any methodology arises from the lack of scientific knowledge we have of our surrounding environment. Due to irreversibility in our ecosystem, there is a strong incentive for decision makers against action and to gather scientific information before implementing a decision.

This thesis hopes to address this conundrum regarding sustainability by using John Locke's labor theory of property to create a clear conception of sustainability as well as create a social framework where capitalist ethics are conducive to environmental sustainability. I will analyze Locke's labor theory of property because Locke's theory is one of the founding pillars of modern capitalism. Although Locke argument focuses on natural rights and the social contract

between men, his theory on the right to appropriate resources from the common is essential for capitalism to function. Locke's theory essentially asserts that in lieu of consent, man can come to own property that previously belonged to society in general by mixing his own labor with that resource. Capitalism functions in the same manner, individuals earning their sustenance from their labor.² Capitalism has essentially adopted Locke's labor theory as its initial framework for the system to function in society. However, modern capitalism has failed to properly implement the theory, taking the labor theory framework without accepting the natural rights and obligations that come with that theory creating the crisis the system faces.

In the first chapter, I will explain Locke's labor theory of property as Locke intended, discussing the role of natural rights in the theory and to show why these natural rights and obligations are essential for the theory to be implemented. By analyzing Locke's intentions when he created the theory as well as the explicit obligations humanity must follow to properly implement the theory, I hope to be able to note some of the deficiencies of modern capitalism. By properly interpreting Locke's theory as it was meant to be interpreted, I will show that the capitalist ethic of focusing solely on maximizing individual welfare is counter-productive to humanity in general and violates individual natural rights. Furthermore, by discussing Locke's labor theory, I will also address some initial values we need to consider regarding the value of natural resources.

In the second chapter, I will discuss various conflicting environmental philosophies and go into further detail about how sustainability should be conceived. In this chapter, I will discuss the environmental issues addressed by the Brundtland report and go into further detail about the

² An individual comes to own a part of the final product because he labors upon it. This can be seen with wages in products. By working on a resource to create the final product, the worker comes to own a portion of the final product. To relieve the worker's claim to that final product, the final owner of that final product pays that worker wages as compensation, compensating that claim of ownership with money which the worker can then use to purchase goods for his own sustenance.

conflicting environmental ideologies and their stance on sustainability. I will then discuss Bryan Norton's environmental philosophy on sustainability, the philosophical issues that arise from sustainability and the methodology he advocates to implement his philosophy. I will focus on Norton's concept of sustainability since Norton is one of the few environmental philosophers who realize that sustainability cannot be a universal construct but must be a localized definition derived from extensive discussion within the community. By discussing Norton, I hope to identify the important aspects of his theory on sustainability.

In the third chapter, I will discuss the major differences between Locke's conceived society with modern capitalism, identifying the differences and creating a new conception of capitalism based on Locke's ideology. After outlining what Lockean capitalism would look like, I will then discuss how Lockean capitalism works with adaptive management to create both a definition and a framework of sustainability which could coincide with capitalism. By combining Lockean capitalism with adaptive management, I will show a social framework based on Lockean ethics that shows that capitalism and environmental sustainability are not two mutually separate ideals and that society can be both environmentally sustainable and show economic growth.

Chapter 1: Locke's Labor Theory of Property

English philosopher John Locke outlined a theory to dictate how individuals with inalienable rights and claims to a common land are able to lay claim to a certain parcel without interfering in the claims of others to also assert their right, his labor theory of property. By justifying ownership based on the labor one imparts into property that was previously common to all, Locke claims that that individual who labored on that property earns the right to use the results from that property for his own benefit. This concept of ownership is the basis of Western capitalism where individuals earn what they labor on and have the right to consume or sell those goods or services they produce.

However, Locke's labor theory of property is misconstrued in its current use in contemporary capitalism where individuals possess the right to mix their labor with and consume resources considering their social obligations toward their fellow citizens. Locke's theory neither advocates nor permits absolute ownership of property and criticizes excessive appropriation of property from the commons for individual benefit. Unless Locke's labor theory of property is mitigated by social obligations, the natural right to appropriation will inevitably conflict with social needs and desires.

1.1 Origins of Locke

John Locke created the labor theory of property and redefined the concept of equality among men to oppose the current philosophical reasoning that justified consolidating property by the rich at the expense of the poor. Locke argued that God gave property to all individuals in common for their use because all men are descendents of God and thus all have an equal claim to property. This assertion clashed with Robert Filmer's proposal where only the King, lords, and

nobles held the right to own land and property because they are the chosen descendents of Adam whom God had only given private dominion to. Locke declares “Adam had not, either by natural right of fatherhood, or by positive donation from God, any such authority over his children, or dominion over the world, as is pretended.”³ Locke argues that not only is this interpretation of Adam being the only receiver of dominion of the Earth by God to be incorrect, but since Adam is the father of all men and thus, all men should have shared dominion over Nature’s resources.

John Locke’s labor theory of property is essential to western capitalism as it outlines how the individual comes to own individual property that is extracted from Nature that is originally shared in common. According to James Tully, Locke states that “the world is a gift given to mankind in common and natural reason teaches that man has a right ‘to Meat and Drink, and such other things, as Nature affords for their subsistence.’”⁴ Locke defines this natural right all men have to the things necessary for his own subsistence as property.⁵ Man earns this right to subsistence due to his two natural rights, his rights to preservation and to his means of subsistence which is “derived by natural reason so are ipso facto, derived from natural law.”⁶ Natural law is imposed on man in general from God to Adam, God giving man natural reason and commanding him to labor for his subsistence from Nature that is given to man in general. Man “uses his reason to discover natural law and chooses to act in accordance with it, thus participating in the divine order in the way appropriate to a rational creature.”⁷ By using his rationality to divine natural law and God’s will, man is able to outlining his purpose in nature.

Unlike the traditional conception of Locke where the “unabating pursuit of selfish interests will rebound to the benefit of society as a whole,” contemporary interpretations of

³ John Locke, *The Second Treatise of Government*, Ch 1, Section 1.1

⁴ James Tully, *A Discourse on Property, John Locke and his adversaries*, (Cambridge University Press: NY, USA, 1980)

⁵ Tully, *A Discourse on Property, John Locke and his adversaries*

⁶ Tully, *A Discourse on Property, John Locke and his adversaries*

⁷ Tully, *A Discourse on Property, John Locke and his adversaries*

Locke depict his political theory in a collectivist light where “people can lay claim to the wealth and skills of others with frequency because the wide-range of good and the social unit will triumph the narrower good of any person.”⁸ Locke believes that all people have equal rights to property and sustenance; all men are created equal and are thus endowed with equal rights that are received either through natural law or by transit through Adam. Thus, all men have dominion over Nature and are all given access in common to the fruits of Nature from God to sustain themselves and ensure that humankind continues to prosper on its own labor. The rights man has to access the resources owned in common and his rights and obligations to use those resources in comparison to his fellow man is determined by natural law, the understanding of which proves man to be rational and thus capable of utilizing those rights he is granted by God.

1.2 Natural Law and Right

According to Locke, man has dominion over the natural world due to the “the need for members of the species to use nature’s bounty to obtain the sustenance without which they could not survive, and the express grants by God of Lordship-over-the-earth to human beings.”⁹ Man’s dominion is derived from the laws of nature which are derived from man’s rationality and serve as the basis for his right to own property. For man initially to be able to own property and extract property from nature, he must possess the capability rationally derive the laws of nature to guide his conduct in society. From the actions of God, mankind asserts the first law of nature to be that “mankind ought to be preserved.”¹⁰ This tenet can be derived from the fact that God “furnished the World with things fit for Food and Rayment and other Necessaries of Life, Subservient to his

⁸ Matthew H. Kramer, *John Locke and the Origins of Private Property*, (Cambridge University Press: New York, NY, USA, 1997)

⁹ Kramer, *John Locke and the Origins of Private Property*

¹⁰ Tully, *A Discourse on Property, John Locke and his adversaries*

design, that Man should live and abide for some time upon the Face of the Earth.”¹¹ Locke argues that if it were not his will that mankind were not to live and thrive on Earth, then God would not have furnished Earth with the materials necessary for man’s survival. The second law of nature is that “what is right is coincident with rational desire.”¹² If “the basic needs of men and women compelled them to engage in certain activities that employed natural resources, we can know that God had authorized such activities and had therefore authorized the employment of the good things in nature.”¹³

From these two natural laws, we can derive man’s natural rights and obligations. From the second law, we can assert that Man has the right to use anything from nature to satisfy his rational desire, a right common to all men. From the first law, we derive that man possesses the right to request charity, requesting resources from his fellow man should he need it. However, if a right exists among men, an obligation naturally arises as well where man is obligated to help his impoverished fellow man. This obligation is derived from the fact that “preservation is one of God’s goals for men, and hence [man’s] natural duty is to bring it about, it follows that he has a natural right to it.”¹⁴ Thus, although man has the right to use property that he extracts from nature for his own subsistence, man also has the duty to ensure that there is enough left in common for his fellow man to also enjoy. Man has the right to appropriate for his own livelihood but has the obligation to allow other men access to those common natural resources so they too can labor to earn their own subsistence. Due to the inherent risks men will face during his quest for sustenance and the demand from God that mankind maximize the livelihood of all individuals, man’s right to charity is a safety net, allowing him to request food should he fail in

¹¹ Tully, *A Discourse on Property, John Locke and his adversaries*

¹² Tully, *A Discourse on Property, John Locke and his adversaries*

¹³ Kramer, *John Locke and the Origins of Private Property*

¹⁴ Tully, *A Discourse on Property, John Locke and his adversaries*

his previous ventures but obligating him assist others who also ask should he possess surplus resources. Through this social obligation man has to himself and to his fellow man, Locke proposes that men can create a fair and equitable distribution of property as long as they have a mechanism through which man can appropriate resources from the commons for his private consumption.

1.3 Equality among Men

Locke declares through the premises set by his opponents that one cannot justify unequal rights on the basis of lineage. Not only was Adam not given dominion by God over the world or his own children, his dominion cannot be passed down to his heirs. Even “if his heirs had, there being no law of nature nor positive law of God that determines which is the right heir in all cases that may arise, the right of succession, and consequently of bearing rule, could not have been certainly determined,”¹⁵ and even such succession could be determined, “the knowledge of which is the eldest line of Adam’s posterity, being so long since utterly lost, that in the races of mankind and families of the world, there remains not to one above another.”¹⁶ Locke asserts that the right of private dominion over Nature was not given to Adam and even if he were to receive such rights, his bloodline has become so diluted among the various members of society, one cannot determine who would be the successor to Adam and inheritor of his rights. Thus, there cannot be any inequality among individuals or restrictions to the access of property according to lineage because such arguments are flawed and unsubstantiated.

All men are equal in society because all men are equal in the state of Nature, “a state of perfect freedom to order their actions, and dispose of their possessions and persons, as they think

¹⁵ Locke, *The Second Treatise of Government*, Ch 1, Section 1.3

¹⁶ Locke, *The Second Treatise of Government*, Ch 1, Section 1.4

fit, within the bounds of the law of nature.”¹⁷ However, this freedom of liberty is limited in that man “has not liberty to destroy himself, or so much as any creature in his possession, but where some nobler use than its bare preservation calls for it.”¹⁸ Man has the duty to preserve himself and mankind in general according to the laws of Nature that have been passed onto mankind from God through reason. Unless the self-sacrifice of an individual can fulfill the nobler goal of allowing mankind in general to preserve itself, man does not have the liberty to sacrifice himself. Just as man cannot have the liberty to sacrifice himself for private satisfaction according to the laws of Nature, man also does not have the liberty to sacrifice others for his private satisfaction. As Locke declares, “all men may be restrained from invading others rights, and from doing hurt to one another.”¹⁹ From this relationship among men in society, we can then conclude that all members of society possess an equal negative right to use common resources that cannot be denied to them, a right defined as “being normatively protected against someone else’s interference in being entitled to someone else’s assistance or remuneration, with regard to a certain action or a certain state of affairs.” Man’s right to use of common resources entitles him to extract resources from common ownership to private use without repression from other members of society, a right which is derived from natural law and thus supersedes society.

1.4 Labor Theory of Property

Locke defines *property* as “the right which one has to his goods and possessions, [and] even with respect to his actions, liberty, his life, his body; and, in a word, all sorts of rights.”²⁰

Property is not a possession in itself but a right to own possessions for personal use. *Common*

¹⁷ Locke, *The Second Treatise of Government*, Ch 2, Section 4

¹⁸ Locke, *The Second Treatise of Government*, Ch 2, Section 5

¹⁹ Locke, *The Second Treatise of Government*, Ch 2, Section 7

²⁰ Tully, *A Discourse on Property, John Locke and his adversaries*

property is defined as the “common right to use, not right to common use, and not to all things but things necessary for preservation” while *private ownership* is “the means of individuating the community’s common property and is limited by the claims of other members.”²¹ Unlike Filmer, who equates property to private dominion, Locke defines property as a right possessed by all men to the “right of use only, not of use, abuse, and alienation.”²² All men are “by nature equal and so must have an equal right to earthly provisions.”²³ Due to the fundamental law of property, no person can have his property taken from him without his consent. Since there is no natural principle for distribution, any division of natural resources must be based on a pact.²⁴ Unless some common agreement to a proper and feasible allocation of property can emerge through a common pact or consent to private allocation from common resources, man cannot come to own private property.

Locke believes that the allocation of the resources of nature held in common can only be appropriated by one individual through the consent of all other individuals who also have a claim right to use of that resource due to the fact that the exercise of any natural right would violate the right of another. However, Locke notes that “private interests invariably conflict since the resources necessary for an adequate moral life for everyone is finite.”²⁵ If resources are limited and people know that these common resources cannot be allocated to all individuals in private without having some of those individuals suffer from a lack of resources necessary for an adequate life, there would be no rational reason for any individual to consent to another stranger removing a resource from the commons for his own private benefit. This rationale creates a paradox of plenty where mankind starves despite possessing abundant resources. Since removing

²¹ Tully, *A Discourse on Property, John Locke and his adversaries*

²² Tully, *A Discourse on Property, John Locke and his adversaries*

²³ Tully, *A Discourse on Property, John Locke and his adversaries*

²⁴ Tully, *A Discourse on Property, John Locke and his adversaries*

²⁵ Tully, *A Discourse on Property, John Locke and his adversaries*

resources from the commons reduces the total amount of resources left in the common, it would be in the best interest for each individual to deny their fellow man from extracting property from the common for their own private use. The immediate private interests of each citizen outweighs the communal interests of humanity in general since it is in each individual's interest to deny any other individual from extracting resources from the common, thereby resulting in the paradox where mankind starves despite his potential access to an abundant supply of resources.

Locke recognizes that it is irrational to assume that individuals and society as a whole can function while requiring such a stringent demand to access property, that "if such a consent as that was necessary, man had starved, notwithstanding the plenty God had given him."²⁶ The impractical demand of requiring the explicit consent of every other individual in the community will hinder resource extraction to the point where man is unable to consume goods he has acquired for his own subsistence. Thus, unless mankind is able to create a mechanism through which he can come to own property without requiring the explicit consent of others, mankind cannot come to create an efficient means of earning his subsistence to maintain his livelihood in the future.

Locke's labor theory of property creates a social contract among individuals where "whatsoever he removes out of the state that nature hath provided, and left in it, he hath mixed his labor with, and joined it to something that is his own, and thereby makes it his property."²⁷ Locke believes that the only thing man truly owns when he is born is his labor, man's ability to create and improve upon things that are found in Nature, transforming them into something that can be of use to man. "Though the earth, and all inferior creatures, be common to all men, yet every man has a property in his own person. The labor of his body, and the work of his hands are

²⁶ Locke, *The Second Treatise of Government*, Ch 5, Section 28

²⁷ Locke, *The Second Treatise of Government*, Ch 5, Section 27

properly his.”²⁸ Although all the resources found in nature are of common property to all of mankind and every person has equal claim to use those resources, every person owns property within himself that manifests as labor. When man acts upon a resource and shapes it into property for his own use, man has removed that resource from the state of Nature by ‘mixing’ his labor with it, thereby mixing a part of himself with the resource he has acted upon.²⁹ Since man has added part of his property to a resource that was unclaimed by anyone else, Locke asserts that the resource that man added his labor to becomes part of his property since “this labor being the unquestionable property of the laborer, no man but he can have a right to what that is once joined to, at least where there is enough, and as good, left in common for others.”³⁰

However, this allocation of natural resources to private property is not limited only to single use commodities. Locke declares that “as much land as a man tills, plants, improves, cultivates, and can use the product of, so much is his property.”³¹ Locke states that “God and his reason commanded [man] to subdue the earth and therein lay out something upon it that was his own, his labor.”³² As long as man is able to mix his labor to cultivate the land and generate use out of it for his own sustenance, man can appropriate land from the common into his own private property which is not prejudicial “to any other man, since there was still enough, and as good left; and more than the yet unprovided could use.”³³ God had given the world to man in common

²⁸ Locke, *The Second Treatise of Government*, Ch 5, Section 27

²⁹ Locke conceives the ‘mixing’ process of labor into property to be man’s ability to shape objects by his handicraft to transform the object into something that will be of use to him. This can be seen through the production of consumer goods such as the production of a table. Before man added his labor to it, a block of wood is simply a block of wood that is of no use to any individual. However, when the carpenter adds his labor to the wood, the carpenter uses his imagination to visualize a table, use his carpentry to cut out the legs and base of the table, and finally assembles the pieces together to create a product that will provide some utility to others.

³⁰ Locke, *The Second Treatise of Government*, Ch 5, Section 27

³¹ Locke, *The Second Treatise of Government*, Ch 5, Section 32

This rationale was pushed to encourage pilgrims to search and cultivate new land under the belief that land that was not directly labored upon by man was not utilized to its fullest potential

³² Locke, *The Second Treatise of Government*, Ch 5, Section 32

³³ Locke, *The Second Treatise of Government*, Ch 5, Section 33

to improve upon with his own labor for his own private benefit since man is sentenced to work for his own sustenance. Man has the right to take from the common the resources he deems necessary for his own sustenance. As long as man is able to take from the common enough that he is able to provide for his own needs and able to labor upon those resources to create goods of value, his appropriation of land from the common for his own private use is not a violation of natural law.

1.5 The Limits to Consumption

As Locke mentions in his allocation of property however, the labor theory of property holds only when ‘there is enough, and as good, left in common for others.’ Locke does not make any presumptuous claims that individuals are innately good and will not arbitrarily attempt to make all the resources held in common into his own private property. To ensure that the labor theory of property not only creates an efficient but also fair and equitable allocation of property based on natural rights, Locke created a spoilage limitation to ensure that enough is left in common for others to also consume. Without an imposed limit to what an individual can appropriate from the commons, the excessive extraction of resources by certain individuals will leave others in the present or future with fewer or possibly no common resources left to meet their own basic needs.

Locke stigmatizes the heaping up and hoarding of resources for personal use as such actions limit the use of resources to all citizens but recognizes that it is in the interest for all individuals to do so to maintain their own livelihood. Thus, Locke permits individuals to hoard of resources as long as man does not appropriate resources exceeding “the bounds of his just property not lying in the largeness of his possessions but the perishing of anything uselessly in

it.”³⁴ The spoilage limitation imposes the “limitation to use what a person can consume without spoil,”³⁵ the act of letting a resource spoil after appropriating it from the common being equated with robbery. The spoilage limit imposes an explicit limitation where one cannot appropriate more than his fair share of resources from the commons, a fair share defined as the amount one can consume given a time limit, that limit being the time until the resource is spoiled and cannot of be consumed by anyone else for their satisfaction.

The exchange of resources becomes an important aspect of Locke’s theory since “if [man] gave away a part [of the resource] to anybody else, so that it perished not uselessly in his possession, these he also made use of. And if he also bartered away plums, that would have rotted in a week, for nuts that would last good for his eating a whole year, he did no injury.”³⁶ The value of a resource is not determined solely by its utility when consumed but also by its durability before it is spoiled by time. Locke’s right to use which is bestowed upon all individuals to does not sanction nonuse of resources at the expense of others, and “embody the idea that an owner who neglects his property may justly be deprived of it.”³⁷ Thus, trading a handful of nuts for a plum would be fair even though the nuts would provide less nutrition than the plum because the durability of the nuts against time over the plum creates additional value to the nuts by allowing the individual to save resources for future consumption.³⁸ Assuming the human population is small relative to the vast land God has bestowed onto man, we can assert

³⁴ Tully, *A Discourse on Property, John Locke and his adversaries*

³⁵ Gopal Sreenivasan, *The Limits of Lockean Rights in Property*, (Oxford University Press: NY, USA, 1995)

³⁶ Locke, *The Second Treatise of Government*, Ch 5, Section 46

³⁷ Sreenivasan, *The Limits of Lockean Rights in Property*

³⁸ One can calculate the value of a resource to be the utility of the good when consumed plus the value of the good consumed in the future along with the risk aversion of the individual. The value of durable goods such as nuts derives from their relatively long life span before spoiling. This durability is valuable since we cannot calculate what events will occur in the future. A poor harvest, failed investment, scarce resources, or other unfortunate events may occur where the individual would find himself without adequate sustenance. Durable goods will allow individuals to hedge against the future shortages and ensure their own sustenance in the future.

that “in the age of abundance, the spoilage limitation and the finitude of labor effectively guarantee that more than enough land will be available for all.”³⁹

1.6 Flaws with Locke’s Theory

Unfortunately, Locke’s labor theory of property is far from perfect and suffers from a number of serious and well-known flaws, the most important being the fact that the crucial inference to justify ownership is a non sequitur. Locke’s labor theory of property is very vague in describing how one comes to own property through the ‘mixing’ of their labor with the object in question. Why would the act of adding what one owns, his labor, into something he does not own become the means through which one would come to make that resource his property? We could reply that since the resources in common are not owned by any particular individual, the act of ‘mixing’ our property into the resource we would thereby differentiate that resource from other resources, making that resource uniquely ours to possess and consume in private. Since we added a part of ourselves into something that is not claimed by anyone else, the act of adding our property to that resource gives us a priority claim to use that resource.⁴⁰ However, we must then ask why mixing our labor with common resources would allow us to come to own that resource as opposed to merely losing something we previously had. This is exemplified with a theoretical exercise by one of Locke’s critics. If we add a can of tomato soup that we own into the sea, we do not come to own the sea for our private use. What differentiates between mixing our labor to produce a chair from mixing our can of tomato juice into the ocean? We could argue that there is no improvement made upon the resource, our labor in creating the chair producing something of

³⁹ Sreenivasan, *The Limits of Lockean Rights in Property*

⁴⁰ One can draw an allegory to the fable “The Little Red Hen,” where the actions of the hen to plant the grain, harvest, thresh, mill, then bake into bread gives the hen a priority use right to consume the bread over the other animals who did not also add their labor to produce the bread.

use that would not appear without our labor while our adding juice into the ocean provides no benefit. However, critics can then question why we can appropriate food for sustenance since pears or nuts are extracted by merely picking them from Nature as opposed to mixing our labor to improve upon those resources. Since our act of picking the fruit from a tree does not increase its innate value or utility, what justifies our ownership of that fruit? Lockeans could possibly argue that ownership of a resource comes from the amount of labor mixed into the good in relation to its value. However, we cannot determine how much labor needs to be mixed for one to come to own property or if there are different extents to which one could own property by mixing of one's labor into resources.

