

Facultad Latinoamericana de Ciencias Sociales, FLACSO Ecuador

Departamento de Desarrollo, Ambiente y Territorio

Convocatoria 2018-2020

Tesis para obtener el título de Maestría de Investigación en Economía del Desarrollo

Greed and Grievance Motivations for Conflict: evolutionary and Behavioral Human  
Preferences

Pablo Augusto Sanchez Hidalgo

Asesor: Wilson Pérez

Lectores: Leonardo Vera y John Cajas

Quito, diciembre de 2023

**Contents**

**Resumen ..... 4**

**Abstract ..... 5**

**Acknowledgments..... 6**

**Introduction ..... 7**

**Chapter 1. Levels of Causation: Empirical Evidence of the Different Levels ..... 21**

    1.1. What are the Mechanisms Underlying the Observed Behavior? ..... 21

    1.2. What is the Developmental Trajectory?..... 24

    1.3. What is the Evolutionary History? ..... 25

    1.4. What is the Survival Value?..... 27

    1.5. Cultural Evolution ..... 28

**Chapter 2. Proposed Consilience ..... 30**

**Chapter 3. Discussion ..... 31**

    3.1. Peace Building and Peacekeeping ..... 32

**Conclusions and Recommendations ..... 33**

**References ..... 35**

**Appendices ..... 39**

## **Declaración de cesión de derecho de publicación de la tesis**

Yo, Pablo Augusto Sanchez Hidalgo, autor de la tesis titulada: “Greed and Grievance Motivations for Conflict: Evolutionary and Behavioral Human Preferences”, declaro que la obra es de mi exclusiva autoría, que la he elaborado para obtener el título de maestría concedido por la Facultad Latinoamericana de Ciencias Sociales, FLACSO Ecuador. (Convenio de doble titulación Flacso Ecuador- Universidad Erasmus de Rotterdam)

Cedo a la FLACSO Ecuador los derechos exclusivos de reproducción, comunicación pública, distribución y divulgación, bajo la licencia Creative Commons 3.0 Ecuador (CC BY-NC-ND 3.0 EC), para que esta universidad la publique en su repositorio institucional, siempre y cuando el objetivo no sea obtener un beneficio económico.

Quito, diciembre de 2023.



Firmado digitalmente por  
PABLO AUGUSTO  
SANCHEZ HIDALGO

---

Firma

Pablo Augusto Sanchez Hidalgo

## Resumen

La opinión generalizada sobre la relación entre las ciencias sociales y las ciencias naturales es que existe una separación infranqueable. Normalmente los argumentos van en el sentido de que las ciencias naturales son determinísticas y la naturaleza social de los seres humanos es muy compleja para obedecer estas leyes. Sin embargo, existe esfuerzos que intentan reconciliar esta separación, en particular E.O. Wilson recomienda a la Economía como un buen lugar para empezar, ya que posee el método científico mas cercano y posee teorías extensivamente formalizadas. Siguiendo este tren de pensamiento la presente investigación busca los sitios de coincidencia tomando como base los trabajos de análisis de conflicto, específicamente la teoría de Codicia y Agravio. Mediante ecología evolutiva y consiliencia propongo como se podría definir la codicia como un proceso comportamental operativo que explique el comportamiento caótico de los grupos de poder y que no cumplen directamente con una decisión racional. De la misma manera los agravios crean una reacción de castigo por una sensación de agotamiento percibido de los recursos hacia un grupo que tiene un marcador fácilmente reconocible. Por último, el deterioro del capital humano orientado hacia una coalición desafortunada de sesgos heredados y de señales ambientales lejos de ideales que resultan en la deshumanización de un grupo en particular que de otra manera podría ser considerado como un vecino (nosotros) y no un enemigo (ellos). Los estudios del desarrollo pueden beneficiarse de este enfoque al tener una perspectiva nueva desde la experiencia de la ecología evolutiva que observa patrones de comportamiento.

Los conflictos violentos no son nuevos para la naturaleza, identificando la evolución de este comportamiento, propiedades en común y características al nivel de violencia, pueden ayudar a desarrollar nuevas estrategias para la construcción de paz. En particular las estrategia mencionada puede ilustrar los problemas de una solución única para todos los casos y al mismo tiempo dar un punto de inicio para analizar causas y consecuencias en un flujo retroalimentado.

## **Abstract**

The common opinion about the relation between social sciences and the natural sciences is that they have a gap impossible to bridge. Usually, the arguments go along the line of the natural sciences are deterministic and the social nature of that human beings is too complex. Nevertheless, there are some efforts to reconcile and in particular E.O. Wilson recommends Economics as a good place to start, as it has the most similar scientific method, and has very well formalized theories. Thus, the present research looks for the places of coincidence starting with the work of conflict analysis and in particular Greed and Grievance. By means of evolutionary ecology and consilience here I propose how Greed can be defined in operative behavioural processes that explain the chaotic behaviour of the ruling party and doesn't comply directly with a process of rational choice. In the same way grievances are viewed as actions towards punishment triggered by a sense of perceived depletion of resources and blaming it on a group with recognizable traits, which are used as markers. Finally, the deterioration of social capital is oriented towards the unfortunate alignment of the biases inherited and the non-ideal environmental cues that result in a dehumanization of a particular group that in another case would be considered a neighbour. Development studies will benefit from this focus by having a new perspective from the evolutionary ecology experience in studying patterns of behaviour. This new perspective accepts the complexity of Developmental Studies and proposes additional tools for looking at the diversity of phenomena, avoiding a deterministic or reductive theory.

As violent conflicts are not strange to nature, detecting the evolution of this behaviour, common properties, and traits in the level of violence, would help develop new peace-building strategies. In particular the above can illustrate the problem of having one solution for everything but giving at the same time a starting point to analyze the diversity of causes and consequences as a feedback loop.

## **Acknowledgments**

I would like to thank everyone who played a role in my academic accomplishments. First of all, my parents, who supported me with love and understanding. Without you, I could never have reached this current level of success. Secondly, my committee members, each of whom has provided patient advice and guidance throughout the research process. Thank you all for your unwavering support.

## Introduction

The main goal of this study is to analyze economic theory in a context of evolutionary theory and related to the knowledge acquired in other sciences. My proposal is to start with conflict as a situation where basic human behavior can be followed to its ancestral roots. Conflict presents an opportunity to build a fundamental theory from a basic behavior such as violence. While studying the high-functioning human in a stable, socially healthy, developed country, and analyzing all the features in a brand-new environment, where the most advanced qualities of the human mind are active will create noise to the construction of a hypothesis or include biases such as survivorship bias. Here I follow the lead of neurology that studies cognitive and behavioral abnormalities that are associated to physical and physiological signs (Baker, Kale, and Menken 2002). To make sense of the enormous amount of information, two powerful frameworks are borrowed from the natural sciences: evolution and consilience.

They are useful toolkits that can contribute to the unknitting of the complicated social and individual human behavior. Evolutionary logic will put our behavior in a biological context without the risk of been reductionist or determinist. Here we think about the development of human society over the years, assuming an initial set of traits that came to be *Homo sapiens* as an independent species are still present. But these traits did not spontaneously appear from the vacuum, it is the result of a history of previous selections that materialized in our ancestors. This gives us an insight on each trait in a simpler setting from where the most complex human behavior can be analyzed, without forgetting the present form of these traits: Form that has an initial state but that can be malleable in different degrees and will change over time.

Another evolutionary part that needs to be considered is the development of the individual up to maturity. As human beings we are extremely dependent on parental care for the survival of our heir. From the day we are born our fragile self (altricial) has to develop organs into a mature form, in the same way we start with a set of innate behavioral traits and from there we learn to survive, and our behavior changes up to a place where it stabilizes. Here is where culture and environmental conditions applied to our parents start influencing us, providing an evolving culture to the growing human being.

Science is a communitarian endeavor as every great thing that mankind has done, thus it cannot be developed in isolation from one another as it is still the case of the social sciences.

For that reason, consilience comes into action by crossing bridges between subjects that analyze different types of phenomena.

Civil war is a form of violent conflict that has increased after WWII as there are more intra-states violence than interstate and has cost millions of lives. In general violent conflicts are a further characteristic of countries that have failed in diversifying their economies and economic growth, resulting in prevalent poverty, high inequality and failed peace resolution (Murshed 2010).

Authors in the field of violent conflicts and peacebuilding take many roots and approaches like scale, types of conflicts, causality, gender, age, ethnics, economics, etc.

