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## Epistemological implications of the tragedy of the commons

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### ABSTRACT

This paper defines and examines the Garrett Hardin's concept of the Tragedy of the Commons. First, an introductory to the concept is presented along with an extensive critique on Hardin's 1968 impactful publication. Second, although the tragedy of the commons belies in the field of environmental economics, an extensive research is conducted on how the concept has naturally extended to other cornerstones such as Philosophy, Ethics & Morality, and human behaviour. The objective of this paper is to not see whether the concept is dubbed correct or erroneous, but rather urge readers to take a collective stand regardless of the universal validity of the concept and shed some serious insight on the hazards of climate change and pursuit of self-interest.

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## 1. Introduction

In 1968, ecologist Garret Hardin published his powerful and impactful journal called the "Tragedy of the Commons", where he gradually postulated how resources in a shared system (a commons system) would eventually tragically dissipate. The concept of Tragedy of the Commons hasn't only resided in environmental economics, but naturally extended to corners of philosophy, ethics, and even human behavior. Why? It's simple. Hardin stated because humans are "rational actors" (that is acting based upon rational human behavior), therefore they will always aspire to acquire as much as they can from a certain good in order to maximize their utility. For example, Hardin said that given an open pasture available for the common public, then it is expected that each herdsman will try to maintain or increase the number of his cattle. This also conforms by Smith's "pursue your own self-interest and the interest of society shall be obtained" – again, rational human behavior. However, the consequences of such self-interest pursuit may actually damage, or hinder the wellness of society

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and resources. Of course, the herdsman now has an increased utility of nearly +1 since he reaps all the gains of the additional increment, but on the other hand, there is a negative -1 utility on the totality of the pasture land due to overgrazing which is experienced by all herdsman.

It is a mostly fascinating dilemma: Increase the number of cattle as to maximize one herdsman's utility? Or decrease the number of cattle attainable by each herdsman, along with their utility, to achieve the greater common good? This is the epitome of collision between economics, climate change, and philosophy.

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## 2. A Critique on the Hardin journal

By starting his essay, Hardin first divulges on the important notion of "not having a solution to a technical problem". In precise, he looks and accredits the works of Wiesner and York – where they portray the tragic 21<sup>st</sup> century dilemma of increased military strength, yet decreased global national security – and publically announces their conclusion of "there exists no technical solution" as courageous and one of a kind. Hardin was impressed by their courageous conclusion of: there exists no technical solution to the problem of national security in a nuclear world; not because the solution isn't found in natural sciences, but because the problem lies under "a class of human sciences" which offers no technical solutions to problems. It was here where Hardin merged his thesis along with "the class of no technical solutions", and stated that the "overpopulation" problem also lies under the same jurisdiction of human sciences not natural sciences. This brought him to his next question of: "What to maximize?" If populations will continue to increase geometrically, how can we maximize their / capita indicators if they are on a finite world? Therefore their per capita will continue to decrease as they remain on this limited-resource planet. On this, Hardin writes:

"A finite world can only support a finite population; therefore, population growth must eventually equal zero..."

Hardin, in two lines, was able to sum up what Malthus had been trying to postulate over the last two centuries; however will Bentham's goal of "the greatest good for the greatest number"\* be fulfilled? Hardin's response to this was a hard *No* due to two reasons. The first reason is due to the theory of partial differential equations, which dictates that it is not mathematically attainable to maximize two variables or more at the same time (Hardin 1968). The second is due to biological facts. On this, Hardin portrays man's necessary economic and social needs through the daily caloric consumption required for basic survival and work. The average man needs around 1,600 "maintenance" calories per day for basic survival. Anything extra a man does, is defined by work calories – calories that are consumed above the 1,600 mark for either work or leisure. Therefore, as put by Hardin, if we try to maximize populations then it is obvious we must make the work calories per person reach zero. In other words, no art, no literature, no vacations or travelling, no leisure, no sports, and absolutely no meals that serve any other function than basic survival – *Flour and wheat*.

