The Emergence of Constitutionalism as an Evolutionary Adaptation

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ABSTRACT

The emergence of modern societies is an evolutionary puzzle. Homo sapiens is the only animal species capable of cooperating in large-scale societies consisting of genetically unrelated individuals. From a biological point of view, this feature leads to enormous questions. Social scientists typically assume that human life is lived in large-scale societies as a result of cultural, social and institutional history. In this perspective, social institutions such as law, economy and religion enhance cooperation to higher levels. Gene-culture coevolutionary theories have studied this issue in an integrated framework that accounts for social and biological theories of cooperation. These theoretical approaches have provided an account of the emergence of human institutions with reference to a coevolutionary background in which specific innate psychological features of the human mind enable the evolution of social institutions that impose social pressures requiring the evolution of a complex moral psychology that enables life in a social environment with institutions. However, although gene-culture coevolution theories can explain cooperation in pre-modern societies, they still cannot explain social life in complex societies such as contemporary democracies, in which cooperation occurs even when individuals do not agree about the main values of their society (Rawls). Acknowledging this fact raises the question as to how it has been possible – from a biological perspective – that people cooperate in large-scale societies with individuals with whom they are not genetically related and with whom they may not even share values and symbolic structures of mutual self-understanding. Following Edward O. Wilson, in hoping to achieve consilience between the natural sciences and humanities, this paper argues that the cooperation level required to drive the evolution of complex societies is possible as a result of the emergence of one particular institutional sociocultural framework: constitutionalism. In this sense, this paper is an attempt to integrate sociology, biology and legal theory in its understanding of constitutionalism as an evolutionary adaptation to specific historical and sociological circumstances that demanded the emergence of institutions to accommodate diversity, pluralism and complexity.

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INTRODUCTION

The emergence of modern societies is an evolutionary puzzle. Although traditionally seen as the result of historical, philosophical and sociological contingencies, these societies are also an unexpected and improbable institutional construction when observed through the lens of modern theories of cooperation in biology.

Homo sapiens is the only animal species capable of cooperating in large-scale societies where individuals are not genetically related. Although it is possible to find natural examples of animal species whose members live in societies consisting of millions of genetically related individuals or in small societies in which genetically unrelated members cooperate, we are the only known species that is able to cooperate with both of these conditions: we cooperate in large-scale societies composed of unrelated individuals.

From a biological point of view, this is an enormous question that must be resolved. Social scientists usually assume that life in large-scale societies is the result of cultural, social and institutional history. In this perspective, social institutions such as law, economy and religion facilitate cooperation at higher levels. However, the answer to this puzzle just begs the following question: Why do these institutions exist and how do they regulate human social cooperation in a way that allows for the large-scale growth of cooperation in our species.

Gene-culture coevolutionary theories have been studying this issue from an integrated framework that accounts for social and biological theories of cooperation. These theoretical approaches have provided a successful account of the emergence of human institutions by reference to a coevolutionary background in which specific innate psychological features of the human mind enable the evolution of social institutions that impose social pressures requiring the evolution of a complex moral psychology to enable life in a social environment with institutions.

However, whereas gene-culture coevolution theories can explain cooperation in pre-modern societies, they still cannot explain cooperation in

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societies as complex as contemporary societies. The primary mechanism that allows for cooperation in large-scale societies is symbolic marking, the psychological ability to identify cultural signs – religion, language, dressing style, tattoos and ritual practices, among others. These markers inform how people belong to particular groups, and they enforce cooperation with a greater number of people because they allow the easy identification of those who are from the same group as one and to target altruistic acts to benefit them.

However, symbolic marking is not enough by itself to explain the evolution of complex societies that are strongly divided by different symbolic markers. In contemporary democratic societies, cooperation was possible even in a context in which individuals do not agree about the comprehensive doctrines that embody the main values of their society. In other words, individuals in democratic societies are able to cooperate with individuals who do not share their symbolic markers.

Acknowledging this fact brings into question the discussion concerning how it has been possible from a biological perspective that individuals cooperate in large-scale societies with people with whom they are not genetically related and with whom they also do not share emotionally strong symbolic markers. Following the hope of Edward O. Wilson\(^4\) to achieve *consilience* between natural sciences and humanities, I will argue that the cooperation level needed to drive the evolution of complex societies is possible as a result of the emergence of one particular institutional sociocultural framework: constitutionalism. In this sense, this paper is an attempt to integrate sociology, biology and legal theory to understand constitutionalism as an evolutionary adaptation to specific historical and sociological circumstances that demanded the emergence of institutions that could accommodate diversity, pluralism and complexity.

**I. THE EVOLUTION OF COOPERATION IN BIOLOGICAL THEORY**

According to a well-known image of biological evolution, nature is “red in tooth and claw”.\(^5\) “Struggle for survival” and “only the strongest ones

\(^{5}\) Although the expression “tooth and claw” was known in the first half of the 19th century, it is usually attributed to Alfred Lord Tennyson’s In Memorian A.H.H. The quotation, extracted from Canto XVI, stresses the violence and savagery of human nature in this way:

“Who trusted God was love indeed
And love Creation's final law
Tho' Nature, red in tooth and claw
With ravine, shriek'd against his creed”
"survive" are also associated with biological evolution and suggest violence and competition as the normal condition of natural beings. Although Charles Darwin stressed competition and the struggle for existence as primary driving forces of evolution, the British naturalist also highlighted that cooperative behavior might evolve if it conferred an evolutionary advantage to its bearer. In a quite distinct and prescient passage of *The Descent of Man*, Darwin posits that virtues such as courage, altruism and loyalty could evolve in human societies because groups whose members had these qualities would have a competitive advantage over groups consisting of selfish people. Thus, he proposed the following explanation for the evolution of morality:

When two tribes of primeval man, living in the same country, came into competition, if (other circumstances being equal) the one tribe included a great number of courageous, sympathetic and faithful members, who were always ready to warn each other of danger, to aid and defend each other, this tribe would succeed better and conquer the other. Let it be borne in mind how all important in the never-ceasing wars of savages, fidelity and courage must be. The advantage which disciplined soldiers have over undisciplined hordes follows chiefly from the confidence which each man feels in his comrades. Obedience, as Mr. Bagehot has well shewn (5. See a remarkable series of articles on 'Physics and Politics,' in the 'Fortnightly Review,' Nov. 1867; April 1, 1868; July 1, 1869, since separately published.), is of the highest value, for any form of government is better than none. Selfish and contentious people will not cohere, and without coherence nothing can be effected. A tribe rich in the above qualities would spread and be victorious over other tribes: but in the course of time it would, judging from all past history, be in its turn overcome by some other tribe still more highly endowed. Thus the social and moral qualities would tend slowly to advance and be diffused throughout the world.6

Darwin thought that group-beneficial individual traits could be subjected to natural selection. This theory, which has been referred to as group-selection theory, had not had a real theoretical basis until the 1960s. In the 1930s, Ronald Fisher, J. B. Haldane and Sewall Wright attempted to elaborate a group selection theory, but only Wright thought it might be an important force.7 In 1962, the Scottish biologist Wynne-Edwards provided the first sound theoretical explanation founded on group selection that was based on the idea that many social behaviors displayed by animals are adaptations that regulate population size to prevent overpopulation.8

8 As Wilson & Sober states: “Wynne-Edwards interpreted this social system as an adaptation that evolved to prevent the grouse population from overexploiting its food
Nevertheless, his explanation of altruistic behavior through group selection was harshly criticized in the 1960s, largely as a result of the research developed by Georg C. Williams, William Hamilton, Robert Trivers, John Maynard Smith, David Lack and findings from game theory\(^9\), which could explain cooperation and altruism solely by resorting to individual selection. This development led group selection to be discredited, and it remained restricted to certain circles of biological researchers.

A. Gene-centered Theories of Human Cooperation

According to these theorists, natural selection acts upon genes, not groups. Specific genes are selected because they benefit individuals who are able to maximize the statistical representation of those genes in future generations\(^{10}\). When trying to explain a useful trait, one must adopt the gene's eye view and always seek the answer to the following question: how will these genes benefit from this feature?

This gene-centered approach became very popular after publication of Richard Dawkins’ *The Selfish Gene* in 1976.\(^{11}\) According to this view, group selection is unlikely to be a major evolutionary factor. In a group composed both of altruists and free riders, the advantages of being selfish would be clear because they would earn the benefits of cooperation without having to pay its price.\(^{12}\) As a result, the proportion of free riders would increase over time, and the altruists would become scarcer over time. In this sense, Darwin’s theory of human cooperation would not work because selection among groups is weaker than selection within groups and, as a consequence, natural selection within the group would select free riders over altruists.\(^{13}\)

However, how could the gene-centered view explain socially cooperative behavior, if selfish individuals have an intrinsic advantage over altruists? In 1964, W. D. Hamilton proposed kin selection theory, according to which an individual’s genes can spread faster if their carriers help genetically related individuals, given that a great proportion of their own genes would also

\(^{10}\) Kevin N Laland & Gillian R Brown, *Sense and Nonsense* 74 (2011).
spread through the population. To this end, altruistic behaviors could arise if the considered individuals had a high proportion of shared genes. To incorporate kin selection into evolutionary theory, Hamilton proposed the concept of ‘inclusive fitness’: the genetic success of a particular animal is not only connected to its ability to reproduce and spread its own genes (individual fitness) but also to spread its genes through the reproduction of its close kin. Furthermore, individuals who share a large amount of genes with their relatives are more prone to cooperate with them than individuals who share a lower percentage of their genes. Kin selection theory provided an explanation for self-sacrificing behavior because one could sacrifice himself but improve the odds that his own genes would spread through the reproductive successes of close relatives.

Kin selection can explain cooperation among social insects (particularly the Hymenoptera order, which includes honeybees, ants and wasps) because of the high degree of genetic-relatedness they display. It might also be a probable evolutionary explanation for many features of animal and human societies, such as parental investment and nepotism. Nevertheless, it cannot explain how cooperation could emerge among unrelated individuals.

According to Martin Nowak, there are other mechanisms that might explain altruism toward genetically unrelated individuals. The first of those is direct reciprocity. Trivers suggested that when non-related individuals interacted over an indefinite amount of time, altruistic behavior might be selected when there was a high probability that the recipient of the benefits would return the favor to the donor in the future.

The logic of this mechanism has been confirmed by game-theoretic experiments, such as the famous tournaments held by the political scientist Robert Axelrod around 1980. In two tournaments, Axelrod tested which strategy would prove to be the best in an iterated Prisoner’s Dilemma framework.
where players who adopted different strategies would encounter one another and choose whether to defect or cooperate. To simulate natural selection, the strategies that achieved the worst results would be gradually eliminated from the game and those that achieved the best results would remain. The winning strategy in both tournaments was the simple Tit-for-Tat. This strategy cooperates in the first move and then replicates whatever the other player has done in the previous round. In so doing, it began showing good faith to establish a cooperative interaction, but it was quite vengeful; whenever the other player defected, it would retaliate that move. In iterated Prisoner Dilemma, Tit-for-Tat could do better than free riders because it would benefit from long-term cooperation with altruistic players, without being subject to exploitation from opportunistic strategies.

In this sense, direct reciprocity depends on altruistic punishment. If a player always cooperates, he/she might be easily exploited by free riders. Tit-for-Tat had been successful in tournaments because it punished other opportunistic strategies. However, altruistic punishment can only sustain cooperation in small societies because cooperation is supported by the direct punishment applied by those who have already been harmed by a free rider. In large societies, there’s always the possibility that free riders interact with altruists who they haven’t exploited yet, which would result in obtaining the benefits of cooperation for free without suffering the costs of punishment. Even if free riders sometimes interact with altruists who they have harmed in the past, it would pay to be selfish, because there are always other altruists to exploit.

Nevertheless, this mechanism explains certain animal behaviors, such as the sharing of blood among vampire bats and grooming reciprocity in chimpanzees. It has even been used to explain some human behaviors. In Robert Trivers seminal article on reciprocal altruism, features of human societies such as friendship; moralistic aggression with respect to punishing free riders and maintaining cooperation; gratitude; and feelings of sympathy, guilty and gratitude, are explained in terms of direct reciprocity. According to Trivers:

There is no direct evidence regarding the degree of reciprocal altruism

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21 There is evidence that other strategies might get even better results than Tit-for-Tat, such as Win-Stay or Lose-Shift, which is a strategy where the player repeats its previous move if it was successful, or changes it whenever it earns a bad result. Tit-for-Tat can lead to a long sequence of retaliation because it can respond aggressively in response to a mistake of the other player, who might play “defect” while the intended strategy was “cooperate”. Win-Stay and Lose-Shift can address these situations by responding accurately to the moves of the other player.

22 RICHERSON AND BOYD, supra note 2 at 200.


practiced during human evolution nor its genetic basis today, but given
the universal and nearly daily practice of reciprocal altruism among
humans today, it is reasonable to assume that it has been an important
factor in recent human evolution and that the underlying emotional
dispositions affecting altruistic behavior have important genetic
components.25

However, explaining altruistic behavior through direct reciprocity turned
out to be not as promising as Trivers might have first thought. Direct reciprocity
relies on altruistic punishment. If a naïve player always cooperates no matter
with whom he/she is interacting, cheaters might easily exploit his/her strategy.
Tit-for-Tat had been so successful in the tournaments because it punished any
player who tried to exploit it. Over the long term, the other player would obtain
better results by cooperating with Tit-for-Tat rather than defecting.26

B. Biology Alone Cannot Explain the Evolution of Human cooperation

Altruistic punishment can only sustain cooperation in small societies
because cooperation is supported by the direct punishment applied by those that
have previously been harmed by a free rider. In large societies, there’s always
the possibility that free riders might interact with altruists who they haven’t
exploited yet, which would result in getting the benefits of cooperation for free
without suffering the costs of punishment. Even if free riders sometimes interact
with altruists they have previously harmed, it would pay to be selfish because
there would always be other altruists to exploit.27

Thus, in large societies, the marginal cost of being punished for being a
free rider might diminish to a point at which it pays to defect. This causes
cooperation to fail because those employing opportunistic strategies would have
better odds to reproduce and increase the proportion of their genes in large
societies than altruists because direct reciprocity relies on repetitive encounters
between the same individuals, whereas there is always the possibility that an
individual will meet a stranger without having a reasonable expectation to
interact with him in the future.

25 Trivers, supra note 19 at 48.
26 There is evolutionary game-theoretic evidence that other strategies might get even
better results than Tit-for-Tat, such as Win-Stay or Lose-Shift, which is a strategy
where the player repeats its previous move if it has been successful or changes it
when it obtains a bad result. Tit-for-Tat can lead to a long sequence of retaliation
because it can respond aggressively in response to another player’s mistake, who
might have played “defect” while the intended strategy was “cooperate”. Win-Stay
or Lose-Shift can address these situations by responding more accurately to the
moves of the other player.
27 Richerson and Boyd, supra note 2 at 200.
Direct reciprocity requires constantly monitoring other individuals’ behavior, which demands complex cognitive capacities. An individual must have a brain with a good memory to remember its past interactions with other members of its group, and it also requires a psychological disposition to punish cheaters to avoid being exploited.

In fact, there is evidence that both free-riding and cognitive limitations had been a real issue to our hominin ancestors, whose brain evolved in response to the selective pressures posed by social life.28 The British anthropologist and evolutionary psychologist Robin Dunbar studied the relationship between the relative neocortex dimensions in relation to the brain and the standard group size of different primate species. As a result, he found a direct correlation between these measurements, which suggests that increasing average group size led to the evolution of a larger neocortex.29 This same result ensued in the evolution of hominin lineage: the Australopithecus afarensis average group size is approximately 60 members, Homo habilis lived in groups of no more than 80 individuals, and the average Homo erectus group held approximately 120 members.

Progressively, each of these hominid species evolved a larger neocortex in proportion to their brain volume. According to Dunbar, the covariation between neocortex growth and group size was not a coincidence, considering that life in larger groups demands cognitive abilities that only a more complex brain could have and, in this sense, neocortex size is a constraint on group size in primates.30 However, this leads to a puzzle that must be solved: following this progression, one should expect that the average size of human societies should amount to no more than 150–160 individuals, which is much smaller than most human social groups. How can this be explained?

II. MORAL PSYCHOLOGY AND THE EVOLUTION OF COOPERATION WITHIN CULTURALLY HOMOGENOUS COMMUNITIES

This is as far as exclusively biological theories have gone in understanding the evolution of altruism. Cooperation is possible in sizable groups of genetically related individuals through kin selection, and it is also possible in small groups of unrelated individuals through direct reciprocity. How can something such as human societies be explained because many countries can

be seen as a huge cooperation network consisting of millions (or billions!) of individuals?

A. Indirect Reciprocity: a Building Block of Human Social Behavior

A third mechanism has been proposed to address this issue: indirect reciprocity. Unlike direct reciprocity, which accounts for only the past interactions of the agent, indirect reciprocity also depends on observing how individuals behave toward one another. This enhances cooperation, because the members of a group may observe and acknowledge the reputation of other members they haven’t met before.\(^{31}\) This logic unveils one important feature of human moral and legal systems: the evolution of third-party punishment as a response to the violation of social norms. As discussed, direct reciprocity relies on dyadic punishment to foster cooperation, and an agent punishes a free rider that betrayed him in the past. Third-party punishment, on the other hand, depends on the punishment of free riders by agents who have not been affected by the cheaters’ actions.\(^{32}\)

According to Peter Richerson & Robert Boyd\(^{33}\), sanctioning violations by third parties might lead to moralistic punishment, which might be more effective than dyadic punishment to establish cooperation in larger societies. Direct reciprocity is not so effective in sizable groups because the cost of being punished is inversely proportional to the community size. On the other hand, moralistic punishment increases this cost because the free rider can be punished not only by those with whom he has previously interacted but also by any other individual who knows about his bad reputation.

Although indirect reciprocity solves some problems, it leaves others unresolved. The first unresolved problem is related to the cost of punishing others. There is an economic cost to punishing free riders because of the need to spend time and energy and even risks to the punisher’s own physical health to pursue and punish opportunists. This might lead to a second-order free rider problem: individuals might be inclined to cooperate but not to punish those who do not\(^{34}\), which could weaken indirect reciprocity because the fitness of cooperators who do not punish turns out to be greater than the fitness of those who do because of the costs of punishing: punishers obtain the benefits from


\(^{33}\) Richerson and Boyd, supra note 2 at 200.

punishing but pay for it, and non-punishers (second-order free riders) obtain the reward from punishment without paying its price.\textsuperscript{35}

Richerson & Boyd propose that this problem might have been addressed easily by natural selection, if moralistic punishment were common and the punishments were sufficiently severe because most people would “go through life without having to punish very much, which in turn means that a predisposition to punish may be cheap compared with a disposition to cooperate.”\textsuperscript{36} In this sense, an innate predisposition to punish first and second-order free riders might have evolved and stabilized cooperation through indirect reciprocity.

There is scarce evidence of indirect reciprocity in non-human animals.\textsuperscript{37} For instance, recent research by Katrin Riedl, Joseph Call, and Michael Tomasello demonstrated that, although chimpanzees (\textit{Pan troglodytes}) are able to punish cheaters who offend them directly, they do not castigate those who inflict harm on others.\textsuperscript{38} The skill to punish those who offend others is fundamental to understanding certain features of human societies, such as the existence of legal and moral norms that are enforced by agents such as police officers and judges who act to guarantee the punishment of individuals who offend other citizens. If individuals only punished those who had offended themselves directly, how could one understand the very existence of norms and institutions whose function is precisely to enforce norms and standards?

This reasoning leads to a subsequent mystery: why are humans able to be involved in indirect reciprocity, unlike chimpanzees or other primates whose behavior is significantly similar to ours and can only accommodate direct reciprocity? Both moral and legal reasoning require the normative evaluation of another individual’s behavior not only toward the evaluator but also in relation to third parties. In this sense, Ernst Fehr and Urs Fischbacher\textsuperscript{39} indicate that the very existence of social norms depends on third-party punishment because violating norms frequently does not harm anyone individually, and there is thus no one single individual that could respond to the violation.

Thus, answering this question is of prime importance to understanding normative reasoning and, as a result, the evolution of law and morality in our species. Why is indirect reciprocity so rare in nature? Part of the answer is related to the fact that indirect reciprocity requires more cognitive capacities than direct reciprocity because one needs to remember not only its past interactions but also the outcome of the interaction between other individuals. Additionally, living in small societies requires less cognitive capacity than living in larger

\textsuperscript{35} Richerson and Boyd, supra note 2 at 200.
\textsuperscript{36} Id. at 200.
\textsuperscript{39} Ernst Fehr & Urs Fischbacher, supra note 32 at 64.
societies because the number of interactions every individual is required to remember is smaller.\textsuperscript{40}

Overcoming these cognitive constraints was a crucial development in our evolutionary history. However, evolution is not teleological; natural selection does not lead necessarily to more intelligent beings that live in large societies composed of genetically unrelated individuals. On the contrary, natural selection is quite frugal; it selects adaptations that perform particular functions efficiently without relying on resource-demanding complex biological structures. There is a trade-off between efficiency and metabolic cost: if two adaptations can do the job, natural selection will more likely favor the evolution of the least resource-consuming option.\textsuperscript{41}

Because complex brains are highly expensive due to their metabolic costs, the environmental pressures that led to the evolution of such brains must be understood.\textsuperscript{42} There are good reasons to suppose that living in large groups demands (at least) the ability to engage in indirect reciprocity, which requires complex cognitive capacities. Here is the evolutionary puzzle: why has the hominin lineage had to live in large groups in which these expensive abilities would prove useful? Other primate species are quite adapted to life in relatively small groups; why hasn’t it also been the case for the hominin lineage?

This issue has been the subject of debate over the past three decades. And many of the suggested answers to this question illuminate our understanding of human normative behavior – our ability to evaluate social situations through the lens of moral/legal rules and principles. Therefore, to understand the reasons behind the evolution of normative thinking in human ancestors, the evolutionary forces must be located to which the cognitive abilities underlying indirect reciprocity proved to be an efficient adaptation.\textsuperscript{43}

\textsuperscript{40} Assessing all possible bargaining situations that might arise from interactions among multiple agents might lead to a combinatorial explosion whose evaluation would demand an exponential increase of brain processing power.