Ethnic and religious characteristics are usually part of the explanation arguing historical and extant frictions, but authors like Jayasundara-Smiths (2014) argue that there are other interactions working in synergy and they are more important characteristics. The author proposes a broader approach where other variables like class, caste, gender, and age, in relation with their reality and their interactions, will allow a complete theoretical scenario.

A different approach takes into account the environment with studies on climate, institutions (Mohamed Salih 2004), resources (Timura 2001), agriculture and environmental services, this area is still looking for a more standardized way of testing since the studies scope and scale may differ in geographical, climatic and demographic terms and would yield different results. Nevertheless Salehyan (2014) affirms that there is definitive evidence of the influence of climate, but not a clear chain of causation.

Economics is on the quantitative side of the studies introducing the analysis of variables such as rents, income, types of resources and commodities, institutions, management, levels of human development, and others. As a result an important line of thought is the one studying greed and grievance as described by Collier and Hoeffler (2004). What they found is that these factors do not contribute in an important way to predict civil wars, but greed and grievances working together can be useful forecasters for the onset and duration of the conflict.

In this study the starting point will be the economic approach particularly proposed by Murshed (2010) as it focuses on three interesting dimensions from a behavioral perspective: greed looks at the ruling party, grievances at the agent level and institutions as part of the social contract.

As Murshed (2010), explains, greed and grievance are analyzed under the light of rational choice, but this can be criticized as bounded reasoning since any alternative that avoids war is usually pareto superior, thus there would be an inconsistency as civil wars continue. Hence, he mentions possible reasons that probably ruled out cooperation and make conflict optimal for group leaders. Among the reasons there are circumstances (constraints, poverty, institutional failure), mistrust (coordination failure), impatience and myopia (discounting the future).

Since violence is present in all animals and is usually a tool of last resort, because of the risk it entails. Humans can be seen as a continuum with the presence of similar neural pathways. As the reward system in the brain is related to motivation there must be a pathway to aggressive behavior.

Conflict and cooperation are two sides of the same coin. Sociality has these two opposites that describe the relationship within and out of the group to which the agent belongs to. For social groups there are still some controversy on whether cooperation happens due to altruism or selfishness, while the selfish agent expects something in return, altruism doesn't, nevertheless cooperation is vital. Cooperation and conflict are part of survival skillset that birds and mammals evolved to enhance the odds of reproduction for the individuals displaying them (Wilson 1999).

The position of greed and grievance as a theory talks about the ruling party pursuing their own agenda and horizontal inequality respectively. In greed, resources are an important part of the equation as they make the conflict viable. For grievances resources are analyzed in the context of comparisons between groups. Resources make it a good candidate to be analyzed from an ecological perspective.

There are two problems as stated by Murshed (2010) to the rational choice approach, first how less costly alternatives are omitted? and the necessity to include the deterioration of the social contract expressed in failing institutions. From a behavioral perspective to resort to violence from the ruling party and the individual grassroots is normally an extreme measure that has become an established option and the mindset stays locked in that mode, this presents some interesting insights. Usually the leaders are not involved in the violent acts but have an important role in maintaining the status quo. The acts of violence committed by foot soldiers on the other side have a heritable component that ethology can trace to the animal kingdom as a continuum to our ancestors.

These homologous and analogous characteristics found in both animals and humans are described by various other sciences, thus if incorporated in a unified body of knowledge that will help to understand the extremely complicated subject of human behavior. While some schools of thought can have competing theories others can be complementary, in any case each theory will provide additional information and contrast.

As mentioned above the main objective of this work is to use consilience (coherence and consistency) as bridge between economics (social science) and the natural sciences, following the work of E. O. Wilson (1999) book. In his book “Consilience: The Unity of knowledge” he gives a broad view of integrating the social and the natural sciences, going from genes to culture. Without been deterministic in his viewpoint, he analyses the mechanisms that biology has to offer to contribute to a better understanding of human behavior. In contrast in this study, I would like to be very specific on the topic, thus, conflict would be a very interesting and narrow subject of study that would help to avoid a totally reductionist tactic.

To guide the process, I based this paper on the work of Mayr (1961) and Tinbergen (1963), that proposed a framework for causality that separates proximate from ultimate causes.

The difference between proximate and ultimate causes as described by Beatty (1982) is focused in the life span of the individual, proximate causes come to effect during the individual’s life cycle while ultimate causes, on the other hand, are invested in the process before the individual came to be, the evolutionary history of the species, and how those events form present mechanism (phenotype). Mayr (1961) argues that both types of causalities are not in conflict but are complementary and only when both are understood we can fully comprehend the behavior.

In order to establish a procedure to put into context the findings of the work done in economics I will start from the mechanisms found and proposed by the greed and grievance analysis of conflict. From there additional explanations from the behavioral and biological sciences can help pinpoint particular neural processes. Immediately after that, I look for evidence related to differences in behavior among age groups that inform the process of development and how it can influence conflict. Then we make a leap to the past and try to understand the processes and conditions that gave rise to present traits. Finally, I look for theories that make the connection to survival.

An supplement was needed in order to do justice to human evolution thus I extend this complete approach and try to figure out the same framework to cultural evolution seen

through the initial toolkit inherited from our ancestors as the limiting factor. Also welcoming the open-ended cultural change that need an evolutionary perspective looking for clues that signal to patterns and pathways. Culture has a starting point based on the environmental and social interactions.

### **Greed and Grievance**

Wars have for a few decades been in decline but for some time civil wars are on a reversal path. While international conflicts are now very rare as part of an effect originated after the Second World War (IIWW), intra-state violent conflicts are now the rule (Von Einsiedel et al. 2017).

According to the UN the biggest difference now with respect to the 1990s is that their operations have more uncertainty of outcome thus the times onsite increase. In the same report Von Einsiedel et al. (2017) points to three developments that add complex nuances to peace efforts: organize crime, increasing “internationalization” and maximalist goals.

The destructiveness of war is a feature worth of highlighting, and how this make it an irrational urge in the sense that there are less costly ways to resolve conflict, for human integrity and the economy. But in close inspection misinformation and biased expectations limit the available options making it a rational process with constrains (Murshed 2010). Here I will argue that cognitive biases as reported by many studies play an important role that gives additional options for intervention and as I will suggest new forms of institutions are required in order to resolve particular traits are transferred by genes or by culture.

Conflict is initiate with a difference in desire between parties, but motivation is required for violence or any action to occur, motivations that can be independent from the causes.

Greed and grievance are an approach from a more quantitative school of thought more oriented to the economic factors for conflict. The stylized patterns of conflict point to developing countries where poverty is prevalent and with exacerbated inequality that have also failed in peace negotiations.

The rational choice theoretical framework main assumption is that conflict comes from choice, thus has a logical process, and must be reverted for peacebuilding.

As poverty is a stressor actions and cognitive ability under these circumstances must be taken into the mix.

Resulting dysfunctional governments have incentivized colonial style intervention with excuse of preventing the collapse (Murshed 2010). Other variables like ethnicity and religion diversity show little contribution to war.

The greed approach focuses on the ruling group and the conflict that arises when a contending party wants a cut over the control and profit of natural resources, their bounded rationality viewed as benefits from the appropriation of resources and the need of a source of financial viability, resources that could come from oil, diamonds, sympathetic diasporas or even illegal drugs.

On the other side grievance are a consequence of perceived depletion of revenues. What the studies have showed is that inequality plays an important role only when the differences are between discrete groups. This is called horizontal inequalities as they come from the relative difference between groups and not from the group with matching markers. Measures are very sensible to scale and are idiosyncratic.

Conflict within groups are rare even if they have large inequalities, group formation is based on well-defined physical and cultural markers that allow generalizations, hence horizontal inequality is more important than vertical, that is, inequality in a homogeneous group may not cause violence but between groups can create the perfect medio culture.

It's important to include segregation as form of group differentiation because there is strong evidence that ethnic and language segregation is correlated with conflict incidence, but no relation with religious segregation even after controlling for institutions (Corvalan and Vargas 2015). That said a hint on to why segregation depends on the type might include resistance of communication and visual markers.

Conversely cities are examples of ethnic and linguistic diversity with corresponding economic and social group diversity resulting from the freedom of association.

Murshed (2010) while revising the Greed and Grievance models also highlights the deterioration of institutions, to the point that stop representing the interests of society as a whole. Institutions are treated by many authors as part of causality for the wealth of nation and in this particular case for intra state violent conflicts.