Locke attempted to address this claim by relying on social necessity, arguing that since there are no alternatives that would provide a simple but fair allocation of property, this would be the best theory to implement.⁴¹ According to Locke, "individual property rights are legitimate on the ground that appropriation of items from the common is necessary if the common is to be useful for the preservation of mankind."⁴² Locke's justification relies on the need for a theory to justify his claim, that the need for a theory to prevent the paradox of the plenty justifies implementing the labor theory of property. Locke also does not address how individuals come to own other essential resources that men need but cannot possess through 'mixing' labor, most notably the ownership of one's self and one's labor. For Locke, ownership in oneself is an assumption taken for granted and is not explored.

Locke's theory also does not justify why individuals only have the right to use as opposed to private dominion over resources he appropriates from the commons, nor does Locke

⁴¹ The justification is similar to Aristotle's defense of democracy. Although democracy is not the ideal social construct, the superior constructs are unsustainable over a long period of time while the practical alternatives to democracy are worse. Thus, although democracy is a bad system, it is still the best compared to the remaining options.

⁴² Tully, *A Discourse on Property, John Locke and his adversaries*

explicitly outline the various rights of use man has to the property he has come to own. Due to Locke's vague claim that individuals have a common right to use resource for their own sustenance, we do not know what individuals can do with their resources apart from consumption or bartering. Critics questions how "one could accept without pain that a laborer, even one who satisfied some sufficiency condition, was entitled to the rights of use in her product, and that is could not be taken from her without her consent and yet reject the conclusion that she was entitled to full individual ownership."⁴³ Locke cannot justify under the traditional interpretation of his theory why individuals only have the rights to use and not full ownership of the resources they extracted from common. Furthermore, Locke does not outline or justify what actions an individual may legitimately take in the use of his own property. Apart from the right to consume, bequeath, or barter; Locke does not outline other acceptable uses individuals have in relation to their property.

One of Locke's staunchest critics, Robert Filmer argued that humanity is inherently unequal with certain individuals possessing greater powers due to divine right. In his attempt to justify man's right to rule over another, Filmer argues "that fathers have a power over the lives of their children, because they give them life and being."⁴⁴ Filmer defends this conclusion by invoking Locke's labor theory of property, claiming that fathers own their children because anyone who makes something acquires dominion over it and fathers create their children. Since fathers add their labor in the creation of their children, the resulting entity that is produced from their labor must also be under their own dominion. Thus, following Locke's own labor theory, fathers can come to hold dominion over their own children since they are the creators of their

⁴³ Sreenivasan, *The Limits of Lockean Rights in Property*

⁴⁴ Tully, *A Discourse on Property, John Locke and his adversaries*

As an English political theorist, Filmer defended divine rights and absolute monarchy. By using Locke's labor theory, Filmer is trying to justify absolute monarchy by proving the father's ownership of his sons and equating the relationship of the father to the son with the king to his constituents.

own children.⁴⁵ Locke addresses Filmer's argument by refuting second premise. Since man does not have the knowledge and skill required "to frame and make a living creature," and he does not have sexual intercourse with the explicit intent to beget a child. Furthermore, if the father did own the child, the mother should possess an equal or greater claim to ownership since her role to beget the child is as much or even more laborious than the father's.⁴⁶ Since man does not have the explicit knowledge on how another human being is created or the power to intentionally create a child with a specified genetic code, fathers do not possess dominion over their children. Unfortunately, the criterion Locke used to reject Filmer's claim is one if consistently applied to all forms of property, would lead to the conclusion that there are many necessary resources men do not make and thus have no right to appropriate.⁴⁷ Given that Locke's labor theory justifies the appropriation of property through the mere mixing of labor, his theory cannot justify why one can appropriate some resources and not others.

1.7 The Workmanship Model

"For Men being all the Workmanship of one Omnipotent, and infinitely wise Maker; All the Servants of one Sovereign Master, sent into the World by his order and about his business, they are his Property, whose Workmanship they are, made to last during his, not one another's Pleasure" (2.6)⁴⁸

To counter the critiques brought up against the labor theory of property regarding the vague concept of how one mixes their labor with natural resources to come to own property, James Tully proposed a different interpretation regarding how one comes to own property through their labor. Tully asserts that it is not the "mixing" of labor into resources but the act of

⁴⁵ This argument has been expanded upon by Filmer to justify slavery due to the fact that man has the right to own another and monarchy due to the fact that the king is the father of all men and thus legitimizes his rule from his status as the owner of the other members of society.

⁴⁶ Sreenivasan, *The Limits of Lockean Rights in Property*

⁴⁷ One such example would be man's growing of fruit and vegetables in a farm for consumption. Man plants the seed into the soil

⁴⁸ Tully, *A Discourse on Property, John Locke and his adversaries*

mixing which mirrors God's act of creation that justifies our individual appropriation of resources from the common into our private property. Tully's workmanship model reinterprets Locke's labor theory of property so that property is limited to artificial products used for our consumption. The workmanship model relies on the special relationship formed between man and God, God giving man reason so that man can produce his own sustenance from Nature. The dependent relationship mankind has with God for its survival in both the present and future defines relationship between God and man and justifies why man's right to appropriate private property from the commons through his labor on the resource.

Man's limited ability to use his resources is due to his limited ability to mimic God. According to Tully, "in Locke's model, God is not dependent on the world, yet man is continuously dependent on God."⁴⁹ Man and God are similar in that God is able to make the world in a manner analogous to the way in which man is able to make intentional actions. God is able to will any action into existence just as man is able take action when he chooses. However, unlike God, man is dependent on his maker for being brought into being and for his continual existence. Without God, man does not have the resources or tools necessary for his own sustenance. Every man is thus a product of God and are created equal to each other and to all of God's other creations. However, what differentiates man from God's other creatures is that "God made him in his own likeness, makes him an intellectual creature, and so capable of Dominion."⁵⁰ God had created man and the world for certain purposes and established natural law to outline the various obligations and rights that arise from the actions which constitute various relations.⁵¹ Since man is the product of God's will, "man is subject to God's will in a moral fashion, [using] his reason to discover natural law and [choosing] to act in accordance with

⁴⁹ Tully, *A Discourse on Property, John Locke and his adversaries*

⁵⁰ Tully, *A Discourse on Property, John Locke and his adversaries*

⁵¹ Tully, *A Discourse on Property, John Locke and his adversaries*

it, thus participating in the divine order in the way appropriate to a rational creature.”⁵² By following natural laws which state that mankind ought to be preserved and that what is right is coincident with rational desire, man has the right to appropriate resources from the commons for his private use.

Tully’s definition of property is similar to Locke’s, expanding property from simple things to also include rights, obligations, and freedoms the individual possesses. According to Tully, a possession can belong to several persons in different ways, each having a different degree or kind of control over it. Tully also derives natural law through rationality, following logical arguments to understand God’s will. Since “preservation is one of God’s goals for men, and hence his natural duty is to bring it about, it follows that he has a natural right to it.”⁵³ Since it is God’s will for mankind to preserve itself, any rational desire man has is right for him to pursue.

As previously mentioned by Locke, man has property in his person and is the proprietor of the actions of his person. Although man “makes not himself nor the world, he makes the actions of his person and so has a natural and exclusive maker’s right in them.”⁵⁴ Tully proposes that it is not Locke’s view that a person mixes his labor with a preexisting object which persists through the activity of laboring and that Locke denies that something is one’s own because one has infused their ego with it. Rather, it is because when man comes to own property because when mixes his labor to produce a good, he is mirroring God’s power of creation through his making. Tully defines two conceptions of ‘production’: creation where “the thing is wholly made new so that no part thereof did ever exist before” and making where “a thing is made up of particles, which did all of them before exist, but that very thing, so constituted of pre-existing

⁵² Tully, *A Discourse on Property, John Locke and his adversaries*

⁵³ Tully, *A Discourse on Property, John Locke and his adversaries*

⁵⁴ Tully, *A Discourse on Property, John Locke and his adversaries*

particles, which, considered all together, make up such a collection of simple ideas, had not any existence before.”⁵⁵ A maker effects the material realization of some idea of his, one which constitutes the essence of the thing made and is an intellectual activity, similar to God as God made man in his own image as an intellectual creature capable of rational thought.⁵⁶ Thus, only rational people with an intellectual nature can come to own property, a person being a Forensick term “appropriating actions and their merit and so belongs only to intelligent agents, capable of a law, and happiness, and misery.”⁵⁷ It is not the simple mixing of labor or the mixing of one’s property, intentional or not, with a common resource that allows one to come to own that resource but the intentional act of making something through the creation and implementation of ideas into action that one comes to own property.

According to the workmanship model, the right a man enjoys in the product of his labor arises from his having made that product from the common materials God has provided for him. It is this intellectual exercise that provides man with the right to use resources. Man does not gain dominion over his resources like God has over man because the act of production is different for both. God brought man into being *ex nihilo* which differs from man who is incapable of bringing anything into existence *ex nihilo*. Man’s capacity for property is explained “in the similarity between man and God as makers in the broadest sense.”⁵⁸ Even though man cannot produce anything without using resources that are already available to him to use, man can still bring new things into being from his making. However, according to both Locke and Tully, the simple act of making is not sufficient to justify ownership. Locke outlines a central criterion for determining whether someone has made something to be “whether he knows what

⁵⁵ Sreenivasan, *The Limits of Lockean Rights in Property*

⁵⁶ Sreenivasan, *The Limits of Lockean Rights in Property*

⁵⁷ Sreenivasan, *The Limits of Lockean Rights in Property*

⁵⁸ Sreenivasan, *The Limits of Lockean Rights in Property*

that thing is in the sense of knowing its real essence.”⁵⁹ If man purposefully mixes his labor with the intention of creating a product, knows what actions need to be taken to create the product, and recognizes the use of the product after it has been created, then he has legitimate claim to appropriate that product for his individual use. Thus, it is not sufficient or appropriate to just ‘mix’ ones labor into a resource to appropriate it; the individual must labor on the resource with the proper intent and knowledge on the product he hopes to create and its use before it legitimately becomes his individual property for use.

1.8 Entitlements

According to Tully, all men have equal claim to all resources in the world because all men have equal creative power to produce things in the world. According to the maker’s right, “man made not himself nor any other man. Man made not the world which he found made at his birth. Therefore no man at his birth can have no right to anything in the world more than any other.”⁶⁰ Since everyone has equal capacity to create, everyone has an equal right to access those resources that are necessary for the individual to create as long as those individuals meet a minimum criterion that justifies their intellectual capacity to create. Jeremy Waldron asserts that “humans are one another’s equals by virtue of their possession of a rather modest intellectual capacity – the capacity to form and manipulate abstract ideas, which enables a person to reason to the existence of God.”⁶¹ If a person can conceive the existence of God through rational thought, then they are a rational person with the capability to make and own property. This rationality

⁵⁹ Sreenivasan, *The Limits of Lockean Rights in Property*

⁶⁰ John Locke, *Morality* From this definition, we can determine that the intellectual capacity needed to make and own property is set as an intellectual requirement that needs to be met so that the individual is rational enough to own property.

⁶¹ Jeremy Waldron, *God, Locke, and Equality: Christian Foundations in Locke’s Political Thought*, (Cambridge University Press: NY, USA, 2002)

criterion is not limited solely to Christianity since the argument for the conception of God is based on morality to ensure a morally-functional society. One conceives that God may exist since there is no creature on Earth that can create anything *ex nihilo*. Since such a creature does not exist, some other entity must have created or set some action to create the Earth for our use, that entity which we label as God. God is what bonds individuals to human society, ensuring that man keep his promises, covenants, and oaths because he believes and fears God's reprisal.⁶² As long as man can rationally conceive of some omniscient and omnipresent entity and thus realizes that he needs to uphold his human bonds, he can make and own property.

Locke believes children have a right to inheritance just as they have a right to common use or charity since "inheritance marks the fact that the parents have eased to use that which belongs to the family in common."⁶³ Locke justifies inheritance "because individuals are normally born infants, weak and helpless, without knowledge or understanding."⁶⁴ Unlike adults, children have not developed the capacity to comprehend God and thus lack the capability to produce resources for their own sustenance. Locke argues that children have a right to inheritance just as individuals have a right to charity based on actual inability. In both cases, the receivers of property are entitled because they are unable to gain property with their own labor. Since children are human beings, they have "a right to maintenance which entitles them to the means of comfort and support which acts as a charge on their parents' property."⁶⁵ Since children possess the natural right to life, they have the right to receive support from their parents to assist

⁶² John Locke, *A Letter Concerning Toleration*, Locke asserts that atheists are the only members who should not be tolerated in society because they deny the being of God and thus, the bonds of human society have no hold upon them.

⁶³ Tully, *A Discourse on Property, John Locke and his adversaries*

⁶⁴ Sreenivasan, *The Limits of Lockean Rights in Property*

⁶⁵ Sreenivasan, *The Limits of Lockean Rights in Property*

in their development even if they did not personally labor to earn that property or exchange goods in kind to their parents for their patronage.

However, Locke imposes a strict limitation on how much property can be bequeathed from the parents to children through inheritance. Since the right to inheritance is based on the dependence children have on their parents, the children's right to inheritance is limited to their period of dependency. Thus, Locke asserts that "adult decedents have no right of inheritance. Moreover, even dependent children are limited, in the extent of what they can inherit, to what is sufficient for subsistence."⁶⁶ Children have no right to inherit the surplus property their parents produced from their labor since the right to inherit is based on dependence. Once the dependent's basic needs are fulfilled, the child has no claim to the additional surplus property. Furthermore, the parent does not have the right to bequeath their surplus property to their children due to the fact that "Lockean man has no general right to appropriate or to be given an opportunity to appropriate. The only general right he has is to be guaranteed a subsistence if he cannot find it for himself."⁶⁷ Man only has the right to use property and not the right to freely bequeath his property to others. Since this property is taken from the common for private subsistence and will not be used if it remains in private possession, the property is then returned to the common so it can be used for the benefit of society.

1.9 Removing the Spoilage Limitation

The spoilage limitation is implemented in society to ensure that everyone is able to gain access to resources for their own subsistence while limiting hoarding, the durability of foodstuffs creating added value to certain goods. Although not perfect, the spoilage limitation ensures some

⁶⁶ Sreenivasan, *The Limits of Lockean Rights in Property*

⁶⁷ Waldron, *God, Locke, and Equality: Christian Foundations in Locke's Political Thought*

equitability among the citizens in society by providing all individuals with the right to access while the right to charity provides a more equitable distribution with the allocation of surplus property to those in need. Unfortunately, the development of the market to streamline bartering through the invention and implementation of money has destroyed the spoilage limitation. Although bartering allowed for the individuals to exchange property they owned with property they wanted, the bartering market was restrictive with high transaction costs. Bartering requires individuals to bring property of various sizes and values with the hopes of being able to trade them with things of equal value that they desire. Not only are there unequal values of property, there is no guarantee that the individual who possesses the property you desire also desires the property you have or if the property who hope to exchange for is of equal value. Due to these various inefficiencies with the bartering system, mankind invented money and developed into a market economy.

The benefit of money over basic property is that money serves as a unit of account, a store of value, and a medium of exchange that streamlines exchange. Money removes the transaction costs of a barter economy due to its ease in transportation and its universal value which places not only a value on your own property but value on other individual's property on a price set by the market. However, money itself does not have any value and is of no use unless it can be valued universally. For money to attain such criterion despite its lack of innate utility, the material that represents money must be scarce to determine its value and incredibly durable since the source of its value is derived from its durability. If money is not infinitely superior to other forms of property in its innate durability, there is no need for man to desire money because property provides infinitely more innate utility than money. Thus, money as we conceive of it as a durable material representative of value was created.

The spoilage limit was created to prevent hoarding to ensure that others are able to also access property. However, the situation changes with the creation of money because money is imperishable and unaffected by the spoilage limit. Money bypasses the spoilage limitation because money can never spoil since that is its innate purpose. Furthermore, since money is a storage of value, all forms of property with limited durability can be exchanged for money with the intention of being exchanged at a later date for a similar or different resource of equal or lesser value. The emergence of money removes the spoilage constraint since individuals who can create surplus property that they could not previously consume in their own lifetime can now hold those resources indefinitely as money to use at a later date, leading to hoarding of resources by certain individuals at the expense of others and the unequal appropriation of land and other essential resources previously held in common. The invention of money distorts Locke's economy "to foster inequality and propertylessness among a large section of society, and to put people more or less completely at the mercy of those who are now in possession of the majority of society's resources,"⁶⁸ the propertyless individuals needing to subsist on a wage relationship to survive. The creation of money incentivizes hoarding and extends the unnatural desire for individuals to accumulate more than their need at the expense of his fellow man. Although the sufficiency limitation and right to charity can be invoked to maintain a more equitable distribution of property, the sufficiency limitation is too vague or constrictive to be useful while the right to charity only ensures that every individual can live on a minimum threshold and does not distribute on the basis of equality.

To remedy the creation of money and its effects on appropriation, Tully claims that the "only solution after the introduction of money is to remove the rule that every man should have

⁶⁸ Waldron, *God, Locke, and Equality: Christian Foundations in Locke's Political Thought*

as much as he can make use of.”⁶⁹ There is a necessity to confine the rule so that the inclusive rights of everyone to appropriate property can still be exercised. Tully proposes “consent of the commoners is required because the common is their property and the remainder, after such enclosure, would not be as good to the rest of the commoners as the whole was when they could make use of the whole.”⁷⁰ Any other method should be rejected, including enclosure based on the justification that certain individuals should appropriate because they can make better use of the land. Since everyone has a right to property, there is no justification to differentiate the right one person would have over another. Furthermore, Locke asserts that “a worker is not entitled to the whole product of his labor since enough must be left for the necessities of the public.”⁷¹ Complete individual ownership and use of property is unjustified because although labor accounts for a significant part of the value created in a resource, it does not encompass its entire value. Thus, although one-use resources such as foodstuffs can be consumed wholly by the individual, resources with repeated use such as land cannot be permanently appropriated from the commons for personal use. Tully recognizes that through the basic assessment of rents, the sufficiency limitation is too restrictive to succeed since as resources are differentiated in their productivity and value, the more productive land and resources would be appropriated from the commons first, leaving resources of relatively lesser value for the community. A strict sufficiency limitation would restrict laboring to resources of relatively poor quality while the most productive resources are left untouched.

⁶⁹ Tully, *A Discourse on Property, John Locke and his adversaries*

⁷⁰ Tully, *A Discourse on Property, John Locke and his adversaries*

⁷¹ Tully, *A Discourse on Property, John Locke and his adversaries*

1.10 When the Commons are Gone

A critical assumption in Locke's labor theory of property is that there is always a greater number of natural resources in the commons than there are individuals to appropriate them to satisfy their sustenance. Any shortage in natural resources that lead to members of society falling below subsistence levels of consumption resulted from a misappropriation of resources due to hoarding which can be remedied with charity. According to Locke, God provided enough natural resources in the world such that double the inhabitants in the world can be properly sustained had money not been invented since "every Man should have as much as he could make use of, would hold still in the World, without straining any body, since there is Land enough in the world to suffice double the inhabitants had not the Invention of Money."⁷² One cannot reasonably assert that a similar distribution can also be made as long as the right to charity and the sufficiency limitation are also properly enforced.

Although Locke's theory has some utilitarian and general right based aspects to it, it is fundamentally a special right based theory that asserts that one gains a conditional right after certain conditions have been fulfilled.⁷³ According to Locke, private property does not exist to serve the public good but is a right that men brought with them from the state of Nature into political society and for its protection political society was created. Since men are not strict observers of justice, the enjoyment of property in the state of Nature is unsafe and insecure, requiring men to enter political society and create institutions to protect their property despite the fact that the laws to regulate property are derived from Nature. In all instances through which Locke's labor theory is developed and which Tully reassesses, there is an overarching assumption that there will always be surplus resources in relation to need. Never does Tully nor

⁷² Waldron, *God, Locke, and Equality: Christian Foundations in Locke's Political Thought*

⁷³ Jeremy Waldron, *The Right to Private Property*, (Oxford University Press: New York, NY, 1988)

Locke mention how the labor theory would function once natural resources become scarce with the threat that a fair appropriation of resources would be insufficient to satisfy the needs demanded by the individuals.

1.11 The Misrepresentation of Value

Locke condemned using money as a substitute for property due to its ability to allow individuals to bypass the spoilage limitation and only reluctantly allowed money to be used in society because of its social benefits. Money is conducive to trade and is essential for a barter economy to transition into a market economy since it is an acceptable medium of exchange. As a stable medium of exchange, money “permits the household to economize on the amount of resources absorbed by [knowledge-gathering] activities and to enjoy a larger and more diversified basket of goods and more leisure.”⁷⁴ Unlike a barter economy where individuals have different demands for goods in different quantities, money allows individuals to be able to sell goods they have to a general public for a fair price and purchase goods at a fair price without needing to expend additional resources.⁷⁵ As a unit of measure, money can be used to set a stable price on goods to substitute produced goods because of the benefits society derives from more efficient transactions in a market economy. By reducing the difficulty in transactions and unifying the supply and demand for all goods to one common unit of measure, money allows

⁷⁴ Karl Brunner and Allan Meltzer, “The Uses of Money: Money in the Theory of an Exchange Economy,” *The American Economic Review*, p. 786

⁷⁵ An example would be an individual with a cow who wants books. In a barter economy, the individual would need to find a person willing to trade books for cows or discover what the person with books wants, such as rope and then find a person willing to exchange rope for a cow. As such, given the differences in demand, individuals would need to expend significant resources to find individuals who are willing to barter. Furthermore, goods are indivisible and differ in value. A cow may represent 20 meters of rope one day, 40 the next due to differences in the demand and supply of the bartering parties. Unless significant resources are expended, individuals cannot always trade their goods for fair prices and significant arbitrage is possible.

society to access to a greater variety of goods at a fair price. Thus, Locke realized that to oppose the creation of money would hinder social progress and thus accepted its incorporation.