\textsuperscript{41} RICHERSON AND BOYD, supra note 2 at 158.


\textsuperscript{43} This evolutionary reasoning presumes that the evolution of such cognitive capacities is an adaptation. This assumption, however, is not uncontroversial. The paleontologist Stephen Jay Gould and the evolutionary biologist Richard Lewontin prefer to adopt a conservative approach about explanations based on adaptationism. According to these scholars, adaptive explanations are usually incorrect because many traits might be historical accidents or side effects related to the evolution of other features. See Stephen Jay Gould & R C Lewontin, The spandrels of San Marco and the Panglossian paradigm: a critique of the adaptationist programme, 205 PROC. R. SOC. LOND., B, BIOL. SCI. 581–598 (1979). Nevertheless, Richerson & Boyd argue that adaptive explanations are useful because they help understand how organisms are well-suited to their environment. See PETER J RICHERSON & ROBERT BOYD, NOT BY GENES ALONE 102 (2005) (According to them, their skepticism “would be justified only if, in addition, non adaptive outcomes were much more
First, it is a reasonable premise in evolutionary thinking to assume that extant species that share certain traits have inherited them from a common ancestor. The evolutionary anthropologist Christopher Boehm, for instance, proposes that it would be theoretically possible to reconstruct certain behavioral traits of ancestral Pan – the “shared antecedent of humans and our two genetically closest relatives, Pan troglodytes (chimpanzees) and Pan paniscus (bonobos)”. To perform this reconstruction, we should look for strong similarities between human species and these ancestors to expose the common traits that humans, chimpanzees and bonobos inherited from the ancestral Pan. Boehm himself identified many of these traits:

All three live in bounded social groups and fight with conspecifics, and all three have territorial tendencies, along with a substantial amount of dyadic dominance-and-submission behavior that can erupt into serious conflict countered by active, sometimes highly effective, peacemaking. In addition, all three form community-wide coalitions that cooperatively threaten males of other groups, whereas within their communities sizable coalitions of subordinate individuals may band together to reduce the domination of higher-ranking males. Here, I rely on a behavioral phylogenetic approach that allows me to conclude that such shared traits are primitive and were to be found in ancestral Pan. By analyzing similarities across all three descendants of ancestral Pan, I can make conclusions about behaviors likely to have been present in our ancestors. From this estimate of our ancestral behavior, I can explore the factors that may have led to the more uniquely human set of behaviors we find in modern Homo sapiens.

To this effect, the ancestral Pan most likely had the psychological features that made them capable of engaging in cooperative behavior through the logic of kin selection and direct reciprocity. There is abundant evidence of nepotistic biases among chimpanzees, bonobos, and humans, which makes cooperation among genetically close individuals more likely. Additionally, chimpanzees and bonobos, like humans, are capable of engaging in dyadic cooperation maintained by altruistic punishment.

In the hominin lineage, Darwinian evolutionary processes selected innate cognitive structures that enabled cooperation through a particular moral psychology. The primate mind copes with its social environment through

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45 Id.
46 Id.
cognitive biases that induce cooperative behavior toward kin and altruists. The ultimate cause of cooperation within our lineage is thus the natural selection of innate cognitive mechanisms that operate through the logic of both kin selection and direct reciprocity; its proximate cause is the evolved moral psychology that allows a specific individual to engage in reasoning based on that type of logic.

The second important element for the evolution of cognitive skills to engage in indirect reciprocity is related to the Machiavellian intelligence hypothesis. According to this hypothesis, primates evolved bigger brains as an adaptation to life in unusually complex societies in which struggling for existence means not only coping with the natural environment but also with the challenges posed by other socially intelligent agents. Intense social competition led to the selection of those who were more capable of successfully adopting social behaviors that include lying, cunning behavior, forming coalitions, and

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47 These biases are fast and frugal heuristics that enable quick and (usually, but not always) correct decisions. As previously discussed, natural selection favors the evolution of “cheap” adaptations – traits that accomplish its duties without spending too many resources. Cognitive biases can be understood as rules-of-thumb that usually display the correct answer to a specific situation, but not always. The evolution of a brain that could correctly respond to every state of affairs in a reasonable amount of time would demand infinitely more energy and structural complexity than a biased mind that can be effective in most situations.

48 According to the evolutionary biologist Ernst Mayr, ultimate causes and proximate causes should be distinguished in order to fully understand an evolutionary phenomenon. Proximate causes govern the immediate responses of the individual and its organic structures to the actual factors of its environment. On the other hand, ultimate causes are related to the evolutionary explanations of the particular behavior and caused the selection of the proximate structures that directly cause the behavior. Ultimate causes are evolutionary causes – the environmental pressures that led to the selection of particular traits, the path dependent traits that turned out to be necessary for the evolution of further complex traits, and so on. As an example of this, Mayr explains the migration of a species of bird by referring to both proximate and ultimate causes: “Now, if we look over the four causations of the migration of this bird once more we can readily see that there is an immediate set of causes of the migration, consisting of the physiological condition of the bird interacting with photoperiodicity and drop in temperature. We might call these the proximate causes of migration. The other two causes, the lack of food during winter and the genetic disposition of the bird, are the ultimate causes. These are causes that have a history and that have been incorporated into the system through many thousands of generations of natural selection. It is evident that the functional biologist would be concerned with analysis of the proximate causes, while the evolutionary biologist would be concerned with analysis of the ultimate causes. This is the case with almost any biological phenomenon we might want to study. There is always a proximate set of causes and an ultimate set of causes; both have to be explained and interpreted for a complete understanding of the given phenomenon”. Ernst Mayr, Cause and Effect in Biology, 134 SCIENCE, NEW SERIES 1501–1506, 1503 (1961).

49 Byrne and Whiten, supra note 28.
manipulating others’ behavior. The presence of greater social intellect in some individuals in a primate group would exert selection pressures on others’ social intelligence, which would in turn lead to the evolution of even more complex social brains, which would result in an evolutionary arms race between the increasingly sophisticated ability to predict the behavior of others and the skills to manipulate them. The result of this process was the evolution of gradually more complex primates that were capable of attributing mental states (intentions, beliefs and desires) to others to predict and anticipate their behavior, which is a skill typically known as mind reading or theory of mind.  

Understanding other’s minds to predict their behavior and react accordingly might have led to the increase in group size – which, in its turn, became itself an environmental pressure for the evolution of more complex cognitive skills. Socially sophisticated minds may accommodate large groups, and larger groups demand even more sophisticated minds in a coevolutionary dance between group size and social intelligence.

At this stage, one question has remained unanswered: social skills are required for the growth of groups, but why did groups have to grow? Could the number of individuals in a group not remain stable and compatible with the cognitive skills of its members? This question admits of many correct answers. The first answer would be “yes!” that it is evolutionary stable to live in small groups where relatively simpler social minds are able to accommodate social complexity, and many primate species are certainly well adapted to life in smaller groups.

However, evolution is path dependent. Even the slightest difference between our ancestors’ minds and the psychology of other primates could have given rise to enormously different evolutionary results. Although there are many controversies about what the psychological differences were between our ancestors and other apes, gene-culture coevolutionary researchers propose that by the time our hominin lineage began to separate from other primates, our ancestors had the mental-reading abilities that were necessary for a skill that would prove very useful: the ability to imitate. It is still not clear why other primates, although skilled enough to learn socially through other means, are not

51 As stated by Orbell et al: “At the heart of the ‘political intelligence’ hypothesis is the assumption that, throughout human evolution (or at least in the Pleistocene ‘environment of evolutionary adaptation’ or EEA), there was an arms race between such manipulative and mindreading capacities. Social living was indeed a necessary condition for our ancestors’ survival, but social living also meant that any mutation produced advantage in manipulation also provided a basis for selection on mindreading and vice versa - producing an upwardly ratcheted arms race that continually increased both capacities”.
capable of truly imitating as we can. Richerson & Boyd suggest that imitation skills may have originated as an incidental effect of mind reading in our lineage, and it might have led to the evolution of rudimentary cultural traditions, which in turn required a more sophisticated ability to imitate.

According to this hypothesis, imitation became an important adaptation because it is an evolutionary stable strategy to accommodate moderately stable environments. In these conditions, animals capable of learning individually and of imitating the behavior of others would do better than those who rely either solely on innate behavioral strategies or on individual learning. Imitation enables the fast spreading of adaptive behaviors through a particular population because the environmental changes are slow enough to allow for the social transmission of adaptive information. In extremely unstable conditions, however, social learning would not be reliable because it would increase the diffusion of maladaptive behaviors in a group. Richerson & Boyd propose that our ancestors coped with moderately stable conditions, where it would pay to imitate. Along the lines of their conjecture, the evolution of social learning in primates may be understood as an adaptation to the increased climate variation that took place in the Pleistocene, between 1.8 million years BCE and 11,500 BCE. Our ancestors might have been the only species with mind-reading skills sophisticated enough to induce the evolution of faithful imitation abilities and, thus able to cross this cognitive threshold.

52 Susan Blackmore discusses the ability of other apes to learn socially through stimulus enhancement, local enhancement, or other simple forms of social learning. See SUSAN BLACKMORE, THE MEME MACHINE 48-50 (2000).
53 See RICHERSON AND BOYD, supra note 2 at 138 (“Some have suggested that primate intelligence was originally an adaptation to manage a complex social life. Perhaps in our lineage the complexities of managing food sharing, the sexual division of labor, or some similar social problem favored the evolution of a sophisticated ability to take the perspective of others. Such a capacity might incidentally make imitation possible, launching the evolution of the most elementary form of complex cultural traditions. Once elementary complex cultural traditions exist, the threshold is crossed. As the evolving traditions become too complex to imitate easily they will begin to drive the evolution of still more-sophisticated imitation”).
54 Imitation is unlikely to evolve in stable environments because natural selection would rather favor the gradual evolution of innate behavioral strategies that can cope adequately with natural challenges without requiring so complex cognitive capacity. Because the evolution of specific innate adaptations able to cope with particular environmental issues requires time (hundreds or thousands of years!), innate behaviors are adaptive to deal with stable environments. In this sense, innate specific adaptations cannot accommodate highly unstable environments; in these conditions, an animal capable of learning its way individually through trial-and-error might do better than another that relies on an innate behavioral strategy.
55 See RICHERSON AND BOYD, supra note 2 at 133-134.
B. The Emergence of Culture and Cultural Evolution as Preconditions to Cooperation among Humans

Imitation allowed for the emergence of a different type of evolutionary system – cultural inheritance. However, the ability to create culture is not a real difference between us and other animals. Other species are also able to maintain cultural traditions over many generations. The difference between those species and us involves another aspect of our ability to process culture: by having the skills to imitate accurately, we not only learn aspects of our culture but also transmit our own cultural contributions to future generations. In this way, humans can accumulate culture and transmit, via language, useful innovations proposed by one generation to the next, gradually storing solutions to environmental and social problems.

Understanding culture as an inheritance system leads us to questions involving its evolutionary dynamics. As Dan Dennett argues, natural selection may be understood as an algorithmic process that occurs whenever three key conditions are satisfied: variation, inheritance/replication and differential fitness. Does cultural evolution satisfy these conditions? According to the anthropologist Alex Mesoudi, all three conditions are met by cultural dynamics.

First, there is much evidence with respect to cultural variation not only regarding the same cultural trait (such as different types of arrows) – which would be analogous to within-species variation – but also among distinct cultural

56 Although there is an enormous debate about the precise meaning of culture, I adopt the concept elaborated by Peter Richerson and Robert Boyd. In this sense, culture is “information capable of affecting individuals’ behavior that they acquire from other members of their species through teaching, imitation, and other forms of social transmission”.

57 There is some evidence that non-human primates, such as chimpanzees and some species of monkeys also display “culture” in some sense of the concept. See Jorge Martínez-Contreras, O modelo primatológico de cultura, in FILOSOFIA DA BIOLOGIA 224–240 (Paulo Abrantes ed., 2011). Some studies even suggest that other unexpected species, like dolphins and crows, also have culture. See BLACKMORE, supra note 52 at 50.


61 For the purpose of the present article, the terms ‘cultural trait’, ‘cultural variant’ and ‘meme’ will be used to mean the same concept. However, it is important to keep in mind that the adoption of each term relies on different theoretical assumptions. A technical use of the term ‘meme’, for instance, connotes a strict analogy between discrete cultural particles and genes, understood as discrete biological particle.
traits (e.g., arrows, axes and shields) and between the cultural sets of different populations (e.g., different languages).  

Second, there is also inheritance of cultural traits via cultural transmission. People learn through (1) vertical transmission, when a parent teaches something to his/her own offspring; (2) oblique transmission, when information is transferred from a member of a former generation to a non-related member of the next generation; and (3) horizontal transmission, when communication occurs among individuals of the same generation. Mesoudi gathers evidence from technological and scientific innovation to demonstrate that there are gradual accumulations of tiny modifications in culture. The invention of the steam engine by James Watt, for instance, was built on the preexisting Newcomen steam engine, and mathematics has also evolved “through the accumulation of successive innovations by different individuals over time”.

Third, the adoption of distinct cultural traits leads to differential fitness among individuals. The odds that an individual survives and reproduces are affected not only by his biological traits but also by the cultural variants he adopts. And, as more genetic fitness means increasing the probability that genes will spread throughout a population, one might also think in terms of cultural fitness. Certain cultural traits are more likely to increase their proportion in the ‘cultural pool’ as a result of their effect on their carriers’ behavior. Thus, there is competition between different memes, and the most efficient grow over the long run. Differential fitness can be observed both on the psychological and the social level. Memes compete for memory within an individual; some cultural variants are easier to remember than others because they are more compatible with innate cognitive biases. In this sense, they would be more imitated than other variants. However, they also compete with memes from different cultures, and more efficient memes (cultural traits that provide better results to their carriers) are more likely to spread. This might be construed as a war between two tribes that are culturally similar and that use slightly different weapons; tribe A warriors use bronze swords, and tribe B warriors use iron swords. Assuming that iron spears are better, tribe B would have better odds to

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62 Alex Mesoudi also refers to technological evolution as an example of variation in human cultures, by mentioning the huge number (7.7 millions) of patents issued only in the United States between 1790 and 2006. He also presents some anecdotal evidence, such as the fact that there are more than 10,000 religions spread around the world, many of which are divided into thousands of other separate denominations.


64 Mesoudi, supra note 62 at 33.

65 Memes, here, refer to an idea first expressed by Richard Dawkins in his The Selfish Gene. According to him, memes are the analogous of genes, but in the domain of cultural evolution.

66 Id. at 31. Richerson AND Boyd, supra note 2 at 75.

67 Id. at 207.
win the war, and as a consequence, would kill more warriors and slowly increase the proportion of iron swords (and the cultural traits needed for their production) in the population of ‘weapons’.

If this picture is correct, then culture meets the three conditions needed for Darwinian evolution. However, this does not mean that culture evolves via the same mechanisms that cause biological evolution. According to gene-culture coevolutionary theory, many evolutionary forces act on both inheritance systems, such as natural selection, mutation and drift. However, cultural evolution is also subject to culture-specific evolutionary forces, which Richerson & Boyd call decision-making forces that derive from the psychological mechanisms involved in learning cultural traits and their transmission to others. Our cognition is not content neutral; it is biased toward learning certain beliefs and ideas instead of others, and these biases affect how culture evolves and what range of cultural possibilities are compatible with our innate psychology. As Morten Christiansen et al state, “cultural evolution does not take place in a biological vacuum but is shaped by biological constraints arising from the nature of our thought processes, pragmatics, perceptuo-motor constraints, and cognitive limitations on learning and processing.”

These biases evolved because they allowed for the most effective ways to cope with natural and social environments; they are fast and frugal heuristics nested within our minds that enable us to make decisions quickly. Some of these biases may have been selected under the same circumstances that shaped our capacity for faithful imitation discussed above; for instance, Richerson & Boyd argue that the very evolutionary forces that selected the ability to imitate might have induced the evolution of a conformity bias, i.e., the tendency to adopt those beliefs, norms and desires that are common in the community one belongs to. The tendency to imitate made our species capable of quickly copying the behavior of others; the conformist bias influences us to imitate the most common cultural traits in our communities.

Richerson & Boyd also discuss other biases that induce the evolution of particular cultural variants instead of others, such as content-based biases, which can result either from cost-benefit calculation of alternative memes or from the very structure of our cognition and favors the learning of particular types of cultural traits instead of others. There is also a model-based bias, the predisposition to either imitate prestigious individuals (prestige bias) or individuals similar to oneself. In the 19\textsuperscript{th} century, the role of model-based

\begin{itemize}
\item[68] \textit{Id.} at 70.
\item[69] Morten Christiansen, Nick Chater & Florencia Reali, \textit{The biological and cultural foundations of language}, 2 COMMUN INTEGR BIOL \textendash {}, 222 (2009).
\item[70] \textit{Richerson and Boyd, supra} note 2 at 121.
\item[71] \textit{Id.} at 70.
\item[72] \textit{Id.} at 124 (“By imitating the successful, you have a chance of acquiring the behaviors that cause success, even if you do not know anything about which characteristics of the successful are responsible for their success. If you can accurately imitate everything they do, you ought to be a success too, at least insofar
imitation in explaining social dynamics had already been revealed by the French sociologist Gabriel Tarde, who opposed Émile Durkheim’s claim that sociology should not focus on individuals to explain society because social facts have an objective existence outside of individuals and social facts are imposed by culture. Tarde believed to the contrary that social facts are not transmitted from the social group as a collective but from one individual to another through imitation.73,74


74 It is important to note that, insofar as Gabriel Tarde believed that imitation played a major role in explaining social dynamics, he also did not believe that biology had anything to offer sociological theory. He agreed with Auguste Comte that sociology is established upon biology – a hypothesis that resembles E. O. Wilson’s concept of consilience. However, he did not think that this meant the precedence of biology over the sociological domain: “Auguste Comte set forth a law concerning the hierarchy of sciences which, if it were true without exception, would fully justify the support sociology asks of biology. In his view, all the sciences from arithmetic to social science, passing via mechanics, physics, chemistry, and the science of living things, are ranked by the decreasing simplicity and generality of their subjects, the lowest ranks having the simplest and most general subjects. It follows that each science must lean on the one immediately below it, and not vice versa, since the lower science studies those elementary realities whose more complex groupings are encompassed by the higher one. (...) Now all this is true, but on one condition: that the successive realities—the subjects of the successive sciences—be superimposed like geological formations of which the highest is most recent and could have been formed only through a transformation or a combination of lower preceding layers. Let us suppose, however, that at a certain level of this scientific stratification there appear entirely new facts comparable to the hot springs of high mountains, which, cutting through all the lower layers, rise up from beneath even the lowest solid layer of earth. And grant that the appearance of consciousness, of the self, on the highest levels of the living world is a marvelous spring of this sort: can the science concerned with this phenomenon, which is not reducible to surrounding or preceding ones and is, though the highest, only conditioned but not engendered by them, can this science be regarded as having a more complex and more special subject than all the others? On the contrary, it may be highly probable that, revealing a hidden
C. The Evolution of a Normative Mind: Gene-culture Coevolution and the Cognitive Foundations of Large-scale Altruism

reality, perhaps the simplest and most lofty of all sciences, psychology, has more to teach its lower sisters than vice versa. And this would also be the case for sociology if there were any reason to think that the social phenomenon—which is essentially psychological—is itself more general than it seems. Are there not, in fact, some rather specious reasons for this view? Was it not by assimilating organisms to society and not society to organisms that the clearest (or least obscure) light was thrown on the great secret of life? Conceived of as an association of cells or as a federation of cellular societies or colonies, the living body becomes for the first time penetrable to man’s probing. Much more than natural selection, the cellular theory puts us on the road to an explanation of the vital enigma”. In sum, Gabriel Tarde argues that, as a higher science, sociology can teach more to biology than it could learn from it. Tarde’s argument, however, misses the point. The French sociologist confuses the science and its object of study. He confuses biology (the science) with biology (the studied subject) and sociology with society. By not being conscious of this misunderstanding, Tarde feels authorized to posit that sociology is more complex than the biological sciences, and thus it can teach more to biology than learn from it. However, Comte’s hierarchy of sciences is not a theoretical but an ontological assumption. Biological sciences are foundational to sociology because the biological world underlies the very possibility of sociality. This confusion can be observed in the statement that sociology helped the understanding of biology because the application of sociological concepts (association of cells and federation of cellular societies) to the biological world threw light on cellular theory. This is not a direct application of sociological concepts in biological theory, but a sociological metaphor to describe biological phenomena. His thesis could justify saying the opposite as well: one could say that biological theories are foundational to sociology because using concepts such as “social organism”, or understanding society as if it had a “head” and a “body”, have been used in social theory. One should remember that Durkheim refers to “organic solidarity” as a central concept of his sociology, but this would be simply a metaphorical use of concepts borrowed from biology, and not a biological theory of society. Thus, Tarde’s example cannot be read as a sociological theory of biology, as he suggests. It is also useful to acknowledge that Gabriel Tarde’s thesis on imitation as the source of social facts confuses the social domain with the cultural domain. Sociology is thus understood as a science that studies social facts; but what is a social fact? Following his theory, social facts are things such as “a word in a language, a religious rite, a trade secret, an artistic process, a legal provision, a moral maxim”. See GABRIEL TARDE, ON COMMUNICATION AND SOCIAL INFLUENCE: SELECTED ESSAYS 115 (1969). But each one of these examples is a cultural token; the object of sociology, thus, is culture, not society. There are many kinds of societies that aren’t studied by sociology, but by archaeology, biology and anthropology – such as the societies of eusocial insects or chimpanzees (which are studied by biologists) or the social environments in which our hominin ancestors evolved, which are subject to the interest of anthropologists and archaeologists. In this sense, the social precedes the cultural.
Certain of these cognitive biases are directly related to the moral psychology that underlies moral and legal systems. For instance, David Sloan Wilson, Rick O. Gorman and Ralph R. Miller performed psychological experiments through which they discovered that we are prone to recall social norms and normative information. We are innately equipped with a ‘normative mind’ that relies on a cognitive architecture founded on specific heuristics for evaluating the rightfulness/wrongfulness of concrete situations. It should thus not surprise us that every known human society is based on normative systems because our minds are biased to interpret the world morally.