An interesting view is that formal institutions are emerging properties of informal institutions or other agent-based rules (Brisset 2016). This view opens a more complex treatment of institutions as they result of the collective action of individuals and as any other activity can

be seen as a marker that would differentiate this group from the rest of the population. Thus, susceptible to prejudice and segregation. Even if they have a good start and structured as successful institutions elsewhere, individual choices will affect every process in the office.

## **Consilience**

Economics take a great deal of attention to motivation as do some other sciences, each one with its unique approach and specificities, like psychology for humans, neurology or biology that uses animal models. In economics as in many other sciences deductive and inductive arguments are used in order to come to logical true conclusion.

According William Whewell, after the inductive process where theories are built confirmation is needed to consider it an empirical true. He proposes three tests: prediction, consilience and coherence (Snyder 219AD). Prediction refers to the ability of the hypotheses to express and estimate phenomena in advance an observation. This part in its own right creates some debate as Nate Silver (2012) puts it in his book, “The signal and the noise: the art and science of prediction”, there are differences between forecasting and predictions, while both terms refer to the estimation in advance of events forecasting doesn’t need an understanding of causality. Here we refer to prediction based on causality and its mechanisms.

Coherence refers to the capacity of the hypothesis to include a new class of phenomena without any change to the original statement.

Consilience, according to Whewell (1858) is probably the most valuable of these criterions,

the evidence in favor of our induction is of a much higher and more forcible character when it enables us to explain and determine [i.e., predict] cases of a *kind different* from those which were contemplated in the formation of our hypothesis. The instances in which this have occurred, indeed, impress us with a conviction that the truth of our hypothesis is certain.

Economics has failed on the last two accounts as it always needs some adjustment for new phenomena and has until recent years kept isolated from other sciences specially from biology and its contributions. But I’m not suggesting a complete failure rather an oversimplified

model that could get informed from the biologist's strategy, in particular from an evolutionary mindset.

There are plenty of examples in the natural sciences. One of the most common is plate tectonics with continental drift been one of the consequences. Furthermore, is consistently confirmed by biogeography and evolution by looking at lineages of animals and plants and their geographic distribution on every discrete body of land. As a result, geological profiles and biological distribution show a coherent pattern of movement by mapping an ancestral contact between continents. This gives the two theories additional information on the historical events that resulted in the present situation testing both from different perspectives. The importance of this case is set by how different they are, the geological processes are mainly based on physical and chemical rules, in contrast with the biological processes that are aligned to evolution, hereby explaining and including different kinds of phenomena with the same exact theory, consilience and coherence.

The origins of our behavior have been strongly debated over the years with two opposing sides claiming what now can be called a false dichotomy between nature and nurture as they were separated from our evolution and ancestry (Sapolsky 2017), a common metaphor is, what is in charge hardware or software? and the answer seems to be that it's a fluid interaction between both (Jonas and Kording 2017). A similar discussion has now gained some momentum in Economics were the self-interested utility maximizing agent statement arguably has failed to fulfil their burden of proof. Some attention has come to the light for human behavior and how our decisions might be bounded in some degree by psychological (bounded rationality) (Simon 1955; Kahneman and Tversky 1979) and evolutionary traits (Sapolsky 2017; Nowak 2006; Traulsen and Nowak 2006).

E. O. Wilson (1999) invokes Whewell on consilience: "literally a "jumping together" of knowledge by the linking of facts and fact-based theory across disciplines to create a common groundwork of explanation". Based on putting together inductions, proposes the need of this between the social sciences and the natural sciences. He says that consilience is the more accurate term and a key part of unification. In his work he attempts a very broad proposal and highlights the importance of economics in bridging the gap between the social sciences and biology.

There are other efforts that come from primatologist with an evolutionary focus in continuity (de Waal et al. 2006; Sapolsky 2017; Moffett 2019). Here they follow neurological and

behavioral pathways that are analogous and homologous in primates and other animals that have developed cognitive skills.

Evolutionary Ecology a part of biology has some experience in the framework for the study of ethology, by studying the variation in the different levels of populations, starting at the individual level to species and even ecosystems. (Fox, Roff, and Fairbairn 2001). This has challenged biology to try to reconcile ideas and information from all kinds of approaches. Mayr proposes in his article in 1961 to levels of analysis proximal and ultimate causation. (MacDougall-Shackleton 2011).

Economics has relied most of its theoretical approach on the Utility function that shows various types of preferences. For me it strikes as interesting how the law diminishing marginal utility is closely related with the Reward system mediated by dopamine (Rothenhoefer and Stauffer 2017). Thus, my framework will be of consilience where patterns of behavior appear in the social sciences but that have strong evidence in other sciences.

The reward system objective is to reinforce behavior that promote the survival of a species, in other words is in charge of desires and well connected with needs. Although, as I mentioned before, it behaves similarly as the law of diminishing marginal utility, it incorporates an important variable, uncertainty, with the same prize dopamine secretion will vary if different from 50% chance (Sapolsky 2017), showing the importance for our brain expectations affect our willingness to do a job. Additionally, our brain is better equipped to detect net change and not nominal quantities. Thus, the chemical reward will come before the physical reward and the motivation will be mediated by the secretion of dopamine depending on past experiences. This signal then will be reinforced by the actual target prize (Sapolsky 2017).

By establishing the reward system and dopamine as functional parts of motivation neurobiologist have mapped related parts in the brain for Sociality, bonding, feeding and mating.

These two factors in principle already change the analysis of our preferences and explain why in studying calorie intake poor homes that exceed certain level won't increase consumption but will change the composition of their diets to allocate other nutrients.

Here we can join forces with biology and use their framework to study behavior as aggression is present all over the animal kingdom, it's constant and it's prevalent in solitary to gregarious to social animals. Intra species aggression is prevalent in the animal world as well, and humanity is not any different. Aggressiveness is relegated for special moments of life

histories like in mating, territory, prey and offspring defense. We, humans, even add a particular kind, group coordinated aggression, behavior that is shared with Chimpanzees and gorillas. common with other species conflict

Humans have various ways to cope with conflict. And in the study of violent conflicts there are many approaches to their motivations like ethnicity or class or context (Jayasundara-Smits 2014) and from the quantitative side of Economics with the rational choice (Murshed 2010).

### **Proximate and Ultimate Causes**

The difference between proximate and ultimate causes is rooted as described by Beatty (1982) focused in the life span of the individual. Proximate causes come to effect during the individual's life cycle, while ultimate causes, are interested in the process before the individual came to be, how the evolutionary history of the species, and how those events form the present phenotype. Mayr (1961) argues that both types of causalities are not in conflict but are complementary and only when both are understood we can fully comprehend the behavior. The explanandum in explanations by reference to proximate causes is behavior (including the behavior of the growing, developing individual), whereas the explanandum in explanations by reference to ultimate causes are proximate causes (Vromen 2009).

The idea is that ultimate causes can explain the development of the proximate causes in an evolutionary fashion. This means that any mechanism that explains behavior has a historic context where evolutionary forces interact to select and inherit these traits, thus, one can theorize on how any behavior originated and how it was vital for survival.

In this way Tinbergen goes further by creating additional levels for proximal and ultimate causality by establishing four questions (Vromen 2009):

- What are the mechanisms underlying the observed behavior?
- What is the developmental trajectory?
- What is the survival value?
- How did it evolve?

These questions can give us additional information into ultimate causes that can be hidden in behavioral constructs that cannot be untangled without consilience. Causes that will differentiate instinctive responses, from ontological thresholds, cultural contributions, mechanisms, and survival importance. Here behavioral economics plays an important role because it has been one of the few subjects attempting an experimental method.

As it can be seen in this question the first two question deal with proximal causes and in that matter dealing with the underlying mechanism that individual present for the functioning of the behavior in question. The division that Tinbergen's generates separates the study of behavior in to different views, first is the mature individual where is fully formed and behavior has been fixated in a stable point, without falling in to thinking that no changes will occur, but any change won't be as radical as in the developing years.

Second is the question of development where learning presents a key role where the environmental context will help determine the mature individual.

On the other hand, the las two questions deal with the past context that give raise to present traits. These two questions put proximal causes in to the magnifying glass and look for adaptive benefits of the formation and posterior establishment of a mechanism that produces behavior. The behavior needs to be inherited or formed from previous traits with the same or even different purposes. Hence, must be present in our ancestors and can be studied by looking in closely related species where traits of our common ancestors will be detected. For a particular behavior to be selected and made part of the population needs to be beneficial and of competitive advantage for the species. In that light present behavior emerged in prehistoric context where it give humans an advantage over other species to survive past threats.