It is here where Hardin asks readers, where do we go from here? What do we do? Whether it was privatization methods, taxation methods, control of public (common) goods or services, or even first-come first-serve basis, there must be a change in the way humans interact with common properties else their value will disappear in the long run. Even when it comes to pollution control instruments for the biosphere, humans are myopic when it comes to disposing their waste, not realizing that we are creating an ill-conceived short-lived environment and are "fouling our own nest", as put by Hardin. He therefore suggests two preliminary thoughts as solutions: I) Privatize what can be overexploited, II) or Keep as a public property but allocate certain rights for use. Hardin's clever use of "tragedy" was not a new concept (Young 1999); its profound roots date all the way to Aristotle who stated that "what is common to the greatest number has the least care bestowed upon it" (Young 1999). Tragic, because it is inevitable.

The tragic irony exists when even all state actors wish to cooperate to collectively save the system, it will eventually collapse. Yet it must be fair to only divulge that much critique has risen regarding Hardin's essay. Many have said this is an example of an *ad hoc fallacy*, or mindless coining. This is called *Tonypandy*, as named by Josephin Tey in her 1951 novel. She defines it as: "a regrettable situation which occurs when a historical event is reported and memorialized inaccurately but consistently until the resulting fiction is believed to be truth" (Cox 1994). Hardin proposed a conceptual framework for a problem without offering any factual evidence behind his tragedy actually occurring. Although it may occur, of course due to logical reasoning, it is not true that it regularly occurred on the common lands of England during medieval and post-medieval times. Cox (1994) rigorously attacked Hardin's romantic appeal to economist, philosophers, and theologian scholars by saying that it is the accolade of misinterpreted antecedents. It is in the views of this paper that nitpicking critique is wasteful, and it is more important to analyze if this tragedy will occur or not, and if so, what are the consequences on anatomically modern humans and future generations?

With the severe economic degradation in the late 1900s and even the current climate change crisis, Hardin's argument cannot be ignored. It is fair that Hardin has called upon a collective stand from readers to at least observe this problem of commons' resource overexploitation and did offer a solution to the problem (considered a partial solution), it was built upon the mythos of a rational man (Hernandez 2010).

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## 3. Epistemological Implications of the tragedy on philosophical foundations

Indeed, the works of Hardin captured the thunders of many philosophers regardless of it being a *TonyPandy*. How the concept transcended over to the philosophical realm could be explained through the following. By reasoning, it could be justified that man's existence in the commons is justifiable only under the condition of a limited population density to complement the finite use of resources, granted? We first disregarded food production, farming, hunting, and fishing in the commons system (Pojman et al. 2011). Later, we experienced abandonment in the water disposal systems (sewages), factories, insecticides, and atomic energy plant installations. Yet, there are some evils in terms of pleasure that have yet a long way to be abandoned. For example, shopping malls

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\* Bentham's goal of "the greatest good for the greatest number" notes that governments should aspire to achieve the greatest amount of happiness for the greatest number of people.

are infiltrated with continuous music without the consent of the shoppers. Advertising and marketing illuminate the views of travelers, TV watchers, and radio stations. Therefore we are miles away from outlawing the commons in matters of pleasure (Pojman et al. 2011).

Is it because we are born as free beings? This implies that every new abandonment of the commons in a certain aspect involves the transgression of someone's personal liberty. But the reality is, we do not oppose past transgressions imposed on commons – as it does not propose a contemporary loss. It is in reality the newly proposed transgressions that we really oppose; it is only then do we hear cries of “rights” and “freedom” (Pojman et al. 2011).