77 This statement does not mean that our mind only interprets the world in a moral sense. There is evidence that we have innate knowledge about many particular features of our social and natural environment. Some psychologists suggest that our mind has engraved within it many naïve theories about the world: a “folk physics”, i.e., an innate comprehension about the rules that govern the physical world; a “folk biology”, an implicit understanding about the organic world; and a “folk psychology”, our natural capacity to explain and predict the behavior of others based on an account regarding their inner mental states. In addition, it is important to note that the neurological sciences have demonstrated that many of our moral judgments are grounded in mental processes that depend on the correct functioning of our brain to produce morally expected behavior. Brain lesions and tumors may affect our behavior, as has been documented. One famous example of the potential of a tumor to contribute to the cause of violent behavior is the case of Charles Whitman. Until 1963, he had displayed an exemplary behavior, but his behavior began to change for the worse; a former Mariner, he was court-martialed, lost his scholarship at the University of Texas, and began assaulting his wife. By this time, he began writing in his diary increasingly about having violent thoughts and a growing desire to shoot other people. On August 1· 1966, he brutally killed his wife and mother, just before he went to the University of Texas, where he killed 14 persons and wounded 31 others before being killed himself by a police officer. Before these events, Whitman left a note where he expressed his regret and a desire to have his brain studied after his death, in order to evaluate if there was anything wrong with it. And he was right. The autopsy revealed a glioblastoma brain tumor that impacted his hypothalamus and his amygdala – regions usually associated with behavior control, impulsive aggression and violence. See Shelley Batts, Brain lesions and their implications in criminal responsibility, 27 BEHAVIORAL SCIENCES AND THE LAW 261–272, 268 (2009). Consider the case of a 40-year old man who always displayed normal sexual behavior and suddenly began feeling have sexual desire towards children. He was arrested and sentenced to either attend a rehabilitation program for the sexually addicted or face jail. Although he had the desire to stop his impulses, he couldn’t control his will and misbehaved again. Just before the new sentencing, he felt a strong headache and had balance problems, and was sent to the hospital. Neurological examination identified a brain tumor in his right orbitofrontal cortex,
The features displayed by our normative mind are fundamental to understanding the evolution of human societies and its social institutions. The first point to be considered is that evolution does not work out new adaptations from scratch; it always refashions older structures to fulfill its own purposes. In this sense, it is reasonable to assume that we share with other primates many of their mental structures that cope with the social environment; thus, we are, like them, capable of engaging in altruistic behavior with our family (kin selection) and of relating to non-related individuals in situations that favor direct reciprocity. We cooperate with those who show prosocial behaviors towards us, and we punish those who do not (altruistic punishment).

According to gene-culture coevolutionary theory, the combination of altruistic punishment and faithful imitation led to the return of group selection as a mechanism to explain cooperation in large-scale societies. Even George Price, one of the first biologists who discredited group selection, thought that it might work as an evolutionary mechanism under very strict conditions. To succeed, group selection depended on the assumption that between-group selection is weak when compared with within-group selection against it. However, the possibility that individuals from one group could migrate to another erodes between-group variation and leads to genetic homogeneity between individuals of different groups and to the strengthening of within-group selection against between-group selection. If groups were genetically equivalent, because the natural selection forces were acting upon individuals (and not groups), variation between groups would not be possible.

1. Moralistic Punishment and Imitation Strengthen Cultural Group Selection

Altruistic punishment and faithful imitation made it possible that selection among different groups became stronger than selection forces acting within-group. Imitation leads to the spread of cultural variations inside a specific

which is involved in the regulation of social behavior. The tumor was removed and the man released. Some months later, he was caught secretly collecting child pornography and, by this time, he was also feeling strong headaches. Another neurological exam revealed the tumor recurrence. See Neuroscience and the Law, 15-16 (Nicholas Mackintosh ed., 2011). Moreover, not only tumors cause misbehavior. Underdeveloped brain structures and even brain injuries may also cause such offensive behavior. Psychopathy, for instance, is a disorder that involves the reduced capacity to feel guilt, empathy and attachment to others. Neurophysiological studies have identified two dysfunctional brain regions in psychopaths: the amygdala and ventromedial cortex, which are related to care-based morality. See R J R Blair, The amygdala and ventromedial prefrontal cortex in morality and psychopathy, 11 Trends in Cognitive Sciences 387–392 (2007).


79 Panchanathan and Boyd, supra note 34 at 501.
group. Nevertheless, if migration is possible, an individual who comes from a different group will likely bring part of his former society’s culture to his new home. His beliefs would soon be imitated by his new co-members and spread through his new group – which would lead to the mixing-up of different cultural sets within each population, and pressures for selection between different groups would be weak.

Peter Richerson and Robert Boyd assume that this problem was solved as the result of our ancestors’ capacity not only to imitate but also to imitate selectively. Their innate psychology was able to identify symbolic markers (signs that identify a group, such as clothing styles, dialect particularities, social customs, badges, and so forth) and to imitate those with whom they shared the same tokens. This ability might have evolved as the result of rapid cultural adaptation. Cultural evolution allows for rapid cultural adaptation to different environments. In this situation, it pays more to selectively imitate the local population, which is a more reliable source of information about which strategy is adaptive, than to follow what immigrants do.80 Knowing how to identify the symbolic markers shared by the local population – and trying to imitate them – would increase the odds of adopting the adaptive behavior. Language also has played an important role in this scenario because it is allows for the reliable transmission of symbols across a population.81

80 RICHERSON AND BOYD, supra note 2 at 212.
81 In Pleistocene, our hominin ancestors began to evolve a larger neocortex and to live in larger groups. Homo habilis (2.5-1.9 million years BCE) lived in societies consisting of 80 individuals; Homo erectus (1.8 million–143,000 years BCE) lived in groups of 100-120 members; archaic humans (Homo heidelbergensis, Homo rhodesiensis and Homo neanderthalensis – 600,000–35,000 years BCE) lived in groups of 120-140 members. According to Robin Dunbar projections, based on the proportional size of the neocortex, Homo sapiens would be able to live in communities consisting of 150-160 individuals – almost three times the average size of a chimpanzee society. The increase in group size required more than larger brains to monitor free riding. It also required new monitoring strategies. Among great apes, the most diffused strategy to keep regular surveillance over the behavior of others is through social grooming, a process that demands trust and develops bonds among members. But the habit of regularly removing dirt and parasites from other’s fur is costly. It takes a lot of time that could have been spent in more crucial activities, such as having sexual intercourse or searching for food, and it exposes the individual to the threat of being attacked by a bully, because the groomed animal achieves a relaxed and quite defenseless state. Based on these costs, grooming is used in primate groups to develop bonds among its members and to evaluate friends and foes (who wouldn’t spend a lot of useful time to groom whom they dislike). However, the time spent in grooming grows in parallel with group size. See Julia Lehmann & Robin Dunbar, Network cohesion, group size and neocortex size in female-bonded Old World primates, 276 PROC. R. SOC. LOND., B, BIOL. SCI. 4417–4422 (2009). In small groups, there is no need to spend much time grooming, but it can take a lot of time in larger groups – and the activity may begin to interfere with engaging in other activities. As expected, there is ethnological evidence about the time spent in social
In this sense, a predisposition to cooperate with those who share the same cultural background helps induce variation between different groups. This begs the following question: How could this variation be maintained for a long period of time? Imitating the local population instead of immigrants may be sufficient when there is only a small set of immigrants; however, if they become a large part of the local population, it will be progressively harder to identify the most widely spread symbolic markers that indicate whom to imitate and, as a result, the mixing-up between groups would inevitably happen.

Richerson and Boyd argue that this problem has been solved in the course of our ancestors’ evolution through a social mechanism: moralistic punishment. Our ancestors were already capable of engaging in reciprocal relationships in which altruistic punishment could solve first-order and second-order free riding. However, altruistic punishment relies on face-to-face relationships and on a psychological trait – memory of past interactions –, which allows for the stability of relatively small communities.

Conversely, moralistic sanctions may be directed against those who do not follow the same beliefs, moral rules and behavior codes of the majority. It is bonding among primates: in smaller groups of monkeys, there is less time dedicated to grooming than in larger groups of chimpanzees and gelada baboons. See Robin Dunbar, The Social Brain: Mind, Language, and Society in Evolutionary Perspective, 32 Annual Review of Anthropology 163–181, 174-176 (2003). However, language allows for the monitoring of behavior at a certain distance without interrupting other crucial activities, which can lead to reducing the time spent in grooming. Indeed, there is also ethnological evidence about increasing vocal communication as the average size of the groups of primates increase. The gelada baboons, which spend almost 20% of their time in grooming, is also the non-human species that shows the most complex vocal communication and that lives in the largest natural groups of primates. See Leslie C Aiello & Robin Dunbar, Neocortex Size, Group Size, and the Evolution of Language, 34 Current Anthropology 184–193, 187 (1993). (“These data can thus be interpreted in terms of a progressive need to supplement existing forms of social cohesion with more efficient vocally based ones as group sizes increased. At the earliest stage, tone and emotion would be the essential components of vocalization; information content would not necessarily be important. The function of this type of enhanced vocalization would be vocal grooming, an expression of mutual interest and commitment that could be simultaneously shared with more than one individual. In fact, this process is already observable at a rudimentary level in extant primates. Richman (…) has pointed out that gelada vocalization has a number of features that were once considered distinctive features of human speech: fricatives, plosives, and nasals, labials, dentals and velars, as well as rhythmic, melodic, and conversational properties involving highly synchronized bouts with intense emotional overtones. It may be no coincidence that geladas live in the largest naturally occurring groups of any non-human primate (mean group size 115 animals. These vocal properties, which converge so uncannily on human speech, appear to supplement grooming as a mechanism for social bonding. Although geladas cannot be said to have evolved language, they may provide a model for the earliest stages in its development”).
not important to remember who did what to whom to punish a free rider, but only monitor who follows the symbolically shared behavior of the community. Additionally, moralistic sanctions are not necessarily applied by individuals who were harmed by someone; it can be applied by third parties and – when societies get much more complex than hunter-gatherer groups – by social institutions. This feature also solves the second order free-riding problem because the costs of punishment are spread throughout the entire population and becomes greatly reduced for each altruistic individual when compared with the benefits of cooperation in large-scale societies.\textsuperscript{82}

Whereas selective imitation and symbolic marking paves the way for cultural variation between different groups, moralistic punishment maintains it over time. By punishing individuals who adopt different memes, it does not allow between-group cultural traits to be mixed up, which assures that group-selection is stronger than within-group selection.

However, there is a side effect to this solution. Although moralistic punishment is a plausible mechanism to maintain large-scale cooperation, it does not maintain only group-beneficial memes, but can also stabilize any type of cultural trait. There are customary sanctions for those who rob or commit murder but also for those who do not follow useless rules, such as dressing codes or etiquette.

Is the stabilizing of cooperation in large groups also just a side effect of moralistic punishment? The answer to this question demands an understanding of both cultural evolution and of our moral cognition.

As far as the story goes, our capacity to cooperate in large-scale societies relies on the capacity of faithful and selective imitation that led to symbolic marked societies. Thus far, we have focused only on two of the necessary conditions for characterizing a system as evolutionary: inheritance and variation. There is also a need that variants relate to differential fitness. Different replicators must affect the behavior of their carriers such that they improve or decrease the odds of transmitting those memes to their heirs. A genetic system is evolutionary because genes cause their carriers to adopt different behaviors. Because some behaviors are adaptive, the genes related to them increase their odds to be transmitted to the next generation. The same occurs with memes. Cultural variants that increase the adaptability of the person who adopts them to the challenges posed by their natural, social and cultural environments also increase the odds of these behaviors being transmitted to others.

By now, the theoretical necessity of taking multiple levels of evolutionary systems into account must be clear. Cultural traits that negatively affect the biological fitness of its carrier cannot spread through the entire population because either the population will become extinct or it will abandon that meme before it happens. Imagine a population that consists 100% of Catholic priests and nuns who are fully committed to their faith and their vows of chastity. Assuming there is no immigration to this community, it will be doomed to extinction – unless they refrain from their commitment of following

\textsuperscript{82} RICHERSON AND BOYD, supra note 2 at 200.
Catholic rules about sexual intercourse between clerics. In this case, cultural evolution is not biologically adaptive.

Conversely, groups that adopt fitness-enhancing memes would be more successful in spreading these memes and its members’ genes than other groups who did not do the same. Competition between groups might lead to this scenario. Not surprisingly, the ethnographic and archaeological data indicate that warfare and competition over natural resources are common in contemporary foraging and hunter-gatherer societies. In war, memes that promoted more cooperative groups could lead to an important advantage over groups whose members were. Of course, development is not only about cooperation; cultural traits such as better weaponry and better strategies would also matter. But, considering a ceteris paribus scenario, larger groups typically do better in conflict with smaller groups. And larger groups can only emerge if they can do so efficiently with first and second order free-ridings – in other words, if they can sustain large-scale cooperation.

Of course, this would result from group selection. There is variation between groups (caused by selective imitation associated with symbolic marker), cultural inheritance (the transmission of cultural variants from one generation to the next) and differential fitness (different memes affecting the odds of survival and reproduction of the group).

In this sense, the evolution of cooperation in large-scale societies is not just a side effect of moralistic punishment, but a biocultural adaptation to an evolutionary problem posed in the Pleistocene to our ancestors. The “cultural” side of this adaptation refers to group-cultural fitness because it increases the odds that the frequency of the group’s memes rise over time. Its “biological” side refers to the coevolution between our innate psychology and culture.

So far, I have highlighted the cultural aspects of this equation. Culture evolved as an adaptation to cooperation problems posed by our ancestors, who had large brains and could cope with progressively larger societies. This imposed a selective pressure for not only even larger brains but also for cultural solutions to selective problems. Culture became an inheritance system of its own – an autopoietic system that refers only to its own elements to reproduce itself and maintain its stability, which indicates that even more complex brains had to evolve to address the new cultural environment. These brains should be not only capable of monitoring the behavior of other individuals but also of imitating the most common behaviors in a given population; in addition, these brains should able to engage in relationships with symbolic markers, to use these markers as a reliable source of information to enhance cooperation and to punish those who do not conform to them.

2. The Moral Grammar Wired in the Normative Mind

Engaging in such sophisticated tasks demands an equally sophisticated brain. A “blank slate” brain, with no innate information, might not be suited for such tasks. Thus, Leda Cosmides and John Tooby have criticized what they
consider a generalized assumption made by social scientists – the Standard Social Science Model.\textsuperscript{83} This model assumes that the human mind consists of general-purpose and content-independent learning and reasoning mechanisms, i.e., a blank slate that is incapable of responding asymmetrically to different types of input. However, there is evidence that our mind relies on different mechanisms to accommodate diverse types of input.\textsuperscript{84} Although there is controversy about the nature of these mechanisms, there is little or no doubt about the fact that our mind has engraved within it innate information that enables it to process specific inputs from different domains (visual cues, social relations, and interpretations about the physical and biological world, among others).

Noam Chomsky’s theory of language acquisition may be the best example of how this mechanism might work. According to Chomsky, a blank slate brain would not be able to learn a new language from scratch if it did not have enough innate information about which aspects of the language it should focus on to extract its syntactic structure and apply it to other linguistic stimuli. This argument, known as the poverty of stimulus (POTS), aims to explain how very young children can learn language and be so competent with respect to its use because they are exposed to limited positive data from which they could extract the structure of a particular language. Because the external stimulus is not enough to explain our competence to engage in linguistic learning, it is assumed that our mind has innate information about how it should organize the linguistic inputs it receives into a universal grammar based on universal principles of language.

According to Chomsky and Steven Pinker, this grammar is based on a distinction between principles and parameters.\textsuperscript{85} Principles are a finite set of fundamental features valid for all possible natural languages, and parameters are a finite set of binary instructions that determine how the principles are structured in a particular language. For instance, one universal principle might be that a sentence must have a subject; and a specific language could parameterize this principle by locking the subject in the beginning of the sentence, while another language could place it at the end of the sentence. Alternatively, one language might admit a hidden subject, whereas another does not. Parameters work like binary switches that set how a particular principle functions in a given language. The universal grammar argument is a powerful framework for linguistic studies because it can account both for the particular features of the known languages and for the ubiquitous features that characterize them. Portuguese, Japanese and English are very different languages, but they nonetheless display features that can be posited as linguistic universals.\textsuperscript{86}

\textsuperscript{84} JERRY A FODOR, \textit{THE MODULARITY OF MIND} 41 (1983).
\textsuperscript{85} STEVEN PINKER, \textit{THE LANGUAGE INSTINCT} 112 (2010).
\textsuperscript{86} \textit{Id.} at 22-24.
A similar contention might be made for the normative domain. Although John Rawls hasn’t explored this insight more deeply, he recognizes that moral competence is analogous to linguistic competence. By explicitly citing Chomsky’s theory of language acquisition, he acknowledges that our ability to engage in moral reasoning cannot be explained solely by means of the assumption that we learn moral principles from our everyday experience. We can make sense of all the moral data we receive in our daily interactions because we have an innate sense of fairness.87

Based on Chomsky’s account of language and on John Rawls’ linguistic analogy, the legal scholar John Mikhail elaborated a theory of moral cognition and intuitive jurisprudence. According to Mikhail, untutored adults and even small children are capable of moral reasoning: they are “intuitive lawyers, who

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87 See John Rawls, A Theory of Justice 41-42 (revised edition ed. 1999) (“A useful comparison here is with the problem of describing the sense of grammaticalness that we have for the sentences of our native language. In this case, the aim is to characterize the ability to recognize well-formed sentences by formulating clearly expressed principles which make the same discriminations as the native speaker. This undertaking is known to require theoretical constructions that far outrun the ad hoc precepts of our explicit grammatical knowledge. A similar situation presumably holds in moral theory. There is no reason to assume that our sense of justice can be adequately characterized by familiar common sense precepts, or derived from the more obvious learning principles. A correct account of moral capacities will certainly involve principles and theoretical constructions which go much beyond the norms and standards cited in everyday life; it may eventually require fairly sophisticated mathematics as well. Thus the idea of the original position and of an agreement on principles there does not seem too complicated or unnecessary. Indeed, these notions are rather simple and can serve only as a beginning”). In another passage, Rawls state that it is reasonable to assume that natural selection would induce the evolution of an innate set of emotions, sentiments, and psychological principles that would embody a sense of fairness. See John Rawls, A Theory of Justice 440 (revised edition ed. 1999) (“In arguing for the greater stability of the principles of justice I have assumed that certain psychological laws are true, or approximately so. I shall not pursue the question of stability beyond this point. We may note however that one might ask how it is that human beings have acquired a nature described by these psychological principles. The theory of evolution would suggest that it is the outcome of natural selection; the capacity for a sense of justice and the moral feelings is an adaptation of mankind into its place in nature. As ethnologists maintain, the behavior patterns of a species, and the psychological mechanisms of their acquisition, are just as much its characteristics as are the distinctive features of its bodily structures; and these patterns of behavior have an evolution exactly as organs and bones do. It seems clear that for members of a species which lives in stable social groups, the ability to comply with fair cooperative arrangements and to develop the sentiments necessary to support them is highly advantageous, especially when individuals have a long life and are dependent on one another. These conditions guarantee innumerable occasions when mutual justice consistently adhered to is beneficial to all parties.”).
are capable of drawing intelligent distinctions between superficially similar cases, although their basis for doing so is often obscure”. In fact, recent research has shown that even babies younger than one year of age prefer people who engage in prosocial behaviors than those who engage in antisocial behaviors and that children between seven and eight years old are prone to egalitarian behavior with respect to those who belong to their group. Thus, moral theory must address a poverty of moral stimulus issue: even though children in their first year have not been exposed to sufficient perceptual inputs to derive moral principles from them, they nonetheless do engage in moral reasoning.

In parallel with Chomsky’s linguistic theory, Mikhail proposes that moral cognition is also based on the distinction between universal principles and local cultural parameters. According to Mikhail, “an adequate moral grammar must include several [...] concepts and principles”, which he enumerates as the following: (i) natural liberty, (ii) prohibition of battery and homicide, (iii) self-preservation, (iv) the moral calculus of risk, (v) the rescue principle, (vi) and the principle of the double effect. Mikhail derived these principles from actually observing how people think when they are faced with moral problems. Although his task is not useless and has yielded many interesting results, taking an evolutionary perspective is also useful in conceiving of the features that universal moral grammar principles should embody.

If this account regarding the emergence of cooperation is broadly correct, we should expect the universal moral grammar to be based on principles structured on the evolutionary history of our social psychology. It is not unreasonable to assume that many of these principles would rely on the logic of more ancient evolutionary principles of cooperation that are based on strong emotional ties related to the observance of kin selection and the logic of reciprocal altruism. However, this moral grammar would also be based on more recent evolutionary features linked with symbolic marking, cooperation directed to group members and suspicion of outsiders, and norm-based reasoning.

The first set of principles should be based on our primate inheritance. The cooperative behaviors of chimpanzees, bonobos and gorillas may be reasonably explained with reference to kin selection and reciprocal altruism. They take care of their infants, tend to cooperate more and empathize with genetically close members of their groups, and they engage in reciprocal relations. To reciprocate, they are also capable of calculating whether it pays better to cooperate or to free ride and to punish freeloaders. These principles are tightly tied to emotional responses that are triggered when they are facing

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91 Id. at 132-149.
92 Id. at 78.
specific social situations and must decide what to do based on a moral evaluation of a concrete situation. Our minds are likely based on similar emotional and psychological dispositions.\footnote{Marc Hauser, Moral Minds 44 (2009).}

Following Richerson & Boyd’s hypothesis\footnote{Richerson and Boyd, supra note 2 at 215.}, the second set of principles has evolved as the result of our distinct evolutionary history and is the product of multi-level selection. These principles consist of tribal instincts that support identification and cooperation in large communities and are related to symbolic marking, indirect reciprocation, cooperation directed to group members and suspicion of outsiders, and norm-based reasoning. Adherence to these principles requires obedience to group beliefs and values, acquisition of the most diffused memes within a community, and punishment for those who fail to acquiesce to the moral standards.

Although the first set of principles relies on more substantive rules (“take care of your offspring”, “punish free-riders”, and “return favors to your friends”), the second set of principles is based on more procedural meta-rules, such as “obey the rules of your community”, “cooperate with those who share the same symbolic markers as yours”, “learn the standards of your group”, and so on. In this sense, the tribal instincts prepare our mind to set how the first-order principles should be stabilized by the cultural parameters of a particular community, functioning exactly as Chomsky’s principle-and-parameters.