Based in the recommendation of various authors it is useful to add a fifth question that can work with a more advance species in the social realm, hence culture as a way of change and dispersion: How did culture evolve? Which states could be ambiguous since culture appear by means of evolutionary process, but is also continuously changing by diversity, selection and heredity. For the complexity of this second part I will only postulate the possible epigenetic rules that will give the basic tools for culture to continue evolving in the context of this document.

## **Justification and Relevance**

Understanding violent conflict has on its own an importance in the survival and flourish of humanity. Knowing its root cause could also point to unhealthy behavior that can be the sum of innate behavior, history of the species and cultural evolution.

Biology in the last decades has had success in its mechanistic causality, joining the knowledge of chemistry, physics, geology etc. Nevertheless, the origin of the success is the theory of evolution, as theory is how we can construct hypothesis to be disproved. By 1973, the geneticist Theodosius Dobzhansky could declare that “nothing in biology makes sense except in the light of evolution.”

Humans as social animals have a duality, pro and anti-social behavior, these two extremes function as a continuum. Group formation is a good example of how complex this continuum can get, since pro-sociality with inner group members will also promote antisocial behavior of outliers. Nowak (2006) has used evolutionary games to demonstrate how cooperation among group members can promote intergroup competition. Anti-social behavior like coordinated violence or corruption may have the same roots in different contexts. Both are related with greed at the top of command chain and with grievances at the bottom end. While we condemn violence in a different category, the lack of public goods and services hurt people. Access to drinking water is a good example, governments must be accountable for preventable deaths by water safety related issues (more than 1900 children are dying every day from diarrheal diseases, CDC). This may create a pandemic and give the environmental cue for a behavioral change in attitudes from comfortable passing through freeze and then fight.

Here we use as the starting point the work of Murshed (2010) to find coherence with other sciences. Greed, grievance, and institutions deterioration are the proposed causes for the onset and maintenance of violent conflicts. These explanations do not only work for the ongoing civil wars or scaling conflicts but also could help enhance wealth as means of reducing inequality if the evidence points out to a behavioral hindrance of motivation to pro-sociality.

As mentioned before in complex systems theory is necessary to make sense and scrutiny the parts and processes of any phenomena. Quantitative studies need a method for model selection, that will assign minimum variables present to test the theory. Here consilience could provide a base line where other sciences add evidence and explanations for different parts of the model. As in any model measuring each variable has many problems, among which are the lack of endogeneity, heterogeneity and confounding effects. This would

produce noise making the signal undetectable. Knowing the causality and how its related in a particular context may help pick more appropriate independent variables. Here this context can be evolutionary, and how close is to ancient and present survival mechanisms.

Taking examples from other sciences, emphasis on weather forecast and science can show how identifying the causes can lead to routes of action but not necessarily a better forecast. Carbon dioxide is known greenhouse effect gas, that has been proven its heat retaining properties thus its contribution to global climate change. The conflict arises when models that include the complexity of the mechanism driving the climate do not outperform simple time series of weather trends (Silver 2012). While this gives some points to simple models, nevertheless no causal mechanism is exposed, and no intervention can be proposed mitigating climate change on the real effects.

In the social sciences this is exacerbated as already complex models with well-defined frameworks, can have additional omitted layers for both the study of causalities and the proposal of actions. Here lies the important point of the present exercise, because causality viewed as a mechanistical set of explanations can contribute with these additional dimensions where interventions and predictions can be tested.

Due to a lack of common language between the social sciences and the natural sciences, this can serve as a base line of related topics to a posterior treatment of violent conflict. Unlike other approaches where all characteristics are added up, here I will try to isolate to basic mechanisms that are shared with species of common ancestry and across human cultures. Due to a lack of fossil evidence of behavior the only way to infer ancestral characteristics is to watch extant species with common ancestry.

The need for a common language can be seen in the present pandemic and how the mechanistic causality is doubted although having all the evidence at hand. And how the social sciences particularly economists have flooded the web with forms of forecasting, that can follow immediate trends but have limited use in public policy design. While behavioral economist will have some useful insights for the executive part of plan viral infection dynamics is not their comfort zone. This is a pressing situation that has few precise records and has no proposed theory for the analysis of conflict risk.

## **Objectives**

### **General Objective**

- Look for consilience among sciences with respect of violent conflict, using Greed and Grievances as the reference point

### **Specific Objectives**

- Establish a relation between proximal and ultimate causes.
- Propose the main basic variables that science supports.

## **Chapter 1. Levels of Causation: Empirical Evidence of the Different Levels**

Causation is common objective in science while

The intersection of economics and biology presents a unique opportunity to explore the concept of causation in violence, particularly in the realms of behaviour and peace-building. This exploration is crucial for understanding the intricate relationships between human activities and their environment. This chapter delves into the various economic and ecological theories that treat motivation and behaviour. By examining causation through the combined lenses of economics and biology, we can uncover insights into the complex dynamics governing our environment and behaviour.

### **1.1. What are the Mechanisms Underlying the Observed Behavior?**

For this question we can use the mechanisms proposed by economics to the group level and other experiments that the behavioral sciences have proposed.

As stated by Murshed and Tadjoeeddin (2009, p.102): “greed versus grievance dichotomy is a useful entry point into the debate about the causes of conflict.”

Collier and Hoeffler (2004) work tested the Greed and grievance contribution to civil war and found that all proxies related to grievance such as inequality, political rights, ethnic polarization, and religious fractionalization, were not statistically significant. Nevertheless, the risk of rebellion was influenced by availability of finance, cost of rebellion and military advantage. The authors take greed and grievance as competing ideas. On the other side there is also the option that they are complimentary, but their mere presence doesn't assures the spark to violence, and thus, the weakening of the social contract can be involved (Murshed and Tadjoeeddin 2009). Whereas additional behavioral and evolutionary knowledge could help untangle the relation. A lot of the difficulty in behavior and in biology in general is to separate confounding variables in a complex system. Knowing what is being detected in the brain and works in different anatomical parts can separate or even group some variables to give a more consistent approach or even the ability to predict conflict.

The next area that can contribute to this topic are the behavioral sciences, here we would include the extensions to the cultural realm, as they are most likely proximal.

As Murshed (2010) explains the rational choice paradigm may be dampened by some process that omits getting to a Pareto superior alternative to war: Here an experimental contribution

made by Haita-Falah (2017) where the sunk cost fallacy and cognitive dissonance were controlled to be detected and tested. What they did is an increase of sunk costs are indirectly proportional to losses but increased cognitive ability didn't have any influence on the sunk cost effect. This can help explain why in an scenario of continuing war the preferred choice is when the rulers and their base are already prey of the sunk cost fallacy no matter how cognitive competent they are.

When invoked, standard models of expected utility, represent preferences as they would behave independently from the source of uncertainty (Lauharatanahirun, Christopoulos, and King-Casas 2012). Under this light uncertainty can come from a stochastic process or from a random agent but socially related. If we can agree that every human interaction is a social interaction as we always refer to our memory to look for social cues to categorize our peers. Lauharatanahirun, Christopoulos, and King-Casas (2012) designed an experiment in order to systematically test possible difference in risk aversion between the social and non-social context. Paired to a behavioral study they used neuro imaging methods to study hemodynamic activity. Their findings complement what other authors like Ariely (2009) have illustrated about the difference of economic and social rules. In the first case Lauharatanahirun, Christopoulos, and King-Casas (2012) locate a difference in activity in the amygdala in the brain for risk attitudes separating social and non-social situations, individuals with a risk aversion in the social context decreased the activity in the amygdala during non-social bets compared to risk-averse individuals in the non-social context that showed an increase in this activity. They also registered the sensitivity to reward by observing hemodynamic activity in the ventral striatum in high risk choice with two levels of reward, resulting in high activity with the higher reward. Joining this social context with sunken cost effect is the work Fujino et al. (2016), by monitoring brain activity they observe a tight coupling of the insula and the prefrontal cortex during the occurrence of sunk cost effects. In this experiment they observe that people that are more prone to social norms and regulations would also be more susceptible to the sunk cost effect.

Then raises the problem of the social contract, that can be explained may a disconnection of the ruling class, or lack of empathy, from the starting point ideals, that would also include why economic growth and other indexes may fail to predict war. Galinsky et al. (2006) tested the ability to comprehend how others see, feel or think under different levels of power priming. In all of which were less able to predict than their low power counterparts.

This decoupling of the ruling class from the needs of their people, is complemented with pluralistic ignorance, this explains how perceived grievance can be overestimated as each agent although contrary to the norm expect the rest to be in favor (O’Gorman 1975). This social norm can be used for peace but its most often than not are used by authoritarian governments to achieve complacency. Culture can be an important driving force to the use of this bias.