But what is freedom? When populations agreed to mutually prohibit theft by imposing laws, mankind became more free and not any less. Those who decide to stay fixated onto the logic of the commons are free only until they bring on universal destruction. They must see the concept of necessary mutual coercion. It was Hegel who said “Freedom is the recognition of necessity” (Pojman et al. 2011). Therefore, once mankind acknowledges the necessity of abandoning the commons in mating and that there is no technical solution in salvaging the disasters of overpopulation, is when mankind will truly liberate future generations from the tragedy of the commons. “Freedom to breed will bring ruin to all,” Pojman et al. (2011).

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#### 4. Empirical Foundations

Since the emergence of Garrett Hardin's essay, many theorists have taken it upon themselves to apply Hardin's tragedy on multiple communities with a commons system; to see if the concept has any statistical soundness or empirical legitimacy. For example, Al-Fattal (2009) conducted a study to test the validity of the tragedy of the commons hypothesis in three marine cases. The most profound finding was that the first two cases, the tragedy of the commons could be diminished when a “co-management” of institutions are collectively established on a local level; while the third case showed that the tragedy of the commons is a true prediction when dealing with the global stage. In precise, California & Oregon fisheries showed resilience against the tragedy of the commons hypothesis because of their historic adaptation of regulation which paves the way for further regulations in free fishing. By all means, this should not be misinterpreted with both states' behaviors; Both Oregonian & Californian fisheries are known for their large investments and return on profits. To them, profit maximization carries a deeper concern for them because this gives them a chance to fully operate a family business and enjoy different non-pecuniary goals as prestige, entrepreneurship, and independence (Al-Fattal 2009).

Although both local fisheries weren't always operated under the control of a just or correct institution, it was nevertheless operated under the power of ethnic produces' coalitions. For example, fishermen from a specific ethnicity would claim a certain resource, then prohibit other certain fishermen not found in the coalition while dictating the harvest and sale of the fisheries' output (Al-Fattal 2009). These local fisheries have always seen fruitful infringements such as Trip limits, license limits, and access limits which is why it showed resilience to the hypothesis. On the other hand, the EU Common Fisheries Policy (CFP) showed validation to the TOC hypothesis. Reasons for the EU CFP's could be explained by examining the opposite reasons of the local fisheries that led to their success. First, the scale of the problem is drastically enlarged than from the local level as well as the number of actors, hence making the system more complex. “A TOC occurs at the international level of the EU when dealing with common fisheries policy”, Al-Fattal (2009). This is due to the EU's three-level game. At the first international level, EU members discuss complex policies amongst each other; at the second national level, EU members discuss specific issues within their government-related fisheries institutions; and finally at the third sub-national level, the local actors negotiate and try to impact the policies of their neighboring EU states. This game is called a “nested game” because one policy is likely to have impacts beyond the issue-area (Payne 2000 as cited in Al-Fattal 2009). So although the EU CFP may be politically practical, it is impractical in fish stock conservation.

In another interesting study, Wallimann-Helmer (2013) explains how the tragedy of the commons has in fact, transcended into another form, which is the tragedy of Climate Change. Regarding the commons tragedy, he said that Hardin's perceptual notion can be true because it is based on rationality. This means that: I) It is rational to deplete a commons resource by individuals gradually, and II) It is rational to deplete a resource if there is no governance or institutional control over such behavior. Wallimann-Helmer was influenced by Stephen M. Gardiner's work, who believed that the real tragedy of the commons should NOT be interpreted as a structural dilemma for parties living in the now, but rather it should be interpreted, taught, and understood as a dilemma occurring between generations (Gardiner 2002 as cited in Wallimann-Helmer 2013). Gardiner labelled this as an “intergenerational tragedy” because the tragedy of the commons amongst parties living in the now could be averted had there been a reciprocal control over the collaborators' behavior in using the resources. Similar to Al-Fattal's findings, this can be attained by either: I) Social interaction among nations involved or II) Institutional governance.