In addition, it is notable that instincts based on these principles were more recently in our evolutionary path superimposed on our psychology without eliminating those based on reciprocal altruism and kin selection.\footnote{Id. at 215.} As a result, it is plausible to assume an intrinsic conflict between these two sets of instincts and the principles they rely on. Sometimes, loyalty to the group may demand that someone expose his own family, or, conversely, concerns about the welfare of his offspring may cause a parent to break the law; this conflict is inherent in our moral psychology because conflicting judgments arise from different cognitive processes that follow contrary deontological assumptions.

Another difference between the functioning of these mechanisms in other primates and in humans is related to the sense of fairness. Great apes, such as gorillas, bonobos and chimpanzees, are strictly hierarchical. Their social system is based on frequent struggles for status and depends on specific dispositions toward the adoption of domination and/or submission cues. However, rank status isn’t stable; a strong subordinate can always depose the alpha male and replace it in the hierarchy. Although there is an innate disposition to respect rank, there is thus also an innate aversion to being subordinate.\footnote{Christopher Boehm, Hierarchy in the Forest 174 (1999).}

Nevertheless, the social structure of contemporary hunter-gatherer societies, which are considered by anthropologists to be societal models of
prehistoric human communities, appears to be intrinsically egalitarian.\textsuperscript{98} As Woodburn states, “what is perhaps surprising is that these societies systematically eliminate distinctions – other than those between the sexes – of wealth, of power and of status. There is here no disconnection between wealth, power and status, no tolerance of inequalities in one of these dimensions any more than in the others”.\textsuperscript{99} This seems to be an anomaly for those who try to explain human sociality from an evolutionary perspective: how could the social structure of our ancestors be so different from that adopted by the great apes? Traditional anthropologic studies typically attribute their egalitarianism to material circumstances, such as food scarcity and the impossibility of storage – due to either technological reasons or social factors, such as nomad life or social pressure to impose the immediate sharing of food.\textsuperscript{100}

The anthropologist Christopher Boehm pursued a different approach to explain this anomaly. According to Boehm, although these causal factors must be taken into account, it is also necessary to consider the role of our social psychology and its evolutionary roots to explain egalitarianism in hunter-gatherer groups. Hunter-gatherer bands and tribes display substantial variation regarding their economic conditions, cultural traits, and ways of life. Some are sedentary and others nomadic; some are involved in small trade networks, whereas others are pastoralists whose lives depend solely on their cattle. In some of these groups, membership is quite stable over time, whereas other bands tolerate migration. After studying 48 hunter-gatherer societies in Africa, Asia, Australia, Mediterranean, North America, New Guinea, Oceania and South America, Boehm found that the only pervasive traits all these communities share are egalitarianism and small size.\textsuperscript{101}

Boehm’s hypothesis holds that our ancestors became egalitarian based on cultural reasons that favored the natural selection of an egalitarian mind. However, how could such psychology evolve on the basis of a hierarchical mind? Boehm’s answer to this evolutionary puzzle is quite subtle; egalitarianism cannot be understood in this context as absence of hierarchy, but as reversed hierarchy. We are used to thinking about political hierarchy as a social form of organization where an elite rules the rest of the society. Egalitarianism among contemporary hunter-gatherers is the opposite – not the absence of hierarchy, but a hierarchical system in which society imposes its political will on its “ruler” through a variety of strategies. An autocratic leader is controlled by public opinion, and his authority may be eroded through criticism or ridicule. In


\textsuperscript{100} Id.

\textsuperscript{101} Christopher Boehm et al., \textit{Egalitarian Behavior and Reverse Dominance Hierarchy [and Comments and Reply]}, 34 \textit{CURRENT ANTHROPOLOGY} 227–254, 288 (1993).
extreme cases, harsh sanctions can be applied, such as deposal, ostracism, or even assassination.\textsuperscript{102}

The “reversed hierarchy” hypothesis assumes that our ancestors had certain cognitive preadaptations that enabled them to reverse the hierarchical behavior that typifies our primate lineage. Among such preadaptations, Boehm highlights the importance of political and actuarial intelligence, the skill to communicate and the ability to live in moral communities.

However, of special importance to the hypothesis is the ability to engage in social hierarchies, discriminating when to respect a superior and when to rebel against him and subvert the rank. Even subordinate chimpanzees (who live in a strictly hierarchical society) occasionally rebel against alpha males and disrupt the rank. However, Boehm suggests that a tendency to defy power was stronger in human lineage than in other primates due to the regular use of weapons. Rebelling against an alpha male is very risky among chimpanzees because the alpha male is usually the stronger individual; thus, the alpha has a strong corporal advantage against its peers.

With weapons (particularly projectile weapons, such as a spear or bow and arrow), weaker individuals can balance the odds against a stronger opponent. In this scenario, being physically stronger isn’t such an advantage against a skilled adversary who knows how to efficiently manage a lethal weapon. Boehm argues that the regular use of weapons balanced power between stronger and weaker individuals and increased the odds of resistance against a bully leader. This was an important step toward egalitarianism because primate hierarchy substantially relies on differences in physical strength.\textsuperscript{103,104}

There is evidence that human ancestors were already capable of handling weapons by 400,000 or 500,000 years BCE\textsuperscript{105}, and Boehm assumes that egalitarianism might have established itself sometime between 500,000 and 250,000 years BCE. In his \textit{Hierarchy in the Forest}\textsuperscript{106}, Boehm was cautious about the genetic implications of egalitarianism. He thought that the balance of power between subordinate individuals and tribal chiefs caused by the diffused use of weapons should have had enough strength to establish egalitarianism socially.

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  \item \textsuperscript{102} \textit{Id.}; \textit{BOEHM, supra} note 97.
  \item \textsuperscript{103} \textit{Id.} at 177.
  \item \textsuperscript{104} According to Boehm: “How do these insights affect egalitarianism? When killing becomes both easy and rapid, the balance of power between two combatants becomes more a matter of skill in tool use than a matter of canine size, jaw strength, and body size and strength. As will be seen through some vivid ethnographic examples, a strong element of chance is involved in who strikes the first lethal blow. Furthermore, while a larger individual may still have an advantage over a smaller in wielding a weapon such as a spear, he also presents a larger target when it comes to spearing, clubbing, or throwing a projectile.” \textit{Id.} at 177.
  \item \textsuperscript{105} \textit{CHRISTOPHER BOEHM, MORAL ORIGINS} 163 (2012); \textit{MARY C STINER, RAN BARKAI}, \textit{COOPERATIVE HUNTING AND MEAT SHARING 400-200 KYA AT QESEM CAVE, ISRAEL}, 106 \textit{PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES} 13207–13212 (2009).
  \item \textsuperscript{106} \textit{BOEHM, supra} note 97 at 177.
\end{itemize}
without requiring any strong genetic change in our moral cognition, although he recognizes the same could have had some impact on other physical aspects of our nature, such as dentition, body size differences between man and women and hair loss on the body.\textsuperscript{107} In his new book, \textit{Moral Origins}\textsuperscript{108}, Boehm seems to have changed his mind on this issue. Although he insists egalitarianism appeared first as a political invention backed by weaponry, life in egalitarian communities could press for the social selection of an egalitarian moral cognition over the long term:

This theory is basically political in that I have tied this strong selection force closely to the advent of egalitarian social orders. These hypotheses provide a very large window during which punitive social selection could have operated to make us moral, and these social orders could have begun to develop at any time in the course of human evolution, really. However, for today’s definitive type of egalitarianism to have flourished, it would have been necessary for human social and political intelligence to become powerful enough for subordinates to decisively curb the alphas in their bands.\textsuperscript{109}

It is reasonable to believe that egalitarianism is a feature of our innate moral psychology, and not solely the result of a political innovation that spread through cultural transmission. First, it is necessary to consider the fact that egalitarianism is ubiquitous among contemporary hunter-gatherer societies spread all over the world. If it were just a cultural meme not founded on our psychology, we should expect to find many hunter-gatherer tribes that adopted a highly hierarchical structure. Additionally, as Boehm acknowledges, our ancestors have been egalitarians for at least 250,000 years – enough time for natural selection to wire such a trait into our minds. There is neurological\textsuperscript{110}, ethnographic and psychological evidence\textsuperscript{111} that inequality aversion develops relatively early in childhood and is pervasive in human social experience.

Egalitarianism, however, does not mean that every member of the band is considered an equal; instead, it means that the hierarchy is inverted. Instead of being a pyramid in which the top is narrow, its base is large and the tribal chief exerts power over his peers, the reversed hierarchy adopts a social structure in which the community actively controls the chief through formal and informal means of monitoring and punishment. If egalitarianism began as a political invention in the Pleistocene, it might have stabilized itself in our mind through natural selection action over thousands of years. In time, this principle of our moral grammar may also have neutralized many of our hierarchical instincts.

\begin{footnotesize}
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\item \textsuperscript{107} \textit{Id.} at 181.
\item \textsuperscript{108} BOEHM, supra note 105.
\item \textsuperscript{109} \textit{Id.} at 157.
\item \textsuperscript{110} Christopher T Dawes et al., \textit{Neural basis of egalitarian behavior}, 109 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES 6479–6483 (2012).
\item \textsuperscript{111} Fehr, Bernhard, and Rockenbach, \textit{supra} note 89.
\end{itemize}
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enabling the possibility that, under the right circumstances, we actually may see each other as equals.

Assuming that the scenario built so far is at least reasonable, it is feasible to conceive of the structure of human moral grammar as the embodiment of principles related to the following mechanisms that embody solutions to cooperative dilemmas faced by our ancestors: (i) kin selection; (ii) reciprocal altruism and altruistic punishment of free-riders; (iii) indirect reciprocity based on allegiance and respect to moral norms via symbolic marking, monitoring and moralistic punishment of those who do not acquiesce to them; and (iv) egalitarianism based on reversed hierarchy and on the constant surveillance of those who attempt to impose their will on others. It is also assumed that all these solutions to cooperative dilemmas are nested within our mind as a result of natural selection responding to many different environmental and social problems.

In this sense, John Mikhail’s approach regarding moral grammar should be understood as a psychological attempt to devise the specific principles that structure the logic of the mechanisms described above. The principle of natural liberty, which is described as a libertarian principle, states that an individual should be free to decide whether to act (or not) unless a specific course of action is forbidden or obligatory. It is reasonable to assume that this principle embodies the logic of egalitarianism, of indirect reciprocity and of symbolic marking. It holds that no one [an egalitarian assumption] should be obligated to act against his will unless his action violates a moral standard held as mandatory by his community [a moral norm adopted by the community as part of its identity, a feature of symbolic marking that, unless heeded, leads to moralistic punishment, as predicted by indirect reciprocity]. In the same sense, the other principles devised by John Mikhail should also be read as innate rules selected as proximate psychological causes of evolutionary responses to social dilemmas.

D. Multilevel Selection Foundations of Human Normative Behavior and Cooperation in Large-Scale Societies

These sophisticated features of the human mind enabled the possibility of life in larger communities than those that might otherwise be sustained in the Pleistocene. The anthropologist Pierre Clastres, for instance, reports that some Tupi, Tupinamba and Guarani villages might have supported, on average, more than 400 natives\(^\text{112}\); however, even if these villages seem huge when compared with the social world of chimpanzees and of our hominin ancestors, they are extremely small when we consider the size of ancient cities and civilizations and of contemporary societies, which are relatively stable societies consisting of millions of individuals.

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How could sophisticated societies be built upon those psychological constraints? In other words, how could the human anomaly be explained? Peter Richerson and Robert Boyd present this puzzle in the following manner:

How does cultural evolution engineer ancient Rome or modern Los Angeles starting with human raw material originally designed for societies, at most, on the scale of the cattle camps of the southern Sudan? The size, degree of division of labor, and degree of hierarchy and subordination of Rome and Los Angeles are orders of magnitude beyond the range of the most complex foraging societies.113

Larger societies such as those displayed by ancient civilizations could not have evolved in the Pleistocene. The climatic constraints of that geological era were hostile to the development of agriculture and foraging societies could not sustain large populations because of insufficient food production.114 However, in the Holocene, the geological era of the last 11,600 years, the relative climatic stability made agriculture almost inevitable – in such a way that it was independently invented at least ten times in different regions of the world.

Increased food production as a result of the invention of agriculture allowed larger societies to become sustainable. The evolution of sizeable societies led to an evolutionary (cultural) race between increasingly large groups, which led to the invention and stabilization of many cultural adaptations. Early large groups had an obvious advantage over smaller groups because they could assemble larger armies, and, in technologically similar confrontations, larger typically means mightier. Later, the first agricultural societies likely dominated smaller hunter-gatherer groups and replaced them. In the second stage, the confrontation between larger agricultural societies led to the selection of those communities that were structured more efficiently based on division of labor, the evolution of certain institutions, the arousal of hierarchical differences among social groups, and more productive economies that allowed for some economies of scale.115

However, how could the human mind address such large societies? Richerson & Boyd propose an elegant solution to this puzzle: large-scale societies were organized in such a way that they could simultaneously emulate small ancient foraging groups and allow for hierarchical differences, obedience to superiors and efficient labor division.116 Societies that might achieve the

113 RICHERSON AND BOYD, supra note 2 at 229.
115 RICHERSON AND BOYD, supra note 2 at 230.
116 According to Peter Richerson & Robert Boyd: “If we are correct, the institutions that foster hierarchy, strong leadership, inegalitarian social relations, and an extensive division of labor in modern societies are built on top of a social "grammar" originally adapted to life in tribal societies. To function, humans construct a social
institutional means to stabilize the conflict between social organization and human psychology by using our moral grammar as a foundation for its social structures would have substantial advantages in competition with societies whose institutions were in strict conflict with our innate moral grammar.

In this sense, our moral psychology is a necessary foundation of functional social institutions. However, this statement should not be taken naïvely: many social structures may be in real conflict with our inner moral psychology. Our moral grammar principles are egalitarian, but history shows that we have lived (and unfortunately still live) in the midst of many hierarchical societies in which inequality is pervasive. Thus, the relationship of adequacy between institutions and moral psychology is quite imperfect: “our social institutions should resemble a well-broken-in pair of badly fitting boots. We can walk quite a ways in the institutions of complex societies, but at least some segments of society hurt for the effort”.117

As a solution to this conflict, the gene-culture coevolution theorists propose three mechanisms that might function as “work-arounds” to stabilize institutions that are in conflict with our innate nature: (i) command backed up by force, (ii) legitimacy through symbolic-based solidarity, and (iii) segmented hierarchies.

1. Command Backed Up by Force

These elements are well known to legal theorists. First of all, command backed up by force, or institutionalized coercion, is a societal solution built on our innate tendency to apply moralistic punishment. In prehistoric hunter-gatherer societies, every individual would be entitled to apply moral sanctions on free-riders and nonconformists and, in extreme cases, the whole community could be assigned the task.118 However, in more complex societies, such as the large empires of antiquity, with inhabitants numbering in the millions119, the power to apply sanctions had to be concentrated in social institutions suited to

world that resembles the one in which our social instincts evolved. At the same time, a large-scale society cannot function unless people are able to behave in ways that are quite different from what they would be in small-scale tribal societies. Labor must be finely divided. Discipline is important, and leaders must have formal power to command obedience. Large societies require routine, peaceful interactions between unrelated strangers. These requirements necessarily conflict with ancient and tribal social instincts, and thus generate emotional conflict, social disruption, and inefficiency.” Id. at 230.

117 Id. at 231.
118 BOEHM, supra note 97 at 172.
119 The Roman Empire, for instance, had a population of at least 60 million people in the 2nd century CE. The entire Greek population was approximately 5 million in the 4th century BCE. Later, in the 13th century, the Mongol empire had a population of more than 100 million. See THOMAS J CRAUGHWELL, THE RISE AND FALL OF THE SECOND LARGEST EMPIRE IN HISTORY 9 (2010).
the job, as a result of specialized processes that enabled the emergence of more efficient societies. Institutions powerful enough to monitor and apply sanctions to punish nonconformists typically are accessible to classes and roles that can subvert this power for their own benefit, leading to institutional free riding over subordinate classes of individuals, such as merchants, craftsmen, and slaves.

Richerson & Boyd suggest that this problem might be solved through social institutions that could “watch the watchmen”. Although they do not explore this theme in more detail, this institutional framework might lead to an equilibrium between rulers and those who are ruled. This type of institutional arrangement is insinuated in early political philosophy. In his Politics, Aristotle argued that a city-state should be organized in such a way that rulers could not use their power for their own benefit but only for the benefit of the common good. Nevertheless, such an institutional equilibrium has rarely been observed in the course of human history. Typically, elites use their power and the military for the explicit purpose of benefitting themselves and imposing their authority over others. With enough military support, it is possible to control nonconformist subordinates through institutional punishment.

This type of militaristic control comes at a cost. The anthropobiological hypothesis discussed thus far assumes that individuals have a strong egalitarian disposition, which leads them not to easily accept subordination. When human history is taken into account, this does not seem an obvious consideration: academic history typically considers a period of time that covers less than the last 10,000 years of human sociality. During this period, our species has lived in strictly hierarchical societies, and it’s understandably difficult to believe that we have an egalitarian impulse. However, this “hierarchical period” of human history is nothing but a small fraction of Homo sapiens social history. When we

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120 TALCOTT PARSONS, TALCOTT PARSONS ON INSTITUTIONS AND SOCIAL EVOLUTION 171 (1982).
121 “However, institutionalized coercion creates roles, classes, and subcultures with the power to turn coercion to their own narrow advantage. Social institutions of some sort must police the police so that they will act in the larger interest. Such policing is never perfect and, in the worst cases, can be very poor. That elites always advantage themselves shows that narrow interests, rooted in individual selfishness, kinship, and, often, the tribal solidarity of the elite, exert their predictable influence.” RICHERSON AND BOYD, supra note 2 at 231.
122 His six-fold classification of constitutional forms is a great example of his reasoning with respect to this issue. The government might be based on one ruler, on a few rulers, or on a multitude of rulers. These kinds of government have a correct form and a deviant form, depending on how the rulers govern their subjects. If the ruler(s) pursue the common good, the government is a correct one – a Kingship, an Aristocracy, or a Polity. However, if it is a corrupt government whose power is used to benefit only a particular group, the constitution becomes corrupted – which would happen in a Tyranny, an Oligarchy or in a Democracy. ARISTOTLE, POLITICS 203-205 (1928).
take into account the last 200,000 (or maybe even 500,000 years, if Boehm is correct), our species has been egalitarian for more than 95% of its natural history.

Even the history of ancient civilizations shows that we aren’t so easily coerced into living in authoritarian hierarchies. The Thracian slave Spartacus commanded a revolt of more than 70,000 gladiators and slaves against Roman authority\(^\text{123}\); the Byzantine Empire faced the population-based Nika riots against the Emperor Justinian\(^\text{124}\); plebeians rebelled against the patricians during the Roman Republic\(^\text{125}\); peasants revolted against nobles, abbots and kings during the Middle Ages\(^\text{126}\), and Italian city-states such as Genoa and Venice\(^\text{127}\) resisted Papal authority in the Medieval period, as did the English nobility.\(^\text{128}\) Although these rebellions didn’t directly modify the structure of the societies in which they occurred, they show a strong human disposition to resist subordination.

2. Hierarchical Segmentation

The relative stability of strict hierarchical societies despite an innate disposition to avoid inequity over the last 10,000 years must be explained. The first element, as already stated, is the specialization of military force controlled by an elite – command backed up by force. However, stable civilizations such as the Roman Republic/Empire, or the Han China, relied on more than just military strength.

The second element that explains this stability is hierarchical segmentation. The human mind is innately ready to live in a world of face-to-face interaction, not in a hugely complex hierarchy-based societal system. The emergence of hierarchies might only be possible in societies that simultaneously respected (i) the psychological need to live in a social world where inequalities must be coped with and (ii) the fact that differences and inequalities exist and sustain the role-differentiation demanded by the social division of labor. Psychological dissonance would destabilize social structures lacking the first

\(^{126}\) Peter Blickle & Cathleen Catt, *4 Peasant Revolts in the German Empire in the Late Middle Ages Social History* 223–239 (1979).


element, and societies without role differentiation could not develop enough complexity to survive when confronted with socially stratified societies.

The solution proposed by Richerson and Boyd aims to achieve both aspirations. Their main thesis is that "top-down control is generally exerted through a segmentary hierarchy that is adapted to preserve nearly egalitarian relationships at the face-to-face level". In this sense, sociocultural evolution selected social structures that were built on a nested hierarchy of classes and roles. Each class was organized as an ancient tribe in which each member had an equal status when compared to its class and whose chiefs would assert their leadership through a negotiated equilibrium with their direct subordinates. The hierarchical chain of command can be organized in such a way that individuals from higher levels interact with lower level leaders. Explicitly authoritarian chiefs attract as much opposition from the upper class as a tribal head might expect to face if he tried to profit from communitarian efforts. Because hierarchy is organized in such a way that each level maintains its own internal egalitarianism – keeping most face-to-face interactions horizontally adjusted – major inequalities are upheld structurally only between different levels of organization. This social arrangement allows for structural inequality and avoids the psychological cost of dissonance.

Societies whose institutional arrangements could best stabilize the social need for strong and centralized power and the psychological demands of egalitarian relationships most likely were more apt to both internally stabilize a highly hierarchical society and enable armies to be organized that consisted of thousands of warriors. The evolution of these societies likely occurred as a consequence of internal hierarchy-making processes coupled with military warfare, which is a common fact in ancient history that most likely acted as a proxy for natural selection. The most efficient societies that adopted hierarchical societal structures relied on our innate moral sense and adopted an efficient social division of labor that allowed for specialization, better economic productivity and military organization.

3. Legitimacy Based on Symbolic-Marker Solidarity

The third element that helps explain the stability of strictly hierarchical societies is legitimacy through symbolic group marking. People accept a subordinate role when they feel that their immediate community is egalitarian, and they can also obey their superiors because of the fear of punishment for violating normative expectations. However, these foundations can be relatively weak if they are the only basis upon which a highly stratified society is settled upon. If differences are so deeply rooted within the social structure, the sense of being part of a fair and egalitarian community vanishes and cooperation can only be maintained through fear and violence.