Now under attack Zimbardo's (Salamucha 2009) theory, the Lucifer effect, proposes a set of characteristics necessary for committing atrocities: dehumanization, anonymity and no accountability. These three characteristics are also common in authoritarian regimes with bad institutions. But are also in line with theories like us vs them, herd behavior and diffusion of responsibility, what is really lacking is our innate sense of fairness and punishment.

Punishment, being an essential part in promoting cooperation and pro-sociality (Feng et al. 2016), may be hacked once the three characteristics of the Lucifer effect are met. This behavior, observed all around in the animal kingdom, are usually motivated by access to resources. In contrast humans not only kill for access to resources, abstractions are now a motive, religion, ideology and economic power (Sapolsky 2019) have been catastrophic examples.

Punishment has inherent cost or gain sacrifice associated with its enforcement thus usually theorize as altruistic punishment. Here the affected party may or may not be in charge of the punishment, either way the punisher will endure a cost by reducing the violator’s payout or rejecting the transaction (Du and Chang 2015). For studying these phenomena researchers focus in three operational behavioral processes: inequity aversion, cost-benefit calculation, and social reference frame used for distinguishing self from others (Du and Chang 2015).

Inequity Aversion seems to be associated with the Amygdala and Anterior Insula as these parts increase activity during inequitable social exchanges. Both activate at the same time when unreciprocated cooperation is detected. Individually the Amygdala predicts individual’s inequity aversion, and the Anterior Insula is related with affective signaling. This last part was performed by asking participants to assign children to two group of children and with inequitable and equitable allocation.

Wilson (1999) describes the brain stem, limbic system, and cortex as heartbeat, heartstrings, and heartless, respectively. Here we can see a mature brain functioning in its different parts but how each one of them contribute to the result is the real question. For the moment we

know that their partial contribution is determined by their context. The input the human body receives will set the path in the brain and thus the specific part that will take control. With the cortex been the rational part and the one attributed with logic being the one active only well controlled and relaxed environments.

## **1.2. What is the Developmental Trajectory?**

The most common reality about violence is male criminality in the ages between 15 and 25, but this behavior can also be changed by parenthood (Huschek and Blokland 2016). Hence, age and gender composition can make a difference, Mesquida and Wiener (1999) tested this idea on the causalities of war and compared 19-30 versus 30 and older, being the first the good indicator of severity.

Moffett (2019) refers to human society as an anonymous society, highlighting that in no sense it's a new feature in zoology. As an example, gives an analogy with ants where society recognize itself by shared characteristics that mark individuals as fellow members. While for ants the mark is chemical humans have extended this to new dimensions as R. M. Sapolsky (2017) points out the analogous basic parts of the brain can be shared but humans go beyond and use a combination of this functional parts in different ways, having as a result other construction from the narrative, that can be extended to clothing, gestures and languages. This flexibility gives markers a more subtle and transient property.

Frans de Waal in his book (2006) show how morality in humans is a continuum of animal kingdom and how empathy and reciprocity are the necessary to accomplish this behavior and can be thought of as building blocks.

Psychology with the help of anthropology and focusing in evolutionary process establish a foundational set of values to determine the development of morality that are good predictors of political tendency in our society (Haidt 2012; Graham, Haidt, and Nosek 2009) and these are:

- Harm/Care
- Fairness/Reeciprocity
- In-group/Loyalty(betrayal)
- Authority/Respect (Submission)
- Purity/Sanctity (Degradation)

The study by Graham, Haidt and Nosek (2009) have used these set of foundation to establish priorities among groups and individuals with certain political leanings. Liberal morality gives preeminence to harm and fairness where as conservative morality is more evenly distributed across all five, that simple difference can produce extreme differences like institutions not recognized by one side of the spectrum.

These moral foundations and how a society treats them have created a notorious polarization in identity politics, as is the case of the US and other countries. These priorities use markers to classify society between us and them and can change depending on the subject.

### **1.3. What is the Evolutionary History?**

Humans are classified as eusocial animals, behavior that is attributed to our ecological success (Wilson and Hölldobler 2005). One of the first limitation of the brain that come to mind is memory in a regular individual. Limitation that has created other mechanisms that can compensate this lack of storage, by creating intuitions and emotions over certain circumstances. But this limited capacity is already exceptional in the animal kingdom and theorized to be originated by the need of social interactions that required an individual to differentiate her enemy from a friend or her neighbor from a foreigner. But in order to identify enemies or rivals in a social system there has to be characteristics obvious to our senses. The animal kingdom has plenty of examples and are called markers (Moffett 2019). In ants is the chemical trail left by each individual and is derived from their diet, so what a better way to know your colony then by the similarity of food eaten. In birds are vocalizations that determine the limits between territories and a tense relation with the neighbors. In humans it gets more complicated as we have created not only visual cues but also ideological ones. The principles are the same our epigenetic behavior needs a social group, a neighbor and in hard times an enemy, adding our tendency to seek patterns, imagination and reason we can create very elaborate narratives, nonetheless starts with very simple rules.

Territory defense is another feature that we have in common with animals (Slingerland and Collard 2012) and it could be present in solitary animals as well in social animals. Here are set the boundaries of the mating area the most precious resources that grant reproduction. Our closest are the great apes they protect their territory as a group from their neighbors as well as from predators. The strategies to defend the territory in our closest related species can go from a mostly pacific style of the bonobos where they stay in their private land to the more

aggressive style of chimpanzees where they have a more active and aggressive patrolling way. But this is not reserved for the vertebrates it also happens in eusocial insects. There is in fact another overlapping area, home range, where the animal roams, but it doesn't enforce any exclusivity. This are the foraging grounds where the strategies are different, and the objective is to optimize food recollection while avoiding predation and competition. The intensity of energy dedicated to protection may depend in the precise stage of the mating season for which energy requirements increase significantly, thus resources need more attention. While the area where foraging occurs in home range encounters are avoided and aggression has no use (de Waal et al. 2006).

Evolutionary game on their own framework have proposed 5 rules in order for cooperation to appear: Kin selection, direct reciprocity, indirect reciprocity, Network and group selection. (Nowak 2006) Cooperation is considering a necessary characteristic to promote even higher levels of organization.

These rules are present all-around nature, and their own prerequisites. Kin selection refers to the relatedness of the agents by analyzing the probability of two agents to have the same gene. Here the emergence of cooperation is explained by the selfish genes. Direct reciprocity satisfies the need of other forms of cooperation that are applied beyond relatives. This rule extends the action even outside of the species. As reciprocity goes here its assumed that the agents will have repeated encounters among them. Indirect reciprocity is more about reputation and captures more nuances particular for the human behavior. While direct reciprocity assumes that both interacting parties are in the same position to help and will reciprocate, indirect reciprocity builds up reputation that will be reciprocated by others. Network selection is an approximation that uses graph theory and exploit the irregularity of human interactions, thus the way for cooperation to prevail is for cooperators to cluster. Group theory speaks more about scale of the selection process, hence these characteristics of the groups are the factors to be crucial for the survival of the individuals.

There are two models that look for stability in small and big groups when altruism is present, altruistic punishment and strong reciprocity.

Altruistic Punishment is about the need of punishment in order to maintain an acceptable level of rule compliance, here the agents follow though and are interested in punishing non-compliers even though there are cost related to enforcing that action.: inequity aversion, cost-benefit calculation, and social reference frame to distinguish self from others.

This leads us to the evolution of extreme cooperation, the willingness to sacrifice one's life for a group of non-kin. Sharing painful experiences produces "identity fusion" (Whitehouse et al. 2017) that allows pro-group behavior to evolve, characteristic observed in initiation rituals (Aronson and Mills 1959).

Finally there is the evolution of aggression where a bimodal classification: proactive and reactive is proposed by Wranghama (2017). This classification shows some patterns in human behaviour, while reactive aggression is low and particular in humans, proactive aggression seems to be more common trait that is shared with chimpanzees.

#### **1.4. What is the Survival Value?**

Evolutionary games have not lead to a benefit of identity development as a fixed trait as the possibility of a coevolution as is observed in parasitism where host is in a constant race with the parasite to avoid been exploited and the parasite is counteracting any new strategy (García, van Veelen, and Traulsen 2014). This could be a reason why markers are so varied and can be assign to not fixed characteristics. However, the marker is important in our brain is not a particular one but more the sense shared characteristics among us and not present in them. As mentioned before these could be religion, race, class etc. and talks about how flexible our detection system should be for detecting markers consequently in a rapid evolving culture, the marker to be used can be more of a bias then a result selection process.