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#### 5. The foundations of ethics & morality

When populations, governments, and institutions decide to collectively co-manage resources, the tragedy of the commons is mitigated (Johnson 2003). Therefore many believe (from ecofriendly advocates to small medium enterprises) that each individual is at least bound to some ethical obligation in reducing the use of the commons to a steady level. A commons is a resource which is hard to exclude on individuals and used by several parties. However what should commons users proceed with when they understand that their use is harming the commons overall because of overexploitation? Should people proceed with a bit of green washing? Should people replace their automobiles to lower fuel capacitors? Would people be able to drive in good conscience, or is it morally erroneous? Should those who manufacture these automobiles halt their production for immorality?

The answer to all those questions, as mentioned by Johnson (2003) is a Kantian one<sup>†</sup>. Therefore, if the planet can sustain the entirety of mankind driving large fuel-tank capacitors then everyone should drive one. The same is applied for firms and factories; they should all collectively and unilaterally reduce

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<sup>†</sup> That every commons user should ethically and morally prohibit their use to a level that is sustainable and applied on every single user regardless of what others do.

their emissions to a tolerable level by the planet. Yet Johnson also views that mankind shouldn't set their moral obligation to a certain function to a certain end goal. Rather humans should work and adhere for a collective stand in general to protect the commons.

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## 6. Utilitarianism & Smith's pursuit of self-interest

The tragedy implies that one man's action that reaps short term benefit to him, is another negative increment on the communal wellness. Hardin stated that the commons should be either in the control of the private sector or the government. However due to this, the utilitarian maxim of "the greatest good for the greatest number" cannot be realized (Hernandez 2010). A fundamental in utilitarian morality, is the greatest happiness principle; however and wherever it is possible one should expand happiness and curb pain. Therefore, utilitarianism ensures that the greatest good accompanies the greatest number because it would be erroneous for a king and his minority council to reap feasts and resources that aren't enjoyed by peasants or the remainder of the population. Utilitarianism never promotes the happiness of a group on the expense of another, as mentioned by utility monsters<sup>‡</sup>. Hardin was not a utility monster, however as described by Hernandez (2010), he misinterpreted the utilitarian maxim by ignoring two fundamentals in utilitarian ethics.

The first fundamental being ignored is, while utilitarianism is hedonistic and follows the same course of Adam Smith's pursuit of self-interest it isn't based on an individual's happiness but rather on a group. In fact, John Stuart Mill actually stated that "*unselfishness*" in pursuit of happiness (including others) along with "*the mental cultivation*" of appreciating higher pleasures (as art and literature) are the two traits behind happiness. Therefore, as criticized by Hernandez (2010), Hardin may have promoted utilitarianism in a hedonistic vulgar way that is incorrect. The second fundamental is Mill's notion of "*Liberty*". Hardin assumes that commoners feel free and inclined to do as they please, however as put by Mill "the right to swing my arms in any direction ends where your nose begins". In other words, we are free to do what pleases us until the point where our actions infringe upon the liberty of others (Hernandez 2010). Therefore, Bentham's goal of recognizing not only the greatest good, but for the greatest number in itself explains how utilitarianism is highly considerate of pursuit of self-interest and the parameters of liberty.

In addition, Hardin claims that Bentham's (or the utilitarian) goal is unattainable because in this case, the greatest number will bring the greatest ruins. Yet, if one revisits the works of Mill, one would find that Mill was aware of population-density control and acknowledged how some nations have reached their greatest degree of sustainable populations (although this was 80 years before Hardin's essay). Therefore Hardin's proposal that an ethical theory that takes into consideration the entirety of society must coexist with a growing population can be considered fallacious.

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## 7. A word for the future

Multiple views and opinions exist regarding the tragedy of the commons hypothesis. Some say that it is a severe global problem that has been signaled to us by Hardin, while others have dubbed it fallacious, *Tonypondy*, and mindless coining. The matter of the fact is, whether this dilemma was true or not, we cannot let ourselves compete with one another in an egotistical touché race. Let us exert all our efforts into gradual repulsion of this abyss if true or commons if false. By observing many empirical foundations, we have found that on a domestic/local level the tragedy can be averted. However, on a supranational level, the tragedy is inevitable. Therefore, as pioneers of the 21<sup>st</sup> century, let us bestow it upon ourselves to find a solution for this mess. In fact, every living generation should have an unwritten universal responsibility, which is ensuring a chance for future generations to live.

