CHECKS AND BALANCES IN CHIMPANZEE COMMUNITIES: MIGHT POLYBIUS' THEORY APPLY?

CONTROLES Y EQUILIBRIOS DE PODER EN LAS COMUNIDADES DE CHIMPANCÉS: ¿PUEDE APLICARSE LA TEORÍA DE POLIBIO?

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ABSTRACT

Our closest relatives are chimpanzees (Pan troglodytes), and we share with them a vast reservoir that serves as a mirror to understand who we are. We study the complex social structure of chimpanzees, gregarious mammals that can form groups of up to one hundred and fifty individuals. This coexistence demands internal cohesion and the presence of stable behavioural patterns and defined boundaries. While this article substantially addresses power dynamics, it also does not overlook the various ways in which chimpanzees access power in their society. We find the analysis of the overlapping and silent structures of counter-power more interesting, which allows for the replacement of herd leaders when they fail to perform their functions properly. Drawing on the works of Polybius and his theory of the degeneration of power cycles (anacyclosis), it is remarkable how this perspective applies to the complex politics discerned in the world of chimpanzees. In our view, these silent and opaque structures of counter-power should be considered as a tool to preserve areas of self-determination for individuals, a sort of vaccine against the potential tyrannies of alpha males who command the group.

KEY WORDS

Balance of forces; hierarchical organisation; anacyclosis; empathy; macho-alpha and check and balances.

RESUMEN

Nuestros parientes más cercanos son los chimpancés (Pan troglodytes), con quienes compartimos un acervo biológico y de pautas conductuales que permite una aproximación analítica a una perspectiva más objetiva y menos influida por factores emocionales, de las estructuras de poder y su evolución. Su organización social, caracterizada por una compleja red de interacciones, permite la formación de grupos de hasta ciento cincuenta individuos, lo que exige mecanismos efectivos de cohesión interna, la consolidación de pautas de comportamiento preestablecidas y la implementación de parámetros estandarizados de conducta. El presente estudio se centra en las dinámicas de poder dentro de estas comunidades, prestando atención tanto a los mecanismos de acceso al liderazgo como a las estructuras de contrapoder que operan de manera silenciosa

pero decisiva. Estas últimas resultan fundamentales para la regulación del orden interno, ya que permiten la sustitución de líderes cuando estos dejan de desempeñar su función con eficacia. Desde una perspectiva teórica, el análisis de estas estructuras puede vincularse con la teoría de la anaciclosis formulada por Polibio, según la cual los sistemas de gobierno están sujetos a ciclos de transformación y degeneración. En este contexto, las dinámicas de contrapoder en las sociedades de chimpancés pueden interpretarse como un mecanismo correctivo que mitiga la concentración del poder en los machos alfa, preservando así espacios de autonomía individual y evitando la perpetuación de liderazgos autoritarios.

PALABRAS CLAVE

Equilibrio de fuerzas; organización jerárquica; anaciclosis; empatía; macho-alpha y controles y equilibrios.

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1. INTRODUCTION

As has been argued for two thousand years, wherever there is an organised community, rules must exist for it to function effectively ("*Ubi societas, ibi ius*"). Irrefutably, for any group to operate effectively, it is necessary to establish a clear structure and define solid guidelines that determine acceptable behaviors within it. The libertarian tendencies of the *ego* contrast with the demands for order derived from the *alter*. We can conceive of this dynamic as an arithmetic equation: the greater the margin for individual self-determination, the lower the cohesion and compactness of the group.

Extrapolating this dynamic further, within any organised group, one can observe a tension between the dynamic forces that lean towards freedom and chaos (entropy) and those that push towards stability and order (negentropy). This tension between entropy and negentropy is fundamental to understanding many aspects of nature and life. For example, life itself can be seen as a process in which organisms combat entropy, maintaining internal complexity and order through negentropy. Similarly, in social and economic systems, this tension can influence how they are organised and develop.

To put it simply, the fight between entropy (disorderliness) and negentropy (organisation) shows the constant battle between disorder and order in both the natural world and social systems. This fight is a very important idea for understanding how

complex systems work. No organised group, whether natural or social, can avoid this fight because it's a basic part of how they exist[1].