Aggression can be seen as a form of Punishment, the punitive sentiment is something felt usually when contributing to the public good, experimental economics has shown that the possibility and reality of punishment can deter free riders and recruits more cooperators. (Price, Cosmides, and Tooby 2002) For this adaptations to evolve it is necessary to give some benefit to the participants over the free riders, hence there could be a second function for punishment where it eliminates or reverse any differential benefit that free riders may enjoy.

There is two important characteristics that are important to describe, strong reciprocity and altruistic punishment. Both entail a high cost with a very little possibility of gains.

Each of the behavioral characteristics have been selected because in some point in the history of our species they gave an advantage. Sociality for example is related to benefits as basic as the number because it gives protection against predators, for optimizing foraging and competition. The reward system is strongly related with the reinforcement of learning and motivation.

## 1.5. Cultural Evolution

Cultural evolution has an additional layer of complexity, while is still a biological process it happens to occur in a different setting that is mostly social. As Wilson (2009, 138) tries to define under the framework of evolution epigenetic rules:

Culture is created by the communal mind, and each mind in turn, is the product of the genetically structured human brain. Genes and culture are therefore inseparably linked. But the linkage is flexible, to a degree still mostly unmeasured. The linkage is also tortuous: Genes prescribe epigenetic rules, which are the neural pathways and regularities in cognitive development by which the individual mind assemble itself. The mind grows from birth to death by absorbing parts of the existing culture available to it, with selections guided through epigenetic rules inherited by the individual brain.

As mentioned above while culture is open-ended and in constant evolution it's not much different than genetic evolution it has variation, selection and heredity. Now we have some other technological improvements that can preserve to some degree the collective cultural memory, by means of language and writing.

Here we will only analyze culture evolution in its primordial characteristics that are shared among human beings and give the potential to this everchanging phenomena.

Culture starts with set of behaviors described in the functional question of Tinbergen.

The brain as known by science has many integral parts that give us among other things, memory, reason, motivation, sentiments and sociability. This sociability makes us a bigger entity with emergent properties that increase the mentioned parts of the brain to the next level. Collective memory and the invention of writing increased memory, herd behaviour gives us motivation and unify feelings and markers. Reason and logic has joined together with the others to facilitate cooperation overcoming natural limitations by creating abstract or concrete compromises called informal and formal institutions. Imagination as described by Judea (Pearl and Mackenzie 2018) has given us the ability to imagine counterfactuals or metaphors as put by Robert Sapolsky or may be to create new markers for new conquests (Harari 2014), or to put everything together contracts that imagine possible scenarios and how to prevent moral hazard.

For the development of cultural evolution memory is an important factor but only in very small groups that can be managed individually thus their importance. Small groups should be encouraged as a way of social catalysts, that give individuals incentives in the form of social flourishing and belonging. Additionally, can be the first level of regulation and punishment only escalating if needed to the next level of association.

## Chapter 2. Proposed Consilience

Here I would like to propose a few forms to integrate the knowledge obtained by reviewing other sciences. As mentioned above there are evolutionary and survival evidence that our social behaviour is an important factor, that puts a burden in any science that studies human motivation to include this important trait of human nature. However, it doesn't stay there, mechanisms in the brain of modern human beings attest to our social cravings, in more than one site of our brain.

In Table 1 a first attempt to trace consilience is depicted by following the instructions of proximate causes that have been described as mechanistic causes active in the modern human brain but that must be connected to an ancestral evolutionary history.

For Greed I have related some behavioral processes that occur in the brain: sunk cost, loss aversion, sensitivity to reward, lack of empathy, pluralistic ignorance, responsibility diffusion and social reference. All these operative behaviors allow the leaders with the cognitive biases to continue war to maintain their status quo, without relating themselves to the suffering of their people and at the same time distancing from responsibilities.

For grievances in the context of the proximate causes its related with the need of punishment and the escalation of violence based in the context of Zimbardo's "Lucifer effect": dehumanization, anonymity and no accountability. Hence the operative processes are: Sunk cost, social risk aversion, risk aversion, lack of empathy, pluralistic ignorance, herd behavior, responsibility diffusion, inequity aversion and social reference frame. All these characteristics in the correct state allow for the rationalization of violence as the ultimate form of punishment. Here I would like to add that violence is the extreme for a continuum, thus the intermediates I may propose are forms of corruption that intend to punish under the logic of avoiding violence or even to the other extreme, that is of omission.

Finally the social capital is analyzed under the scope of cultural evolution as the next layer that kickstarts with the mechanisms endowed in the brain and continue from there to an open ended variation interacting with the environment. Thus the institutions are an expression of this interactions and effective under this precise turn of events. This means that good institutions are not necessarily the result of unique progressive and rather are convergence from different histories that allowed the generation of intermediary institutions.

### **Chapter 3. Discussion**

As we can see in various examples from nature the markers needed for recognizing peers, colony members, family, descendants etc. are ample, and in that sense proposed inclusion of the additional characteristics in the analysis (Jayasundara-Smits 2014) is necessary. I may argue furthermore that this additional information should be included in two categories: markers and environmental cues. It's no strange fact for biology that responses to environmental cues may result in behavioral changes thus we are talking of at least two distinguishable component that have to add up for conflict to ignite. The target of our grievance who must have a salient marker. As mentioned before, social emotions, empathy, salience, etc. are very related as they are processed in the same part of the brain, the insular cortex.

As horizontal inequality is measured by income there must be a way to measure expectations of social status enhancement as our brains are designed to perceive change. Perceived change in status may be very local and in small groups, thus freedom of association and the resulting diversity would possibly give a hint of the availability of individuals to actively be capable of acknowledgement.

Humanity's closest extant relatives with a common ancestor are all in critical danger and have never been in any race against us other than for land. It is obvious in biology that drastic changes in the environment can trigger equally drastic behavioural changes. In ants enormous colonies that have lived in peace over long spans of time change their behaviour when an environmental variable changes the availability of resources. This has been very complicated to show in human societies because of the noise emitted by our cultural complexity. After showing all the parts of Greed and Grievance a different hypothesis can be proposed where behavioral traits are more reactionary and we should look for the right environmental and social context that gives the signal that changes the behavior from freeze to fight or even flight.

### **3.1. Peace Building and Peacekeeping**

The components, organized crime, increasing “internationalization” and maximalist goals complicating peace effort (Von Einsiedel et al. 2017), can be seen as a result of the behavioral problems discussed above. In particular organize crime and maximalist goals are antisocial among groups but prosocial intragroup (Sloan Wilson)

Ethnicity and religion diversity show little contribution to war but as observed from the ecological point of view these characteristics are part of the same process of detecting visible traits that allow the individual characterize the target as an enemy, family or a neighbor, thus it would be useful to consider them as markers.

Colonial style intervention are usually norm arguing that is the only option to avoid collapse (Murshed, 2010), this interventions are also characterize by having cookbook solutions based on success stories. As argued above good institutions seen as a cultural evolution have their unique path. If that’s the case then the intervention should focus in the behavioral processes that are stuck in the vicious cycle.

Resources not only make wars and rebellion sustainable, they can also increase the social capital. Thus the intervention should be focused in optimizing those resources, by encouraging group formations with prosocial principles that can put social punishment and diversity in their agenda. Above its argued the importance of altruistic punishment for promoting prosocial behavior, but also we need to hack the recognition process to avoid us vs them attitudes that can corrode friendly behavior, as shown in the low efficiency in peace treaties because among other reasons there is always an unrepresented group in the negotiations. Murshed (2010) states that countries are prone to recursive conflict after having a war which enters in synchrony with the description at the behavioral components, this troubles me because if only this is taken into account, then this cycle of violence will not end. Because of this is important to figure out the environmental cues that can trigger a change of behavior.

Stability is a very important attribute that helps magnify peoples time horizons which, as stated by Murshed (2010), contribute in favor of peace. This is totally in line with behavioral analysis.

## Conclusions and Recommendations

First of all, I will like to be a small part in the discussion between Ecological Economics and mainstream economics by identifying how a ultimate causality could contribute, and not considering both as exclusive of each other but instead of different level of causality.

Ecological economics can be seen as a subject concern with the survival of humanity by addressing ecological limitations given by carrying capacity, and may be lacking a behavioural component where evolutionary mechanisms created present traits but in response to ancient environments, thus a better question is: has the survival value of our behaviour still relevant? Or has it become detrimental to our survival? Innovation has been a key aspect of our culture and has created a new environment that differs greatly from around a hundred thousand (100 000) years ago. Thus, our heritable behavioural traits may be conflicting with the environment and putting our permanence on Earth in doubt.