129 Richerson and Boyd, supra note 2 at 232.
However, our minds are also adapted to expect a linguistic and symbolic world in which different sets of values, norms and beliefs can integrate with innate dispositions and unify local parameters and our universal grammar. As discussed above, much of human sociality derives from indirect reciprocity founded on sharing reputations through linguistic communication and on symbolic cues that show that an individual belongs to a certain group. Some of these symbolic markers are central cultural features of particular societies, in the sense that they convey information about how inequities and differences can be explained in such a way that they might be considered understandable, justified and even fair features of the community.

These norms, beliefs and values are spread through the entire social structure via imitation and other forms of cultural transmission, stabilizing principles and parameters that might be seen at first as highly incompatible, such as egalitarian principles and social structures that admit unequal distribution of resources. In a now famous anthropological experiment, Joseph Henrich et al investigated whether this was the case in actual societies.\textsuperscript{130} If our sociality could be explained only through innate moral principles, we should expect the same behavioral standards in similar situations. Conversely, if our behavior could be explained only through cultural parameters, a large amount of diversity should be expected. We should expect to encounter societies of free riders where nothing would be shared, and societies of human angels that shared everything equally. To check if any of these extremes might actually happen, Henrich et al undertook a large cross-cultural study of how different people behave when playing ultimatum, public good and dictator games. They recruited subjects from 15 small-scale societies and from a variety of environmental, social and economic situations, and found that none of these groups displayed a completely altruistic or egoistic behavior, although they did show different patterns of sharing. They stood somewhere in between, as one might predict using the universal moral grammar hypothesis as a theoretical framework:

These group differences are strikingly large compared to previous cross-cultural work comparing ultimatum-game behavior among university students (Roth et al., 1991). While mean offers in industrial societies are typically close to 44 percent, the mean offers in our sample range from 26 percent to 58 percent. Similarly, while modal offers are consistently 50 percent in industrialized societies, our sample modes vary from 15 percent to 50 percent.\textsuperscript{131}

Additionally, the social psychology literature recognizes a human disposition to rationalize inequalities through ideological explanations. According to System Justification Theory, people tend to believe that their


\textsuperscript{131}Id. at 74-75.
outcomes and social arrangements are fair and legitimate. Members of disadvantaged groups tend to accept their situation by stereotyping themselves as undeserving and accepting responsibility and blame for their unfavorable conditions. In this sense, they internalize inequalities as if they occurred as a result of their own dispositions. Conversely, members of advantaged groups rationalize the status quo as being fair and deserved; they are in a favored position as a result of their dispositions.

When observed from the evolutionary perspective favored so far, System Justification Theory makes sense. First, it must be considered that our egalitarianism is based on a reversal of hierarchies, not on their absence. Life in hierarchical societies is deeply rooted within our moral psychology; egalitarianism based on hierarchical reversal was made possible as a result of power equalization between the chief and the other community members who could oppose to his power. Before egalitarianism had been stabilized within our hominin lineage, our primate ancestors lived in strict hierarchies where lower rank individuals accepted being subordinate. A hypothesis consistent both with this evolutionary account and System Justification Theory would consider the internalization of social inequality as a necessary means to avoid cognitive dissonance and the psychological costs of not accepting the status quo. Thus, even if humans have a strong bias against inequalities, this bias might be triggered only in social situations where subordinate groups have enough power to counterbalance the advantaged groups. Otherwise, our minds rationalize the situation to avoid cognitive dissonance.

Second, System Justification Theory is also compatible with cooperation based on group-identifying symbolic markers and on segmentation and stratification of social groups. On one hand, the diffusion of legitimatizing rules and beliefs through social imitation, which is associated with an innate mind ready for accepting subordination under the right social conditions, leads to the acceptance and rationalization of extreme inequalities. On the other hand, our social psychology is also prepared to address the distinction between in-groups/out-groups. Typically, this distinction works as a proxy to differentiate whom to trust (in-group members) and whom not to trust (out-groups). However, when coupled with other psychological dispositions, such as prestige bias (imitate the more successful individuals), the disposition to differentiate in-groups and out-groups might work as a status quo stabilizing force that would lead to the acceptance of a subordinate role whenever its reversal is not socially feasible, and the psychological need to rationalize and justify its condition through elaborated narratives would lead to accepting a deeply unfair state of affairs in a segmented and highly hierarchical society.

133 Id. at 120.
134 According to Jonathan Haidt: “The human mind is a story processor, not a logic processor. Everyone loves a good story; every culture bathes its children in stories.
It is important to acknowledge that not only psychologists recognize the role of legitimacy in stabilizing social structures. The sociological tradition has debated this issue for a long time. The French sociologist Émile Durkheim, for instance, differentiated between organic and mechanical forms of solidarity as distinct means through which legitimacy could establish itself in any society. Mechanical solidarity structured cooperation in pre-modern societies based on a shared collective identity and on the distinction between insiders and outsiders. A communicative background in which the collective body constitutes one single moral/sacred community can sustain cooperation among the members of a traditional community. In pre-modern societies, there is no sense in distinguishing between law, morals and religion because those elements had not yet been differentiated. However, whenever social structures began to differentiate into functionally unique cultural systems, legitimacy could no longer be structured on the basis of a shared lifeworld.

Durkheim attempts to reconstruct the basis of the legitimacy of complex societies through the concept of organic solidarity. Unlike mechanic solidarity, organic solidarity maintains a fully integrated society without relying on a socially shared moral blueprint. Organic solidarity is founded on the very

Among the most important stories we know are stories about ourselves, and these life narratives are McAdams’s third level of personality. McAdams’s greatest contribution to psychology has been his insistence that psychologists connect their quantitative data (about the two lower levels, which we assess with questionnaires and reaction-time measures) to a more qualitative understanding of the narratives people create to make sense of their lives. These narratives are not necessarily true stories – they are simplified and selective reconstructions of the past, often connected to an idealized vision of the future. But even though life narratives are to some degree post hoc fabrications, they still influence other people’s behaviors, relationships, and mental health”.


137 The functionalist sociological theory advanced by the German sociologist Niklas Luhmann adopts the term ‘social system’ instead of ‘cultural system’ as proposed. Although both terms describe the same sociological phenomenon – systems that reproduce themselves on the basis of their own elements – the existence of complex social behavior in other animal species indicates that reserving the term ‘social’ solely for the description of human social behavior is misguided. As argued above, it is not the fact that we are social that is unique to our species but the fact that we live within a cultural background that evolves through the diffusion and differential selection of memes. Many other animal species are also capable of living in social systems in which individuals must deal with a social understanding of others, at least in a rudimentary sense. All cultural systems are social systems, but many social systems are not cultural.

interdependence of economic and social roles, each of which with a specific function in the social structure. As Philippe Besnard states, the proper functioning of organic solidarity requires the interdependent integration of social roles (objective integration) such that there is a system of relations between them and that individuals become conscious and accept this interdependence (subjective integration). In the same fashion, Talcott Parsons also agreed that the social division of labor was required to enable the emergence of more complex forms of sociality and so that individuals internalized the values and norms required to support the social structure.

Evolutionary, psychological and sociological theories approach the problem of explaining the legitimacy of social structures from quite different and complementary perspectives. An evolutionary approach helps us understand the logic of cooperative behavior among different organizational levels. It also leads to comprehending how our social behavior is caused by biases and heuristics that have been incorporated into our minds during our evolutionary past. Psychological theory provides a strong and plausible link between this naturalistic approach and social theory. On the one hand, the interdisciplinary study of social psychology, ethnology and Darwinian anthropology allows for understanding the evolutionary history of our behavioral dispositions. On the other hand, the interaction between social psychology and sociology can provide the link between our minds and society by helping understand the simultaneous interactions of biological, psychological and sociological factors that can be fully observed by a triangulated theory of human behavior.

System Justification Theory and gene-culture coevolutionary theory are marvelous examples of how multiple levels of theoretical explanation can be integrated into a single naturalistic framework. First, such examples are quite compatible with the evolutionary explanations developed so far. Christopher Boehm’s theory of the reversed hierarchy can explain the evolution of the ambiguous dispositions of humans toward inequality; as primates, we are intrinsically hierarchical and inequity averse. System Justification Theory acknowledges this ambiguity in our behavior by positing that we have a psychological need to solve cognitive dissonance in our social life by either constructing an equal state of affairs or by admitting the status quo. This ambivalence is required both by chimpanzee hierarchic societies and by our social communitarian life; otherwise, the painful psychological stress of being a subordinate would destabilize social organization. The evolution of cultural

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140 PARSONS, *supra* note 120 at 36.

141 And, indeed, there is evidence that subordinate chimpanzees are stressed due to being constantly vulnerable to aggression from higher-in-the-rank bullies. See Vasiliki Michopoulos et al., *Social subordination produces distinct stress-related phenotypes in female rhesus monkeys*, 37 *PSYCHONEUROENDOCRINOLOGY* 1071–1085 (2012). There is also psychological evidence that humans are subject to rank-
systems exploits this ambivalence to fulfill its own needs – working in such a way that it can follow its own structural logic while simultaneously building cultural work-arounds that exploit innate constraints of our minds and finesse our social instincts. Cultural systems that were unavoidably incompatible with the principles that shape our innate moral psychology would not be stable, as moral philosophers such as John Rawls and Jürgen Habermas recognize.

Second, the theoretical framework proposed thus far also links psychological theory with sociology. Cultural systems that might best integrate our psychological need to solve cognitive dissonance toward inequality in social patterns with its structural need of hierarchic and unfair institutions might be more efficient and would likely be more apt to spread its memes in a memetic population.

In this sense, the psychological perspective can help social theory explain how our psychology can cope with huge inequalities and sustain unfair social structures. On the other hand, social theory explains how unequal patterns of social structures can emerge through cultural differentiation of social roles and systems. Isolated, these theories cannot lead to the full understanding of the emergence of legitimation. By relying only on social facts, a strictly sociological approach lacks the understanding of the role of psychological forces that cause individuals to acquiesce to social norms and engage in settled cultural realities. Alone, psychological theory cannot provide a full account of how culturally based beliefs and norms hijack features of our psychology in different cultural backgrounds. Only an integrated and evolutionary theoretical framework can account for the reciprocal interactions between genes, minds, institutions and societies.

related stress. See Lynn R Offermann & Peta S Hellmann, Leadership behavior and subordinate stress: a 360 degrees view, 1 J OCCUP HEALTH PSYCHOL 382–390, 382 (1996) (“Social psychological theory and research in social cognition provide a strong theoretical basis for predictions of differences in perspectives of leaders and subordinates on the issue of subordinate stress. As observers of subordinates, leaders may make fundamental attribution errors (e.g., Fiske & Taylor, 1984) in attributing stress responses to the subordinates themselves rather than to the organizational environment (structural and human) in which the subordinate works. Furthermore, the workings of self-serving biases (e.g., Gioia & Sims, 1985) to promote favorable self-images may inhibit leaders from acknowledging the full impact of their behaviors in producing, maintaining, or failing to take action against the stress experienced by their subordinates. Subordinates, as actors, will likely be far more aware of the impact of the external organizational environment - including the impact of their leaders - on their stress levels. These psychological processes are predicted to be reflected in a consistent pattern of leader underestimation of the relationship of their own behaviors to subordinate stress in comparison with the subordinate perspective”).

142 RICHERSON AND BOYD, supra note 2 at 231.
143 RAWLS, supra note 87 at 429.
144 JÜRGEN HABERMAS, MORAL CONSCIOUSNESS AND COMMUNICATIVE ACTION 16 (1990).
III. CONSTITUTIONALISM AS A CULTURAL ADAPTATION IN FUNCTIONALLY DIFFERENTIATED SOCIETIES

This consilient sociopsychological approach aims to explain much of human sociality observed throughout history. Until the beginning of Modern Era, most civilizations adopted social structures that incorporated the features explored thus far. The three elements posited by Peter Richerson and Robert Boyd are pervasive in human societies. Institutionalization of moralistic punishment using command backed by force, segmented hierarchies organized by ranking internally egalitarian groups, and in-group solidarity established through symbolic marking are features of all complex societies.

A. Modernity, Functional Differentiation and the Disintegration of Homogeneity

Nevertheless, a substantial problem remains for sociological theory. It is an undeniable fact that human historical societies display much more sophisticated social patterns, institutions and structures than ancient and prehistoric societies. However, contemporary societies are quite different from premodern societies. Although both are far more sophisticated than ancient forms of socialization, the social structure of premodern societies is far less differentiated than social structures observed in contemporary constitutional democracies.

In society’s transition to modernity, Niklas Luhmann identifies the construction of the assumptions that led to distinguishing between premodern and contemporary societies. According to Luhmann, premodern societies were subject to three forms of differentiation: (i) segmentary differentiation, which is defined as the equal differentiation of social (cultural) subsystems on the basis of descent and communal living; (ii) center-periphery differentiation, which occurs on the basis of segmentary differentiation and develops as the result of the inequality between a dominant segment with power and wealth (center) and the other segments (periphery); and (iii) stratified differentiation, based on vertical inequality according to rank/status in a hierarchical system, such as the Indian caste system or medieval Europe.\(^{145}\)

According to Luhmann, modernity is the result of replacing medieval European stratified differentiation with functional differentiation between the 16\(^{th}\) and 18\(^{th}\) centuries.\(^{146}\) Stratified differentiation was founded on a strictly hierarchical distinction between the different ranks/statuses; functional differentiation, on the other hand, is based on a simultaneous equal/unequal

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\(^{146}\) *Id.* at 45.
distinction among cultural systems. Society is differentiated through many systems (law, politics, economy, education, morality, religion, etc.), and each is *unequal* because each performs different functions and has different codes, programs, media, structures and elements

147 but these systems are also *equal* in the sense that they are not ranked hierarchically. Law is not more important to societal structure than economy or politics; the difference among social systems results only from performing different functions and is not based on a hierarchy of ranks.

The functional differentiation of society occurred in the dawn of modernity as the result of contingent transformations that with the evolutionary selection of institutions and structures that furthered increasingly differentiated functions. Before modernity, one could not conceive of separate functional systems. Politics, law, morality, medicine and religion were entangled in a single lifeworld, and there were no differentiated systems. Society was conceived of as a system that encompassed all feasible forms of communication – a central concept in systems theory. Communication is held as a combination of three components: information (a selection from a repertoire of possibilities), utterance (the form and reason of communication), and understanding (what the receiver of the utterance holds as the transferred information). Before modernity, communication was performed through a barely undifferentiated background of assumptions. Law was entangled with morality, custom, politics and religion in a broad communicative framework. In this sense, pre-modern legal theory developed over moral foundations: morality, *via* the virtue of justice, was the main feature and aim of legal institutions and was based on a natural law account of institutional legitimacy.

148 The transition to modernity was a process of social functional differentiation. With respect to legal theory, the differentiation between law, morals, religion and politics is of paramount importance. The separation between law, morality and religion through positivity excluded the very possibility of founding law on “the medieval notion of a cosmologically founded, hierarchical architecture, which provided for natural and divine law”.

149 The positivity of law led to the differentiation between law as a social system, on one side, and morality and religion as separate and functionally equivalent social systems that nonetheless performed different functions. Thus, although a moral system can evaluate law as being good/evil

150 and a religious system might evaluate law as being in strict accordance/dissonance with transcendental principles of deity-

147 These terms must be understood within the specific framework of functionalist sociology, which adopts cybernetics and autopoiesis theory as its departure points. Each system reproduces itself according to its own code. For instance, “the code of science is true/false, the code of politics is government/opposition, and the code of law is legal/illegal”.

149 *Id.* at 77.
150 *Id.* at 76-77.
given natural law\textsuperscript{151}, these judgments are not legally binding in modern society, although they would have been in pre-modern times.

The separation of law, morality and religion resulted, at least in part, from religious pluralism. The European wars of religion in the 16\textsuperscript{th} and 17\textsuperscript{th} centuries, which followed the beginning of the Protestant Reformation, resulted from the decoupling of state power and religion. Not only were Protestants and Catholics struggling for control of power and religious dominance, but also royal authority fought for independence against the religious control of secular religious power.\textsuperscript{152} The aftermath of the wars brought a Revolution in political theory. Thomas Hobbes\textsuperscript{153} maintained that peace could not be sustainable unless absolute power was concentrated in the hands of a sovereign. According to Hobbes, religious struggle could only be solved by adopting one uniform religion in the realm. Later, John Locke posited toleration as a political principle by separating politics and religion:

I esteem it above all things necessary to distinguish exactly the business of civil government from that of religion and to settle the just bounds that lie between the one and the other. If this be not done, there can be

\textsuperscript{151} Rudi Laermans & Gert Verschraegen, "The Late Niklas Luhmann" on Religion: An Overview, 48 SOCIAL COMPASS 7–20 (2001).

\textsuperscript{152} According to Harold J. Berman: "(…) the Netherlands, which was subject to the Roman Catholic Spanish Crown, was de facto sharply divided between Roman Catholic and Protestant (chiefly Calvinist) provinces. In Roman Catholic France, following a series of internal religious wars, Henry IV’s Edict of Nantes of 1598 provided protection for (chiefly Calvinist) Huguenots, and in Protestant England under Elizabeth (1558–1603) there was a de facto toleration of moderate forms of Calvinist Puritanism within the Church of England and of private individual Roman Catholic worship services. Nevertheless, the religious situation in both those countries, as in Germany, remained one of great tension, culminating in the seventeenth century in a series of religious wars throughout the continent of Europe that are known collectively as the Thirty Years’ War (1618–1648). In France the persecution of Protestants resumed, culminating in the revocation of the Edict of Nantes in 1685. In England the Crown cracked down on the Puritans, who eventually rose up in a civil war. Closely connected with the religious crisis was a political crisis within each of the major political dominions into which Europe was divided, as well as an international political crisis among them. Within the various polities there was a continual tension between the principle of constitutional monarchy and the principle of absolute monarch. In sixteenth-century Germany the power of the Lutheran prince was limited, on the one hand, by the dictates of Christian conscience, reinforced by pastoral admonition, and, on the other, by the body of high councilors, the Obrigkeit, which was also subject to Christian conscience and which shared the prince’s sovereignty. Protestants in other countries sought to establish similar limitations on the ruler’s power, usually without success. Even in Roman Catholic countries the church came increasingly under royal power and a doctrine of absolute monarchy came to be asserted".

\textsuperscript{153} THOMAS HOBBS, LEVIATHAN (1976).
no end put to the controversies that will be always arising between those that have, or at least pretend to have, on the one side, a concernment for the interest of men’s souls, and, on the other side, a care of the commonwealth.\textsuperscript{154}

Note, however, that the logic of the Letters Concerning Toleration is not an institutional logic at all. Locke appealed to an interpretation of the sacred scriptures to establish a foundation for tolerance; it was a demand from Christian religion, not from a secular institutional framework. For instance, in the very beginning of the text, Locke states, “toleration to be the chief characteristic mark of the true Church. (…) Let anyone have never so true a claim to all these things, yet if he be destitute of charity, meekness, and good-will in general towards all mankind, even to those that are not Christians, he is certainly yet short of being a true Christian himself”.\textsuperscript{155} It is no surprise, then, that he holds that toleration does not apply to atheists.\textsuperscript{156}

Although this seems to be an unjustifiable result of a political doctrine of toleration, Locke’s account of this matter was a huge advance in terms of the philosophical justification of how the government should address the issue of a still incipient religious pluralism. Toleration and the principle of the separation of church and state (developed later in history), were semantic innovations that resulted from the functional differentiation between law, politics, morality and religion, among other systems. Locke turned out to be wrong. Although a specific reading of the Bible might lead to the understanding that toleration was a direct implication of the sacred text, the structural reasons behind it were far deeper than he could conceive of. Toleration and the separation of church and state implied that the very basis of legitimacy in the new regime wasn’t a metaphysical set of beliefs implicitly held as true by the entire social body.

This perspective raises an evolutionary puzzle that can be cast as the psychological paradox of complex societies. If our psychology was shaped by natural and cultural evolution to address a world of symbolic unity in which those who adopted the same sets of values, beliefs and behaviors were held as trustable and as members of the same group, how could it address functionally differentiated societies? Conversely, if these types of societies were so deeply inconsistent with our social psychology, they would not have been stable enough to persist as long as they actually did. Although the new social structure was not legitimized based on the assumption that individuals share the same cultural

\textsuperscript{154} \textsc{John Locke}, A Letter Concerning Toleration 7.
\textsuperscript{155} \textit{Id.} at 3.
\textsuperscript{156} According to Locke: “Lastly, those are not at all to be tolerated who deny the being of a God. Promises, covenants, and oaths, which are the bonds of human society, can have no hold upon an atheist. The taking away of God, though but even in thought, dissolves all; besides also, those that by their atheism undermine and destroy all religion, can have no pretence of religion whereupon to challenge the privilege of a toleration.” \textit{Id.} at 43.
values, it raises the possibility of stabilizing political societies with no moral consensus.

How was this possible? Before trying to answer this question directly, it is necessary to establish the foundations of an interdisciplinary approach that simultaneously takes gene-culture coevolution, anthropology, sociology and legal theory into account.