Locke failed to recognize that money fails to account for another significant measure of value that is essential in determining the true value of a good. Society determines the value of goods based on the immediate demand society has for the good as well as supply available in the market. By finding the price buyers are willing to pay as well as the price sellers are willing to accept, the market economy determines a fair price for produced goods. However, the market economy fails to remember the innate value of money itself. Money was incorporated into society not only because it represents a societal unit of measure and medium of exchange, but also because it is a stable storage of value. Money in and of itself is useless, a piece of paper or metal whose value is only recognized through the trust society has in it. Money is valuable because it is a permanent resource that is able to retain its value over time. Unlike consumer goods such as fruit, which goes bad if left unconsumed over time, or manufactured goods, such as a table which decreases in value over time through use, money is unique because it retains its value regardless of time. Regardless of the number of times a dollar is used or the length of time the dollar has been in circulation, the value of a dollar remains as a dollar. It is this tenacity to retain a fixed value regardless of the effects of time that makes money the ideal good to act as a unit of measure of all other goods.

However, due to money's innate value as a unit of stable value, society fails to recognize that other goods possess different values based on their individual differences which significantly alter the true value of certain goods. In our current society, the value of a good is determined by the demand for it as well as the supply. The demand for a good is derived from its utility in its consumption and the personal preferences of the buyer while the supply of a good is determined

by the costs incurred in producing the good. Thus, the market can justify issuing a higher price for brand name shoes over regular shoes regardless of the fact that both goods are footwear. Buyers are willing buy the brand name shoes at a higher price to because the brand name provides additional utility to the good in its use and the preference of the buyer to that particular brand, also known as conspicuous consumption, which makes the shoes more valuable. The seller is more inclined to sell their brand name shoes at a higher price because they incur a higher cost in ensuring that their brand retains its reputation for higher quality. However, these factors fail to take into account the time-value of these goods.

One of the values of a good under Locke's labor theory of property lies in its storage capacity. The spoilage limitation asserts that one has not violated the rights of others in his appropriation of a good as long as that good is consumed before it has spoiled. Taken another way, a good can be more valuable than another because of its ability to retain its usage over time. Following Locke's example, trading a single walnut for a pear could be justified as a fair despite the differences in utility. Although the utility of the pear may be greater than that of the walnut due to the higher calories the pear provides and the better taste, the walnut is able to remain fresh for a longer period of time than the pear and can be stored for a longer period of time without fear of spoiling and infringing on the rights of others. Due to its greater durability over time, the walnut has additional value than the pear.

Although there is no definite methodology to measure the time-durability value of a good to reflect as a price, the closest measure would be risk. By measuring both the length of time a good can remain consumable and comparing that to the risk of creating a rival good with a shorter spoilage time frame but higher utility, one could possibly determine the time-value of a single good. Although this difference in time durability is relative between two goods, it is an

important measure of value that is lost when goods are measured based on the single measurement of money based on demand and supply. Our current methodology does not take into account the time durability of certain goods and thus undervalues certain goods over others. Since certain foods spoil quicker than others, foods that are able to retain their freshness for a longer period of time should have a higher price given the fact that they last longer.⁷⁶ Given that certain goods are more durable than others and thus can be stored for longer periods of time and consumed in times of need, these goods should have a higher price to reflect their greater value.

1.12 The Right to appropriate Land

Although value is determined by mixing labor, the innate value of a consumable resource is not determined solely by its added labor. As Locke acknowledges, one comes to appropriate goods when man appropriates them from nature, the additional value he adds with his labor giving him the right to consume that good. One cannot assert that it is only man's labor that produces value in the good although it may comprise a significant part of it. Man's right to consume and own goods thus comes from his ability to add value, his ability to appropriate things from nature derived from his ability to reason and create rather than from his own ability to create. One of the reasons why man's right to consume and destroy is limited is due to the fact that man cannot create *ex nihilo*, that man needs to create from the materials God has given for him to work with so that man can create goods for his own use and consumption. Although this premise is essential to understanding why man must be limited in his right to consume goods, it

⁷⁶ Critics would argue that this difference in spoilage limitations is not as significant due to improvements in technology such as refrigeration that would preserve food for longer periods of time. However, this does not undermine my argument since it shows that for a pear to last as long as a walnut, it needs a refrigerator to retain its freshness for a longer period of time.

is also a premise that is essential to understand what goods and resources man is legitimately allow to appropriate.

Locke's labor theory of property only discusses goods man appropriates for his own consumption and livelihood. Man has the right to appropriate fruits and water because he needs them to survive. Man has the right to appropriate wood to build carts or plows because man has the right to create capital goods to aid in his labor in the production of future goods. However, unlike the various natural resources Locke permits man to appropriate, land is a different natural resource. Land is not a consumer good that is produced for consumption but a capital good used for the purpose of producing. Unlike fruits for consumption or wood which needs to be labored upon before it becomes a capital good, land is a capital good which possesses its own ability to produce without additional labor from man.⁷⁷ Unlike other natural resources, land has the potential to produce resources for others to consume.

Given the unique property land has as a capital good rather unlike the other natural resources available to man, Locke's labor theory of property must reassess land in a very different perspective. Land is not an equivalent resource that can be freely appropriated from nature like other resources because unlike other resources, it has the capacity to produce those resources that were previously common to all. By appropriating land from the commons for his own individual use, man is able to consume resources he grows in private for his own individual consumption since anything that is produced from that land from man's labor is also his property. Although man has the right to appropriate land for his own use, his appropriation of land reduces the quantity of land available for others to also appropriate. Given that land is both limited and not prone to spoilage, man must acquire consent from society for his individual

⁷⁷ A capital good is an economic term for a good that is used in the production of other goods rather than a good that is consumed for its own sake. The Cobb-Douglas function quantifies production with the equation $Q = K^\alpha L^{(1-\alpha)}$ where output is calculated as a function of capital and labor.

ownership. The capitalist would argue that given Locke's labor theory of property was created with the intent to substitute consent from society. Given that it is permissible for the individual to appropriate natural resources from the common for his own individual consumption, it should also be permissible for individuals to appropriate land from the commons for his own individual ownership.

Jean-Jacque Rousseau proposed that "the first man who, having enclosed a piece of ground, bethought himself of saying *this is mine*, and found people simple enough to believe him, was the real founder of civil society," and lamented how many horrors and misfortunes mankind could have saved if one cried to his fellow man "beware of listening to this imposter; you are undone if you once forget that the fruits of the earth belong to us all, and the earth itself to nobody."⁷⁸ Rousseau argued that land is common to all and belongs to society in common. Every individual has a right to access land but he does not possess the right to appropriate land for his own individual use. Man does not have the right to enclose land because land is given by God to all men. By enclosing land for one's individual use, man is essentially prohibiting others from enjoying the resources the Earth produces for all men in common by appropriating those resources before fruition for his own personal consumption. Man's appropriation of land not only provides him with access to capital to produce consumer goods for his own welfare, it also limits the resource base for his fellow man to enjoy those same benefits due to the limited quantity of land available. Locke's spoilage limitation does not impose any limitations to the appropriation of land due to the fact that land in and of itself can never spoil due to its nature as a capital good. As long as that land is used for its productive capabilities, Locke's labor theory would justify appropriation at the expense of his fellow man. Given that land is limited yet there is no

⁷⁸ Jean-Jacque Rousseau, "Discourse on the Origin and Basis of Inequality Among Men," *The Social Contract and Discourses*, (BN Publishing, USA, 2007), The Second Part, p 118

limitation on the quantity man can appropriate for his own benefit, there will be an inevitable shortage in land as is appropriated among the first individuals who choose to appropriate the land for their own benefit, leaving those will lower standing in society or those born in later generations unable to appropriate land for their own consumption or be able to labor for their own sustenance due to the fact that the natural capital that previously produced those goods in common for appropriation are now owned in private.

The appropriation of land thus subverts the rights of others to appropriate and consume due to the fact that the appropriation of land with inevitably lead to a society where there are no commons left for individuals to appropriate. Tully argued that should resources become limited to the extent that further appropriation would prevent others from access to resources for consumption, Locke's labor theory must dissolve and return to a system of consent among all individuals in society. Waldron proposed that land may only become property as long as there is enough and as good land left in common, the lack thereof prohibiting further appropriation. Tully and Waldron's attempt to address the shortage of land is a significant issue because the appropriation of land removes the capital available in nature to produce communal consumable goods, favoring landowners by giving them monopoly access to certain resources. By decreasing the quantity of communal resources for individual appropriation, landowners essentially gain an advantage over other individuals due to their ownership of a resource that provides them with the same capabilities as the resources shared by a society. Given increasing populations and decreasing communal resources, landowners have the power to essentially enslave their fellow man, forcing them to labor for the landowner in exchange for access to those resources that were once common to all.

In regard to limited land, Locke supported privatizing land because he believed the privatization of land would increase productivity, allowing a greater population to live off smaller acres. However, Locke was against the imbalance of power between workers and believed that man has the right to choose if he wanted to work under his own person or for another, “the servant must be free to not be a servant and have access to availability of spontaneous products of nature.”⁷⁹ Locke attempts to remedy the inequality in rights that results from the appropriation of land by asserting that “under conditions of scarcity, there attaches to property in land as a condition of its continuing legitimacy, the obligation to employ those without land of their own.”⁸⁰ Furthermore, the sufficiency condition maintained that “appropriated land must be able to sustain at least as many people as it was capable of sustaining while held in common.”⁸¹ Given that land was primarily a communal resource, the landowner has an obligation to employ as many landless able-bodied commoners, minus one, as his land could have supported had the land not been appropriated. Given that every landowner would be under such an obligation, “neither party in these negotiations will have any bargaining power.”⁸² However, Locke misunderstands economics, failing to recognize that not only is there no mechanism to ensure that landowners hire enough individuals but that landowners possess different qualities of land and do not necessarily have to hire certain individuals. Landowners can get commoners to compete against each other due to the limited number of individuals they would need to hire, essentially maintain bargaining power over the landless.

Locke justified the appropriation of land, asserting that without appropriation, there would be large amounts of land that would not be labored upon had appropriation not occurred,

⁷⁹ Tully, *A Discourse on Property, John Locke and his adversaries*

⁸⁰ Tully, *A Discourse on Property, John Locke and his adversaries*

⁸¹ Tully, *A Discourse on Property, John Locke and his adversaries*

⁸² Tully, *A Discourse on Property, John Locke and his adversaries*

thus limited the potential resource base of society. Land can be spoiled if it is not labored up “if the products of the improved field are not used in the sense of being collected for the sake of use for support and comfort, then the cultivated land ceases to be one’s own and reverts to the common.”⁸³ Individuals do not have a right to own land but the right to use land conditioned upon the use of the products produced from the land from man’s cultivation. Locke’s conception of land ownership was derived from the English common where “every man was an independent proprietor, [with the] attempt to ensure the widest possible distribution of private property by abolishing monopolies, banning primogeniture and throwing open the commons.”⁸⁴ By employing the sufficiency limitation and ensuring that government regulates appropriation with the intent of maximizing the use of land while ensuring the widest possible distribution of it, the appropriation of land is acceptable.

Locke’s labor theory of property must adopt a more regulated stance in regards to appropriation regarding land. Although Locke’s theory permits the appropriation of land, it may only do so given that the land appropriated is utilized to its maximum efficiency and that laborers are employed significantly that its appropriation does not harm society. The appropriation of land must be regulated by society as land in itself is a common good, an essential resource that ensures that the common resources for appropriation are produced. Given Locke’s vision of an equitable society and his misunderstanding of economics, we must assume that Locke permitted the appropriation of land given stringent limitations, that the appropriation be regulated by societal values rather than individual interests and that the appropriation would be in the interests of both the landowner and society as a whole to permit. The appropriation of land must be

⁸³ Tully, *A Discourse on Property, John Locke and his adversaries*

⁸⁴ Tully, *A Discourse on Property, John Locke and his adversaries*

determined by the social values and communal consent of society given land's productive potential.

From this chapter, we can ascertain that Locke's labor theory of property does not permit the capitalist conceptions of consumption and ownership practiced in modern neoliberal capitalism. Although Locke's theory permits the capitalist ethic where one owns what one has labored on and deserves to be compensated for his labor, there are stringent limits on what man can appropriate and what rights man has to his own creations once he has created them. Furthermore, despite man's right to enjoy the fruits of his own labor, man has an obligation to support his fellow man in times of crisis due to the interest of man and the intention of God to ensure that humanity maintains its prosperity over time. In light of the significant discrepancies between Locke's true intentions and modern capitalist practices, we must reevaluate the claims individuals truly have in the fruits of their labor and the obligations the capitalist has to his fellow man. The next chapter will attempt to delve more into the obligations man has not only to his fellow man in society, but to humanity as a whole in the concept of sustainability.

Chapter 2: Pragmatic Environmental Sustainability

Modern theory of environmental sustainability has been plagued with contention and extreme views that has hindered discussion on what a workable definition of sustainability could be, let alone a conception of sustainability that is complementary with capitalist society. However, the Brundtland Report, submitted to the United Nations in 1987, attempts to conceive a working definition and identify some concepts of what sustainability should entail. Environmental philosopher and adaptive management advocate Bryan Norton attempts to further this conception of sustainability and identify a method to make sustainability a practical reality while addressing the many theoretical issues that hindered its conception in the past. Similar to Locke, both the Brundtland Report and Norton acknowledge that the capitalist system is an ingrained ideology of modern society. Neither advocates a change in the capitalist ideology or a reversion back to a more antiquated but natural state of society that is codependent on nature, such as Green theory, nor does either advocate inaction and a belief in human ingenuity to solve environmental crises through innovation like Cornucopian theory.

Rather, both advocates of sustainability advocate social change and local self-determination. For sustainability to first become achievable, one must first define what being sustainable is. Modern environmental philosophy is plagued by the contention between economists and ecological philosophers whose language prevents any discussion of what sustainability could be given the emphasis both sides place on opposing values. By analyzing the social and environmental issues that arise with environmental sustainability and Norton's proposed solutions, I will identify the key concepts of Norton's argument for adaptive management which I will expand upon in relation to a reinterpreted conception of capitalism in the next chapter.

2.1 Environmental Ethics

Environmental sustainability is a growing concern due to humanity's dependence on the environment as well as its significant impact through their consumption patterns. Modern

environmental philosophy has focused considerably on the impact human production and consumption has had on the environment and attempts to assess the source of these impacts. Although previous environmental theories have discussed the various stresses human growth can have on the environment, the first individuals to successfully quantify the various environmental stresses by humanity into a single equation were Paul Ehrlich and John Holdren in 1970 with the IPAT equation where:

$$\text{Impact} = \text{Population} \times \text{Affluence} \times \text{Technology}$$

Environmental economists propose that the cumulative impact humanity has on the environment in any given point in time can be calculated by the total population multiplied by the affluence of the population and the current technology in use. In this equation, population is defined as the size of the population, affluence as the consumption by that population, and technology the process used by the population to transform resources into useful goods and waste.⁸⁵ As population and affluence increase, the impact humanity has on the environment also increases while technology represents a more unique variable that changes the level of impact depending on the technology implemented. Unlike population and affluence which only magnifies impact, the authors note that “improvements in technology can sometimes hold the per capita impact constant or even decrease it despite increases in per capita consumption.”⁸⁶ Although initially created to show both the significance of technology on environmental degradation and to propose the possibility that improvement in technology can mitigate the inevitable increases of human impact through population growth and economic prosperity, the equation represents a simplified account of the various factors that contribute to humanity’s impact on the world. The IPAT equation has contributed to redefining our philosophical

⁸⁵ Marian Chertow, “The IPAT Equation and Its Variants,” *Journal of Industrial Ecology*, Vol 4

⁸⁶ Marian Chertow, “The IPAT Equation and Its Variants,” *Journal of Industrial Ecology*, Vol 4

understanding of environmental ethics and reassesses our values in relation to the environment. What responsibilities does man have to the world and what actions should man adopt to mitigate his impact on the world. This has developed into three variant branches of thought, each one advocating an active change in a single factor in the equation.

Green theory asserts that humanity's capitalist ideology is innately incompatible with environmental sustainability since "environmentally sustainable development implies sustainable levels of production and consumption rather than sustained economic growth."⁸⁷ According to their conception of the IPAT equation, humanity's demand for affluence is too great and imposes too much pressure on the environment. Green theorists argue that humanity should forgo economic growth should be limited and focused on equitable distribution and development, regulating waste emissions to be "kept within the assimilative capacity of the local environment without unacceptable degradation of its future waste absorptive capacity," renewable resources harvested within regenerative capacities, and nonrenewable resources harvested below the rate at which renewable substitutes are developed.⁸⁸ To achieve sustainability, extreme green theorists advocate returning back to Nature and forgoing capitalism.

Neo-Malthusian theory improves upon Malthus' initial theory on population. Based on the premises that "food is necessary to the existence of man" and "that passion between the sexes is necessary, and will remain nearly in its present state," Malthus proposed that population expanded and contracted in size dependent on availability of resources in the region.⁸⁹ Malthus argued that the rate of growth for agriculture increased arithmetically while the rate of growth for populations increased geometrically. Although populations are initially below the carrying capacity of a given region, due to the larger increase in population growth compared to

⁸⁷ Robert Goodland, "The Concept of Environmental Sustainability,"

⁸⁸ Robert Goodland, "The Concept of Environmental Sustainability,"

⁸⁹ Thomas Malthus, *First Essay on Population*

agricultural growth, the size of the population will inevitably outgrow the supply of food available to the population, requiring a crisis which will allow the population to revert back to a quantity below the maximum carrying capacity. Neo-Malthusians expanded upon this initial theory to assert that environmental sustainability is contingent on humanity's unregulated population. Humanity creates too significant an impact on the environment through its unregulated population growth which cannot be remedied with decreasing rates of affluence or improvements in technology. Thus, Neo-Malthusians argue that we must actively suppress our population growth, limiting our birth rate to 2.1 or lower to maintain a constant or decreasing population.

Cornucopian theory embraces capitalist ethics and argues that humanity should embrace entrepreneurship and new technology to solve current crises. Relying solely on technology, cornucopians propose that human impact derived from increases in population and affluence can be mitigated by improvements in technology. Throughout history, humanity has always been able to discover new technologies or alternate substitutes when humanity faces limitations with current resources which encourage human innovation and entrepreneurship that allows humanity to overcome these limitations. Rather than attempt to halt their own growth by regulating population or decreasing incentives to generate wealth, cornucopians argue for greater investment in technology.

As we can see from the discussion and ideals of the three main schools, each theory focuses on a single aspect of the IPAT equation and focuses on altering that specific variable at the expense of others. Due to limited resources and different theories on the leading proponent of human impact, the three different philosophies of environmental sustainability have failed to come to a general consensus on how sustainability should be defined as, let alone how it can be

achieved. However, recognizing that this is an international issue with at least three unknown but significant factors that contribute to humanity's impact on its environment, the United Nations attempted to outline a universal conception of sustainability.

2.2 *The Brundtland Report*

The Brundtland Report, titled *Our Common Future*, was a report submitted to the United Nations in 1987 by Brundtland Commission headed by Gro Harlem Brundtland with the task of defining sustainable development and creating strategies for the international community achieve sustainable development.⁹⁰ This report came into being due to the growing realization that economic development cannot be separated from sustainability and that “many present development trends leave increasing numbers of people poor and vulnerable, while at the same time degrading the environment.”⁹¹ By defining what sustainable development is and how the international community should develop to ensure that they are able to encourage economic development while retaining their obligations to the future, the Brundtland report hoped to outline strategies for nations to adopt so that they can pursue sustainable growth without sacrificing economic efficiency.

The Brundtland report recognizes that a clear reassessment of social values and economic goals was necessary if we hope to curb humanity's increasingly significant impact on its environment. Human impact has increased significantly, our population at 5 billion at the time of the report with the population projected to stabilize between 8 and 14 billion within the next century while industrial production has increased more than fiftyfold over the past century with

⁹⁰ Gro Brundtland, “Our Common Future, Chairman’s Foreword,” UN Documents

⁹¹ Gro Brundtland, “Our Common Future, From One Earth to One World,” UN Documents

four-fifths of this growth emerging from 1950.⁹² Although new technology offers the potential to slow this rapid consumption of finite resources, the report recognizes that technology “entails high risks, including new forms of pollution, and the introduction to the planet of new variations of life forms that could change evolutionary pathways.”⁹³ Thus, unlike the more optimistic Cornucopian ideology on environmental sustainability, humanity cannot hope to stem environmental degradation through further technological development. Humanity must stem its overconsumption and reassess both its economic goals and its societal values if it hopes to manage the various environmental issues it hopes to solve.

The Brundtland report argues that a world in which poverty and inequity are endemic will always be prone to ecological and other crises and “living standards that go beyond the basic minimum are sustainable only if consumption standards everywhere have regard for long-term sustainability.”⁹⁴ Beyond this basic standard of livelihood however, the Brundtland report asserts that “perceived needs are socially and culturally determined, and sustainable development requires the promotion of values that encourage consumption standards that are within the bounds of the ecological possible and to which all can reasonably aspire.”⁹⁵ Thus, the Brundtland report conceives a two-tiered definition of sustainable development: a minimum standard of consumption which every community has a right to achieve on the basis of humanity’s basic needs and a right to define sustainable development. Sustainable development needs to be conceived of as a “process of change in which the exploitation of resources, the direction of investments, the orientation of technological development; and the institutional change are all in

⁹² Gro Brundtland, “Our Common Future, From One Earth to One World,” UN Documents

⁹³ Gro Brundtland, “Our Common Future, From One Earth to One World,” UN Documents

⁹⁴ Gro Brundtland, “Our Common Future, From One Earth to One World,” Introduction , I, UN Documents

⁹⁵ Gro Brundtland, “Our Common Future, From One Earth to One World,” Introduction , I, UN Documents

harmony and enhance both current and future potential to meet human needs and aspirations.”⁹⁶

The Brundtland commission recognizes that sustainability cannot only be concerned with the basic needs of humanity in the current generation but it must also consider the needs and rights to resources of future generations. However, considering the fact that our current generation also suffers from a crisis in limited resources where poorer members in our current society are incapable of fulfilling their basic needs, the Brundtland commission must balance between the needs and rights of the current poor with the needs and rights of the possible future.