Economics, as stated before, employs the rational choice framework as an interesting approach. It can be attributed that the rational choice coincides with two areas of the brain that have been in a way modelled, the reward system (nucleous accumbens) and the prefrontal cortex. The former related to motivation and formation of preferences, and the latter is the proper rational part. The reward system is mediated by dopamine levels that can be closely modelled as the diminishing marginal utility, but this is hardly rational as it is related to motivation towards pleasurable activities. The cortex on the other side it's our heartless part of the brain responsible for our rationality, nevertheless, can easily be overridden by emotions, stress or sexual arousal. Also it is important to highlight that dopamine levels change to motivate action thus it happens before any real-world rewards and it depends on the chances to succeed. With the highest level on a 50-50 chance and will decrease on either direction.

The study of conflict must be tied to the study of corruption, both processes seem to be part of a nonhealthy circle between our process of pro- and anti-social behaviour that comes naturally with our inherited sociability.

When isolating rationality we have to be careful and reasonably identify if fear is an option, where the limiting factors can be cognitive ability, experience and memory. Even if the cortex is fully in control there is still no clear evidence that the optimization process occurs as a matter of conscious process. Memory in the other hand is clear to be part of our development

to sociality and the limiting factor for our bounded rationality. Memory is a fragile resource that has limited capacity and can be easily manipulated by context. Both episodic memory (the recollection of events), and semantic memory (abstraction to symbols) should play a role by justifying the existence of visual markers to categorize our neighbors and facilitate our interactions by creating heuristic to those categories. Thus, only if we are agents free of threatening events or stable testosterone levels can we be rational but also limited by our memory.

There is the need to find a correct pipeline or framework to develop new and improved institutions, that include a bottom up procedure where a social contract can be negotiated and not imposed. While this has been proposed in other literature the procedure should understand particularities but remember the mechanics put together. Especially the three important areas resources, social hierarchy and mating. After this three are secure group rationality can be expected and planning can be achieved. While the attention has been in the income and thus focused in eliminating poverty by aid and job creation, the results are mixed. Here it would be proposed that attention should be put to social interaction by promoting association of various kinds. Usually this happens only at a top level where the ruling parties get to meet, but evidence dictates that this group would no longer have empathy with the common people, hence any agreement, rule or institution here crafted would be corrupted. Instead, a series of small social enterprises can be promoted to draw local social capital and group cooperation. All the efforts should be towards putting corruption as the common enemy, carefully avoiding any relation with race, ethnicity, language or any visual marker. And only when a trend of informal institutions is apparent more detailed laws and agreements can be made. The few rules that can be put at the start of the intervention can be incentives towards human rights and diversity.

In order to create a language a method that can put together the social and natural sciences an institutional effort is needed to start a systematic and methodic process.

## References

- Ariely, Dan. 2010. *Predictably Irrational: The Hidden Forces That Shape Our Decisions*. Harper.
- Ariely, Dan, Ximena Garcia-Rada, Lars Hornuf, and Heather Mann. 2014. "The (True) Legacy of Two Really Existing Economic Systems." *SSRN Electronic Journal*, 2014-26: 1-25. <http://dx.doi.org/10.2139/ssrn.2457000>.
- Aronson, Elliot, and Judson Mills. 1959. "The Effect of Severity of Initiation on Liking for a Group." *Journal of Abnormal and Social Psychology* 59 (2): 177-81. <https://doi.org/10.1037/h0047195>.
- Baker, Mary G., Rajendra Kale, and Matthew Menken. 2002. "The Wall between Neurology and Psychiatry." *British Medical Journal* 324 (7352): 1468-9. <https://doi.org/10.1136/bmj.324.7352.1468>.
- Beatty, John. 1982. "The Proximate/Ulimate Distinction in the Multiple Careers of Ernst Mayr 1." *Biology and Philosophy*, 9: 333-56. <https://doi.org/10.1007/BF00857940>
- Brisset, Nicolas. 2016. "Institutions as Emergent Phenomena: Redefining Downward Causation." GREDEG Working Paper Series. <https://shs.hal.science/halshs-01425669/document>.
- Collier, Paul, and Anke Hoeffler. 2004. "Greed and Grievance in Civil War." *Oxford Economic Papers* 56 (4): 563-95. <https://doi.org/10.1093/oep/gpf064>.
- Corvalan, A., & Vargas, M. (2015). Segregation and conflict: An empirical analysis. *Journal of Development Economics*, 116, 212-222.
- Dobzhansky, Theodosius. "Nothing in biology makes sense except in the light of evolution." *The american biology teacher* 75, no. 2 (2013): 87-91.
- Du, Emily, and Steve W. C. Chang. 2015. "Neural Components of Altruistic Punishment." *Frontiers in Neuroscience*, 9. <https://doi.org/10.3389/fnins.2015.00026>.
- Einsiedel, Sebastian Von, Louise Bosetti, James Cockayne, Cale Salih, and Wilfred Wan. 2017. "Civil War Trends and the Changing Nature of Armed Conflict". Occasional Paper 10. [https://collections.unu.edu/eserv/UNU:6156/Civil\\_war\\_trends\\_UPDATED.pdf](https://collections.unu.edu/eserv/UNU:6156/Civil_war_trends_UPDATED.pdf).
- Feng, Chunliang, Gopikrishna Deshpande, Chao Liu, Ruolei Gu, Yue-Jia Luo, and Frank Krueger. 2016. "Diffusion of Responsibility Attenuates Altruistic Punishment: A Functional Magnetic Resonance Imaging Effective Connectivity Study." *Human Brain Mapping* 37 (2): 663-77. <https://doi.org/https://doi.org/10.1002/hbm.23057>.
- Fox, Charles, Derek Roff, and Daphne Fairbairn. 2001. *Evolutionary Ecology: Concepts and Case Studies*. New York: Oxford University Press.
- Fujino, Junya, Shinsuke Fujimoto, Fumitoshi Kodaka, Colin F. Camerer, Ryosaku Kawada, Kosuke Tsurumi, Shisei Tei, Masanori Isobe, Jun Miyata, Genichi Suhihara, Makiko Yamada, Hidenao Fukuyama, Toshiya Murai, and Hidehiko Takahashi. 2016. "Neural Mechanisms and Personality Correlates of the Sunk Cost Effect." *Scientific Reports* 6 (33171). <https://doi.org/10.1038/srep33171>.
- Galinsky, A. D., Magee, J. C., Inesi, M. E., & Gruenfeld, D. H. (2006). Power and perspectives not taken. *Psychological science*, 17(12), 1068-1074.
- García, Julián, Matthijs van Veelen, and Arne Traulsen. 2014. "Evil Green Beards: Tag Recognition Can Also Be Used to Withhold Cooperation in Structured Populations." *Journal of Theoretical Biology*, 360: 181-86. <https://doi.org/10.1016/j.jtbi.2014.07.002>.