B. Excursus: Systems Theory as a Theoretical Bridge between Sociology and Psychology

Traditional sociology is not suited for the conciliatory task of unifying these theoretical fields because it assumes naïvely that social facts can only derive from other social facts and that human psychology cannot play any definitive role in explaining human societies. As Émile Durkheim says, "when the individual has been eliminated, society alone remains".157 According to Durkheim, minds cannot impose any constraints on the collective consciousness of a society:

Collective representations, emotions, and tendencies are caused not by certain states of the consciousnesses of individuals but by the conditions in which the social group, in its totality, is placed. Such actions can, of course materialize only if the individual natures are not resistant to them; but these individual natures are merely the indeterminate material that the social factor molds and transforms. Their contribution consists exclusively in very general attitudes, in vague and consequently plastic predispositions that, by themselves, if other agents did not intervene, could not take on the definite and complex forms that characterize social phenomena.158

Of course, Durkheim does not represent the entire sociological tradition. Even during his time, he faced strong opposition from his major rival, Gabriel Tarde, another French sociologist. Tarde accused Durkheim of adopting a scholastic ontology because his assumption that society did not depend on individuals implied that taking individuals out of society would leave everything unchanged – an awkward society whose ontological existence did not depend on individuals within it. Tarde adopted an atomistic path to address this issue: society is no more than the sums of its parts. In his view, social action was caused by the interaction of individuals who imitated beliefs and desires that became internalized by them through learning processes. Sociology was recast as collective psychology, the result of communication of cultural elements that emerged in individual minds (intra-mental psychology) and were transmitted to other individuals through imitation. However, even if he considered that


158 Id. at 105-106.
understanding psychological law was an important part of sociology. Tarde also followed the Durkheimian strict fission between the natural world and culture.159

In its attempt to overcome atomistic and holistic approaches, systems theory attempted to take an alternative route. Its point of departure is the Parsonian theorem of double contingency – the idea that social action is ultimately indeterminate because the action of one individual (ego) depends on the action of the other (alter). An expectation about how alter will behave must occur before ego decides his course of action. Therefore, social action is indeterminate.160 Game theory attempts to solve this problem via the concept of equilibrium, which is achieved when every agent behaves rationally and no better outcome could be rationally expected.161 Talcott Parsons followed a different path: according to Parsons, double contingency can be solved through the assumption of consensus resulting from a shared symbolic system that provides values and normative orientation to guide human action.162 According to Luhmann, this approach is flawed because it assumes an a priori difference between the biological and psychological structures of the subjects of action (alter/ego). This difference, however, cannot be assumed as given because it occurs only as a result of the differentiation within the dynamic action system and not in advance.163

Rather than focusing on the action of specific individuals, systems theory concentrates on communication as a means of overcoming double contingency in a more determined state of affairs. Double contingency means indeterminacy in the sense that no agent can reliably trust in the action of alters. To solve this problem, systems theory assumes a difference between psychic systems (individuals) and social systems.164 Focusing only on what happens within individual psychology is insufficient because no one has direct access to the content of an other’s mind; one mind is a black box to another mind. However, when social action occurs, each agent can trustfully coordinate his actions with the actions of others because they understand the normative

159 Culture is Part of Human Biology: Why the Superorganic Concept Serves the Human Sciences Badly, Culture is Part of Human Biology: Why the Superorganic Concept Serves the Human Sciences Badly, in PROBING HUMAN ORIGINS 1–113, 62 (Morris Goodman & Anne Simon Moffat eds., 2002).
161 ANATOL RAPORT, N-PERSON GAME THEORY 63 (1970).
162 LUHMANN, supra note 160 at 104-105.
163 “Parsons had in mind (in a fairly rough sense) subjects of action, who confront one another with self-determined (not just naturally given) needs, and who depend on one another for the satisfaction of their needs. But this account of the problem leaves its flank open to attack. One would have to ask what these subjects of action (actors, agents) designated as ego and alter really are if what constitutes their ‘organism’ (latter ‘behavioral system’) and ‘personality’ is differentiated only within the action system, and is not given in advance to the system. And one would have to ask how contingency is to be understood if all determinate order emerges only within the problematic of double contingency”.
164 Id. at 108.
expectations toward his behavior and are grounded in shared knowledge that enables the possibility of mutual understanding through communication.\textsuperscript{165}

Luhmann recognizes the necessary role of individual psychology to establish a foundation for the emergence of social systems by stating an important but unfortunately not well-developed hypothesis. According to Luhmann, “Psychic and social systems have evolved together. At any time the one kind of system is the necessary environment of the other. Persons cannot emerge and continue to exist without social systems, nor can social systems without persons”.\textsuperscript{166} This is a true advance compared with the sociology of Durkheim, Tarde and Parsons, who ascribed little importance to the codependence between mind and society.

However, in a certain sense, Luhmann also failed to acknowledge the relevance of underlying psychological processes to the understanding of social evolution. Communication is a process that occurs only in social systems and never inside an individual mind. Psychic systems and social systems operate through different processes: the former links thoughts to thoughts, while the latter links communications. The links between psychic systems and social systems occur through language, as part of a structural coupling that translates thoughts into communications and vice-versa.\textsuperscript{167} However, each of these systems is operationally closed; their internal operations refer only to communications that occur inside each system, and not to operations that occur in its environment, such that psychic systems and social systems constitute part of each other’s environment. In this sense, social systems are held as autopoietic because their development is possible through the reciprocal relations between the intrinsic communications that are selected within the domain of each system and without referring to processes that occur in other systems.\textsuperscript{168}

1. Systems Theory Must be Supplemented with Gene-culture Coevolution Theory

Although systems theory provides a more sophisticated account regarding the relationship between individual psychology and society, it also relies on distinctions that cannot be entirely sustained in light of contemporary biological research. To be fair to his legacy, Luhmann does not hold that social evolution is completely independent of mental processes, but that mental operations can only affect what happens in society through the conversion of thoughts into communications via language, which is the only structural coupling that bridges the gap between minds and social systems. When we take into account the evidence presented in the first sections of this article, his thesis

\textsuperscript{165} Id. at 108.
\textsuperscript{166} Id. at 60.
\textsuperscript{167} K Maurer, Communication and Language in Niklas Luhmann's Systems-Theory, PANDAEMONIUM GERMANICUM (ONLINE) (2010).
\textsuperscript{168} GUNTHER TEUBNER, LAW AS AN AUTOPOIETIC SYSTEM 29-30 (1993).
does not seem to fit well with the theoretical framework of gene-culture coevolutionary theory.

Of course, one might maintain that systems theory might be correct and that gene-culture theorists could be wrong. However, I do not believe that this is the case because the latter theorists offer evidence from different fields – anthropology, ethnology, sociobiology, evolutionary biology, sociology, population genetics, behavioral ecology – in arguing that social structures actually reflect many features of our minds. Alternatively, systems theory relies on autopoiesis, a biological theory that has yet to prove its heuristic value in biology, its original field of research. As Durkheim, Mead, Boas and others did, Luhmann also assumes the separation thesis as *a priori* truth, according to which social processes are almost entirely autonomous vis à vis mental operations.

This proposition does not seem to be true. In fact, the separation thesis cannot be sustained through an *a priori* principle; it must rely on *a posteriori* evidence. And the fact is that empirical evidence is clearly stacked against the separation thesis. As discussed above, human minds have some innate knowledge from the beginning regarding what a society should be. The evidence presented thus far shows that the human mind expects to live in a social world where there are strong ties among genetically related individuals, free riders are punished, reciprocal relations are respected, cooperation is mediated through the identification of in-group members (who deserves to be trusted), and out-groups (who are to be treated suspiciously). We also display a sense of fairness based on inequity aversion and suspicion toward those who try to climb the ladder of social rank to exploit others. Not surprisingly, all human societies display these features to a certain extent. If language were the only means through which the human psychic system related to social systems, this result should not be expected. If social systemic operations were really so independent from mental operations, we should expect far more diversity among societies than we actually have.

One might object to this statement by maintaining that human societies *do display* far more diversity than would be expected if they depended on innate and universal features of our minds. However, that would not be a particularly good response. According to gene-culture co-evolutionary theory, the universal features of our social mind (the principles of our universal moral grammar) are entangled with particular cultural elements of each society. Additionally, this theory allows substantial room for independent sociocultural evolution, which might lead different societies to follow divergent evolutionary trajectories. However, the breadth of diversity that might emerge from the separation thesis would be far greater than what we actually have. We should expect societies in which there would be no punishment for violating social norms, where people cooperated more with out-groups than with their peers, and where individuals would prefer to be treated unfairly than to receive their fair share for their efforts. Notably, there is no evidence about the existence of these types of societies, and if the absence of such evidence is not a definitive proof to support the empirical truth of gene-culture coevolutionary theory, it at least backs the claim that the reproduction of social systems *does* depend on certain innate
features of our psychology.

Of course, it would be naïve to accuse Luhmann to have not seen what he could not have actually seen. The very hypothesis of the universal moral grammar was still being developed in 1998, the year that Luhmann died. Furthermore, much evidence about gene-culture coevolutionary processes have been discovered in the most recent decade. Multilevel selection theory, which lays much of the foundation required for this theoretical framework, has been accepted as a feasible possibility only in recent decades. Neurological evidence regarding the dependence of our moral behavior on specific brain processes was also not uncontroversially available to him.

Even if this does not mean that Luhmann’s theory must be abandoned, it does indicate that it must account for these facts. I propose three main ways in which Luhmannian sociology should be adjusted to be compatible with new scientific knowledge about the relationship between mind and society. It must incorporate the following as major tenets of systems theory: (i) the understanding that minds impose constraints on the evolution of cultural systems; (ii) a microsociological theory of the evolution of culture; and (iii) multilevel selection. Luhmann himself had some intuitions about these themes, as certain isolated discussions in his writings demonstrate. Thus, in some sense, the task is to further develop those intuitions and not debunk his sociological framework, which has significant value for social theory.

2. The Biological Constraints of Cultural Evolution

The first task is to incorporate the fact that minds impose constraints on the evolution of cultural systems. Luhmann himself utilized the concept of constraint to account for the fact that different social systems impose reciprocal limits on the evolutionary possibilities for one another. Whenever a new system is formed, it constructs a boundary between itself and its environment, constraining its own possibilities for further evolution. It gains deepness but loses scope and width. When law differentiates itself from morality, religion and politics, these domains escape the realm of legality, but law itself gains more possibilities for internal evolution and for increasing in its own complexity. As Luhmann states:

On the one hand, reproduction is subject to the conditions for connectivity; it must be able to suit a situation. On the other, it offers possibilities for forming within the system a new system having its own system/environment difference – perhaps a system that will last longer than the initial one. (…) Settled system differentiations stabilize the possibilities for reproduction by constraining conditions on the comprehensibility of communication and the suitability of behavioral modes. But the meaning surpluses that must be produced alongside provide ever further chances for innovative systems formation; in other words, they provide the chance to include new differences and new
constraints and thus to increase the ability to constrain the initial situation via differentiation. Only thus can system complexity increase.\textsuperscript{169}

Here, Luhmann refers to \textit{internal differentiation}, which “connects onto the boundaries of the already-differentiated system and treats the bounded domain as a special environment in which further systems can be formed”.\textsuperscript{170} Internal differentiation occurs when similar systems differentiate within similar ones – as occurs when society differentiates itself into social systems such as law, religion, morality, science, economy, etc. Each system creates a boundary between itself and other social systems, thus limiting its own evolutionary possibilities. They are similar because they reproduce through communication; thus, their differentiation is built onto comparable semantic patterns.

However, there is also \textit{external differentiation}, which happens when systems emerge from different ontological systems. Luhmann distinguishes among three different types of autopoietic systems: living systems, psychic systems, and social systems. Living systems (brains, cells, organisms, etc.) operate upon media that exist in the natural world, such as pressure, temperature, proteins, and other living beings. Psychic systems operate through consciousness, which consists of all thoughts and feelings that have meaning for an individual. Finally, social systems operate by means of communication.\textsuperscript{171}

The distinction between internal and external differentiation processes leads us to ask \textit{how} social systems could emerge from psychic and living systems. This is an evolutionary question that demands the type of explanation sketched out above in the first two sections. However, this response entails enormous consequences for systems theory: it must acknowledge that the very autopoietic logic of social systems \textit{do} depend on psychic processes.

When considering internal differentiation among social systems, Luhmann accepts that different systems impose reciprocal constraints on one another’s evolutionary possibilities. The evolution of law changes the environmental selection dynamics regarding religion, politics, economy and morality, limiting and blindly directing their evolution (and vice-versa). Luhmann also distinguishes between two processes of differentiation: horizontal and hierarchic. When systems are horizontally differentiated, they impose constraints on other systems via the contact between each system’s boundaries. Hierarchical differentiation, on the other hand, imposes another type of constraint, which is akin to a containment process. A system that differentiates itself in two subsystems imposes constraints on each in the sense that the internal logic of each is dependent on the parent system’s logic. When law differentiates itself into legal subsystems (such as trade law, criminal law, or environmental law), each subsystem has both an internal logic that maintains its differentiation,

\textsuperscript{169} \textsc{Luhmann, supra} note 160 at 189.
\textsuperscript{170} Id. at 189.
\textsuperscript{171} \textsc{Michael King \& Chris Thornhill, Niklas Luhmann’s Theory of Politics and Law} 1–273 4 (2003); Niklas Luhmann, \textit{The Autopoiesis of Social Systems}. 
and an abstract and shared logic that identifies them as *legal* subsystems.

The type of constraint that psychic systems impose on social systems is akin to the limits imposed through hierarchical containment. However, while containment implies that a social system and its subsystems share the same means of reproduction – communication – the constraints imposed by psychic systems on social systems are of a different order. As Luhmann says, psychic systems cannot communicate with social systems; the only transitive connection between them can only be established through language, which converts thoughts into communications and vice-versa. Luhmann is correct in positing that language is a structural coupling between psychic systems and social systems. However, this is not the only way that mind and society influence one another. To understand this point, culture and society must be distinguished from one another. As discussed above, conceiving of social systems as ‘social’ is misleading because it undermines the distinction between ‘culture’ and ‘society’. And this is an important distinction because there are many other animal species that engage in social behavior without the emergence of ‘social systems’. Ants, bees and termites live in highly complex societies, vampire bats engage in reciprocal relationships and chimpanzees have a very complex social life in which most of their communitarian behavior is fully regulated through innate dispositions.

In each of these cases, the structural coupling between individual psychology and social reality was mediated not through language but through individual minds. A bee, a vampire bat or a chimpanzee can engage in complex social behavior not because they can create an autonomous and autopoietic system through language but because their minds can solve double contingency by using mental heuristics that enable them to accurately interpret cues from their environment (including their social world). Their social world is *ontologically* constrained by their minds.

By mixing up the concepts of ‘social’ and ‘cultural’, Luhmann could not see this difference. And the same happens in human sociability: our ancestors became cultural beings because the distinction between the social and the cultural domains turned out to be stringent. Our ancestors’ social lives were completely determined by their innate psychological dispositions (their universal moral grammar). Their minds were the structural coupling that enabled a bridge between their biology and the social world – which is pretty much what happens in other animal societies. However, when cumulative culture became a salient adaptation that solved the problem of social life in large groups, the psychic systems must cope with the complexity of culture in a different way. Cultural evolution imposed quicker changes than those seen in social environments previously; our ancestral minds were innately equipped with dispositions to address stable societies, not with rapid change. If a universal moral grammar could bridge the gap between psychic systems and stable social environments, it is a flawed and outdated solution to cope with the increasingly changing cultural world. Language was selected as a useful adaptation to bridge this gap – not between psychic systems and society but between minds and culture.

As Luhmann believed, language is the means through which social
communications link themselves with individual minds and can affect or be affected by them. However, this is only part of the necessary explanatory scheme because this proposition only explains how psychic systems cope with culture while remaining blind to the moral grammar that is necessary for social life. In this sense, it is the interplay between innate mental dispositions and language that fills the gap between biology, culture and society. If the gene-culture coevolutionary hypothesis is correct, our universal moral grammar became sensible to particular aspects of local cultures. Thus, it differentiated itself between a core of universal principles and a multitude of culturally adapted normative assumptions (parameters). Our primate ancestors could rely only on universal principles because their minds did not have to cope with the problem of cultural diversity. In the last 200,000 years, we became capable of living in cultural systems because our minds bridged the gap between an innate psychology and a cultural lifeworld. Universalism/particularism are two codependent and pervasive sides of the same coin in human social experience.

As a result, human psychic systems impose ontological constraints on cultural evolution. First, the structure of human societies must be compatible with the innate social expectations of our minds. Otherwise, psychological distress would lead to social disruption. Even if cultural variants can describe an infinite amount of possible societies, only a small set of these would be compatible with our mental dispositions because of the decoupling between the cultural and the social domains; language can describe an impossible social state of affairs that is not a workable possibility.


The second way in which Luhmannian sociology must be adjusted is related to the dependence of cultural evolution on psychological processes. Cultural evolution relies on psychological dispositions related to language acquisition and cultural transmission. As discussed above, the transmission of cultural variants obeys certain rules that are nested within our psychology, which affects the probability of selecting some cultural traits instead of others. For this reason, we can hypothetically conceive of a society where individuals do not take care of their children or where individuals kill their peers indiscriminately, but we cannot find a single society where this actually happens. These cultural standards would be so incompatible with our innate social predispositions that their diffusion would be highly improbable.

According to Luhmann, social systems are autopoietic, which means that the legal system – as any other social system – is circularly structured. It is self-referential because it can be observed as a system of rules in which each of its elements refer to legal rules to establish its validity. When law differentiated itself from other social systems, its validity became independent of extra-legal features of the world (i.e., natural law or morality). It is also self-productive because it produces its own components. Although political, moral, religious and economic factors affect the production of legal rules, a particular normative
standard does not become a legal rule as a result of the influence of other social systems but because it is produced in accordance with other legal rules (e.g., the legislative procedure) to become part of the legal system.  

Even if Luhmann recognizes that social systems coevolved with psychic systems, the reproduction patterns of law are deemed intrinsic to it and do not depend on any element that is outside of it. This is an odd feature of systems theory because it confronts the entire logic of evolutionary reasoning. When one higher level of reality emerges from a lower one, it remains continuously connected to it through mechanisms that are extrinsic to the higher level. Consider DNA replication as an example. DNA has information embedded regarding how to build an entire organism from scratch. However, DNA cannot replicate itself from scratch unless rare and still barely known conditions such as those that led to the emergence of life are met. Its information is only useful if it can be translated by ribosomes into proteins, and DNA can only reproduce itself because it needs external structures. This process allows the connection of living systems to chemistry, and it depends on structures that are outside DNA, such as ribosomes and tRNA. The entire biological system can be considered autopoietic but only because its reproduction depends on a connection to structures that are outside itself and that have also been selected in an evolutionary process. These structures are part of the autopoietic chain because their existence also depends on DNA, but they are also outside the chain because they are necessary structures to the reproduction of DNA, which is the paradox of autopoiesis.

Luhmannian systems theory can conceive of autopoietic social systems without relying on low-level explanations of how systemic reproduction occurs because it does not pay sufficient attention to the microscopic evolutionary level of cultural replication. Even if it recognizes that mind and society coevolved and that there is a structural coupling between them through language, this link is always treated as a secondary – and ultimately negligible – process in social evolution. In systemic approaches, what matters to understand law is how courts

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172 In this respect, one should think about Herbert L. Hart’s thesis regarding the relationship between primary and secondary rules. Primary rules govern conduct and secondary rules allow for the creation, modification, extinction and adjudication of legal rules – and for the recognition of a specific normative pattern as a legal one. Also, Luhmann refers to self-observation as another feature of autopoietic systems, but the concerns of this article recommend us to focus on self-reference and self-production.


174 Because of this reason, Geoffrey Hodgson and Thorbjørn Knudsen do not think that self-organization theories – such as autopoiesis - are a real alternative to Darwinian evolution. GEOFFREY MARTIN HODGSON & THORBJORN KNUDSEN, DARWIN’S CONJECTURE 52 (2010) (“Self-organization may be necessary to explain the emergence of a number of complex phenomena, such as the formation of new species in nature. But, in the absence of selection, there is little chance of the development of increasingly complex structures”).
apply law, how judges and lawyers argue about law, how congress enacts new statutes that are incorporated into law, and how the Constitution links law with other social systems. Nothing that happens inside the human mind is considered an important part of legal evolution.

Nevertheless, cultural evolution depends on human minds as much as DNA replication relies on structures that are outside itself and that have been naturally selected. To accommodate this point, sociology must incorporate a theory about how cultural evolution actually occurs in the micro level of individual interaction – where the role that mind plays comes to be necessary.

Richerson & Boyd’s approach to cultural evolution offers such a theoretical possibility. Their theory links human psychology and cultural dynamics by acknowledging that culture is not only a holistic feature of human sociality but also a micro-evolutionary process based on the social transmission of information, individual by individual. Culture is retained and evolves in a multilevel process that is related both to biological and cultural fitness. As discussed above, culture is a biological adaptation that helped our ancestors solve many of their environmental and social problems. Memes that made our ancestors so unfit that they could not reproduce themselves would not last for long because their biological substract (humans) would cease to exist. Early societies that adopted memes that favored cooperation would have better odds to survive both culturally and biologically because such memes would simultaneously allow for efficient transmission of culture and for the genetic reproduction of its members.

So, in a sense, culture can be examined as a natural adaptation that can be explained through natural selection processes. However, culture is also affected by the way our mind works. In this sense – and systems theorists would agree with this – our psychology is part of the environment of cultural systems (and vice-versa). The fact that our psychology relies on simple heuristics that shape its way to learn and transmit memes to others is an important element to be considered. Thoughts that are so incompatible with the principles of our universal moral grammar hardly would seem attractive to our minds. As a result, our innate psychology would hardly select them as potential candidates to be transmitted to social systems through language.

That is one of the reasons why features such as parental care, nepotism, reciprocity, free-rider punishing, and inequity aversion – which comprise much of our universal moral grammar – are so pervasive in human societies. Our psychology stochastically selects thoughts that are compatible with these moral assumptions. This happens before they are transmitted to social systems through language. Of course, there is also an influx of information from social systems to our minds, and it is processed through the interplay between the principles and parameters of our universal moral grammar. Culture likely affects the

175 Richerson and Boyd, supra note 2 at 5.
176 This does not mean that I disregard the existence of maladaptive cultural traits. The point is instead that societies where they are widely spread will face the risk of extinction if the reproductive rate falls below the rate of immigrants.
functioning of our moral psychology, but not to the point that the latter is completely molded by the former. Durkheim was plainly wrong: individual nature is not—as he believed—merely the indeterminate material that the social factor molds and transforms. But, to acknowledge this fact, we must look at the microsociological aspects of cultural evolution.