2.3 The Brundtland Conception of Sustainability

The Brundtland report defines sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”⁹⁷ Despite its simple preface, this definition of sustainability is difficult to implement in practice due to the dichotomy between respecting the rights of the future and the rights of the present. Given that we have finite renewable and nonrenewable resources, there is an inevitable struggle between the consumption rights of the current poor against the consumption rights of the future as a whole. Due to the fact that there are currently individuals who do not have the wealth necessary to afford their basic necessities, we need to consider allocating wealth and spending to provide adequate social care for those in current need. However, given both our increasing population size over time as well as dwindling resource base, we need to save our remaining resources and invest in increasing our resource base to sustain our future. It is not just that one must suffer from starvation and poverty merely because one was born into a developing nation

⁹⁶ Gro Brundtland, “Our Common Future, From One Earth to One World,” Introduction , I, UN Documents

⁹⁷ Gro Brundtland, “Our Common Future, From One Earth to One World,” Introduction , I, UN Documents

with inadequate care by chance but it is also our obligation as human beings to ensure that our future does not suffer from the consequences of our selfish consumption patterns.

The Brundtland report attempts to remedy this issue by stating that “living standards that go beyond the basic minimum are sustainable only if consumption standards everywhere have regard for long-term sustainability.”⁹⁸ As long as there is a significant resource base that is able to sustain our current population and future populations beyond a minimum threshold, any further consumption of resources beyond the basic minimum can only be defined as sustainable if those consumption patterns consider the consumption rights of the future. Sustainable development requires societies to “meet human needs both by increasing productive potential and by ensuring equitable opportunities for all”⁹⁹ by focusing on accumulating knowledge and developing technology to enhance the carrying capacity of our resource base to its ultimate limits. The Brundtland report does not go so far as to embrace technology and productivity as the solution to environmental degradation like Cornucopains. Although technology plays a significant role in mitigating human impact, the Brundtland commission recognizes that reductions in population and affluence are necessary costs that present society must accept for future generations.

The Brundtland report thus attempts to assess the ideal rate of consumption to meet present and future needs for natural resources. The report recognizes that renewable resources “are part of a complex and interlinked ecosystem, and maximum sustainable yield must be defined after taking into account system-wide effects of exploitation,” while nonrenewable resources need to be consumed at a rate where “the rate of depletion should take into account the criticality of that resource, the availability of technologies to minimize depletion, and the

⁹⁸ Gro Brundtland, “Our Common Future, From One Earth to One World,” Introduction , I, UN Documents

⁹⁹ Gro Brundtland, “Our Common Future, From One Earth to One World,” Introduction , I, UN Documents

likelihood of substitutes being available.”¹⁰⁰ After assessing the maximum yields of sustenance our resources can provide for us, we must find the ideal rate of consumption such that we can use renewable and nonrenewable resources in the short term while investing in new technology such that we can reduce our dependency on nonrenewable resources and maximize yields from our renewable resources to sustain our population in the future.

The Brundtland report also attempts to discuss how present generations should invest in present resources to increase future yields. Due to the irreversible impact any form of investment has on the ecology of the environment, the effects of investments to improve the resource base must be carefully considered to ensure that the short-term gains are not hindered by long-term losses. Ecosystems interdependent systems where “resource use alters the dynamics of species competition, thereby fundamentally, changing the regeneration of the resource and, in extreme cases, causing the collapse of the resource management system.”¹⁰¹ Furthermore, changes to ecosystems are irreversible; the initial exogenous shock on the system creating a permanent change that cannot be undone. Comparing different species of grass, Albers discovered that “once grasses are established [in the ecosystem], they will continue to dominate in all future cycles.”¹⁰² Due to the fact that different species have different effects on the ecosystem, the newly introduced species could shape its surrounding environment such that it lost its previous value as a resource. In the case with grass, Albers discovered that “because grass ecosystems provide less agricultural fertility than do woody ecosystems, farming may never again be profitable [in that ecosystem] and the land may be abandoned permanently.”¹⁰³ Human impacts

¹⁰⁰ Gro Brundtland, “Our Common Future, From One Earth to One World,” Introduction , I, UN Documents

¹⁰¹ H.J. Albers, “Irreversible ecosystem change, species competition, and shifting cultivation,” *Resource and Energy Economics*, 22 (2000) p. 262

¹⁰² Albers, “Irreversible ecosystem change, species competition, and shifting cultivation,” p. 268

¹⁰³ Albers, “Irreversible ecosystem change, species competition, and shifting cultivation,” p. 268

have lasting changes on their surrounding environment where improper actions can lead to permanent loss and erosion of previously valuable and suitable resources.

Thus, to avoid reducing the future supply of natural resources, the Brundtland report argued for ecological conservation. Sustainable development must require the conservation of plants and animal species since “short-sighted, short-term improvements in productivity can create different forms of ecological stress, such as the loss of genetic diversity in standing crops, salinization and alkalization of irrigated lands, nitrate pollution of ground-water, and pesticide residues in food.”¹⁰⁴ Although our issue with limited resources can be solved by increased use of renewable energy sources, “the exploitation of renewable sources such as fuelwood and hydropower also entails ecological problems. Hence, sustainability requires a clear focus on conserving and efficiently using energy.”¹⁰⁵ Communities must reassess their consumption patterns according to the compatibility between society’s environmental and economic objectives as opposed to individual or group gains. We cannot retain a blind faith in technology and science’s ability to find the solutions to our problems, nor can we attempt to escape our need for sustainable growth by revoking capitalism. Instead of maintain present consumption levels, humans need to reassess how resources should be allocated to sustain what is important. Rather than determine what should be preserved or based on the will of all individuals in society, sustainable values must be determined by the General will of society.¹⁰⁶

¹⁰⁴ Gro Brundtland, “Our Common Future, From One Earth to One World,” Introduction , I, UN Documents

¹⁰⁵ Gro Brundtland, “Our Common Future, From One Earth to One World,” Introduction, III, section 5

¹⁰⁶ Rousseau conceived of an ideal society where the laws that dictate the rights, obligations, and values of the state should be determined not by the aggregate interests of the individual members of the state but the general will, the consensus of the society considering not their individual interests but the interests of each individual member as a citizen of that society.

2.4 Resource Crisis

Unlike previous environmentalist philosophers however, the Brundtland report recognizes that populations can decrease over time without a Malthusian population bomb. The Brundtland report recognizes that threats to the sustainable use of resources “come as much from inequalities in people’s access to resources and from the ways in which they use them as from the sheer numbers of people.”¹⁰⁷ Population growth “diffuses the fruits of development over increasing numbers instead of improving living standards in many developing countries”¹⁰⁸ and a reduction in the current growth rate is essential for sustainable development to become feasibly possible. Although we produce more food per head of population today than ever before in human history, “increases in food production are undermining the base for future production.”¹⁰⁹ New technology expedites our problems, the impacts of technology decreasing the productivity and future yield of the land.

According to the report, “increases in cropped areas in recent decades have often extended cultivation in marginal lands prone to erosion”¹¹⁰ which has resulted in 29% of the Earth’s land suffering from slight, moderate, or severe desertification. Due to our emphasis on short-term sustainability, land permanently degraded to desert-like conditions continue to grow at an annual rate of 6 million hectares while our global food system will need to annually increase food production by 3-4%.¹¹¹ To remedy this decrease in arable land, the report proposes identifying land according to a ‘best use’ criteria and enact local land reform. Without reform, “institutional and policy changes meant to protect the resource base can actually promote

¹⁰⁷ Gro Brundtland, “Our Common Future, From One Earth to One World,” Ch 4, Population and Human Resources

¹⁰⁸ Gro Brundtland, “Our Common Future, From One Earth to One World,” Ch 4, Population and Human Resources

¹⁰⁹ Gro Brundtland, “Our Common Future, From One Earth to One World,” Ch 5

¹¹⁰ Gro Brundtland, “Our Common Future, From One Earth to One World,” Ch 5

¹¹¹ Gro Brundtland, “Our Common Future, From One Earth to One World,” Ch 5

inequalities by shutting the poor off from resources.”¹¹² Land must be reallocated based on local values due to the diverse ecologies and population growth must be regulated if humanity is to sustain its basic needs.

In regards to global natural resources, global cooperation under treaties and an assistance program where industrialized nations help developing nations strengthen their legal and institutional frameworks are essential to sustainability. The living resources of the sea are under threat from overexploitation, pollution, and land-based development with “most major familiar fish stocks throughout the waters over the continental shelves, which provide 95% of the world’s fish catch, are now threatened by overfishing.”¹¹³ Although the Law of the Sea reconciled widely divergent interests of states and established the basis for a new equity in the use of oceans and their resources, the treaty is still inadequate to prevent overfishing or protecting endangered species. Although the report acknowledges that environmental agencies have registered some notable successes in improving environmental quality during the past two decades, most of these agencies are confined by their own mandates to focus exclusively on the effects of climate change while national interests have blocked significant institutional reform to protect the environment.¹¹⁴

Although the Brundtland report was able to identify the many domestic and international issues that arise from resource shortages and land degradation as well as show some attempts by the international community to remedy these ailments, the international community is too divided to agree on a single definition of sustainability, let alone agree to limit their own state interests for the international community. Although international law was created with the intent to regulate state action and align state interests, international law has been ineffective in curbing

¹¹² Gro Brundtland, “Our Common Future, From One Earth to One World,” Ch 6

¹¹³ Gro Brundtland, “Our Common Future, From One Earth to One World,” Ch 10

¹¹⁴ Gro Brundtland, “Our Common Future, From One Earth to One World,” Ch 12

state consumption. Rather than debate on the importance of rights and the future of humanity, the international community chooses to adopt Cornucopian sentiments, placing faith in technology rather than bear present costs. Although the Brundtland report has helped identify many interrelated social issues caused by environmental problems and have warned against placing undue faith in technology, the Brundtland report itself has not proposed an agreeable definition of sustainability.

2.5 Sustainability and Adaptive Management

Sustainability represents humanity's ability to progress as well as humanity's relationship with Nature. The primary flaw of the Brundtland report was that it was attempting to define sustainable development, focusing too much on humanity's ability to progress in an increasingly unstable environment rather than attempting to rein back human impact so that humans can have a codependent relationship with Nature. Bryan Norton attempts to delve into this local concept of sustainability, advocating local values rather than universal ideals to create an acceptable and practical definition of sustainability.

Norton asserts that given the premise that even experts do not know what is best, "management through political participation and social learning"¹¹⁵ is essential for *sustainability* to become feasible. One cannot rely on experts because "one can only reasonably speak of the risk to an ecological system if one has some idea of the aspects or elements of the system that are socially valued."¹¹⁶ However, the current methodology of making decisions is "deficient in ways of articulating, discussing, and deliberating about values, goals, and objectives."¹¹⁷ The current

¹¹⁵ Bryan G. Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, (The University of Chicago Press: IL, USA, 2005), Introduction

¹¹⁶ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 1, p. 10

¹¹⁷ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 1, p. 13

methodology in creating development strategies while ensuring environmental sustainability rely on experts to who possess the answers on what strategies decision makers should adopt.

Unfortunately, experts cannot propose optimal strategies without knowing what needs to be valued. Values questions are, at best, “simply resolved by splitting political differences; at worse, they are resolved by raw political power or by financial contributions to the campaigns of unscrupulous politicians.”¹¹⁸ Rather than having a few decision makers become the sole arbiters to determine what resources should be protected, Norton argues that the social value of resources must be determined by the general will of the local community.

Norton’s definition of sustainability “both refers to systemic physical dynamics that will change the world humans encounter in the future and evokes a commitment to consider the important normative relationships that can develop in these dynamics, which today involve multigenerational impacts.”¹¹⁹ Sustainability must entail both a description representing the resources society intends to leave for the future as well as an evaluative component to express our moral concern of what society bequeaths to its future generations. However, the two leading philosophies regarding how humanity should value its resources advocate opposing ideologies. On one side, Gifford Pinchot believes the utility of natural resources is derived solely from human consumption, the quantity of resources consumed in the present limited only by the needs of the future. On the other side, John Muir believes nature has its own innate value and humanity has a vested interest in protecting Nature for its own sake. Although both philosophers favor “principled” conservation, they disagree on the principle should be applied in valuing resources.

Norton argues that siding with one principle over the other is improper and impractical as the pragmatists recognized the importance of communities as arbiters of human action.

¹¹⁸ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 1, p. 14

¹¹⁹ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 1, p. 40

Humanity does not face nature as individuals but as members of a community and are guided by evolving tools, social norms, and institutions that help that community decide what is important to that society as a whole. Man should not nor should have the right to independently value resources without consent from the society he reside in. Although Norton takes a pragmatic approach to define sustainability, his methodology is marred by disagreement. As shown in the previous example, although both sides advocate conservation, their attitudes toward conservation are very different with one believing that Nature was created for man while the other believes Nature has an innate value. Although the attitudes regarding sustainability are different, the final consensus on valuing natural resources is not necessarily different if natural resources are correctly valued.

2.6 Adaptive Management and Social Value

Norton asserts that environmental goods are communal or “community-level” goods that are consumed by society as a whole rather than by any single individual. The “economics of any society or culture deal with individual values, where consumptive or spiritual; but economic decisions are bounded by a larger cultural overlay, a multigenerational, living relationship between the land and the people who live on it.”¹²⁰ Decision makers cannot assume the responsibility of making environmental decisions without input from the community because the valuation which determines the relative value of resources in certain physiologies determines the utility of that resource. According to Norton, any theory of environmental management must be a theory of action where “the actions can be motivated only by social values, and all actions, including scientific study, are suffused with values.”¹²¹ The value of any resource must be

¹²⁰ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 2, p. 72

¹²¹ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 3, p. 92

determined by society and although those values can change as more knowledge is acquired, the final valuation of resources must come from the consensus of society considering the interests of that society's persistence into the future.

For adaptive management to be implemented successfully however, adaptive managers must consider three significant factors. Adaptive managers must be willing to experiment and implement action plans that not only work toward promoting sustainability but also provide information to improve the current action plan. Since humanity's knowledge of its local ecosystem is incomplete, experimentalism is essential for the adaptive manager to gain a better understanding on how certain strategies affect the environment. Managers must also be able to understand, model, and monitor natural systems on various scales of time to understand the short-term and long-term effects of their policies, thereby being able to assess the strategies they implement. Although a strategy may produce positive yields in the present such as increasing annual yield of food, the strategy may produce negative net yields in the future where the increased yields eroded the source of the natural resource. Finally, managers must consider differences in local environments and vary on the strategies they implement based on region. Although building wind farms on plains would provide ample green energy to the local community, the same wind farms would not work in a forest due to different ecosystems and different opportunities within that system.

Norton places a significant emphasis on the value of localism, "the idea of a community of people capable and willing to participate in decisions that affect their lives in their local context."¹²² Public management requires that "management be politically feasible and capable of reflecting community-based values."¹²³ Adaptive management is contingent on the idea that local

¹²²Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 3, p. 94

¹²³ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 3, p. 95

communities know the best strategy to implement to protect the values they believe to be most important to their social identity. The same natural resource will have different values in different areas because that natural resource may be more or less productive in certain ecosystems or hold unique significance toward the identity of that particular society. Although adaptive managers help society choose from a variety of strategies to become sustainable, it is the society who bears the cost of change and must be the ones determining what costs they are willing to bear to protect the resources they believe to be most valuable.

Norton's schematic definition of sustainability asserts that "individuals in earlier generations alter their environment, using up some resources, leaving others. If all individuals in the earlier generations overconsume, and if they do not create new opportunities, then they will have changed the environment that subsequent generations encounter, making survival more difficult."¹²⁴ Humans have the ability to permanently change their surrounding environment through their consumption patterns which will affect the resource base in that region. Therefore, any "action or opportunity is not sustainable if it will reduce the ratio of opportunities to constraints in the future."¹²⁵ Given that current actions can have significant effects on future potential for sustainable living, adaptive managers must carefully accumulate and analyze their knowledge before making any strategic decisions that could potentially reduce the sustainability potential of the region.

2.7 Building a Knowledge Base

Norton's critics would argue that adaptive management is an ineffective system because it attempts to implement strategies to achieve sustainability based on contrived values. Since the

¹²⁴ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 3, p. 96

¹²⁵ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 3, p. 97

value of resources are attributed by society dependent on social relevance rather than by more quantified methods such as the cost to produce the good, adaptive management needs to create a strategy from a void of knowledge.

In the search to discover true knowledge, Descartes advocated starting from a point of universal doubt of all information from the senses and using reason and deductive reasoning alone to discover the truth. By starting from a void of knowledge and proving newly acquired information to be true, Descartes believed that a base of pure knowledge could be created. However, by choosing to doubt all previous knowledge, Descartes removed the base from which a basic foundation of knowledge could be built upon, setting “such a high standard for knowledge and uncertainty that he created for himself and his followers an impossible requirement for epistemological justification.”¹²⁶ Given that the mere accumulation of evidence on a question is not sufficient to justify action unless the evidence amounts to unquestionable proof in support of that action, Descartes advocates gathering knowledge *ad nauseam*, thereby prohibiting action in lieu of gathering knowledge. This incentive to gather knowledge *ad nauseam* is a popular practice by contemporary decision makers. Fearing the consequences of implementing a wrong strategy, decision makers are reluctant to adopt strategies to promote change in society until they are sure of the consequences of their actions, thereby delaying social progress toward a sustainable society and magnifying damages to the local environment.

Norton disagrees with this ideology because it hinders action at the pretense of uncertainty. Although knowledge is necessary to identify strategies to adopt, a lack of knowledge should not be sufficient justification to refuse action. Although Norton acknowledges limited realism where “no substantive knowledge of the external world is knowable a priori,”¹²⁷ Norton

¹²⁶ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 3, p. 106

¹²⁷ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 3, p. 109

advocates adaptive managers to adopt “safe-fail” strategies which ensure “that the costs of a failed experiment are acceptable, allowing a reversal of policy when things do not work out.”¹²⁸

Norton asserts that “sustainable outcomes are not definable in advance but must emerge from a program of active social experimentation and learning.”¹²⁹ Given that human populations can irreversibly damage the environment and eliminate choices for future generations, decision makers must “go beyond an analysis of individual well-being to take into account the range of options they leave for subsequent generations. If we add the goal of long-term survival of our successors, then we must have a two-sale decision process with independent criteria of value at each level.”¹³⁰ An independent valuation of resources must be created from discussion within society to determine what resources should be deemed “valuable” to the identity of that society relative to other resources over time to then derive what strategies would be most acceptable to ensure that those resources are protected and enjoyed in the present and future.

2.8 Wicked Problems

However, Norton recognizes that the dialogue regarding environmental conservation is hindered by opposing ideologies. Muir’s theoretical language encouraged him to see all development as evil while Pinchot’s commitment to individualistic market economies encouraged him to see the importance of resource use and development due to the good of human consumption overriding other values.¹³¹ Opposing ideologies make any form of discussion impossible to come to a consensus because the valuations for both ideologies are

¹²⁸ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 3, p. 111

A “safe-fail” strategy is a strategy whose impact on the ecosystem is minimal enough that if the strategy fails to meet social goals, the strategy can be reversed to revert the ecosystem back to its previous state before the strategy was implemented with limited social costs incurred by society.

¹²⁹ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 3, p. 120

¹³⁰ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 3, p. 127

¹³¹ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 4, p. 130-131

polar opposites. Norton attempts to bridge this difference between both ideologies by moving the discussion away from the innate valuation of resources to framing the problem.

Norton compares two different problems, benign and wicked where “benign problems have only one solution, and when that solution is found, it can be seen to be a unique solution. Wicked problems seem to yield only better-or-worse solutions; the problems are never solved.”¹³² Norton frames environmental problems to be wicked problems, possessing formation issues, incomputable solutions, are non-repeatable, and possess an open-ended temporal frame which can be approached with hierarchy theory where “a solution represents a temporary stable point in an ongoing negotiation in which today’s “solutions” will alter the dynamic and lead to a new problem formation and new forms of competing claims and interests.”¹³³ By implementing a safe-fail solution, the solution “could be a good balance or bad balance across competing values, the good-bad judgment may encourage either-or formulations and a return to ideological environmentalism.”¹³⁴ Norton advocates embracing moral pluralism instead of searching for a universal monist theory of environmental value since pluralism would represent a true empirical statement about the values expressed by citizens from various democratic backgrounds as well as encourage us to think of environmental conflicts as problems choosing over multiple goods and value those goods on relative scales rather than attempting to maximize a single good.

Norton believes that this pluralistic approach is the only feasible strategy adaptive managers can adopt because it is the only strategy that provides a basis to analyze effects. Norton’s methodological naturalism asserts that the only basis for correcting inaccurate beliefs and evaluations is through experience, experiments, and careful observation where “given the right conditions and public attitudes, the method of challenging reasons in an open, deliberative,

¹³² Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 4, p. 132

¹³³ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 4, p. 136

¹³⁴ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 4, p. 137

pluralistic community will, over time, contribute to consensus.”¹³⁵ Norton believes that value assertions must be part of a larger pattern of beliefs, vulnerable to experience and in any given situation where action is forced; there will be some beliefs or norms that will gain more acceptance than others. Norton asserts that by following this methodology, in the long run, this method “can ferret our error and decrease uncertainty, but this outcome requires a community capable of social learning.”¹³⁶ By experimenting different solutions with a community with an open mind to different ideologies, adaptive management discovers knowledge in the short run through trial and error and eventually creates optimal solutions that will allow the community to achieve their sustainability goals in the long run. By shifting to an active, experimental form of management, discussions on solutions needs to justify their policies rather than rely on correctness of general theories of value.

I have chosen to go into detail regarding the social values and different frameworks on Norton’s definition of sustainability because sustainability is an undefined concept. There is no single correct definition of sustainability because sustainability depends on the values of the local community. As Norton has stated previously, sustainability must be derived from social values with the resources the society is trying to protect dependent on the costs that society is willing to bear to protect that resource. Sustainability is a wicked problem, a problem without a single solution which only produces better or worse situations from human intervention. By discussing the various concepts Norton discusses in his personal framework in defining sustainability, I will identify the guidelines that society needs to consider when choosing to pursue a sustainable society which I will discuss in the next chapter.

¹³⁵ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 6, p. 205

¹³⁶ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 6, p. 205

2.9 Multi-Temporal Sustainability

Norton cautions managers to consider different scales of time when deciding to implement solutions to temporarily solve their environmental issues. Norton differentiates time on three levels: experimental, ecological, and geologic. Experimental time represents change determined the effects that result from a solution that appear in the shortest period of time, within the lifetime of the humans that implement the solution. Ecological time represents the change determined by changes in the ecosystem such as changes in the pace of colonization of plants and animals or development of symbiotic and predatory relationships. Geologic time represents change determined by the changes in the physical features of a landscape. These different time scales measure different but significant changes that humanity must consider when they implement a solution.