- Graham, Jesse, Jonathan Haidt, and Brian A. Nosek. 2009. "Liberals and Conservatives Rely on Different Sets of Moral Foundations." *Journal of Personality and Social Psychology* 96 (5): 1029-46. <https://doi.org/10.1037/a0015141>.
- Haidt, Jonathan. 2012. *The Righteous Mind: Why Good People Are Divided by Politics and Religion*. New York: Pantheon / Random House.
- Haita-Falah, Corina. 2017. "Sunk-Cost Fallacy and Cognitive Ability in Individual Decision-Making." *Journal of Economic Psychology*, 58: 44-59. <https://doi.org/10.1016/j.joep.2016.12.001>.
- Harari, Yuval N. 2014. *Sapiens: a brief history of humankind*. London: Harvill Secker.
- Huschek, Doreen, and Arjan Blokland. 2016. "Crime and Parenthood: Age and Gender Differences in the Association between Criminal Careers and Parenthood." *Advances in Life Course Research* 28: 65-80. <https://doi.org/10.1016/j.alcr.2015.09.006>.
- Jayasundara-Smiths, Shyamika. 2014. "Sri Lanka's Civil War: What Kind of Methodologies for Identity Conflict?". In *Conflict, Peace, Security and Development*, edited by Helen Hintjens, Dubravka Zarkov, 199-213. London: Routledge.
- Jonas, Eric, and Konrad Paul Kording. 2017. "Could a Neuroscientist Understand a Microprocessor?" *PLoS Computational Biology* 13 (1): e1005268. <https://doi.org/10.1371/journal.pcbi.1005268>.
- Kahneman, Daniel, and Amos Tversky. 1979. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47 (2): 263-91. <https://doi.org/10.2307/1914185>.
- Lauharatanahirun, Nina, George I. Christopoulos, and Brooks King-Casas. 2012. "Neural Computations Underlying Social Risk Sensitivity." *Frontiers in Human Neuroscience*, 6. <https://doi.org/10.3389/fnhum.2012.00213>.
- MacDougall-Shackleton, Scott A. 2011. "The Levels of Analysis Revisited." *Philosophical Transactions of the Royal Society B: Biological Sciences* 366 (1574): 2076-85. <https://doi.org/10.1098/rstb.2010.0363>.
- Mayr, Ernst. 1961. "Cause and Effect in Biology." *Science* 134 (3489): 1501-6. <https://doi.org/10.1126/science.134.3489.1501>.
- Mesquida, Christian G., and Neil I. Wiener. 1999. "Male Age Composition and Severity of Conflicts." *Politics and the Life Sciences* 18 (2): 181-89. <https://doi.org/10.1017/S0730938400021158>.
- Moffett, Mark W. 2019. *The Human Swarm: How Our Societies Arise, Thrive, and Fall*. London: Head of Zeus.
- Mohamed Salih, M. A. 2004. "The Limits of Institutions: Environmental Degradation and Knowledge Framing BT - Globalisation, Poverty and Conflict: A Critical 'Development' Reader." In *Globalisation, Poverty and Conflict*, edited by Max Spoor, 261-82. Dordrecht: Springer Netherlands.
- Murshed, Syed Mansoob. 2010. *Explaining Civil War: A Rational Choice Approach*. Cheltenham UK: Edward Elgar Publishing.
- Murshed, Syed Mansoob, and Mohammad Zulfan Tadjoeddin. 2009. "Revisiting the Greed and Grievance Explanations for Violent Internal Conflict." *Journal of International Development* 21 (1): 87-111. <https://doi.org/10.1002/jid.1478>.
- Nowak, Martin A. 2006. "Five Rules for the Evolution of Cooperation." *Science* 314 (5805): 1560-3. <https://doi.org/10.1126/science.1133755>.
- O'Gorman, Hubert J. 1975. "Pluralistic Ignorance and White Estimates of White Support for Racial Segregation." *Public Opinion Quarterly* 39 (3): 313-30. <https://doi.org/10.1086/268231>.
- Pearl, Judea, and Dana Mackenzie. 2018. *The Book of Why: The New Science of Cause and Effect*. New York: Basic Books, Inc.

- Price, Michael E., Leda Cosmides, and John Tooby. 2002. "Punitive Sentiment as an Anti-Free Rider Psychological Device." *Evolution and Human Behavior* 23 (3): 203-31. [https://doi.org/10.1016/S1090-5138\(01\)00093-9](https://doi.org/10.1016/S1090-5138(01)00093-9).
- Rothenhoefer, Kathryn M., and William R. Stauffer. 2017. "Dopamine Prediction Error Responses Update Demand." *Proceedings of the National Academy of Sciences of the United States of America* 114 (52): 13597-9. <https://doi.org/10.1073/pnas.1718818115>.
- Salamucha Agnieszka. 2009. "The Lucifer Effect. Understanding How Good People Turn Evil by Philip Zimbardo". *Forum Philosophicum* 14 (1). <https://doi.org/10.5840/forphil200914130>.
- Salehyan, Idean. 2014. "Climate Change and Conflict: Making Sense of Disparate Findings." *Political Geography*, 43: 1-5. <https://doi.org/10.1016/j.polgeo.2014.10.004>.
- Sapolsky, Robert. 2019. "This Is Your Brain on Nationalism: The Biology of Us and Them." *Foreign Affairs*. <https://www.foreignaffairs.com/world/your-brain-nationalism>.
- . 2017. *Behave: The Biology of Humans at our Best and Worst*. New York: Penguin Press.
- Silver, Nate. 2012. *The Signal and the Noise: The Art and Science of Prediction*. London: Penguin UK.
- Simon, Herbert A. 1955. "A Behavioral Model of Rational Choice." *The Quarterly Journal of Economics* 69 (1): 99-118. <https://doi.org/10.2307/1884852>.
- Slingerland, Edward, and Mark Collard. 2012. *Creating Consilience: Integrating the Sciences and the Humanities*. Oxford University Press, New York.
- Timura, Christopher T. 2001. "'Environmental Conflict' and the Social Life of Environmental Security Discourse." *Anthropological Quarterly* 74 (3): 104-13. <https://doi.org/10.1353/anq.2001.0031>.
- Tinbergen N (1963) On the aims and methods of ethology. *Z Tierpsychol* 20:410–433
- Traulsen, Arne, and Martin A. Nowak. 2006. "Evolution of Cooperation by Multilevel Selection." *Proceedings of the National Academy of Sciences of the United States of America* 103 (29): 10952-55. <https://doi.org/10.1073/pnas.0602530103>.
- Vromen, Jack. 2009. "Advancing Evolutionary Explanations in Economics: The Limited Usefulness of Tinbergen's Four-Question Classification." In *The Oxford Handbook of Philosophy of Economics*, edited by Dan Ross and Harold Kincaid. <https://doi.org/10.1093/oxfordhb/9780195189254.003.0012>.
- Waal, Frans de, Robert Wright, Christine M Korsgaard, Philip Kitcher, and Peter Singer. 2006. *Primates and Philosophers: How Morality Evolved*. Edited by Stephen Macedo and Josiah Ober. Princeton: Princeton University Press.
- Whewell, William, taken from Snyder, Laura J., "William Whewell", *The Stanford Encyclopedia of Philosophy* (Winter 2023 Edition), Edward N. Zalta & Uri Nodelman (eds.), forthcoming URL = <https://plato.stanford.edu/archives/win2023/entries/whewell/>.
- Whitehouse, Harvey, Jonathan Jong, Michael D. Buhrmester, Ángel Gómez, Brock Bastian, Christopher M. Kavanagh, Martha Newson, Miriam Matthews, Jonathan Lanman, Ryan McKay, and Sergey Gavrilets. 2017. "The Evolution of Extreme Cooperation via Shared Dysphoric Experiences." *Scientific Reports* 7 (1): 1-10. <https://doi.org/10.1038/srep44292>.
- Wilson, Edward O. 1999. *Consilience: The Unity of Knowledge*. New York: Knopf Doubleday Publishing Group.
- Wilson, Edward O., and Bert Hölldobler. 2005. "Eusociality: Origin and Consequences." *Proceedings of the National Academy of Sciences of the United States of America* 102 (38): 13367-71. <https://doi.org/10.1073/pnas.0505858102>.

Wranghama, Richard W. 2017. "Two Types of Aggression in Human Evolution."  
*Proceedings of the National Academy of Sciences of the United States of America* 115  
(2): 245-53. <https://doi.org/10.1073/pnas.1713611115>.

## Appendix

### Tracing Consilience

Proximate Causes			Ultimate Causes			Cultural component		
Economic Theory			Mechanistic Causality	Development	Evolutionary history	Survival Value	Proximate	Ultimate
Greedy	Greivance	Institutions						
X	X		Sunk cost	Males retarded development of PFC	Insula and Prefrontal cortex		Tight loose rules trade off	Sunk Costs + Environmental cues
	X		Social risk aversion	Moral development	Eusocial	Number	Social Capital	Social aversion + Environmental cues
	X		Risk aversion	Males retarded development of PFC	Reward System	Vision of consequence	Tight loose rules trade off	Risk aversion + Environmental cues
X		X	Loss Aversion			Status quo maintenance	Tight loose rules trade off	Loss aversion + environmental cues
X		X	Sensitivity to reward		Reward System	Learning reinforcement	Tight loose rules trade off	Sensitivity to reward + Environmental cues
X	X		Lack of empathy	Moral development		Enemy detection	Social Capital	Lack of empathy + Environmental cues
X	X		Pluralistic ignorance			Belonging	Social Capital	Pluralistic ignorance + Environmental cues
	X	X	Herd behavior	Moral development		Belonging	Social Capital	Herd behavior+

								Environmental cues
X	X	X	Responsibility Diffusion	Authority	Altruistic Punishment	Altruistic Punishment	Social Capital	Environmental cues
	X		Inequity aversion	Males retarded development of PFC	Altruistic Punishment		Social Capital	Environmental cues
		X	Cost-Benefit calculation	Males retarded development of PFC	Altruistic Punishment			
X	X		Social reference frame		Altruistic Punishment		Social Capital	Environmental cues