4. Systems Theory Must Take Multilevel Selection Processes into Account

The third way in which systems theory must be reformed is a consequence of the need to take social microdynamics into account. Any evolutionary theory of culture must rely on a multilevel selection procedure if it is to be used to really explain social evolution. In fact, Luhmann himself anticipated this in many ways but did not develop the major consequences of this path of analysis for systems theory. For instance, he acknowledged that psychic systems and social systems coevolved: “Psychic and social systems have evolved together. At any time the one kind of system is the necessary environment of the other”177 and “Both kinds of systems emerge by the path of co-evolution”.178

By acknowledging the coevolution of psychology and social systems, Luhmann suggested a simultaneous evolutionary process between those systems. Nonetheless, mind and culture do not relate among themselves solely on the basis of coevolution. They are also codependent with one another; culture can only replicate by using minds, and our minds are fully adapted to life in a cultural background. In this sense, much of the evolutionary pressures they face are imposed on both systems and demand integrated solutions in both the cultural and psychological systems in the way predicted by gene-culture coevolution theory. The example of the evolution of cooperation discussed above can be understood as such: cultural systems faced an evolutionary pressure that demanded more sophisticated solutions to cope with socially complex environments, and this process also selected minds suited for the task of coping with increasingly elaborated cultural frameworks. However, minds are not infinitely flexible; they impose constraints on how culture evolves, and those cultural systems that better exploit these psychological features for their own behalf are more suitable for evolutionary selection. To fully explain sociocultural evolution, a sociological theory must take into account that these coevolutionary processes are happening simultaneously at each level of analysis: (i) the psychological processes that take place in the preselection of particular memes instead of others before the linguistic output happens; (ii) the cultural processes that further select among those preselected memes and intrinsically drive cultural evolution; and (iii) the rebound effect of the selected memes on the evolution of genes related to our psychology.

This multilevel approach highlights another similarity between

177 LUHMANN, supra note 160 at 59.
178 Id. at 98.
Luhmannian analysis and memetic theory. Although memes depend on the way our minds function, they also explore our psychology for their own benefit; memes that do this better replicate themselves more efficiently and thus will spread more quickly in a particular population.\textsuperscript{179} Some memes, however, replicate better when they are associated with other particular memes. They can group themselves and, as a group, may reproduce themselves more efficiently than if they were alone. This is what Susan Blackmore calls memeplexes or meme-complexes.\textsuperscript{180} In systemic terminology, a meme should be understood as a particle of meaning. A social system might be conceived of as a memplex—a full body of memes that replicate better as a group than individually and that follows its own evolutionary and developmental logic. Communication can be conceived of as memetic replication, i.e., the process through which a meme replicates itself in a memeplex. Here, systems theory can offer much to memetic theory because it better enables the sociological understanding of systemic evolution than memetic theory so far. In Luhmannian terminology, memes could be understood as the smallest particles of communication.

In this sense, both theories complement one another. On the one hand, memetics explain the microevolutionary processes of cultural evolution in a perspective that allows for the interaction between mind and culture; on the other hand, systems theory focuses on macroevolutionary sociological processes that admit enough circularity to integrate with the microsociological processes of cultural evolution.

C. Constitutionalism as an Evolutionary Acquisition

The title of this subsection refers to a paper published by Niklas Luhmann in 1990\textsuperscript{181}. In this article, Luhmann argues that the constitution solved a major problem that had emerged from social differentiation. Before modernity, all societies were based on relatively undifferentiated social systems. Society was a monotonic social scheme in which politics, law, science, morality, religion and economics were part of a continuous flow in the lifeworld. Law was politics, and both were morality, and moral issues were also legal and political issues. Political status granted substantial economic rights to the nobles, and being a priest also granted certain political privileges.

1. Constitutions Provide Stability in Functionally Differentiated Societies

In that societal framework, law was itself entangled with morality, and it

\textsuperscript{179} \textsc{Dawkins, supra} note 11 at 195.
\textsuperscript{180} \textsc{Blackmore, supra} note 52 at 19.
\textsuperscript{181} \textsc{Niklas Luhmann, La Costituzione come Acquisizione Evolutiva, in Il Futuro della Costituzione} 129–166 (Gustavo Zagrebelsky, Pier Paolo Portinaro, & Jörg Luther eds., 1996).
made sense to derive law from natural law, the law inscribed in our hearts that derived from our nature and ultimately from God. However, modernity disrupted this monotonic logic. Slowly and progressively, science differentiated itself from religion, establishing a standard of truth and knowledge independent of religion. Politics and religion also became different regulatory spheres. The Middle Ages saw many struggles between secular power and the Church: English lords barely tolerated papal intervention, and many Italian city-states fought for their autonomy against the Pope from the 11th century onward.

Ultimately, the religious pluralistic framework of the 16th century led to a total disruption involving legal/political authority and religion. In a rare historical appreciation, a usually philosophically abstract John Rawls examines the institutional impact that derived from such an unstable societal framework:

The Reformation had enormous consequences. When an authoritative, salvationist, and expansionist religion like medieval Christianity divides, this inevitably means the appearance within the same society of a rival authoritative and salvationist religion, different in some ways from the original religion from which it split off, but having for a certain period of time many of the same features. Luther and Calvin were as dogmatic and intolerant as the Roman Church had been.

There is a second, if less obvious, contrast with the classical world, this time with regard to philosophy. During the wars of religion people were not in doubt about the nature of the highest good, or the basis of moral obligation in divine law. These things they thought they knew with the certainty of faith, as here their moral theology gave them complete guidance. The problem was rather: How is society even possible between those of different faiths? What can conceivably be the basis of religious toleration? For many there was none, for it meant the acquiescence in heresy about first things and the calamity of religious disunity. Even the earlier proponents of toleration saw the division of Christendom as a disaster, though a disaster that had to be accepted in view of the alternative of unending religious civil war. Thus, the historical origin of political liberalism (and of liberalism more generally) is the Reformation and its aftermath, with the long controversies over religious toleration in the sixteenth and seventeenth centuries. Something like the modern understanding of liberty of conscience and freedom of thought began then. As Hegel saw, pluralism made religious liberty possible, certainly not Luther’s and Calvin’s intention.

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182 JOHN FINNIS, NATURAL LAW AND NATURAL RIGHTS (CLARENDON LAW) 42-48 (2 ed. 2011).
183 BERMAN, supra note 128; CHRIS THORNHILL, A SOCIOLOGY OF CONSTITUTIONS (2011).
184 RAWLS, supra note 3 at 23-24.
From a sociological perspective, the results of this process and other processes that were happening simultaneously in early modernity was functional differentiation. Societal complexity demanded that social systems became differentiated to cope with internal sophistication. The entire process might be understood as the result of cultural selection between societies that could better address complex sociocultural environments. Social structures that remained dependent on an undifferentiated cultural background were erased from the meme-pool, whereas social structures that deepened the differentiation processes while being coupled with the other social (cultural) systems were selected because they provided a more stable framework. Soon enough, the socially fragmented legal, political and economic structure of the Middle Ages could no longer accommodate the demands of modern society for a more stable legal framework that would support a pluralistic society whose economic needs demanded stability and autonomy from religion and morality.

Luhmann’s thesis about constitutionalism precisely describes how this differentiation process occurred from a social (cultural) perspective. He adopts the approach of a sociologist and must describe it from this viewpoint. According to Luhmann, the very selection of the word ‘constitution’ among other possibilities such as ‘fundamental law’, ‘social contract’ or ‘social covenant’ is a fact that must be explained. The concept of constitution wasn’t exactly new in political philosophy, but the meaning of the term went through a profound transformation during the 18th century. Before that, the idea of constitution had been understood in political thought as the body of the political organization, such as in Aristotelian thought or in the medieval and early modern political philosophy use of the word. Other conceptual roots of the term included its usage to describe written laws passed by legislative bodies, such as statutes, decrees and ordinances. These conceptual usages remained separately applied to either the political (the body analogy) or the legal domain (the reference to diverse types of statutes) in different contexts, but only in England did the constitution become simultaneously the supporting principle of both law and politics, and only after the American Revolution – and particularly after Marbury v. Madison in 1803 – did the explicit use of a constitution to check the validity of a particular norm passed by a legislature turn out to be possible.

Instead of a description of the organization of a political body, the new concept of constitution was normative. Aristotle or Machiavelli would not recognize the legal use of the constitution to affirm that a statute was null and void under its terms because their concept of constitution only described how politics was organized. In the classical and medieval worlds, the only way to hold a statute invalid was to sustain its essential injustice due to its incompatibility with natural law. After the constitutional revolutions, the normative evaluation of law became secularized because the entire legal system became autopoietic. Instead of relying on an external foundation (natural law), it

185 LUHMANN, supra note 148 at 405.
186 Id. at 405. TERENCE BALL & JOHN G A POCOCK, CONCEPTUAL CHANGE AND THE CONSTITUTION (1988).
could rely on an internal source of validity – the constitution. The same process occurred in politics: before the development of the modern concept of a constitution, modern political thought relied on the idea of sovereignty, a metaphysical account about the source of a ruler’s power. In the 19th century, the ruler himself became subject to constitutional limits – an idea that began to be developed with the Glorious Revolution in England in 1668-89.187

It is a truism to state that the new concept of constitution limited politics and law. However, Luhmann goes one step further and proposes that the constitution not only limited politics and law but also fostered the generation of new possibilities for both. Law and politics became differentiated cultural systems, but they remained in strict contact with one another through the concept of constitution. Political communications are binding because they can be enforced through legal institutions, and in this sense politics depends on law. Even the internal communication of politics relies on law because elections are regulated by the constitution and political acts by legislative procedures. However, law also depends on politics. Legal change can occur through a court’s rulings, but this process is often slow and conservative. In contemporary societies in which economic and technological changes are increasingly fast-paced, legal innovation mostly occurs through new statutes, decrees and regulations that derive not only from the political bodies but also from executive agencies. In this sense, law’s adherence to societal change depends on its relations with the political system. This codependent relationship is mediated through the constitution, which is the structural coupling that mediates the communication flow between law and politics. As Luhmann states:

As a result [of social differentiation], the ‘state’ eventually emerged as the carrier of the structural coupling between the political system and the legal system – however, only under the special condition that the state was given a constitution which made positive law the instrument of choice for political organization and, at the same time, made constitutional law a legal instrument for the disciplining of politics. This form of coupling by the constitutional state made possible higher degrees of freedom and a remarkable acceleration of the dynamics within both systems, that is, for legal system as well as for the political system.188

In nature, the division of labor is widespread. As Szathmáry & Maynard Smith propose189, the main evolutionary transitions, such as those from prokaryotes to eukaryotes, from unicellular to multicellular organisms, and from chimpanzee sociability to human social life, were accompanied by division of labor. There are many other examples in nature: differential roles between male

188 See LUHMANN, supra note 148 at 404.
189 See THE MAJOR TRANSITIONS IN EVOLUTION (1997).
and female in offspring raising is pervasive and can be observed in hornbills and emperor penguins. Sentinel behavior in group foragers such as suricates and group-hunting among bottlenose dolphins are also important examples of the division of labor in natural environment. Having hearts, lungs and stomachs, i.e., organs that perform different functions, raised the efficiency of living beings, paving the way for increasingly more complex life forms. The division of labor in social frameworks is not only a human feature; it is widespread in nature.

The functional differentiation between law and politics had the same impact on the level of cultural systems as labor division had in societal roles or the impact of organic differentiation for living beings: all enjoyed increased efficiency. This increase in efficiency, in Luhmann’s approach, is what qualifies the constitution as an evolutionary acquisition. It is an adaptation that solves a problem within social systemic evolution, the reaction of social systems to the differentiation between law and politics and the societal need for interaction between these two systems. Rather than relying on a hierarchical approach, systemic differentiation led to the emergence of autopoietic subsystems, which interact in a strictly horizontal (non-hierarchical) relation. The efficiency of these subsystems increased after differentiation because their communication (memetic replication) could be specialized to address political or legal issues. And the constitution turned out to provide the path of communication between these two systems: “(…) an immense increase in mutual irritability can be achieved through constitutions by limiting the corridors of contact – more possibilities are created for the legal system to register political decisions in a legal form, and also more possibilities for the political system to use the law for the implementation of politics”.  

2. Constitutions Provide Psychological Stability in Morally Pluralistic Societies

This is as far as Luhmann’s sociological explanation can go because sociology cannot investigate the consequences of such differentiation for psychic

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194 LUHMANN, supra note 148 at 404.
systems. After all, minds do not participate in the process of communication. Nevertheless, taking a multilevel evolutionary approach allows us to devise other ways in which the constitution can be understood as *even more* than a reaction to the systemic differentiation that provided the structural coupling between law and politics.

As even Luhmann recognizes, there is no systemic privileged point of view to be taken; although the sociologist focuses on observing the internal processes of each cultural system, this is only one methodological option among several. Much can be learned about one system’s operations by observing the way it relates to other cultural systems and to psychic systems as well. In this sense, the following hypothesis must be conceived of as a tentative description of the differentiation process through the lens of human psychic systems.

During the 16th century, the wars of religion ignited a process that disrupted the logic of cooperation as it had been established over 200,000 years. The size of human groups could grow substantially compared with societies of other primates because *Homo sapiens* could rely on symbolic marking as a trustworthy cue to differentiate between friends and enemies. Those who adopted the same symbolic markers (linguistic dialect, rituals, clothes, specific tribal symbols that were used to mark swords, shields and banners, etc.) could be trusted as a member of the same group, and those who adopted different symbolic markers were treated suspiciously. This achievement turned out to be evolutionarily possible because it was built on many psychological dispositions we share with our closest primate relatives – a sense of fairness, a disposition to select with whom to cooperate and to monitor the social behavior of others, and a bias to imitate the cultural traits (memes) adopted by the majority of our group, among others.

Nevertheless, as Rawls advocates, the wars of religion ignited a different prospect for the future: the possibility to live in a society where different symbolic toolkits share the same cultural background as a result of one side effect of functional differentiation – the separation between law, morals, politics, and religion. From the 16th century onward, social life became so complex that it had to find its own evolutionary path to overcome the limits of human innate social psychology. By adopting the suggestion from Peter Richerson & Robert Boyd, we should look for workarounds that make it possible to evolve complex social institutions that at the same time might address differentiation between social systems at the cultural level and with the mental constraints imposed by our minds at the psychic level.

Human psychic systems expect to live in a cultural environment marked by a specific set of values, which became impossible in the aftermath of the religious wars, when Protestants and Catholics were forced to share social life under the same secular institutions based on a Lockean principle of toleration. At first blush, this solution is an unstable equilibrium caused by the perception that neither side could win – a bare modus vivendi.\(^{195}\) The same evolutionary

\(^{195}\) As Rawls states: “This becomes clear once we change our example and include the views of Catholics and Protestants in the sixteenth century. (…) Both faiths held
psychological logic that forces individuals to identify religious equals as friends and religiously different as enemies would be at work; they would barely tolerate one another, and would recognize the opposite side as someone who had the same political status only as a result of forced imposition.  

The first legislation that imposed tolerance did not even allow for much religious tolerance: for instance, the English “Toleration Act” of 1689 did not grant rights to Roman Catholics, but only suspended the penalties imposed on Protestant dissenters from the Anglican church that had been condemned under the grounds of heresy.

The first generations of Catholics and Protestants living in a background of modus vivendi toleration would feel as being in a truce, but the following generations would be used to life in a pluralistic background. Their minds would have never lived in a social environment where religious dissenters were real enemies that in fact posed a threat to one another on the grounds of religion. The toleration laws would impose an institutional restriction to punishment of heretics and this state of affairs would mean, from the perspective of individual psychology, that heretics aren’t to be punished for this reason alone. Their minds would be faced with some cognitive dissonance as a result, for they would know that heretics should be punished for not accepting the right symbolic makers (religious beliefs) but would simultaneously know that they could not be punished – a consequence of the new toleration laws. Many psychological biases would conflict in attempting to find a solution for this state of affairs. The disposition to recognize non-members as enemies would be triggered, but simultaneously the conformist bias and the disposition to avoid punishment would consider that others accepted the political decision on toleration and that disobedience might lead to legal punishment.

How could this cognitive dissonance be resolved? Our innate moral psychology reproduces in itself the distinction between moral and immoral to respond adequately to social situations. In our evolutionary past, it had to identify group members as friends and outsiders as enemies as a reliable solution to cope with double contingency. After the toleration laws, the moral/religious frontier between friends and enemies became fuzzy and the stability of the new state of affairs depended on establishing new distinctions because cooperation can only emerge when agents discriminate between altruists and free-riders.

A new distinction that was suggested by John Rawls in his Political Liberalism appears to have been paramount to solve this fuzziness and that it was the duty of the ruler to uphold the true religion and to repress the spread of heresy and false doctrine. In such a case the acceptance of the principle of toleration would indeed be a mere modus vivendi, because if either faith becomes dominant, the principle of toleration would no other be followed”.

198 Rawls, supra note 3.
psychological dissonance. According to Rawls, toleration among religions became feasible because the basic structure of a democratic society adopted a hierarchical priority of right over the good. Questions about fairness, law and politics (the domain of right) must have precedence over ethical and religious concerns (the domain of good) in a pluralistic framework.\textsuperscript{199} Note that his approach is fundamentally different than that adopted by Luhmann, who maintains that the functional differentiation among social systems is not hierarchical but heterarchic. No social system has priority over any other. However, what would seem to be an intrinsic difference between Luhmann and Rawls turns out to be a distinction caused by the different viewpoints their theories assume. Luhmann’s sociology observes social differentiation from the perspective of a social theorist, not from the perspective of an individual who tries to hold all his beliefs adjustable to avoid dissonance. If individuals believed that law and morality/religion had the same relevance, the struggle between morality/religion and the law would destabilize social arrangements because the fuzziness would persist and the individual would lose normative guidance for his behavior. However, the Rawlsian original position argument takes the perspective of the individual from the beginning because his original position argument starts from the individual approach, and it is useful to understand how individuals could cope by relying on the distinction between law and morality. The Rawlsian priority of the right is also useful because it acknowledges what happens from the perspective of legal and political institutions. Having to cope with society’s entire social order (and not only with the allegiance of some members), institutions must also rely on the priority of law over religion and morality; otherwise, legal institutions would have no epistemological means of imposing the rule of law over religious authorities.

At first, this distinction was founded on the basis of a mere modus vivendi that was based on a compromise between enemies and on the fear of punishment for disobeying the law. Nonetheless, as the younger generations began to live their entire lives with a political background in which pluralism was the normal state of affairs, the source of the distinction between friends and enemies required to sustain cooperation came to be informed by a legal perspective – not by morality or religion. If the analogy between linguistic and moral reasoning stated by John Mikhail is right, this result should be expected. In \textit{The Language Instinct}, Steven Pinker shows how the linguist Derek Bickerton demonstrated that an entire language could be built from scratch in only two or three generations. In the 18\textsuperscript{th} century plantations, farmers deliberately mixed up slaves from different linguistic backgrounds. They could not communicate very well among themselves, but had to communicate to carry out practical tasks. As a result, they developed pidgin, a poorly articulated mixture of elements from different languages. The first generation slaves could only develop a simple dialect, but their children, exposed to pidgin at a much younger age, would create an entirely new and grammatically sophisticated language from much simpler linguistic elements. Their innate moral grammar principles coupled with

\textsuperscript{199} \textit{Id.} at 173-211.
the parameters set by pidgin to produce a fully structured language.200

A similar process might have happened in the normative domain. Cultural systems can build workarounds that simultaneously establish new possibilities that sustain further complexity at the social level and continue coupling with psychic systems. The offspring of those who first lived under the rule of toleration laws would accommodate pluralism from a young age; therefore, their minds lived in a religiously pluralist and (relatively) peaceful social background in which pluralism was pretty much common. Their inner moral grammar would face that state of affairs and avoid cognitive dissonance by organizing it in an easier and more structured way to cope with. From the standpoint of mind, the priority of right means that both the distinction between friends/enemies and the source of the main normative and symbolic loyalties is law, i.e., not religion and not morality. This statement does not mean that every single individual will obey the law or that religion has no place in contemporary constitutional democracies because the proposed hypothesis assumes that law is held as the source of compulsory normativity by a number of individuals who transcend a statistical threshold required to affirm a state of affairs as legitimate. Additionally, both morality and religion became a matter of individual consciousness in modernity; after the separation of church and state, religion lost its relevance as a privileged standpoint from which to explain the normative world.201

Constitutionalism emerged as the result of this process. The concept of constitutionalism adopted here is broad and assumes a functional prospect that encompasses the principles of popular sovereignty, a declaration of rights, universal principles, limited government and the constitution as supreme law.202 This institutional outlook provided not only a normative bridge between the social systems of politics and law, as Luhmann argues but also the normative basis that granted an internal connection between the system of law and morality from the perspective of cultural systems. Notably, this outlook also allowed the human mind to organize the social environment as psychologically expected, which provided stability to the new institutional background. From the viewpoint of psychic systems, a constitution grants (i) a widely accepted source of symbolic markers that entails a sense of bounded collective identity, (ii) a reliable criterion to distinguish between in-group members and outsiders and (iii) normative principles highly compatible with the innate principles of the universal moral grammar.

200 PINKER, supra note 85 at 32-33.
202 Dippel, supra note 187 at 155; Michel Rosenfeld, Modern Constitucionalism as Interplay Between Identity and Diversity, in CONSTITUTIONALISM, IDENTITY, DIFFERENCE, AND LEGITIMACY: THEORETICAL PERSPECTIVES, 3 (1994).
3. Constitutions Replace Religion and Morality as a Source of Normative Validity

Constitutionalism replaced religion and morality (in the form of natural law) as the central source of normativity by capturing the function as a symbolic marker from which all legal norms derive. In a very specific sense, it would not be wrong to assume that theological and constitutional rationalities are strikingly similar. As Ran Hirschl correctly assumes, both religions and constitutional regimes share many features\(^{203}\). They are held as apolitical symbols based on *sacred* texts, such as the Bible, in a Christian lifeworld, or the constitution, in a secular democratic regime. Both are tied to elevated and highly idealized moral commitments, such as the constitutional principles of religious toleration, equality and liberty, or the cardinal virtues proposed by most religions\(^{204}\). Thus, constitutionalism can be understood as a national civil religion that functions as a new source of normativity and identity by establishing a sense of bounded collectiveness.\(^{205}\) The constitution becomes the focus of political life in a pluralistic society – a phenomenon described by Rawls as an *overlapping consensus*\(^{206}\) and by Habermas as *constitutional patriotism*\(^{207}\).