Humans must recognize that “they have now gained the power to be the dominant force in changes on larger scales, that we ignore long-term consequences of our actions at great risk, and that the use of our technological power greatly expands our responsibilities as actors in a multigenerational drama.”¹³⁷ Due to dramatic increases in population and higher standards of living, humans are consuming more than they are contributing back to Nature, extracting resources without realizing the significant impacts their consumption has on the future. The purpose of sustainability is to prolong the human race, something that can only be achieved through a harmonious relationship between humanity and Nature. Since human intervention is both significant and lasting on the local ecosystem, humanity must consider the costs and benefits of actions taking into account different time frames to assess which action is more sustainable. Unless humanity recognizes the effects it has on the environment in both the short and long term into its assessment, humanity will never be able to create a sustainable strategy.

¹³⁷ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 6, p. 214

John Baird Callicot proposed an interesting perspective on assessing humanity's relationship with Nature. Framing the ecosystem as an encompassing community, Callicot proposed that the relative good of the community should be the standard by which relative value is assessed with the relative worth of species dependent on the rarity and their contribution to the system. Although Callicot's theory is untenable due to the difficulty in assessing the contribution each species has to the ecosystem, Callicot's framing of nature as a codependent entity rather than a free resource for humanity to consume at will is an important contribution to framing a tenable conception of sustainability.

2.10 Weak and Strong Sustainability

Norton believes that sustainability "is about the future, our concern toward it and our acceptance of responsibility for our actions that affect future people."¹³⁸ Our "obligations to the future cannot be of the standard, contractual variety; they cannot depend upon assured reciprocity."¹³⁹ However, the concept of sustainability is divided into two categories: weak and strong. Weak sustainability requires maintaining a non-declining stock of economic capital into the indefinite future while strong sustainability specifies limits on substitution, requiring that there must be limits to the replacement of natural assets with human-built ones. Modern decision making emphasizes Economism, arguing that "policy decisions should be made on the basis of welfare effects only, with the understanding that neoclassical economic models can in principle provide complete and adequate measure of welfare both in the present and in the future."¹⁴⁰

Although allocating resource use based on welfare is a reasonable method to measure

¹³⁸ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 8, p. 304

¹³⁹ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 8, p. 304

¹⁴⁰ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 8, p. 308

sustainability, criticisms of weak sustainability are directed against the fundamental assumptions and valuations techniques of neoclassical theory as an insufficient assessment of sustainability.

Although weak sustainability helps create a framework on how we can set a reasonable guideline to define sustainability, weak sustainability is generally recognized as a necessary but not sufficient criterion for sustainability. Following the same sentiments at Muir, Herman Daly and John Cobb argued that natural capital should be saved because natural capital have innate value in themselves that cannot be priced by markets or substituted with manmade products. Natural capital has innate value that cannot be replicated by manmade substitutes due to the fact that natural capital often provides additional benefits humanity takes for granted.¹⁴¹ The two different assessments of sustainability attempt to identify to what extent humanity in the present needs to regulate its consumption and preserve the world in its natural state, what obligations men have to providing similar resources to his predecessors. Do humans have an obligation to maintain some specific natural resources that are deemed crucial to humanity and irreplaceable? Or do humans only need to insure that equal levels of welfare or opportunities to consume are available to future generations?

John Passmore proposed that our obligations are limited only to our immediate posterity, and the only obligation the present generation has to the future is to leave the future with the resources or technology necessary to achieve a similar level of prosperity. Brian Barry argued that we should compensate future generations for present consumption that has reduced the number of available opportunities where compensation should be in terms of productive potential. Although the present generation is not obligated to give back to the future the same level of resources available to humanity in the present, the present generation does need to

¹⁴¹ An example would be natural sunlight. In terms of its role, natural sunlight can be substituted with electricity to provide lighting. However, natural sunlight has the added value of being able to produce solar energy and provides vitamin D to skin among other benefits.

substitute its present consumption with better technology or substitute resources that allow the future generation to enjoy the same levels of comfort to the present. Both advocates believe that our obligations to our progeny should include equal opportunities to achieve equal or greater prosperity, thereby advocating that weak sustainability should be included in a final conception of sustainability although weak sustainability as it stands is not adequate. Norton proposes that “there are some elements or processes in nature that are so important to the future that no generation is permitted to destroy them,”¹⁴² that some aspects of nature are so essential to the basic welfare of human beings that to deny this resource to future generations would be a violation of their right to consume. Weak sustainability advocates would argue however that we cannot presume to know the values of future generations. Future generations may choose to value certain resources differently than we do and we cannot attempt to predict these differences.¹⁴³ Instead of attempting to estimate what values and rights future generations will hold, we can only provide equal welfare levels and let future generations to decide what they hold to be valuable.

Norton identifies four different problems sustainability has to contend with: the trade off problem, the distance problem, the ignorance problem, and the typology of effects problem. Sustainability has to balance between the rights of the current poor with the rights of the future, theorize how many generations into the future it has to account for, and cannot presume to know the values, needs, or rights the future will hold. Norton addresses these problems by framing these dichotomies as a question of value and how we should determine value. As advocates of strong sustainability, “protectionists do care about the preferences of future generations, and their

¹⁴² Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 8, p. 320

¹⁴³ People born prior to 1940 when the personal computer was invented would not have recognized the value of rare earths, chemical elements that are essential for the production of compact computers due to their superconductor properties.

preservation efforts are a part of a larger project, that of shaping the values of the culture to include love and respect for natural things and to perpetuate these ideals for the future.”¹⁴⁴

Norton argues that “if we see the problem of intergenerational morality as one of a community making choices and articulating moral commitments, as expressing their values in the footprint they leave on their place, then the problem of ignorance becomes less obtrusive.”¹⁴⁵ Norton argues that we can predict future values by shaping them with our own, that community values are intergenerational.¹⁴⁶ Strong sustainability promotes values protecting natural resources and respecting the rights of future generations, entailing more sustainable livelihoods in the present, immediate, and far future. On the contrary, “we can harm the future by failing to create and maintain a culture and a community respectful of its past, including both the human and the natural history of the common heritage.”¹⁴⁷ Decisions as to “what options need to be held open cannot be resolved by prediction what people in the future want, because, to a considerable extent, what people of the future want will be shaped by the world we leave open for them.”¹⁴⁸ Our current decisions affect future values just as our histories have affected us.

2.11 Modeling Sustainability

Norton thus attempts to define and frame sustainability by taking into consideration three criteria sustainability should consider: economics, fairness, and community values. Sustainability should attempt to not decline in welfare, protect opportunities, and protect resources of great community value. To take into account all three criteria, Norton proposed several rules and

¹⁴⁴ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 8, p. 328

¹⁴⁵ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 8, p. 334

¹⁴⁶ If a community used to value water over gold in the past, it is very likely that even 1000 years in the future, the community will still value water over gold due to tradition, teachings, values, etc.

¹⁴⁷ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 8, p. 339

¹⁴⁸ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 8, p. 339

methods adaptive managers should utilize in their decisions. The safe minimum standard rule (SMS) contends that resources should be saved “provided the social costs are bearable.”¹⁴⁹ The Risk decision squares maps out different strategies on a graph to observe the length of time and the area of impact of the worst case scenario of a decision. Finally, the precautionary principle takes affordable steps to avoid future catastrophe. Following these three rules, Norton believes that decision makers can assess the potential outcomes of certain strategies to see if the final results would lead to a sustainable outcome.

Norton’s three tenets outline his conception of how sustainability should be measured and achieved by adaptive managers. The SMS rule ensures that adaptive managers are adopting safe-fail strategies to gather information as well as place initial value on certain resources. The SMS rule restricts all decision making to the valuation of the community, the community determining what resources should be protected given the “social cost” the community must incur to protect that resource. The SMS rule ensures that all strategies are determined by the general will of the community since the solutions to protect those resources are dependent on the social cost the community is willing to take to protect those resources. The Risk decision squares allow adaptive managers to compare the various strategies they can choose to undertake and the costs associated with each in its worst case, thereby identifying both the potential problems that result from action to protect one resource in favor of another as well as consider the results of each action, taking into account the different scales of time Norton noted was essential when assessing the effects of a solution. Finally, the preemptive principle ensures that adaptive managers are willing to take action and not resort to inaction by excuse of inadequate knowledge, encouraging immediate action to prevent future catastrophe.

¹⁴⁹ Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, Ch. 8, p. 352

Norton's strategy emphasizes his conception of sustainability, that we are obligated to protect certain natural resources that possess significant social value. Due to the fact that future generations possess equal rights to consume, sustainability needs to ensure that resources are protected and invested for future use. However, sustainability is not merely the protection of certain socially valuable resources, but the proliferation of social values and ideals. Sustainability represents the values society believes to be most important, those values that need to be passed down to future generations to ensure that the identity of that society continues to exist.¹⁵⁰ Sustainability does not only represent the obligations one has for the future but the interests one has in society's future. Humanity must acknowledge its ability to shape its environment in its own image, its ability to shape the ecology for its own benefit at the expense of options in the future. Aesthetic changes in the present may have significant impacts in the future and short-term benefits must be paid with catastrophic costs. Norton asserts that the right to control and own the environment belongs to society in general rather than the individual, the right to shape the environment and shift consumption patterns determined by society's interest in its long term stability.

2.12 Critiques of Norton

Norton is able to provide a very comprehensive but concise and workable definition for sustainability. Most environmentalist philosophy often fails to propose a comprehensive definition of sustainability due to the emphasis most philosophers put on various values.

¹⁵⁰ The concept of social values here are values that have been derived from the general will of society rather than common consensus. The members of the society chose to value certain resources they way they do because these values are integral to that community's survival and identity. As a member of that community, those resources hold value. Social values on resources are not agreed upon through a democratic procedure of voting but through numerous discussions where the society identifies the values they believe represent society and the values they want their society to represent and create a framework through that, additional discoveries through adaptive management and scientific ventures changing social values over time.

Norton's theory successfully bridges the difference between environmentalists and economists, bypassing discussions of welfare and intrinsic value to discuss sustainability in a communal context rather than in terms of individual rights. However, Norton's theory of sustainability possesses some significant flaws and fails to address some significant issues that undermine his definition of sustainability.

First, Norton acknowledges that sustainability needs to consider the effects of solutions over various scales of time, ranging from short-term human time to long term geologic time. In theory, this is an important aspect of sustainability, the goal of sustainability being that human action is able to secure the welfare of resources over long periods of time so that generations in the far future will continue to have the right to pursue opportunities that we enjoy today. However, Norton's definition, although theoretically sound, is practically infeasible to accomplish. Given that solutions can have effects on a geologic scale, the impacts those solutions have are significant. Not only could the symptoms to collapse stay hidden under more pressing crises, the effects that result on a geologic time scale may be the result a different solution, the unfortunate interaction of various solutions, or a natural phenomenon that cannot be explained with the actions taken by present decision makers. The environment is not a static entity that changes based solely on our actions.

This represents a significant flaw in Norton's theory because his theory is dependent on the ability to gather information through adaptive management. By implementing low risk strategies, the adaptive manager could gather information on how the local ecosystem changes and start to understand how the environment functions, assuming it's a static entity that produces the same result if the same strategy is implemented. Since environments are irreversible, adaptive management strategies to gather information on the environment unintentionally cause

permanent changes in the environment that may negatively affect the local ecosystem, imposing costs the local community is unwilling to bear. Unfortunately, the only safe alternative to adaptive management would be contemporary methods to gather knowledge and refrain from taking action. Theoretically, irreversibility is not crippling to Norton's theory since strategies that impose minimal impacts on the environment can be used in place of "safe-fail" strategies to gather additional information on the environment and experiment. The community must be willing to bear a higher cost and additional uncertainty when framing their social values.

The second significant flaw in Norton's theory is the conception of social value in society. Norton seems to assume that with enough discussion, societies can come to a consensus on the social value of resources. Unlike Rousseau who sets certain guidelines on how individuals should determine laws based on a the General will which represents the consensus of society where each individual considers his interests as a citizens of society rather than his own personal interests, there is no such stipulation on Norton's definition. Given that Norton discusses various conflicting environmental philosophies within a single school of thought, there is no guarantee that society can hope to reach a community consensus on social values especially if the community contains environmental theorists from different schools that believe different IPAT factors to be significant. As I have attempted to frame social value under the stipulation that society consider their interests and come to a community consensus based on their interests as representatives of that society akin to Rousseau's creation of the General will, I will spend an excessive amount of time outlining a guideline to determining social value in the next chapter.

From analyzing several different environmental theories and their definitions of sustainability, I believe we have developed a basic conception of what sustainability is. As I have mentioned earlier in this chapter, sustainability is an undefined concept. Apart from maintaining

a stable environment to ensure the local community's future sustenance, there are no explicit definitions sustainability and only general guidelines that societies can adopt to come to their own conception of sustainability. Sustainability is inherently indefinable because it is based on social values and since every society has a right to self-determination, sustainability cannot possess a universal definition apart from ensuring humanity's survival in the future. The explicit concepts of sustainability must be derived by the local community while considering their relationship to Nature and their social values. Sustainability represents both humanity's relationship with its progeny and its relationship with Nature. As we have defined the concept of sustainability, I will go into further detail on how this concept of sustainability could be implemented in a capitalist framework by implementing Locke's natural rights and obligations into the capitalism as well as utilize adaptive management as a tool to assess the society's progress toward sustainability.

Chapter 3: Lockean Environmental Sustainability

This chapter will combine the conception of sustainability we derived in the previous chapter with capitalism that has been altered by implementing Locke's natural rights and obligations into the framework, strengthening social ties that will limit excessive appropriation of resources with the intent to create a framework of sustainable capitalism. However, before we combine sustainability with Lockean capitalism, we need to identify the flaws in modern capitalism that has resulted in the consolidation of wealth and resources and how Locke's natural rights and obligations remedy those flaws.

The first section of this chapter will compare modern capitalism with Locke's conception of capitalism through which we hope to create a social framework that combines Lockean ethics and natural rights with capitalism. We will then combine Lockean capitalism with our new conception of sustainability to show that the two frameworks are complementary and can result in a clear conception of sustainability. After framing a sustainable capitalist society, we finally hope to come to define the concept "sustainable capitalism" itself and create a model to show the relationship capitalism will have with the future and with Nature. This chapter will show that contemporary capitalism is significantly lacking in key aspects that make the concept of sustainability incompatible with capitalism and that by implementing limitations to economic rights by strengthening social obligations, humanity can enjoy economic growth in a stable environment.

3.1 Lockean Capitalism

As discussed in the introduction, Locke's labor theory of value is one of the founding pillars of capitalism due to the fact that it allows individuals to create a claim of ownership to

goods by mixing his labor with it. Without Locke's framework, capitalism would not be able to function since individuals would not be able to own resources to consume or barter to satisfy their basic needs. However, contemporary capitalism chose to adopt Locke's framework without social obligations, thereby removing limitations to the individual right to appropriate which encourages unequal distributions in wealth and weakened social ties. Locke's labor theory of property imposes certain restrictions that redefine modern capitalism, encouraging social programs and government intervention rather than defending neoliberal capitalism which advocates conspicuous consumption and privatization of nature for efficient production.¹⁵¹

Locke's labor theory of property was created to allow individuals to appropriate resources from the commons for their own individual consumption under the premise that the commons were property to all members of society prior to appropriation, the right to charity and right to sustenance imposing strong limitations on the individual right to appropriate goods. God had given the world and its bounty to all humanity to ensure that individuals would be able to subsist. Thus, although people are justified in the appropriation of resources from the common to ensure their own survival, their right to appropriate must be considered within a framework where natural resources are which every individual has a claim to consume. Since individual rights to consumption are limited by individual rights to sustenance, a neoliberal proposal for complete privatization of natural resources is unjustified under Locke's theory of property. Although Locke would agree that privatization can be helpful in ensuring that unused land is cultivated to maximize the potential yield of common resources, Locke never advocates privatizing all common resources. On the contrary, Locke struggles with the dilemma between

¹⁵¹ Neoliberal capitalists argue that common resources should be privatized because they would be more efficiently used without fear of a tragedy of the commons from occurring since it is in the interest of the individual who owns the commons to ensure that the commons are not overused to maximize its efficiency and durability. Conspicuous consumption is a term outlined in Thorstein Veblen's *The Theory of the Leisure Class* which asserts that humanity purchases goods and services for the purpose of displaying wealth.

privatization of the commons between the efficiency of privatization and resulting inequality. Privatization of resources reduces the remaining resource left in commons for other individuals to consume, infringing on their natural rights by denying them their right to life and sustenance. By embracing the neoliberal capitalist ethic of unregulated consumption and private ownership and favor individual interests over society, humanity defies its purpose which is the preservation of the human race.

Locke argues that “preservation is one of God’s goals for men, and hence his natural duty is to bring it about.”¹⁵² Humans earn the right to live and appropriate resources for their own sustenance because it is their purpose is to preserve humanity. Since God had given nature to man in common to allow them to earn their own sustenance and since all individuals possess the natural right to life, no individual has the right to appropriate resources at the expense of the sustenance of his fellow man since individuals cannot be sacrificed unless it is for the greater good for humanity. However, neoliberal capitalism does not impose any limitations on the individual’s right to appropriate. Since individuals possess the right to appropriate regardless of their current possessions, social equality, or the sufficiency limitation¹⁵³ for other individuals’ use, the neoliberal conception of capitalism contradicts Locke’s intent as outlined in his labor theory of property. The lack of limitations to appropriating in neoliberal capitalism promote resource shortages because it encourages individuals to appropriate resources, the rational individual recognizing that since his natural rights to access to resources is not guaranteed under neoliberal capitalism, it is in his best interest to appropriate resources for his own consumption regardless of the welfare of his peers. Neoliberal capitalism breaks down the social ties among

¹⁵² Tully, *A Discourse on Property, John Locke and his adversaries*

¹⁵³The sufficiency limitation as outlined in chapter 1 is the limitation imposed on the individual where the individual can only appropriate resources from the commons as long as he leaves enough and as good a quality of the resource left for other individuals to also enjoy.

individuals and exponentially increases demand for natural resources, creating shortages and individuals who disregard social interests in favor of their own welfare. Due to the lack of social obligations, neoliberal capitalism promotes environmental degradation while creating a social contract where social interests are disregarded. Since Locke's social framework is responsible for this social collapse, Locke's theory must be analyzed to find remedies or alternate systems to promote natural obligations within society.

Contrary to the critiques that the theory is antiquated and irrelevant, Locke's labor theory of property is essential to the implementation of capitalism in modern society. The inherent justification of ownership for capitalism is dependent on Locke's theory, that ownership of a resource is justified not from any inherently unique individual right to the resource but from the labor the individual imparts onto the resource, transforming or utilizing the resource in a way that is most beneficial to himself. Unlike prior social contracts such as feudalism where resource ownership was based on social relationships revolving around nobles and fiefs, capitalism allocates resources based on entrepreneurialism.

Locke's theory provides the social framework that gives every individual the opportunity to generate their own wealth and produce goods for their own consumption regardless of lineage, race, or social standing. Capitalism relies on this social framework, asserting that equality in opportunities is essential to maximize social welfare. By giving all individuals equal rights to appropriate and labor to maximize their own welfare, capitalism is able to maximize social growth through the invisible hand of capitalism.¹⁵⁴ By choosing to maximize their own welfare and "by pursuing his own interest [the entrepreneurial individual] frequently promotes that of the

¹⁵⁴ The invisible hand is a concept created by Adam Smith who asserted that capitalism is able to maximize social welfare by virtue of each individual laboring to maximize his own welfare. Since capitalism is an interconnected social system where trade is necessary for individuals to obtain goods they value, the individual interests of each member of the capitalist society combine to maximize social welfare.

society more effectually than when he really intends to promote it.”¹⁵⁵ Locke’s social framework which allows the appropriation of resources and capitalist incentives to maximize individual wealth allow society to ideally maximize social welfare.

However, capitalism cannot function without Locke’s labor theory of property. For capitalism to encourage social innovation and ensure that resources are allocated toward the individuals with the potential to maximize the utility of certain resources, all individuals must have an equal right to appropriate. Since talents are innate, all individuals must also possess the right to access resources to determine which individuals possess the aptitude to extract the maximum yield of value from those resources. Given that these common resources are owned by all individuals within the capitalist society, “any resolution concerning the whole of the positive common, held in several, requires the consent and act of each commoner.”¹⁵⁶ Given that “private ownership is the means of individuating the community’s common property and is limited by the claims of other members,”¹⁵⁷ capitalism requires the consent of other members of society or another mechanism to substitute consent before one can choose to appropriate any resource from the common resource base for their own private ownership. Locke’s labor theory of property allows capitalism function without explicit consent, the mixing of labor into resources to allowing one to appropriate resources for their own use.

3.2 Superrationality in a Lockean Framework

Although Locke’s labor theory allows individuals to appropriate resources from the common, that right to appropriate is limited by his natural obligations the individual has to

¹⁵⁵ Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, (London, 1776), Book IV, Chapter 2

¹⁵⁶ Tully, *A Discourse on Property, John Locke and his adversaries*

¹⁵⁷ Kramer, *John Locke and the Origins of Private Property*

humanity in general. Neoliberal capitalists would argue that they are only borrowing Locke's labor theory of property as a framework without relying on the religious dogma to justify the right to appropriation. However, what the neoliberal capitalists fail to realize is that religion is a central aspect to Locke's theory since it assesses the capacity for the individual to appropriate resources as well as force individuals to recognize their natural obligations. Since God represents the concept to assess the individual's capacity to appropriate as well as the vanguard to respect natural rights, the individual's respect of natural rights must be internalized with a secular concept.