Druzin (2016), for example, proposes a solution to this problem. Indeed, we have already mentioned how the main failures for international entities in collaboration resides in not having an international government that enforces laws through punishments or incentives. State sovereignty here will be the destruction of mankind. He proposed nations joining (or already part of) an agreement such as The Kyoto Protocol or the Paris Agreement, contribute with an upfront deposit to an international regulatory body named: "The Commons Management Fund (CMF)" (Druzin 2016). As simplistic as this may sound, it is in reality complex. The main focus here is not centered on the penalties, but rather the ability for governments to create what is known as "credible signal commitment". According to game theory, credible signaling can actually prevent a tragedy of the commons occurring by promoting confidence and trust between parties so that everyone sticks to their responsibilities.

Druzin (2016) brilliantly laid out a framework that could be adopted on a supranational level, yet this doesn't mean this is the only proposed solution. Many people have taken it upon themselves to collectively solve this problem, however to truly create a difference, we must take a collective stand in fighting the selfishness of self-interest pursuit. Regardless of whether the tragedy occurs or not, we must owe it to ourselves to ensure the wellness of our resources to sustain future generations.

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## 8. Conclusion

Garret Hardin's powerful 1968 publication "Tragedy of the Commons" (TOC) threw the didactic aristocratic world off its kilter. The concept of Tragedy of the Commons implies that due to rational human behavior, one will always pursue his self-interest. People do this simultaneously until enough demand on a certain good, a commons good, results in its overexploitation until it tragically dissipates forever. Hardin's tragedy of the commons hasn't only resided in environmental economics, but was also extended to corners of philosophy, ethics, and even human behavior. Hardin continues to use his famous example of a given open pasture available for the common public and how the inhabitant herdsmen act and behave under no restrictions or excludability methods. Due

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<sup>‡</sup> Utility monsters are those who critique utilitarianism by saying that a child might live in suffering for the rest of society to live in a utopia.

to the Tragedy of the Commons being heavily intertwined with Bentham's utilitarian goal, Mill's utilitarian maxima, and Smith's pursuit of self-interest, the examination of the multiple foundations behind this dilemma must be observed.

On philosophical foundations, we found that the TOC proposed infringements on the liberty of mankind. Is it because we are born as free beings we cannot accept new modes of abandonment for certain commons resources? What was found was profound, but the reality is, we do not oppose past transgressions imposed on commons – as it does not propose a contemporary loss. It is in reality the newly proposed transgressions that we really oppose; it is only then do we hear cries of “rights” and “freedom” (Pojman et al. 2011).

On empirical foundations we found that the TOC hypothesis does in fact occur on national and supranational levels. However it is only on a domestic scale do we see a commons system (as fisheries or water catchment sites) avert the tragedy; when applied between international parties the tragedy occurs and it cannot be averted. Many reasons arise behind this, but the main reason is due to the incapability of the international stage to take a collective stand against this tit-for-tat race. In addition, Hardin claims that Bentham's (or the utilitarian) goal is unattainable because in this case, the greatest number will bring the greatest ruins. Yet, the works of Mill show that Mill was aware of population control and acknowledged how some nations have reached their greatest degree of sustainable populations (although this was 80 years before Hardin's essay). Therefore some of Hardin's proposals contradict with the very own ethical theories he mentions, with many saying that much of his essay can be dubbed as fallacious. However the matter of the fact is, whether this dilemma was true or not, we cannot let ourselves compete with one another in an egotistical touché race. Let us exert all our efforts into gradual repulsion of this abyss if true or commons if false.

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