Constitutionalism also enabled more complexity in other organizational domains by providing an institutional framework in which power is diluted both vertically through federal/local adjustments and horizontally via the separation of powers. The federal arrangements can also be deemed to be cultural workarounds to overcome psychological limitations because they keep the size of the immediate communities in which any individual can take part as small as possible, thus respecting the cognitive capacities of each individual (such as Dunbar’s number). Simultaneously, they enable each individual to participate in all hierarchical spheres of power through elections. In this sense, the first federal arrangements might be understood as initial ‘glocal’ experiments that institutionalized both a national/global identity and local (states/municipalities) partial identities\(^{208}\) that further institutionalized at the local level the principles established by the federal constitution.\(^{209}\)


\(^{204}\) Writing about the importance of constitutionalism to national identity, Hirschl refers to Max Lerner’s description of the constitution as an American fetish and to Jaroslav Pelikan’s suggestion that the American constitution filled a gap left by the exclusion of religion from the public sphere.


\(^{206}\) Rawls, *supra* note 3 at 193.

\(^{207}\) Habermas, *supra* note 136 at 500.


\(^{209}\) The appropriation of the ‘glocal’ concept has not been strictly as proposed by Giacomo Marramao. According to him, global principles such as human rights are settled and institutionalized in different local realities. In the appropriated usage, I refer to global both in the sense of a national background (in the case of constitutionalism) and of a globalized framework (in the case of human rights).
4. Constitutionalism Potentially Disrupts the Friend/Enemy Distinction through the Adoption of an Inclusive Logic

The second way in which constitutionalism relates to psychic systems is that it establishes criteria to distinguish between in-group members and outsiders. As outlined above, this distinction is required to induce and maintain the flow of cooperation in large communities of genetically unrelated individuals. Otherwise, the epistemic costs of monitoring social behavior to identify and punish cheaters would be so high that life in large societies would not be evolutionarily stable. Religiously closed communities solved this problem because the distinction between friends and enemies was based on devotion and heresy. Cooperation in these communities is targeted at devotees, and heretics suffer moralistic punishment for not accepting the majoritarian beliefs.

In a constitutional and pluralist society, the social identity of individuals is not attributed to persons on the grounds of beliefs or personal values but on the assumption that “all men are created equal” and are endowed with “unalienable rights”, as the American Declaration of Independence (1776) asserts. In the same fashion, the French Declaration of the Rights of Man and of the Citizen (1789) affirms that all “men are born and remain free and equal in rights”. At first blush, the attribution of rights was much more restrictive than this abstract statement should mean: women, blacks, children, indigents, natives, religious minorities and many other classes of persons had almost no rights pursuant to such bold statements. Nevertheless, the abstractness of the declarations of rights brought up the possibility of discussing to whom constitutional rights should be applicable. By not relying on strong metaphysical assumptions, the acquisition of rights became a strictly political issue and, by means of wars, protests, strikes and other political movements, many classes of individuals came to defy traditional customs and obtain the status of equal citizen. The legal historian Lynn Hunt posits that the expansion of rights of minorities was a consequence of the abstractness of the declaration of rights:

(…) the supposedly metaphysical nature of the Declaration of the Rights of Man and Citizen proved to be a very positive asset. Precisely because it left aside any question of specifics, the July–August 1789 discussion of general principles helped set in motion ways of thinking that eventually fostered more radical interpretations of the specifics required. The declaration was designed to articulate the universal rights of humanity and the general political rights of the French nation and its citizens. It offered no specific qualifications for active participation. The institution of a government required movement from the general to the specific; as soon as elections were set up, the definition of qualifications for voting and holding office became urgent. The virtue of beginning with the general became apparent once the
specific came into question.210

In the same fashion, Steven Pinker sustains that “the statement ‘We hold these truths to be self-evident, that all men are created equal,’ however hypocritical at the time, was a built-in rightswidener that could be invoked to end slavery four score and seven years later and other forms of racial coercion a century after that.”211 Because it was abstract, this attribution of rights allowed for the discussion about who are their legitimate bearers and opened the door for a new possibility: that every single human being might be considered a bearer of constitutional rights/human rights. From the perspective of psychic systems, this means that, in principle, no person should be regarded as an enemy unless they pose a real threat or violated the rights of others. This was a major evolutionary achievement, not only from a cultural perspective but also from a biological one: for the first time, every human being could be considered a friend, a member of the group, unless he/she refused to obey the rule of law. Valid punishment of free riders is permitted on the grounds of legal violation, not as the result of being part of a particular religious/moral/ethnic group.

Of course, this description is just an idealized approach to a rather obtuse historical background. Although the advent of constitutionalism enabled group-openness and pluralism, we should keep in mind that constitutionalism is an artificial construct. Psychic systems evolved in simpler social environments in which their attachment to moral/religious standards was stronger than the current attachment to the constitution. As Rawls observes, religions are deep.212 They define every aspect of a citizen’s life, such as a dress code, food restrictions, moral and sexual behavior, and their ultimate conception of the good. In a pluralist society, on the other hand, democratic constitutions are narrow; they cannot determine every aspect of a citizen’s life, or they would otherwise impose a particular conception of the good on the citizens. Instead, democratic constitutions must focus on very specific issues, such as the structure of the government and the political process and the basic rights that legislatures must respect.213 The stability of the system is created, in Rawls’s statement, by coupling constitutional principles with comprehensive doctrines through the overlapping consensus, a situation in which the legitimacy of the political order is granted because each religious/philosophical doctrine adjusts itself to accept the constitutional regime. This adjustment demands substantial tolerance from comprehensive doctrines, and in many real societies it cannot happen easily. The friend/enemy distinction is psychologically much stronger in the deeper comprehensive doctrines than in narrow political constitutionalism, and the dissonance between religious and political commandments can lead to many struggles and can pose a real threat to the stability of democratic institutions.

The success of democratic regimes depends on their efficacy in

210 LYNN HUNT, INVENTING HUMAN RIGHTS: A HISTORY 1735 (Kindle ed. ed. 2008).
212 RAWLS, supra note 3 at 19.
213 Id. at 227.
institutionalizing the distinction between the right and the good. At least in a certain sense, the failure to maintain this contrast is at the root of the tragic ascent of the Nazi party in Germany. The political theory of Carl Schmitt is a strikingly crude example of this, for he criticized liberalism precisely because it led to a pluralistic state of affairs in which the State was subject to the will of dissenting groups. Pluralism should not be tolerated because it corrupted the political element of the Weimar Constitution by blocking the construction of a homogeneous political will. Homogeneity, in his view, demanded a political decision regarding who are friends and who are enemies and who are those who oppose the political order that should be eradicated.

Nazi ideology could be understood as a comprehensive doctrine in Rawlsian terms. It was based on a full account of who were to be held as friends and enemies, and it demanded from in-group members an almost religious loyalty to Nazi symbols and rituals and complete submission to the values of the collective identity. The degradation of the German economy coupled with the unstable social environment after World War I paved the way for popular support of the Nazi party.

Not accepting the hierarchic distinction between the right and the good, German constitutional theory lacked the theoretical framework necessary to contain the ideological rise of Nazism and its diffusion through democratic institutions. Although not as radical as Schmitt, other Weimar Republic public law theorists such as Smend, Kaufmann and Heller feared pluralism and posited that unity, homogeneity and integration were the paramount aims of politics and law. Of course, there was opposition to this reasoning: Hans Kelsen, e.g.,

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218 In this sense, see the account from Arthur J. Jacobson and Bernhard Schlink on this theme: “Integration, the key concept in Smend’s theory of the state and constitution, is not a given, not something created in and of itself or signed and sealed by a social contract or constituted by a constitution once and for all; it is a process, constantly renewed, to be newly formed and experienced. The state ‘is there only in this process of constant renewal.’ It can therefore also succeed or fail, depending on whether the process— which Smend sought to grasp and describe in its various cultural and attitudinal, political and legal aspects—succeeds or fails. For Heller, too, state unity is something that must be established and maintained and that can fail. But where Smend relies on culture, values, and meaning, and their common spiritual experience to establish and maintain unity, Heller recognizes the importance of economic and social conditions, state organization and state procedure. Propagating a realist approach against Smend’s idealist one, Heller confronts the state as a unity of culture, values, and p.437: meaning, with the state as a unity through action and decision [Wirkungs und Entscheidungseinheit], where unity must be achieved through organization and procedure and enforced in decisions. It is not
supported democratic institutions and considered that democracy should embody value relativism and decide controversial issues on the procedural foundations of the majoritarian rule because the validity of law could not be based on prepositive values or norms. Nevertheless, Hitler successfully appropriated Schmitt’s ideals and his proposal that the Führer, as an incarnation of the people’s unity, was the only legitimate official to affirm autonomously who are friends and who are enemies.

The acceptance of the distinction between the right and the good is highly contextual and highlights the difficulties of handling the delicate equilibrium between institutions and political culture. Without a cultural background fostering tolerance and autonomy, institutions can interpret the friend/enemy distinction based on intolerant comprehensive doctrines that more easily trigger emotional responses on psychic systems. For most of our evolutionary history, minds coped with pluralism in a totalitarian fashion by treating as enemies those who held different beliefs than those held by the majority.

Even a strong democratic and constitutional tradition can stumble when confronted with the psychological panic posed by a threatening enemy, which weakens the distinction between the right and the good. Episodes such as the American institutional reaction to the terrorist events of 9/11, such as the approval of the Patriot Act few weeks after the attacks, or French intolerance with respect to the religious practices of Muslim communities, can be read under this theoretical framework. In times like these, the friend/enemy distinction loses its constitutional foundation and establishes itself on values derived from majoritarian underlying comprehensive doctrines. To maintain the priority of the right over conceptions of the good, democratic institutions must root their principles in the minds of citizens through education and public political practice; otherwise, the risk of a political takeover from majoritarian comprehensive doctrines is real and credible.

5. Constitutionalism is Grounded on Normative Principles Highly Compatible with the Universal Moral Grammar hypothesis

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enough for Heller that the state’s unity through action and decision is effective. For him, unity must be created and maintained—unlike Smend’s integration, at least as it is commonly understood—not merely in being effective, but in conforming to ethical standards that should arise from and correlate with a society’s ethical practices. Heller did not elaborate on how conformity would come to pass. Nevertheless, the possibility of achieving conformity linked his political activity as a Social Democrat and champion of the Weimar Republic with his scholarly work”.

219 Id. at 73.
220 Maia, supra note 214 at 235.
The third and last way in which constitutionalism relates to psychic systems is that its normative principles are highly compatible with universal moral grammar’s innate principles. Constitutionalism not only fits with moral psychology regarding its institutionalization of symbolic markers that establish a highly abstract sense of identity and a highly inclusive friend/enemy distinction but also is suited to our innate sense of fairness based on reciprocal altruism and reversed-hierarchy egalitarianism.

The logic of fundamental rights is highly reciprocal. Citizens in constitutional democracies are held as equals in rights and can invoke legal institutions to protect them against perpetrators of actions violating such rights. The legal description of a rights violation might be translated into a game-theoretic approach as indirect reciprocity. Constitutional symbolic markers settle rights-based criteria to distinguish between altruists (friends, or those who have rights) and free riders (enemies, those who violate the rights of others or who do not have any rights at all). By attributing competencies to various legal authorities, constitutions also assign the institutions responsible for monitoring social behavior. From the standpoint of reciprocal altruism logic, this indicates that legitimate constitutions establish the institutions that, from its perspective, perform the function of moral communities that punish free riders.

Certainly, stratified social structures in the Middle Ages or in Antiquity had institutions that performed the same function. Nevertheless, they were highly unstable because their legitimacy was structured over an imbalanced strength between different social strata. Cooperation requires both legitimacy and punishment, and stratified societies face the challenge of keeping themselves stable even on a highly unequal social structure. Much of the social stability was provided by punishment directed to lower strata, which lacked enough power and organizational strength to counter this state of affairs, and its legitimacy depended on how lower strata could avoid cognitive dissonance and justify the state of affairs on the grounds of religion and morality.

Constitutionalism, on the other hand, is highly congruent with reversed-hierarchy egalitarianism, which is another feature of our moral psychology. In fact, it might be considered the first social arrangement in human history that structured complex institutions around this psychological trait after the egalitarian tribes of the Pleistocene. There are remarkable similarities between the ways constitutionalism and pre-historical tribes addressed the issue of power distribution. As Boehm’s research demonstrates, ancient hunter-gatherer communities were structured over inverted hierarchies in which the tribal chief is strictly subject to the moral community. His strength is under critical scrutiny

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222 It is important to note that the meaning of ‘principle’ in the expressions ‘normative principles’ and ‘universal moral grammar innate principles’ is not the same. In the former, it refers to deontological standards of reasoning, whereas, in the latter, it means the universal moral categories embedded in human innate mind.

of the tribe, and any attempt to impose his will on others may be punished with a broad range of moral sanctions, including ostracism and assassination. The autonomy of each tribal member against the chief is warranted by the entire community as a result of a psychological disposition to revolt against the improper use of political power.

In the same fashion, constitutionalism is based on a suspicion of the political abuse of power. Separation of powers, attribution of legal competences to different authorities, distribution of attributions among a federated framework, judicial review and fundamental rights are institutions that protect different spheres of autonomy. The very origins of constitutionalism are related to this issue, as the history of the famous constitutional revolutions demonstrate. The American Revolution originated from colonial dissent against the high taxes imposed by the British Crown and resulted in the promulgation of the United States Constitution (1787) 11 years after the Declaration of Independence (1776). Alternatively, the French Revolution resulted from the revolt against nobility and clergy on the grounds of intense inequity of resource distribution and imbalance of power between the three estates. Even the earlier Glorious Revolution (1688) can be understood under this theoretical framework because it also led to institutional changes that resulted in strict control of royal power by Parliament. Different issues were at stake in each case, but each resulted in imposing restrictions on political authority.

However, the parallels between Pleistocene egalitarian communities and constitutional democracies can lead to a superficial conclusion that must be avoided. At first, it would appear that the same underlying causes are behind both social processes, but this is not the case. On one hand, the egalitarian revolution of the Pleistocene occurred mostly as a result of clashes among the members of a tribe and its chief and cannot be described as a cultural revolution because the social tribal structures did not change with the deposal of the chief consequence; on the contrary, social structures remained relatively intact when tribal leaders were replaced. Obviously, in the long run, the constant monitoring of bullies by the entire tribe had an important impact on the evolution of the reversed-hierarchy bias, but it likely was a slow social process that took hundreds of generations to stabilize into new types of society. Such a slow process can hardly be called revolutionary – at most, it should be called a (r)evolutionary process.

For its part, constitutionalism is a cultural and a social phenomenon and is much more complex because constitutionalism limits power by establishing separate sets of distinctions, both hierarchically (right–good or law–religion/morality; federal–state–municipality; and citizen–state) and horizontally (law–politics or legislative–executive–judiciary). Conversely, reversed hierarchy (r)evolution occurred on the domains of the social and of the psychic systems, and it granted autonomy to the psychic systems against other psychic systems – and not against the entire tribal community – because no individual could revolt

224 Notice that, unlike Luhmann, the terminology adopted does not accept the identity between the social and the cultural domains. See supra footnote n. 138.
against its communitarian ancestral practices. Constitutionalism is a cultural systemic bridge that grants autonomy to both the psychic and cultural systems by providing institutional firewalls that protect their autopoietic operations. It not only assures us that individuals have the right to believe in a particular faith (psychic autonomy is granted via individual rights) but also protects religions against political intervention (separation of church and state), protects politics against scientific colonization (political freedom of speech), protects science against religious imperialism (scientific autonomy), etc.

The relationship between constitutionalism and the reversed-hierarchy psychology is subtler and is related to the problem of stability. To be stable, social institutions must be compatible with our social psychology or build workarounds to neutralize possible events leading to cognitive dissonance. Constitutional ideology of power contention and individual autonomy is remarkably sound to capture biases related to reversed-hierarchy psychology. The promises of equality and freedom may resonate in our minds and trigger dispositions related to inequity aversion and suspicion of power abuse, particularly in the political environment of the 18th century, in which demands for autonomy and equality were salient. Unlike the political ideologies that justified stratified social structures, the political ideas of liberalism and constitutionalism were appealing to these psychological biases because they offered psychological relief against inequality and a political path to overcome it.

Furthermore, constitutionalism provides stability not only on the psychological level; as a multilevel evolutionary approach should observe, constitutionalism also enhances stability at the level of the political system. Before constitutional democracies became a historical possibility, political change was not exactly easy. Dissent was to be hidden from political life through obscure means protected as *arcana imperii*, or otherwise it should be channeled through violent means that resembled how that tribal chiefs were deposed in ancient communities. Constitutional democracies enabled the construction of dissent without political rupture by reinforcing the government/opposition distinction in the domain of politics. Regular elections for public offices grant that dissent can be absorbed in the political processes – at least in principle.

In sum, constitutionalism became such a widespread phenomenon because its main tenets provide a stable legal framework that not only protects differentiation among different cultural systems but also grants autonomy at the level of functional groups (religious groups, workers unions, political associations, etc.), roles and individuals. By coupling itself with psychic systems and by adopting distinctions that could easily be adjusted to normative premises of our innate psychology, the ideological memes of constitutionalism might spread quickly throughout the world – and have, in fact – because even political systems that could hardly be recognized as constitutional democracies embrace its rhetoric.
CONCLUSION

In an influential paper regarding the implications of evolutionary thinking to legal regulation, Brian Leiter and Michael Weisberg argued that “as the science stands today, evolutionary biology offers nothing to law” and that “only systematic misrepresentations or lack of understanding of the relevant biology, together with far-reaching analytical and philosophical confusions, have led anyone to think otherwise”. They ask rhetorically whether one should expect “law and evolutionary biology” to “have the lasting power and impact of, say, law and economics, or will it go the way of deconstructionism and Critical Legal Studies (CLS), both of which faded from the scene in roughly a decade or less?” And their answer is sharp: “the ‘law and evolutionary biology’ fad should have a shelf life at least as short as deconstruction’s”. Evolutionary psychology has delivered no consistent and unequivocally confirmed results thus far – the argument goes – and institutions do not require a complete understanding of human behavior to regulate successfully. Leiter and Weisberg also dismiss the pursuit of consilience between social and natural sciences as an epistemological ideal.

However, the consistency of any legal theory should not be evaluated for the sake of its success in being used by the community of judges and lawyers. Neither CLS nor deconstructionism aimed to provide a new foundation for legal practice, but both led us to deeper understandings of the law and of many of law’s unspoken premises. Similarly, taking evolutionary biology into account when analyzing the law can enlighten the way in which we see many features that were previously hidden. Evolutionary psychology seems to have delivered no consistent and unequivocally confirmed results – as Leiter and Weisberg argue – it has the merit of at least having successfully noted the demise of the rationality assumptions upon which most of law and economics theory relies on. We human beings are not so rational as rational choice theories assume. The psychological biases involved in our reasoning affect us all the way down to how we behave, how we interpret the law and how we judge the behavior of others.

It is true that evolutionary psychology and the other biological sciences have not yet unequivocally explained the many aspects of our complex social behavior. However, they have the merit to have shown that social scientists – and legal theorists among them – must think about the consequences of not taking into account the evolved aspects of our psychology that affect rationality and the way humans behave. Although in a still underdeveloped ongoing research program, its premises are already being tested within the domain of legal practice. There is evidence regarding the influence of psychological biases

225 Brian Leiter & Michael Weisberg, Why Evolutionary Biology Is (So Far) Irrelevant To Legal Regulation, 29 LAW AND PHILOS 31–74, 35 (2009).
226 Id. at 33-34.
227 Id. at 54-62.
in how judges think and about how our predisposition to behave according to law and morality is affected by the proper functioning of our brain because lesions and tumors can induce us to behave in antisocial ways.

These findings are important for law because they call into question many factors that had been overlooked by legal theory and that impact the normal functioning of legal institutions. That a judge’s impartiality can be affected by something as naïve as a dice number or that even experienced magistrates can be influenced by extraneous factors such as fatigue and hunger is something that must be taken into account by legal theory. None of these studies could have been developed without relying on the assumption that psychological and biological factors play an important role in legal practice.

Furthermore, taking an interdisciplinary perspective leads to a better understanding of how legal institutions evolve over time and remain deeply rooted in human nature. Even if there is much to be learned about human psychology, it is simply not an option to wait before incorporating the knowledge we currently have into legal theory; otherwise, institutions will continue to rely on assumptions and models that have been proven false, such as the rational actor model assumed by the economic analysis of law. By taking into account the knowledge accumulated by scientific fields as diverse as social and evolutionary psychology, Darwinian anthropology, and neuroscience, among others, scholars can develop better legal theories because they will be relying on more accurate models of human social behavior.

Obviously, the hypotheses generated by this evolutionary paradigm can only embody a tentative project that follows, accordingly, a Popperian approach to scientific thought. Brian Leiter argues that this is a failure that characterizes any attempt to apply evolutionary thinking to legal thought, but the fact is that every scientific and historical explanation is tentative. Scholars and scientists can only hope to do the best with the data they have at the moment, and the best they can do is to make theoretical sense of the available evidence. It is not by ignoring data from other sciences that we can hope to design better institutions. Cass Sunstein and Richard Thaler’s attempt to apply behavioral economics to understand and design legal institutions and Jon Hanson’s situationist approach regarding the implications of social psychology to understand market

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manipulation\textsuperscript{233} and torts\textsuperscript{234} are prominent examples of how to undertake this enterprise.

In addition to using social behavioral and evolutionary sciences to design better institutions, there is a less pragmatic sense in which this interdisciplinary approach can benefit social and legal theory. It can provide a broader account about the very nature and function of law and of the role law has played in the sociological, cultural and natural evolution of mankind. We are acquainted with historical thinking in law, but legal philosophy has yet to cross the Rubicon between man and other animals. Except for certain studies conducted by anthropologists and social psychologists, almost no study has seriously attempted to understand the impact of our animal nature on our social behavior and on the evolution of institutions.

In this sense, this article can be understood as a tentative attempt to reframe the development of constitutionalism within evolutionary thought. I have tried not to establish naïve and direct implications between our biological/psychological nature and the tenets of constitutionalism; instead, I sought to offer a rather complex description of how biology, culture and institutions may have interacted in such a way that constitutionalism resulted as a feasible evolutionary achievement. Maybe the answer developed here will be regarded over time as a false hypothesis about how this interaction occurred, but at the very least I believe in its merit of having posed some methodological and substantive questions that should be addressed by the community of legal scholars.


\textsuperscript{234} Jon Hanson & Michael McCann, \textit{Situationist torts}, 41 Loy. LAL Rev. 1345 (2007).