The fundamental law of Nature, from which innate human rights are derived, states "the preservation of mankind [is] due to the fact that God created man and God gave man reason and desire to live."¹⁵⁸ From the law of Nature, humanity can extrapolate that "men have a duty and a natural right to preserve themselves and others."¹⁵⁹ The fundamental premise on which Locke's labor theory is founded depends on the law of Nature which asserts that not only does man have an interest and an obligation to protect his well-being; he also has a vested interest in protecting the well-being of his fellow man. Given that all human beings were born from Nature and thus have equal rights under the law of Nature, Locke asserts that humans are "one another's equals by virtue of their possession of a rather modest intellectual capacity, the capacity to form and manipulate abstract ideas, which enables a person to reason to the existence of God and to the necessity of finding out what if anything God requires of him."¹⁶⁰ Individuals earn the right to appropriate and are respected as equals once they develop the capacity to use rationality, determined by their ability to rationalize God's existence. The labor theory of property is founded on a framework based not on religion but on the law of Nature, the laws that dictate how

¹⁵⁸ Kramer, *John Locke and the Origins of Private Property*

¹⁵⁹ Kramer, *John Locke and the Origins of Private Property*

¹⁶⁰ Waldron, *God, Locke, and Equality: Christian Foundations in Locke's Political Thought*

man should naturally act toward himself and to his fellow man which can only be derived through rational thought. To assess if a man is truly rational and can thus derive the laws of Nature for his own understanding, Locke believed that man must be able to be able to theoretically conceive God's existence.

A secular interpretation of Locke's labor theory of property would require replacing the religious dogma that is used to justify Locke's theory while retaining its framework. The ability to rationalize God's existence is essential because it displays the individual's capacity to derive natural law as well as recognize the need to respect natural rights and obligations he has derived from Natural law. Being able to rationalize God's existence is important because it shows that the individual has developed the capacity to comprehend the fact that all individuals, regardless of race or gender, have an equal right to life. By being able to conceive that all individuals have natural rights, the individual recognizes that he has an obligation to respect the natural rights of others. The second reason Locke argued that man's ability to rationalize God's existence was essential was because God strengthens man's respect of natural rights. Locke argued that "every man has an immortal soul, capable of eternal happiness or misery; whose happiness depending upon his believing and doing those things in this life which are necessary to the obtaining of God's favor."¹⁶¹ Since man's purpose is to sustain humanity, man's soul achieves happiness when he acts to maintain humanity throughout time. The rational individual recognizes that once he appropriates resources from the commons for his own property and substituting consent with labor, he has entered a covenant with society where he promises to respect and consider the natural rights of his peers.

Locke asserts that the only people who earn privilege to invoke their natural rights are those who recognize and respect God's existence. Locke does not advocate any particular

¹⁶¹ John Locke, *A Letter Concerning Toleration*, James' Library(1689)

religion, believing that “everyone joins himself voluntarily to that society in which he believes he has found that profession and worship which is truly acceptable to God.”¹⁶² Locke argues that “the care of each man’s salvation belongs only to himself,”¹⁶³ and that man must have the freedom to choose the religion he believes is most conducive to his needs for salvation. Religion guides man toward fulfilling God’s mission by reminding man that God is omniscient and omnipresent and that the transgressions of others’ natural rights will be punished. Locke believes that religion checks man’s desire to expand his power, shown by the fact that “we cannot find any sect that teaches, expressly and openly, that men are not obliged to keep their promise; that princes may be dethroned by those that differ from them in religion; or that the dominion of all things belongs only to themselves.”¹⁶⁴ Religion dictates man respect his obligations to society for fear of reprisal from God. Thus, Locke proposes that society not tolerate atheists, declaring “those are not at all to be tolerated who deny the being of a God [since] promises, covenants, and oaths, which are the bonds of human society, can have no hold upon an atheist. The taking away of God, though but even in thought, dissolves all.”¹⁶⁵ Without God, there is no authority over man to ensure that he respects natural rights of his fellow men and respects his obligations to society and humanity in general.

Religion is integral to Locke’s labor theory of property because it guarantees man’s duty to respect the natural rights of his fellow man, the supernatural entity checking man’s desire to accumulate power for his own benefit. To separate religion from the theory without undermining its structure, we would need to substitute religion with an ethical framework that maintains man’s obligation to humanity. Since this new framework is replacing God in Locke’s theory, it

¹⁶² Locke, *A Letter Concerning Toleration*

¹⁶³ Locke, *A Letter Concerning Toleration*

¹⁶⁴ Locke, *A Letter Concerning Toleration*

¹⁶⁵ Locke, *A Letter Concerning Toleration*

must possess the same capacity to enforce natural obligations on the individuals in society.

Although there are various potential substitutes to respect natural obligations in lieu of religion, given the strong emphasis on legalization and rationality in secular society, I propose substituting religious dogma with superrationality. Coined by Douglas Hofstadter, superrationality is an economic term that was proposed as a possible solution to the prisoner's dilemma.¹⁶⁶ Unlike the rational economic individual who made their decisions based on individual utility and dominant strategies based on Nash equilibriums,¹⁶⁷ the superrational individual attempts to discover the socially outcome which yields the maximum level of utility and acts accordingly to achieve that outcome. Superrationality is an optimal substitute for religion for Locke's labor theory of property because it emphasizes two elements similar to religion: universal applicability and internalization of norms.

God's role in Locke's labor theory was to enforce compliance to natural law and demand individuals recognize the importance of respecting natural law without question. Since God is an omnipotent and omniscient entity, the rational individual recognizes that he must respect law or face God's wrath. Although superrationality does not instill the same fear in its constituents, superrationality is an appropriate framework for secular Lockean capitalism because its functions similar to God's role in Locke's theory. While the rational individual is able to derive natural law, the superrational individual recognizes the purpose of natural law. The superrational individual understands that natural law is the foundation of his right to life as well as the legal

¹⁶⁶ The Prisoner's Dilemma is a situation discussed in game theory where two individuals are given two options to pursue, labeled here as A and B. The socially optimal result can be obtained from both individuals choosing option B. However, based on individual utility, it is in the best interest for the individual to choose option A regardless of the action the other individual chooses. This results in the individuals resulting in a less socially optimal and often worst social outcome for the individuals and society as a whole.

¹⁶⁷ The Nash equilibrium is an economic term describing the outcome two rational actors will always end up in a game due to the fact that there is a clear dominant strategy for both players that encourages them to end up in this outcome.

source that protects his rights from infringement. The superrational individual knows that if he obeys natural law, he imposes an obligation on his fellow man to respect his natural rights. However, if the superrational individual chooses not to obey natural law, he revokes his natural rights. By disrespecting social obligations and pursuing selfish interests, the individual endangers society and justifies the community's right to seize that individual's property and expel him from society. By failing to recognize the importance of natural law, the individual revokes his natural right to appropriation and thus, his mixing of labor into resources does not justify his appropriation of that resource. Superrationality ensures that the individual recognizes that if he chooses to violate natural law, he revokes his own natural rights and endangers his own livelihood.

Superrationality imposes on the individual natural obligations and limitations to his consumption rights based on the individual discussing and pursuing socially optimal outcomes. Given that the individual recognizes from his rational extrapolation that his pursuit for short-term economic gains is not only irrational and may also not lead to optimal short-term outcomes, it is in the best interest for the individual to discuss the social values and desires of the society and attempt to achieve those outcomes through collective individual actions. By understanding both the social environment the individual lives in and the optimal social action the individual should take to maximize social welfare, the superrational individual takes initial action to attempt to reach the socially optimal outcome but reacts to his fellow peers accordingly to maintain his own sustenance. Thus, the superrational individual's initial intent is to pursue actions that reach the most socially optimal and individually beneficial result. If the superrational individual's peers pursue actions for their own individual benefit rather than attempt to maximize social welfare, the superrational individual adopts actions to defend his own interests, mimicking his peers and

pursue similar actions to protect his own welfare from exploitation. However, as the superrational individual recognizes that the socially optimal result is the optimal result for both the individual and society, he will occasionally “forgive” his neighbor’s transactions and pursue actions in an attempt to maximize social welfare. The superrational individual makes his economic decisions based on his desire to maximize his own welfare, thereby pursuing socially optimal goals as those goals encourage compliance from his neighbors.

3.3 The Right to Charity and the Welfare State

Contemporary capitalist would argue that even if Lockean natural rights are not incorporated into modern capitalism, the welfare state will ameliorate the inequalities that result from individual consumption. However, advocates of modern capitalism fail to realize that the interpretation of rights to consumption and their inevitable limitations drastically change both the consumption patterns and demands to appropriate, patterns that are not reflected by the welfare state. Given that there are no strong obligations to charity, no strong impositions to appropriation, or limitations to inheritance based on basic livelihoods, the welfare state is an inadequate substitute to realize a Lockean conception of capitalism.

Both Locke’s labor theory of property and the welfare state advocate providing all members of society with a minimum level of sustenance. Locke’s labor theory attempts to achieve this level through charity, man having the obligation to provide his fellow man with resources he himself possesses in abundance if his fellow man is currently under the minimum threshold. Although such obligations for charity are not imposed on the individual in the welfare state, the government attempts to redistribute some resources by providing aid through social services and passing economic laws to ensure that most individuals are able to attain a minimum

threshold as long as they remain active in society. The welfare state provides state assistance to individuals in poverty, the government acting on behalf of society to assist those individuals in need. Although Locke's conception of charity and the modern welfare state both operate to ensure that all individuals in a society can attempt to attain a minimum level of sustenance, there are significant ideological differences between Locke's conception of charity and the modern welfare state which inherently disadvantages those in need and weakens ties among men, undermining the concept of superrationality that is essential for capitalism to function.

Unlike the welfare state which attempts to ameliorate inequalities that arise from capitalism, Locke's conception of charity imposes limitations on the initial rights of individuals to appropriate and reduces their desire to appropriate. This limitation is derived from man's individual obligation to assist his fellow man when they are in need, Locke asserting that man has a duty to provide resources from the excess he possesses beyond his basic needs. According to Locke, every man has the right to ask for charity from his fellow man when he is in need of resources to meet his own basic needs. Although capitalists would argue that this incentivizes individuals to demand charity rather than labor for their own sustenance, superrationality dictates that it is in the best interest for each individual to pursue economic opportunities to generate individual wealth. As the capitalists have accurately stated, if individuals have the right to ask for charity and receive consumer goods to sustain a basic livelihood, it would be in the interest of each individual to not labor and attempt to live off the charity of their peers. However, as superrationality dictates, pursuing such a lifestyle would undermine social welfare and individual livelihood and it would be in the rational interest for each individual to labor to maintain his own welfare. Under superrationality, the individual would recognize that even if it may seem

beneficial to attempt to live off his peers rather than to labor for his own livelihood, it is in his best interest to labor for his own livelihood.

Although it seems beneficial for the individual to attempt to attain a livelihood without laboring, superrationality allows him to realize that the same thought process is most likely occurring among his fellow men as well, all men meeting the same incentives to not labor for their livelihood. Given that charity is provided not by the state but from fellow men that possess excess resources, if no one chooses to appropriate resources, there is no one with any goods to consume, let alone any individual with resources in excess of their basic livelihood that they can donate to others. By each individual choosing on his own volition to not labor, each man is essentially condemning himself and society to starvation.

Furthermore, even if the majority of individuals recognized this dichotomy and chose to labor while a minority attempted to live off the charity of their peers, there is no guarantee that enough resources are produced to ensure the basic livelihood of every individual. Although Locke asserts that man has an obligation to provide charity to his fellow man, man is only under this obligation if he possesses resources excess of his basic needs. Even if each individual in society labored enough that he possessed resources in excess of his basic needs, there is no guarantee that every man possesses enough resources in excess such that those who choose not to labor can receive enough from charity that they themselves would be able to reach a minimum threshold of sustenance. Locke's purpose for charity was twofold, first to strengthen the social ties among men such that the social construct within which society operates respects the rights and obligations individuals have among one another while the second was to act as a safety net to assist individuals after their failure in the pursuit of an economic venture. Locke understood that not all economic ventures were successful, that even the simplest of tasks such as building a

table or growing crops may occasionally fail due to unforeseen events, a lack of technology, or inexperience. Locke asserted that given the possibility of failure with economic ventures, man has an interest to ensure that if he failed in an economic venture he is still able to gain access to resources for his own livelihood. Man wants to labor for his own sustenance because by doing so, he is able to earn wealth which he can use to maintain his basic needs and possibly earn more in excess which he could use for his own pleasure. By choosing to labor, man gains the opportunity to produce enough resources in excess of his basic needs while his right to charity provides him with a safety net should his venture fail.

3.4 The Disincentive of Charity

As we have mentioned in the first chapter, the creation of money removed the effect of the spoilage limitation on appropriation. The three aspects of money has allowed it to become a perfect substitute for consumer goods, its role as both a constant unit of value and as a durable unit of storage allowing individuals to appropriate resources without the threat of spoilage allowing the consolidation of wealth among productive individuals to occur. Locke acknowledged the invention of money as necessary evil. Although the creation of money contributed to inequality in wealth among individuals, money is essential in creating a thriving market due to the ease in transactions that emerges from money's portability and measure as a unit of equal value. Due to the creation of money and the removal of the spoilage limitation from appropriation, Lockean capitalism requires a new limitation to regulate appropriation.

Due to the essential role of money for the function of the capitalist system, the spoilage limitation would be impossible to impose on individuals to limit their consumption. However, without some limitation to regulate the appropriation patterns of individuals, all rational men

have an incentive to appropriate resources excessively from the commons. The incentive to appropriate aggressively occurs due to two factors: the removal of the spoilage limitation and the uncertainty of economic ventures. As previously stated, Locke imposed a time constraint on the right to appropriate, asserting that those individuals who choose to privatize resources and fail to utilize those resources before they are spoiled have infringed upon the rights of their fellow men due to the fact that by appropriating resources, they have denied their fellow men from utilizing that resource for their own benefit and by allowing those resources to spoil, man has essentially wasted resources that could have been consumed by another. Locke created the spoilage limitation to regulate the rational man's desire to appropriate, the rational man recognizing that he has an obligation to ensure the welfare of his fellow man and thus needs to respect the obligations imposed on him by the spoilage limitation.

However, given that the spoilage limitation has been removed due to the creation of money, another mechanism needs to be imposed on the rational individual to regulate his appropriation. Since time constraints have become irrelevant, constraints on individual appropriation must be regulated by social obligation. By replacing the spoilage limitation with a social obligation, namely man's right to charity, Lockean capitalism can justify appropriation through labor while maintaining material equality.

The individual's right to charity imposes a significant disincentive on the demand for individuals to appropriate due to the additional obligations man incurs from laboring in excess of his basic needs. According to Locke's definition of charity, man has a duty to provide aid to his fellow man if he possesses resources in excess of his and his family's basic sustenance and if his fellow man does not possess the resources necessary to meet his own basic needs, the wealthy man must provide charity from his stock of excess resources until his stock of excess resources is

extinguished or the impoverished individual is able to reach his basic minimum needs. Although originally construed as a method to strengthen the social ties among individuals, the superrational individual recognizes that the right to charity dissuades him from appropriating excess resources. The right to charity demands that the individual consider not only the benefits of successful economic ventures but the costs in choosing to pursue economic ventures that yield value in excess of the individual's basic needs. Although the individual has the right to consume the goods he has appropriated to satisfy his basic needs, his freedom to consume additional goods becomes severely limited when he comes to own resources in excess of his basic needs. Given that resources are limited, the superrational individual recognizes that the more resources he chooses to appropriate and shape through his individual labor, the fewer resources remain available to his fellow man to consume. The more resources the individual chooses to appropriate for his own consumption in excess of his basic needs, the more that there will be individuals without the means to satisfy his own basic needs and thus has a legitimate claim to request charity with the individual with excess resources must comply. By choosing to voluntarily labor in excess of his basic needs, man is essentially enslaving himself, choosing to incur costs in terms of labor and time while relinquishing the claim to reap the benefits.¹⁶⁸

The right to charity essentially imposes a limitation to appropriation based on rationality. Unlike modern capitalism where welfare is offered by the state and government bears the cost of maintaining equality, man must care for the well-being for his fellow man in Lockean society and cannot deny his natural rights. Although there is no clear limitation regulating the initial

¹⁶⁸ In some rare cases, it would be rational for the superrational individual to appropriate goods excessively if the individual possesses the capital necessary to produce goods at a lower cost than if it were appropriated by someone else AND if the lower costs for production require the excessive appropriation and production of resources. Essentially, if the costs to the individual are so minimal that the individual does not mind laboring beyond his own needs and that by appropriating more resources, the individual is able to benefit from increasing returns to scale, it is rational and socially beneficial for the individual to choose to appropriate more resources to provide to society.

appropriation of goods, the industrious individual must recognize the risks of his labor being consumed by individuals in need and be willing to bear the costs of his fellow man's need for charity. Recognizing the probability of individuals requesting charity and the value of his time and leisure, the superrational individual will recognize that the capitalist ethic of excessive appropriation and hoarding of goods is tantamount to voluntary slavery and irrational.

Marxists would disagree that the right to charity is sufficient to limit inequality in the system. Marx proposed that the capitalist was able to enslave his fellow man as laborers. The capitalist is able to maximize his individual resources by investing in capital to replace labor, eventually being able to increase his wealth by minimizing his costs by limiting his labor costs.¹⁶⁹ However, Locke's right to charity would combat this inequality due to its specific interpretation on the use of resources. Locke's right to charity asserts that all individuals who cannot meet their basic necessities have a right to charity. Although the capitalist may not need to pay the wages for his unemployed workers, the capitalist does need to provide charity for those unemployed workers because the capitalist possesses goods in excess of his basic needs that his unemployed former workers now have a right to due to both the lack of alternative means to generate wealth independent of charity and the previous infringement of the capitalist on the right to appropriate on those former workers. Not only is the capitalist ethic of excessive appropriation irrational, the Marxist ethic of maximizing welfare by replacing labor with capital is also irrational.¹⁷⁰ The superrational individual recognizes that the right to charity is an integral

¹⁶⁹ Marx's reasoning here is flawed because this theory is based on two critically flawed premises: that the capitalist can maintain increasing returns to scale and that every additional unit of capital will always be more productive than the last unit of labor. As the Cobb Douglas function shows, capital and labor have a cooperative relationship where an optimal level of capital is determined by the relative productivity of the last added unit of labor. Microeconomics have also shown that no industry benefits from continuous increasing scales of return, that all industries and all firms inevitably suffer from an eventual decline in returns.

¹⁷⁰ It is rational for the individual to choose to produce goods in excess of his basic needs even though man has an obligation to donate his excess goods to charity because of uncertainty in economic ventures and the ease in storage. Due to the invention of money, individuals have the ability to exchange any consumer goods they produce

aspect of Lockean capitalism must be considered if the individual chooses to labor to produce goods beyond his own basic consumption.

3.5 Lockean Capitalism and Environmental Sustainability

We have now outlined a secular conception of Lockean capitalism, a capitalist system regulated by social ties where each individual possesses the right to appropriate resources from the common for their own private consumption due to their natural right to life and basic sustenance. Lockean capitalism allows the individual to appropriate resources from the commons that are owned by all for his own personal benefit without requiring the consent of others by instituting a mechanism where individuals can appropriate resources by mixing their labor in while respecting the natural rights of his fellow man. Given this strong emphasis on individual right to sustenance and social obligation to society, Lockean capitalism is conducive to environmental sustainability.

Although Norton's conception of adaptive management can theoretically be adopted into any social contract, it is most harmonious with Lockean capitalism. This is due to the fact that Locke's labor theory of property provides a universal framework independent of cultural bias, the labor theory of property providing an efficient mechanism allowing the appropriation of resources conducive for a capitalist framework while protecting man's natural rights. However, unlike modern capitalism which embraces individual interests in the pursuit of achieving social goals, Lockean capitalism and environmental adaptive management both advocate discussing

for money which they can then store for long periods of time. Furthermore, given that all economic ventures possess inevitable risk, there is no guarantee that economic ventures that were successful in the past will always be successful in the future. It is very feasible that due to changes in future ecosystems, unforeseen events, or lack of time, skill, resources; an individual will find a previous economic venture to be less successful or more costly to pursue. During these times of crisis, it would be beneficial if that individual had saved wealth from his past ventures to spend during his time of crisis.

social goals, asserting that social goals are not necessarily achieved by pursuing individual interests and protecting the right to private property over another person's right to appropriation when the right to appropriation may be vital to the individual's basic needs.

Lockean capitalism is harmonious with adaptive management because the Lockean framework produces an effective social framework for environmental sustainability, being able to achieve a stable balance between the natural rights of the individual and the general will of humanity. Both adaptive management and Lockean capitalism assert that the long term goal for society is not to maximize wealth but to sustain humanity. Adaptive management requires the practitioner adopt a long-term view on while Locke argues that God's goal for humanity is to survive throughout history. Although both ideologies advocate different rationales, both agree that humanity's goal is to survive in its current environment while protecting natural rights and interests within society.

3.6 Building the Framework for Adaptive Management

Lockean adaptive management merges Locke's social framework created from his labor theory of property with adaptive management practices outlined by Norton to create a capitalist social framework which promotes social sustainability and individual interests. Both Locke and Norton believe that humanity has a societal goal that can overcome the individual's right to property, that humanity has an obligation to sustain itself over time and members of society have an obligation to ensure that their excessive individual consumption do not threaten their peers' rights to sustenance. Locke recognizes that individuals have natural rights and an important aspect of Locke's theory is to protect individual claims to those natural rights. However, Locke also recognizes that in cases where social interests diverge with individual interests, it is in

humanity's interest to protect social values that support sustainability. Although individuals have a right to act in their best interest, if their individual actions threaten the values and resources society believes are essential to defining the identity of that society, the individual's rights can be curbed for the greater good.

Since Norton does not outline any general guidelines on how social value should be determined, I will now outline the framework on how I believe a communal consensus on social value can arise despite differences in environmental values within the community. Norton's discussion on social values need to be held in a dialogue where the participants consider the social values of the society that they hope to impart to future generations rather than their individual beliefs as members of society. Similar to Rousseau's conception of the General will where law is determined by community consensus with participants creating laws based on their values as citizens of the community, social values need to be derived from individual representations of social interests. The participants in the dialogue must consider social values from a superrational perspective, the superrational individual recognizing that although certain laws or values may favor his personal circumstances in society, it would be in the best interest for the superrational individual to promote laws and values that represent the ideal society the individual would to live in.¹⁷¹

3.7 Valuing Natural Resources

If we want to combine adaptive management with Lockean capitalism to create a sustainable capitalist system, we need to value natural resources to help the decision makers

¹⁷¹ An example here would be the right to freedom of expression. Some individuals may argue believe that the freedom of expression should be limited, that ideals should not be allowed to expressed in public because they are controversial (racism, atheism, sexual orientation, etc.) However, to deny the right to expression would create an oppressive society and stifle innovation. Although personal issues may arise with freedom of expression, it is in the interest for individuals as citizens within the society to support the right to freedom of expression.

create an environmentally sustainable strategy. Since communities have a right to self-determination, social value should be determined through dialogue as previously outlined in the Rousseau model, community discussion from a superrational perspective allowing the community to identify and promote those values that are essential to its identity as a community.

Although economists may propose we use market mechanisms to attribute basic social prices to natural resources, the market is inefficient in pricing natural resources. Natural resources are undervalued relative to manufactured products due to the fact that markets only calculate value based on labor added to the initial resource. Furthermore, certain natural resources are undervalued relative to other resources due to the implementation of money negating the additional value natural resources provide from its storage potential which adds value as a potential safety net for economic ventures in the future.¹⁷² Although the invention of money has lifted Locke's spoilage limitation, money has not removed the storage value of natural resources. The value of money itself is composed only of storage value. If money itself also possessed the potential to spoil and become useless over time, money would lose its innate value and people would lose trust and value in money.¹⁷³ It is because money has the function as an efficient substitute of permanent storage that we come to value money. However, even though money possesses a permanent storage of value which removes the spoilage limitation, we still

¹⁷² The additional value from possessing greater storage potential adds value to goods because it is a resource that can be stored over time, a valuable aspect of a resource due to Locke's spoilage limitation. The ability to store resources is valuable because those resources can be used at a later date during a point in time, a future point in time when the individual was not able to produce enough resources from his present ventures that he needs to rely on his saved resources to satisfy his basic needs. The storage capacity of the resource allows it to become a safety net, allowing the individual to store resources for future use without the fear of it spoiling which would equate to the individual infringing upon the rights of his peers. This additional value is significant depending on the discrepancies between storage capacities. A handful of nuts could be equally valuable as a peach despite the higher nutrition and pleasure derived from the peach due to the fact that the nuts have a much longer storage capacity.

¹⁷³ The storage value of money in this case only attributes within the local community. As we have seen in the international market, money can "spoil" over time due to improper budgeting by the nation's government, inflation leading to a decrease in value of the currency. In extreme cases, money can lose all value due to hyperinflation.

need to consider the storage value of natural resources to conceive an accurate representation of relative value between natural resources. Resources that possess higher storage potential should be valued higher than resources of low storage value since these resources can act as safety nets for resource shortages in the future.

Land should be recognized as a natural resource with intrinsically greater value than other resources due to its unique capacity as a capital good. Unlike other natural resources which must be labored on to create a resource of value, land is able to create resources independent of human intervention and can be labored upon and utilized multiple times over various periods of time. Since land possesses the intrinsic ability to produce natural resources, land should be valued significantly higher than natural resources and should possess more stringent requirements to allow any individual to appropriate those goods.¹⁷⁴

Although the majority of natural resources can be valued by local communities, society must also recognize that there are some globally shared natural resources that are essential to humanity's well-being. Globally shared resources such as the atmosphere and the ocean are public goods, resources that non-excludable and non-rival. As a non-excludable resource, the globally shared natural resources are large enough such that they cannot be privatized by any single community to regulate the use of that resource. As a non-rival good, the current use of the globally shared resource by one society does not limit the ability of another society to also use that resource. Given that these globally shared goods are large enough that policing to promote

¹⁷⁴ Locke attributes more stringent requirements to the appropriation of land. Due to its unique capabilities as a resource that produces additional natural resources when labor is added to it, Locke asserts that land is a resource owned by society. Locke advocates private appropriation of land, stating that the private appropriation of land gives the owner the incentive to maximize the land's productivity, thereby being able to produce equal to or a greater amount of resources with the same or a smaller area of land. However, Locke asserts that to compensate the appropriation of land and the future produced resources from the common, the landowner has the obligation to hire as many individuals minus 1 that the land had supported prior to its appropriation to compensate them for the reduced level of natural resources produced in the commons.

the appropriate use of the resource is too costly to enforce while the continued degradation of the resource overtime would have significant impacts on humanity's ability to survive, humanity must consider the value and vulnerability of these globally shared resources on a geologic time scale and place significant value on these resources. Although society may not fear that the maximum yield of these global resources will not diminish until the far future, we must recognize that the continuous demands humanity imposes on these resources can cause a significant decrease in the resource's total yield. Unlike other natural resources, these globally shared resources are multiple use goods that adopt a variety of different roles in the ecosystem that are essential for humanity's survival over time. Due to their essential role in maintaining global ecosystems, their valuable outputs, and the costs humanity must bear if the total yield of these resources is significantly diminished, humanity as a whole must adopt a superrational view in the use and valuation of these resources, recognizing that future generations also have a right to enjoy these resources at a similar capacity to the present and that humanity has a vested interest in ensuring that these resources do not degrade over time.

Local communities have a vested interest in promoting socially sustainable values that reflect the community's identity because the values not only identify the resources the community deems to be most valuable, they will also significantly influence the values of future generations. As Norton mentioned in his response to the assertion that current generations cannot hope to predict the values of future generations and thus should practice weak sustainability, we can predict future values by deriving values from our current generation. The values society holds in the present as important to the sustainability and the identity in the present will most likely retain their significance in the future due to the integral part these values play in framing social identity. The social values that the community will place on resources will naturally

determine the priority those resources will have relative to others and thus, the likelihood that those resources will exist in the far future for the community to enjoy. Thus, it would be in the best interest for local communities to valuing the natural resources that they not only find valuable to identifying their social identity but those natural resources that are essential to the livelihood of the community and humanity as a whole.

However, these are only guidelines to help local communities determine how they should value certain resources to help design an optimal sustainable strategy. Natural resources may possess different values for different communities due to the local environment. Due to the natural climate, North American communities would be more inclined to value wheat as a more valuable resource than other natural substitutes such as rice due to the fact that the local environment is more conducive to growing wheat than rice while the opposite would be true in the Pacific Islands where the local environment is more conducive to growing rice. Given innate differences in local environments, natural resources would possess different values due to differences in the local environment. However, in addition to local environments, the values of natural resources are determined by the role of that resource to the community's identity. Even if the resource itself does not yield any utility to an individual from its existence, the resource may represent an integral aspect of the society's values such that the society is willing to bear the expense to ensure the sustainability of that resource.

3.8 Creating an Adaptive Strategy on Sustainability

Once we have placed social values on natural resources from local consensus, we can now utilize capitalism's methodology to create the framework for an optimal sustainable strategy. This can be achieved by utilizing economic tools traditionally used to derive different

baskets of goods that produce the maximum level of utility. Since the local community has already placed social value of various natural resources, the decision makers in the community can begin to formulate an action plan based on social values while economists create several baskets of natural resources of different quantities to represent the several different baskets of goods society can consume while retaining a sustainable relationship with Nature.

Lockean capitalism can help decisions makers by creating a variety of different basket of natural resources and use social value to assess which basket is both sustainable and provides the most social value to society. Since the local community has already placed social values on natural resources to more accurately reflect the values of society rather than the production costs in the market, natural resources are given a price that accurately reflects their true value. By attributing higher prices to valuable natural resources, Lockean capitalism is able to encourage more sustainable appropriation practices where individuals are incentivized to not appropriate the more valuable resources due to their higher cost relative to other resources.¹⁷⁵ Following a cornucopian sentiment, the higher social value of these resources may incentivize entrepreneurs to invest new technology to extract greater yields from a single unit or to discover substitutes that can provide the same benefit to the individual but at a lower cost to Nature's ecosystem. The social values that reflect more accurate values of natural resources encourage entrepreneurial citizens to pursue economic ventures that promote environmental sustainability while Lockean rights to charity ensure that the wealth generated from these economic ventures are equitable and that the social ties among men are not broken by private interests.¹⁷⁶

¹⁷⁵ Although new technology by itself is not sufficient to solve the sustainability crisis and can produce additional problems for society to confront in the future, the Brundtland report acknowledges that the invention of technology to increase the yield of current resources would allow society to remedy the dichotomy between the right to consumption for the present poor and the rights of future generations.

¹⁷⁶ Although there is a disincentive for individuals to labor in excess of their basic needs, there is a strong incentive for innovation because the superrational individual recognizes that certain natural resources that are limited to

One critique against Lockean capitalism and superrationality is the foundation on which initial strategies are derived to achieve sustainability. Similar to the critiques directed towards Norton's adaptive management strategy, Lockean capitalism and superrationality by itself cannot guarantee sustainability. Although humanity has attempted to place an accurate value reflecting the social value and environmental value of resources during their discussion, humanity's knowledge on natural resources is still incomplete. The initial values society placed on certain natural resources are derived from dialogue regarding sustainability rather than social experimentation to assess if certain resources are more valuable than others. Natural resources can possess a wide variety of roles in the ecosystem, each role representing different but essential functions to ensure that the ecosystem remains relatively balanced and unchanged.¹⁷⁷ Essentially, the social values that are initially imposed on society are social values based on limited information and the "sustainable" consensus reached through capitalist markets may not truly necessarily represent the optimal basket of natural resources due to the inadequacy in our assessment. To truly gain a sustainable society where natural resources are not misappropriated due to wrong societal values, society needs to adopt adaptive management to gain more information on the true value of natural resources.

Adaptive management essential in creating a sustainable society since the methodology allows society to experiment and gain more information regarding the functioning of natural resources in the local ecosystem. By utilizing safe-fail strategies to assess the effects of certain

society are valuable that by discovering new technology that will allow the individual to produce more of that resource or extract a greater yield from the remaining resources, the benefits the individual experiences from successful ventures far outweigh the initial costs to pursue them.

¹⁷⁷One such example of a natural resource with multiple functions is the ocean. Although the main interaction society has with the ocean is to obtain consumption goods and to expedite travel, the ocean has shown to possess a greater significance in balancing the ecosystem. From the threat and resulting scientific studies to discover a way to combat global warming, scientists have discovered that the ocean is a huge sink for greenhouse gases and plays an integral part in maintaining greenhouse gas levels prior to human intervention.

strategies as well as gain additional information from observing the resulting reactions to the strategies, adaptive management provides the least risky method to test the effectiveness of current action plans to assess what actions need to be adopted to maintain a stable ecosystem. Assuming that actions used to change the ecosystem are reversible such that the previous changes that have been caused by the implemented actions are reverted back to their initial state, adaptive management provides a proactive methodology through which environmentalists can enact a variety of action plans to assess the short and long term changes in the surround environment, thereby understanding which resources at what quantities are essential to sustain the present environment.

However, the results from adaptive management must be considered within the context of time constraints where differences in lengths of time must be taken into account to fully assess the benefits and costs of each action plan. Norton outlined three different scales of time: the experimental scale where changes in the environment can be observed within the current generation's lifetime, the ecological scale assessing changes in the surrounding ecology from changes enacted by the action plan, and the geologic scale assessing changes in the topography from changes implemented by the action plan. Since these three difference time scales occur over significantly different periods in time, it is clear that the changes observed and the magnitude of those changes in the environment must be significantly different with more observable changes occurring within the experimental time scale while the changes with the most significant impact on the local environment occurring on the geologic time scale.

Norton asserts that humanity needs to take a geologic perspective on environmental sustainability. Since humanity's mission is to survive in the far future and the most significant impacts within the local environment will occur most on a geologic time scale, it is in the best

interest of the adaptive manager to consider the end result of actions plans from a geologic perspective. Norton argues that man needs to adopt a geologic perspective because humanity cannot assess all manmade impacts within their generation. Adaptive management has shown that environmental impacts in the present in an attempt to shape the local ecology more favorably to society have backfired due to humanity's inability at the time to consider the role of all resources within the ecosystem. In Norton's example, adaptive managers attempted to remove the wolves within a local area to increase the population of deer in the mountainous region, thereby increasing the food supply for society. However, adaptive managers did not consider the integral role of the wolves as a limit to the deer population. By removing this limitation on the deer population, deer overpopulation created a population time bomb and due to a significant drop in food supply from overgrazing, the manmade impact from removing the wolves resulted in deer disappearing from the region.

As noted in the previous chapter however, this perspective is a catch-22 due two significant variables: inconclusive source of change and irreversibility. Observing changes on a geologic time scale requires attempting to attribute significant changes in future surrounding environments from potentially insignificant changes in the present to understand the various roles certain natural resources maintain the environment. However, due to the significant number of ecological changes occurring over geologic time, it would be difficult to be able to attribute significant changes in the long term to insignificant changes in the present. The difficulty in assessing causes and effects are not necessarily crippling to adaptive management assuming that manmade changes in the local ecosystem can be reversed by stopping the action. Furthermore, human impacts in local ecosystems are not necessarily reversible. Norton assumes that ecological impacts are reversible, that stopping human actions within a given time frame

ameliorates present changes made in the environment which allows the ecosystem to return to a state prior to human impacts which allows adaptive managers to experiment. Unfortunately, ecological science has shown that ecosystems are irreversible, that human impacts leave lasting changes in the environment regardless of the time frame in which the action was instigated and stopped. Irreversibility significantly hinders experimentation, the risks of free experimentation from permanent negative changes outweighing the benefits in knowledge gained in any single venture.

However, adaptive management is not rendered unusable from irreversibility since society can adopt minimal risks to gather knowledge of the surrounding ecosystem to build upon society's existing knowledge base to understand the benefits and costs of pursuing their action plan. Although humanity may not comprehend the complex relationships among natural resources in determining the strategy society should adopt to protect their most valued resources, humanity is not creating strategy from complete ignorance. In an effort to understand our relationship with our surrounding environment, humanity's past scientific ventures have allowed us to gain more than a rudimentary understanding of the various intricate relationships among species in nature. Humanity recognizes that nature is not a mystical entity, a gift from God that is independent of human society but a provider of resources. Nature is not immune entity filled with dangers that for mankind to fear or a passive entity for mankind's personal benefit. Humanity recognizes that it is an aspect of nature, a small but significant cog within the system that helps maintain the balance within the surrounding ecosystem.

Humanity has a sufficient understanding of the interaction between various resources to understand that all natural resources, even if those resources do not explicitly provide utility to humanity, need to be preserved due to the potentially significant impact the extinction of that

species could have on other species and the ecosystem. Humanity may not know the codependent relationship among all species but humanity does not need to have a complete understanding of nature to reach a sustainable equilibrium. By outlining a clear social goal of sustainability and accepting that the incomplete information they have is sufficient to theorize a socially acceptable goal, adaptive management would allow society to experiment with different strategies to see if those sustainable goals are realistic and optimal as well as gain a greater understanding the codependency among various species in nature. However, we must understand that although Lockean capitalism and adaptive management provide the social framework and tools to allow a community to work toward achieving a stable coexistence with nature, neither gives a true definition of what sustainability truly means.

3.9 Redefining Sustainability

As we have shown, Lockean capitalism and adaptive management together help implement a social plan on the process through which modern society can attempt to move toward a more codependent relationship with nature while protecting the social ties that define human rights. However, we have also shown that the frameworks outlined themselves do not provide a clear definition of what sustainability is or what factors should be considered to create the initial social construct that is “sustainable.” This is due to the fact that there is no clear definition of sustainability. Sustainability is a social theory itself, independent of other philosophies and although different theories can be supported through the use of other ideologies, true sustainability must be defined by the local community itself.

The environmental crisis occurred due to limited natural resources resulting from unrealistic demands of over consuming developed nations and overpopulated developing nations.

As Norton previously stated, the environmental crisis is a wicked problem, an ongoing social issue that cannot be remedied with a single universal strategy but from adapting and controlling the problem to limit damages. Sustainability cannot be framed as a mathematical problem with only one solution that is universally applicable because there are multiple solutions to sustainability. Strategies to address wicked problems only produce better or worse situations with incomputable solutions to different and evolving environments. Although this would require all local communities to consider their community values and to honestly consider what values they believe to be most important to their social identity, it also means that all communities possess the right and obligation to determine and implement their own conception of a sustainable society. Environmental sustainability requires the right to self-determination, the right to determine which cultural values is most relevant to society and the costs they are willing to accept to maintain these values.

Sustainability requires humanity to reassess its relationship with Nature. Historically, nature has always been an unquantifiable entity that seemed infinite in capacity relative to humans where it was in the best interest for humanity to attempt to subdue nature. Thomas Hobbes described the life of the man in the state of Nature as “solitary, poor, nasty, brutish, and short,”¹⁷⁸ arguing that the social contract under the rule of a sole monarch was created because rule by arbitrary law was better than the alternative. Although Locke depicts a more favorable view of Nature as a gift from God, Nature was still considered to be an entity alien to mankind. As humanity began to industrialize however, they came to be able to shape the landscape in their own view for their own pleasure, subduing Nature for his own benefit. Industrialization has allowed man to change his relationship with Nature, extracting resources for his own consumption. However, both relationships fail to recognize the codependence between humanity

¹⁷⁸ Thomas Hobbes, *The Leviathan*, Ch. 13,

and its environment. Humanity needs to depend on the environment to extract resources for its own consumption. Without a stable ecosystem, the human race would be unable to adapt efficiently enough to the changing factors that would allow humanity to prosper as much as it has in the present. Humanity also possess power over nature however, its ability to change the environment through industrialization and overconsumption shaping the world in various ways for its own benefit. Humanity has been able to extract value from various resources as well as improve upon those resources to increase the utility gained from each additional unit extracted from Nature.

Technology has empowered man, giving him the ability to consume resources without restrictions due to the lack of limits imposed on his consumption abilities. Man must reconsider his relationship with nature and acknowledge that his demand for resources are excessive and unrealistic in light of Nature's limited supply. Although humanity contributes to Nature by laboring on its land to produce additional resources, the benefits man produces are severely undermined by the costs man imposes on Nature. Humanity has imposed excessive demands which Nature cannot satisfy due to her limited capabilities and our greed has transformed our codependent relationship into a parasitic one. Man must reconsider his interests and values and recognize through his superrationality that his demands are excessive and by maintaining those demands, mankind wrecks irreversible damage on Nature and himself.

Locke's labor theory of property exemplifies this codependent relationship between man and nature. The labor theory of property not only represents a social contract through which man can come to appropriate resources shared among his fellow men, it also represents the ecological contract between man and nature. Locke asserts that Nature is God's gift to man, a gift given to ensure that man can survive without divine intervention and must not be taken for granted. We

must remember that Nature was given to mankind in general, that every member of mankind in the present and the future has a right to appropriate resources from Nature to sustain their own right to life. Locke's labor theory of property that guarantees individual rights to appropriation as well as individual obligations to charity and limits to inheritance not only display the social ties men have among each other but the relationship between society and Nature. Prior to industrialization, man did not possess the technology to increase his productivity to a point where he needed to restrain his desire to consume. Since humanity now possesses the capital and technology to transform more natural resources beyond Nature's reproduction rate of those resources, humanity must now impose restrictions on their demand to appropriate, balancing their demand for natural resources with Nature's supply.

3.10 The Natural Market

Since man does not possess any dominant rival to regulate his population or any restrictive ecosystem to limit his consumption needs in a fixed region, man needs to restrict his own consumption, using superrationality and social values to determine acceptable consumption and reproduction rates. As the Brundtland report has already identified, there is conflict between the rights of the present poor and the rights of the future. Society must adopt a market perspective regarding their relationship with Nature, recognizing that Nature is a monopoly seller of natural resources. Man must assess the optimal rate on which society can appropriate resources from nature based on the reproduction rates of renewable resources, the reproduction rate representing the production cost by nature to produce these goods. Since Nature itself cannot place a price on different natural resources, humanity must place that price itself based on the supply, social value, and reproduction rate of resources. Assuming there is a socially agreed

upon value placed on natural resources, a relatively accurate assessment of the reproduction rate and remaining supply of the natural resource in question, and a savings rate on which humanity is willing to cut present consumption for future consumption, humanity can set a natural price on natural goods based on a natural market where:

$$Demand_{(t)} = social\ value_{(t)} \div (labor_{(t)} \times technology_{(t)})$$

$$Net\ Supply_{(t)} = (savings\ rate_{(t-1)}\ gross\ supply_{(t-1)} \times reproduction\ rate) \\ - savings\ rate_{(t)} \times gross\ supply_{(t)}$$

Assuming that Nature is the sole supplier of natural goods, the relationship between society and Nature should be framed in a monopoly market. From this relationship, society can calculate a “natural price” for various resources to quantify the amount and rate of resources humanity can extract from Nature while maintain a stable ecosystem. The quantities outlined in this market are determined by the General will of society. The social values of goods represent the value the local community has placed on the resource necessary to sustain the local community. The reproduction rate is the rate in which the natural resource is reproduced in a given time frame with current supply as the current supply of that resource remaining in nature. The savings rate is the percent of resources the society is leaves untouched back in nature.¹⁷⁹ By assessing these values through dialogue within the community and a general agreement on the values that define society, the decision makers are able to create an economic framework to assess their optimal quantities for consumption. As shown in the model, the local community’s demand for resources is determined by the social value they have for the resource that decreases as improvements in labor and technology allow the laborer to extract more consumer goods from

¹⁷⁹ There are various incentives for the local community to store resources in the present for future use. By leaving resources intact in nature in the present, the community hedges against the risk of a decrease in the quantity of resources reproducing in the future while the larger resource base may possibly increase the reproduction rate of resources in nature.

the same unit. The supply of natural resources that may be appropriated is determined by the current supply within nature minus the proportion of resources the community hopes to save for future consumption. By balancing society's demand with nature's supply, decision makers can create a socially optimal basket of natural resources to meet society's needs and maintain a stable ecosystem.

The decision maker must realize that the factors used to calculate their "optimal" baskets are all based on subjective values that are prone to change from new discoveries in science and technology. As our knowledge in our local ecosystem increases, our assessment of the values of resources will change as will the reproduction rates to predict future yields. Furthermore, the decision maker must realize that there will not be one but multiple optimal baskets for a sustainable society. Due to discrepancies in social demand and natural supply, it is likely that society may be unable to appropriate the desired quantity of a certain resource without threatening the future yield of that resource for future consumption. Society must accept the responsibility of bearing certain costs; that due to variability in the ecosystem Nature may not be able to consistently produce enough of the desired resources for society to consume. The decision maker must accept that there is no single solution, no optimal strategy that can be repeated indefinitely to maintain a sustainable society.

3.11 Beyond Sustainability

Practicing sustainable appropriation of resources does not necessarily entail a permanent reduction in the livelihood and consumption within society. With significant improvements in technology, humanity may be able to return to its 20th Century consumption levels without fearing the environmental issues of the 21st Century. However, humanity must recognize that at

its current consumption rates, they will never be able to achieve any form of sustainability due to the significant pressures imposed on the environment. Lockean capitalism and adaptive management provide the tools to assess sustainability, not the ideology to achieve and maintain sustainability.

Sustainability requires changing ideology, emphasizing natural rights to life and equality over economic incentives to maximize personal profit. Sustainability cannot be achieved in a capitalist system that emphasizes profit-maximization over humanity's long term survival. Rather, the capitalist desire to maximize private property must be mitigated by superrationality with man recognizing the right of his fellow impoverished men to a basic level of sustenance limits his right to private property. Although Locke believed that man initially entered into the social contract to protect his private property from unlawful seizure, Locke would disagree with the assertion that man's right to private property is superior to man's right to life and liberty. As we have continued to address repeatedly, all men have a right to life and to labor for their own sustenance. By excessively appropriating resources from the commons beyond his basic needs such that there is not enough left in common for his fellow men to also appropriate to satisfy his own needs, the appropriator is essentially denying his fellow men the right to life and liberty, enslaving his fellow man and forcing him to either starve or enslave himself for his own sustenance. Locke believes that man has a social obligation to assist his fellow man when his fellow man is in need of assistance, that man must provide charity to help his fellow man if that man was unable to successfully produce resources for his own consumption. It is because man chooses to pursue his own interests and maximize his own wealth that there is a huge incentive for every individual to appropriate resources excessively, each individual recognizing that every attempt to produce consumer goods may not be successful and that unless man is able to produce

his own resources or labor for another, he will be unable to obtain the goods necessary for his survival. Sustainability requires humanity reassess its goals and values and revitalize the social ties that initially brought men into society.

From this chapter, we have defined the concept of sustainability and how a Lockean capitalist framework would function so that sustainability could be achieved. Modern capitalism that partially adopts Locke's framework is not sufficient due to the fact that modern capitalism embraces economic goals at the expense of the social ties that enable Locke's theory. Without the social obligations among men to protect societal interests, the superrational individual has no constraints on his right to appropriate, no obligations to his fellow man, and no desire to protect his society. The social ties between men are what define the local community's values, the importance of helping one another in times of need creating a community incentive to protect that society which modern capitalism fails to fully implement.

Once those values are integrated into society and the superrational individuals understand their rights and obligations, Lockean capitalism provides the social construct through which humanity can create a harmonious relationship with Nature, extracting resources while maintaining the stability of the local ecosystem. Although mankind's knowledge of its local environment is not complete, scientific ventures and safe-fail strategies through adaptive management will provide society with the knowledge necessary to create reasonable strategies. Since sustainability is a wicked problem where the solutions are only better or worse outcomes, sustainability does not require that the best solution be implemented. Rather, society should attempt to implement the strategy that will result in a better outcome for society in the future. By using adaptive management and creating a basket of natural resources society can extract from nature in a given time period, man can create a harmonious relationship with Nature while

gaining more information about his local environment while the capitalist incentives create profit would incentivize entrepreneurs to invest in technology that will improve the production and transformative capabilities of labor, allowing humanity extract more goods from Nature with less units of natural capital. By reassessing social values and embracing social ties, Lockean capitalism can create an efficient sustainable social construct with potential economic growth.

Concluding Chapter

I believe that this thesis has successfully delved into the concept of sustainability as well as create a social framework through which economic innovation is not hindered by environmental conservation. Previous discussions on environmental sustainability have been marred by conflicting values with decision makers torn between supporting individual rights to own private property and humanity's need to protect the local ecosystem. However, the conflict regarding the right to private property and social obligations was not a dilemma between humanity's right to consume and environmental sustainability but a misconception of natural rights and obligations. As we have discovered with Locke, the individual right to appropriate and consume resources in excess of his basic needs is limited by the needs of his fellow improvised peers. If another man is in need of sustenance and requests charity, the individual who possesses goods in excess of his needs has a duty to humanity in general to provide aid to his impoverished friend.

Locke's labor theory of property has been misinterpreted and improperly applied to capitalism, encouraging individual appropriation of resources and maximizing individual wealth without regard to social ties. Since modern capitalism eschews social obligations and natural obligations such as the duty to provide charity are not enforced, there is no incentive for the superrational individual to consider the welfare of his fellow man or to limit his own consumption. Since the superrational individual realizes that he is not directly responsible for the welfare of his impoverished peers and that there is are no costs on his possession of excess resources, the superrational individual will choose to appropriate resources in excess of his basic needs to hedge against potential economic crises in the future.¹⁸⁰ By removing natural

¹⁸⁰ The individual recognizes that if there are no costs to owning excess resources and that he can safely store those resources without penalty, there is a huge incentive for the individual to appropriate in excess of his basic

obligations from the framework, capitalism has made it rational for the individual to pursue their own welfare at the expense of his peers, encouraging excessive appropriation which results in the tragedy of the commons and the perpetual shortage of natural resources. Since the spoilage limitation to appropriation was removed with the invention of money, the right to charity is essential to regulate the incentive to appropriate. Sustainability is a conflict between societal interests and individual welfare, the benefits to society clashing with the individual incentive to maximize current welfare to protect against future crisis.

We have successfully outlined a definition of sustainability that could be implemented in a capitalist society, ensuring ecological stability and economic growth in society. Sustainability is a social construct defined by local consensus, the General will of society pricing natural resources based on social value and extraction capability. By placing a natural price on resources, society can create a fixed basket of goods using economic models under which society can appropriate resources while placing a rational limitation on their consumption. Given that it is in humanity's best interest to maintain a stable ecosystem, the superrational individual recognizes that his natural rights obligate him to restrict his own consumption needs. As we have shown, Nature is a monopoly market, the sole producer of natural goods with its rate of production dependent on the reproduction rate of each individual unit and the number of resources remaining in supply. The natural price of resources should be determined by comparing the rate of reproduction with the social value of each resource, the optimal accumulation of resources determined by the interception of these variables in an economic

needs. This rationale arises because the individual knows that all economic ventures he engages are not guaranteed to end in success. By having a safety net of excess resources, he can guarantee his own future livelihood. Furthermore, the superrational individual realizes that this rationale applies to every other individual who all recognize that their own welfare must be protected by their own labor and by choosing to refrain from appropriating, the individual puts himself at risk since every other individual will choose to appropriate regardless of the individual's actions.

model. Since decision makers already have the tools to calculate the optimal basket of goods that should be appropriated from Nature, the proper valuation of resources based on social goals rather than market mechanisms and reinforcing social ties among men will encourage sustainability with the superrational individual recognizing that his interests are better served by promoting sustainability. Sustainability itself is an undefined concept that represents the relationship between humanity with its progeny and humanity with Nature. There are as many different definitions to sustainability as there are different social values and apart from board guidelines and an overarching goal of humanity's survival into the future, there is no explicit definition to sustainability.

Not only have we come to a general consensus on how sustainability should be defined, we have also created explicit guidelines on how natural resources should be valued regardless of local consensus. Although some resources will possess more social value than others due to the significance these resources have to social identity, land must be recognized to be more valuable to society than consumable goods. Unlike natural resources, land is a natural capital good that possesses the capability to produce resources for future consumption without additional labor. Although mixing labor into land may increase its productivity and annual yield, land has the ability to produce goods without human intervention.¹⁸¹ Thus, although Locke encourages privatization of land to encourage increasing the yield of natural resources, Locke attaches stricter limitations on the ownership of land where the owner is obligated to hire at least as many individuals minus one to labor on the land.¹⁸² Locke recognized that although increases in yield from privatizing land would benefit humanity in general, consolidating valuable resources that

¹⁸¹ On the contrary, mixing labor into land can be harmful since mixing labor adds additional stress to the land to produce more resources, decreasing the level of minerals within the soil. Since man then extracts the yield instead of returning it to the land, excessive labor on land can accelerate land degradation.

¹⁸² Locke made this assertion under the assumption that there was more land available than humanity could privatize which is not the case today.

were previously available in general into the hands of the few is harmful to society due to the fact that the consolidation of land would increase inequality in society. Since increasing the level of inequality in society promotes disunion and violates natural rights by forcing individuals to labor for another for their own sustenance, appropriating land only through mixing individual labor and using capital to replace labor would violate natural rights as well as undermine Locke's labor theory of property.¹⁸³ The superrational individual recognizes that although it would be beneficial for him to appropriate land and hire laborers to extract resources to allow him to attain a basic level of sustenance with less than strenuous labor, the increasing costs of labor and the decreasing productivity of land dissuades him from excessively appropriating land.¹⁸⁴

Superrationally is the key concept to understanding Lockean capitalism and its ability to promote environmental sustainability. Although it is an economic term that was added by this thesis to Locke's theory to replace religion as the justification for natural rights and social obligations, superrationality is essential to understand the individual's incentives in Lockean capitalism. Superrationality assumes that the individual is able to choose actions in his best interests while considering the social goals and social framework he is in. The ability to consider your overall benefit considering the social framework you are in is essential because without superrationality, the individual would not be able to recognize the future value of maintaining natural rights. The superrational individual would recognize the value of the right to charity since

¹⁸³ Marxists argue that the labor theory of property that supports capitalism propagates the inequality that leads to the worker revolution of unemployed workers against the wealthy capitalists. The Marxist assertion of the historical progression toward social revolution is contingent on the right of capitalists to replace worker labor with capital. Not only does this assertion not hold feasible weight due to decreasing returns to the productivity of capital as shown with the Cobb-Douglas function, it also violates Locke's theory.

¹⁸⁴ The decreasing yield of land is derived from David Ricardo's conception of rent where individuals initially appropriate the most productive land and continues to appropriate land of decreasing quality. Naturally, as the quality of land decreases the maximum yield of land overall decreases. The cost of labor increases as more individuals are added due to the fact that the labor market under Locke's theory is a monopsony market where the average cost of labor is determined by the cost of the latest added unit. Since hiring an additional worker from a decreasing pool of laborers increases the wages and every laborer wants equal wages with to their peers who produce the same work, hiring more workers increases costs exponentially.

the right to charity provides a hedge against the potential economic downturns in the future at a minimum cost. The right to charity only provides impoverished individuals with the right to request charity, the individual is only required to provide charity if he possesses goods in excess of his basic needs. The superrational individual recognizes although there is some benefit derived from laboring in excess of his basic needs, his choice to labor excessively provides significantly decreasing returns, the costs and risks of laboring beyond basic needs significantly outweighing the costs of that labor since the excessive labor increases the likelihood of others asking for charity. Superrationality becomes essential to the Lockean capitalism because the optimal actions for the superrational actor favor sustainability.

The superrational actor considers the social context within which he is acting. He recognizes that he has a strong incentive to labor to produce enough goods to meet his basic needs but not exceed those needs because there is no guarantee that the right to charity will provide him with his basic needs.¹⁸⁵ Since no man is attempting to appropriate excess resources, it is very likely that the optimal actions of each superrational individual will promote economic equality with minor discrepancy in total wealth. Since the superrational individual recognizes that their future sustenance depends on the stability of the ecosystem, there is a general consensus in favor of environmental sustainability. Due to limited natural resources, the entrepreneur recognizes the potential profit that could be made from discovering new technology or methods to increase the yield of natural resources without threatening the local ecosystem. Lockean capitalism essentially promotes environmental sustainability based solely on its ideology with local discrepancies remedied by the general will of society regarding the social

¹⁸⁵ Critics may argue that the right to charity incentivizes individuals to not labor. However, this is a huge risk for those who venture the easier path. Since the superrational individual recognizes that such individuals exist and are guaranteed to have to provide charity, there is almost no incentive for the individual to labor in excess of his basic needs. Since no individual possesses excess goods, the unproductive individual must labor for his sustenance or starve.

value of resources that adapt as society gains more knowledge on the codependent relationships within the ecosystem from adaptive management. Lockean capitalism and adaptive management provide the ideology, justification, and methodology necessary to implement sustainability and track society's progress to achieving that stable balance between growth and stability.

Unresolved Issues

Although this thesis has provided a general framework on how we can define and assess sustainability, there are several issues with the theory which I have not currently addressed. The first and most notable issue arises in the practical implementation of this theory. Due to the international relevance and proliferation of modern capitalism, it would be difficult for nations to emphasize social obligations and reallocate property. Second, I have not addressed the dichotomy mentioned in the Brundtland report regarding the rights of the present poor with the rights of the future to natural resources. Third, I have not addressed the international conflicts regarding sustainability where the interests of developed nations do not necessarily align with the interests of developing and newly industrialized nations.

As stated, Lockean capitalism possesses significantly different values to modern capitalism in regard to the valuation of resources as well as social obligations the individual has to societal interests. Although analyzing social theory may help frame a social contract conducive to promoting environmental sustainability, that analysis becomes moot if there is no method to change modern capitalism to encompass Lockean ideals. Since the differences in the different conceptions of capitalism rely on social values, we need to change social values to make Lockean capitalism relevant. I believe that changes in social values can be achieved through international law, passing treaties that strengthen the social obligations man has to

society. I believe that international law would be the optimal method to implement Lockean capitalism due to the fact that international law is universal and acts to influence state values. Although international law does not possess the ability to influence how states enact international law into domestic legislation, “the national legislature is bound to respect international law when passing legislation.”¹⁸⁶ International law can shape ideas and force states to accept a more socially conscious interpretation of capitalism closer to Locke’s interpretation rather than the modern form which embraces privatization and wealth maximization.

The dichotomy between the rights of the current poor to access resources against the rights of the future generation to those same resources is an old argument regarding rights that resulted from a shortage of natural resources. Due to both inequalities in the distribution of wealth as well as overpopulation, humanity’s demands for resources exceed Nature’s supply. Due to these two social issues, there is a struggle regarding to whom those limited resources should be given to. Since we are advocating equal rights and every individual’s right to life and basic sustenance, there is a clear argument toward allocating those remaining limited resources to the current poor. On the other hand, the rights of the future generations should hold as much weight as the rights of the present; it would be a violation of the natural rights to deny future generations their access to natural capital. Unfortunately, this argument is much deeper than weighing the claims to both groups because there is a time component involved in this issue.

The debate lies between the rights both sides have to the limited resources in question. Environmental economists recognize that we need to protect the environment and increase our supply of natural resources. This is due to the fact that the human population continues to grow in a fixed environment with a maximum yield of resources. Unless we store current environmental resources in the present, there will not be enough resources in the future which

¹⁸⁶ Jeffrey Dunoff, *International Law: Norms, Actors, Process, 3rd Ed.* (Aspen Publishers: MD, USA, 2010), Ch. 5

will inevitably lead to a Malthusian catastrophe.¹⁸⁷ However, by denying impoverished individuals access to resources currently available to them, we are essentially denying their human right to life since we are denying them their right to basic sustenance. Unfortunately, choosing to give these individuals access to those last limited resources would only be offsetting the decision for future generations at a higher cost since the reduced supply of resources in the future will create more impoverished individuals.

To address this dilemma however, we need to consider the actions that would result from choosing one action over the other. By choosing to save resources in the present, we would be more likely to provide a larger base of resources for the future generation. Assuming we can keep our global population stable rather than increasing it by adhering to a birth rate of 2.1 children per couple, we would be able to provide food to a greater portion of the population in the future. If we give these resources to those currently impoverished, we further reduce the current supply of resources for the future such that even if we keep populations stable, a greater portion of the population will be impoverished. Furthermore, since current populations determine population size in the future, denying those that are currently impoverished the right to consume these resources may result in a smaller future population, thereby increasing the likelihood of the future generations being able to meet their needs. However, since our values are passed to future generations, denying the present poor their natural rights would propagate to future generations and will set a dangerous precedent for humanity. Although this would be a significant struggle in ideals, I believe that Locke would side with investing the resources for the future. Locke asserted that as a natural right to life, man does not have the right to sacrifice himself unless he is doing it

¹⁸⁷ Malthus argued that due to the fact that populations increase exponentially while agricultural growth increases geometrically, population growth will inevitably surpass the maximum food supply. When this inevitable shortage occurs, the population will suffer from a Malthusian catastrophe where the population will drop back to a point where the surrounding ecosystem can support them again.

for humanity's interest. By denying the natural rights of the present poor, we are sacrificing their rights to ensure a sustainable future and humanity's survival.

This thesis has focused solely on the local community and their interests in sustainability. Since the local community is most aware of their local ecosystem and have a right to self-determination, sustainability must consider the interests of the local community and not impose a universal definition and framework. However, globalization has proliferated interaction among communities with states coming together to discuss international norms and values that should be upheld as international law. Although there is a vested interest for all states toward promoting a sustainable future, there is little consensus regarding how nations should cooperate to achieve sustainability. On the one hand, developed nations are imposing strict regulations on the industrialization of developing nations, forcing them to adopt limitations that they themselves did not respect when they were developing. On the other hand, developed nations are unwilling to provide developing nations with the technology necessary to make the transition to a green economy. One of the stumbling blocks during the climate summit in Copenhagen was the debate over the role of intellectual property rights in the transfer of emissions-reducing technologies to developing nations.¹⁸⁸

Developing nations insist on using the principle of allowing poor nations to break patents and produce green technology to help developing nations industrialize in a more eco-friendly manner, equating the action to the pharmaceutical industry who agreed to allow poor nations to mass produce drugs on a generic basis to assist millions of poor people dying from HIV and AIDS.¹⁸⁹ However, the role of patents on the price of green technology is much less clear than on drugs. According to a study by Barton, although pharmaceutical patents have a substantial

¹⁸⁸ Robert Collier, *Who Owns the Clean Tech Revolution?* (University of California, Berkeley: CA, USA, 2009), p. 4

¹⁸⁹ Collier, *Who Owns the Clean Tech Revolution?*, p. 9

upward impact on price, patent protection has expired on most basic green technologies and only specific improvements tend to be patented with several competing patented products and the resulting competition bringing the price of technology below monopoly levels.¹⁹⁰ Furthermore, technologies are much more diverse than drugs and due to greater market participants and higher manufacturing costs, the profit margins from patented technology are lower and thus more socially acceptable.¹⁹¹ Company executives argue that clear and transparent protection of patent rights is “needed to enable clean tech firms from all nations to invest the large sums necessary in R&D of new clean technologies.”¹⁹² Developing nations argue that green tech firms are only attempting to protect their profits with licensing and worry more about the bottom line than on ensuring environmental sustainability. I believe the key issue of contention between the two sides is the lack of incentives modern capitalism has to encourage investing in green technology due to the fact that natural resources are undervalued in the current market. By embracing Lockean capitalism and setting a natural price on resources dependent on the social value of resources, we could possibly encourage entrepreneurs to invest in green technology.

However, one final contention in international relations is agreeing to a common consensus. In the previous example, many clean tech firms say “they need the implementation and harmonization of international standards” since demand-side management metering, time-of-use pricing and greater use of renewable all depend on having common standards.¹⁹³ Unfortunately, this harmonization of standards may be impossible under our proposed framework of Lockean capitalism due to the fact that Lockean capitalism and adaptive management is dependent on local valuation of resources. Although we have outlined basic

¹⁹⁰ Collier, *Who Owns the Clean Tech Revolution?*, p. 10

¹⁹¹ Collier, *Who Owns the Clean Tech Revolution?*, p. 11

¹⁹² Collier, *Who Owns the Clean Tech Revolution?*, p. 15

¹⁹³ Collier, *Who Owns the Clean Tech Revolution?*, p. 16

guidelines on how certain resources should be valued relative to others, it is unlikely that a universal consensus could arise from the independent valuation of different communities. Furthermore, due to the fact that certain resources may be more abundant in certain areas over others, setting a universal valuation would lead to inevitable struggle as states compete for ownership of more valuable resources.

Concluding Remarks

The intent of this thesis was to delve into the definition of sustainability in relation to capitalism to see if the two systems were mutually exclusive. As we have shown that by defining Locke's labor theory of value as Locke intended within the capitalist framework, capitalism and environmental sustainability are not mutually exclusive concepts. On the contrary, as long as social obligations are respected and natural rights protected, capitalism is conducive to promoting environmental sustainability. However, due to the fact that the current capitalist framework encourages excessive consumption and values protection of private property over the interests of societal equality, capitalism has been subverted from Locke's intentions and manipulated into violating natural rights and sustainable practices.

Modern capitalism cannot function in its current framework. Not only does it violate natural rights and sustainability, the economic growth it attempts to achieve is inevitably unsustainable. Although the current capitalist framework may seem to produce resources, the majority of wealth generated within the current framework is not from increases in productivity or technology but changes in financial valuation. Money has become the impetus of growth when money itself is essentially a valueless resource, its value derived solely from its storage capacity of other resources and its efficient substitutability. Although changing the current

capitalist framework completely to a Lockean conception of capitalism may be unfeasible, capitalism must shift from its current framework to incorporate social values and strengthen the social ties between men.

Bibliography

- H.J. Albers, “Irreversible ecosystem change, species competition, and shifting cultivation,” *Resource and Energy Economics*, 22 (2000)
- Gro Brundtland, *Our Common Future, From One Earth to One World*, UN Documents
- Karl Brunner and Allan Meltzer, “The Uses of Money: Money in the Theory of an Exchange Economy,” *The American Economic Review*
- Marian Chertow, “The IPAT Equation and Its Variants,” *Journal of Industrial Ecology*, Vol 4
- Robert Collier, *Who Owns the Clean Tech Revolution?* (University of California, Berkeley: CA, USA, 2009)
- Jeffrey Dunoff, *International Law: Norms, Actors, Process, 3rd Ed.* (Aspen Publishers: MD, USA, 2010)
- Robert Goodland, “The Concept of Environmental Sustainability,” *Ecological Applications*, 6(4), 1996
- Thomas Hobbes, *Leviathan*, (Hackett Publishing Company, Inc: IN, USA, 1994)
- Matthew H. Kramer, *John Locke and the Origins of Private Property*, (Cambridge University Press: New York, NY, USA, 1997)
- John Locke, *The Second Treatise of Government*, (Yale University Press: CT, USA, 2003)
- John Locke, *A Letter Concerning Toleration*, James’ Library(1689)
- Thomas Malthus, *First Essay on Population*
- Bryan G. Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, (The University of Chicago Press: IL, USA, 2005)

- Jean-Jacque Rousseau, “Discourse on the Origin and Basis of Inequality Among Men,” *The Social Contract and Discourses*, (BN Publishing, USA, 2007)
- Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, (London, 1776)
- Gopal Sreenivasan, *The Limits of Lockean Rights in Property*, (Oxford University Press: NY, USA, 1995)
- James Tully, *A Discourse on Property, John Locke and his adversaries*, (Cambridge University Press: NY, USA, 1980)
- Jeremy Waldron, *God, Locke, and Equality: Christian Foundations in Locke’s Political Thought*, (Cambridge University Press: NY, USA, 2002)
- Jeremy Waldron, *The Right to Private Property*, (Oxford University Press: New York, NY, 1988)