According to the German biologist Von Bertalanffy[2], a system can be defined as a complex of interacting elements, from whose interactions emerges a behaviour that is characteristic of the system as a whole[3]. Each system is defined as an entity with boundaries and interrelated and interdependent parts, whose whole is greater than the sum of its parts[4]. Within a system, modifications to one component inevitably have cascading effects on other components and ultimately the entire system, leading to the emergence of predictable behavioural patterns. The positive growth and adaptation of a system hinges on its capacity to effectively adjust to the demands of its environment. Additionally, systems are frequently characterized by a unifying purpose (function) that contributes to their overall maintenance and mitigates the risk of failure.

Modern social organisations are increasingly viewed as open, complex adaptive systems with nonlinear structures, subject to internal and external forces that can contribute to chaos[5]. The metaphor of chaos, utilized in verbal theories and grounded in mathematical models and the psychological aspects of gregarious animal behaviour, offers a valuable perspective for describing the complexity of intelligent behaviour analysed both from individual and collective viewpoints[6].

In short, the social fabric forms a system, and every system moves around an axis that reacts to the inevitable social changes and adapts to them, the movement of any structured system is predictable[7]. The system as a whole adapts to change and exhibits patterns of behaviour that can be deciphered and predicted, and this assertion is predictable to any system whether animate or not.

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1 SCHRÖDINGER, E. What is life? The physical aspect of the living cell (Dublin 1944) 446 et seq.

2 VON BERTALANFFY, L. General theory of systems: Application to psychology. Social Science Information, 6/6 (1967) 125-136. Bertalanffy distinguished between real systems and abstract systems. Real systems are entities that are perceived or inferred through observation, and their existence is independent of the observer. A prime example is a group with its distinct members. Conversely, abstract systems are conceptual frameworks, essentially symbolic constructs, that correspond to reality but are inherently dependent on the observer's interpretation. A scientific field with its various theories exemplifies this category. Notably, any group in nature that aspires to survive as a unit necessarily operates as a real system.

3 HALL, A. D., FAGEN, R. E. Definition of System, General Systems: The Yearbook of the Society for the Advancement of General Systems Theory, 1 (1956) 18-28.

4 VON BERTALANFFY, General theory of systems, cit. B20, p. 363.

5 In this sense, it is worth recalling that Gleick understands his chaos theory as a new way of approaching science that demands holistic and multidisciplinary perspectives and shuns monothematic or linear views. GLEICK, J. Chaos: Making a new science (London 2008).

6 FORNO, A. D., MERLONE, U. Chaotic dynamics in organization theory. Global Analysis of Dynamic Models in Economics and Finance: Essays in Honour of Laura Gardini (2013) 185-204.

7 HUBLER, A.W. Adaptive control of chaotic system. Helv Phys Acta, 62 (1989) 343-346.

Chimpanzee society, as we'll discover, can be surprisingly complex. These groups, which can reach up to one hundred fifty individuals, further divide into smaller subgroups or units. Unlike simple dominance based on brute force, chimpanzee society is hierarchical, with high-ranking individuals attaining their positions through various strategies, often involving the support or recognition of others. The factors that determine an alpha male's status are diverse and include physical size, fear he inspires, prestige, self-control, cooperation, and competition. To become an alpha in a chimpanzee community, hopeful individuals must gather enough support to form strong alliances, as physical strength alone is often insufficient. Social support is crucial not only to attain but also to maintain a high-ranking position within the complex social structure. This support is typically earned through participation in internal conflicts, where adult males must align with key individuals during disputes within the group. While protecting the group from external threats is a fundamental responsibility of adult males, earning status within the social hierarchy is largely contingent upon providing support in these internal dynamics, such as aiding in conflicts or sharing resources with elders, females, and younger chimpanzees. On the other hand, they also try to break up other alliances that could hinder their path to power.

Recent advancements in genomics, as highlighted by Watson[8], have necessitated a revaluation of the taxonomic classification for humans and anthropoid apes. The Hominoidea superfamily encompasses three families, of which only two boast extant representatives. The first, Hilobatidae, includes gibbons and their ancestral lineages. The second, Hominidae includes gorillas (Gorilla), chimpanzees (Pan troglodytes), bonobos (Pan paniscus), orangutans (Pongo), and, crucially, Homo sapiens (humans). This reclassification underscores the close genetic affinity between humans and chimpanzees, sharing a remarkable 98.8% DNA sequence homology. Consequently, while chimpanzees and humans are both members of the Hominidae family, they remain distinct species with significant biological differences. As such, the traditional classification of chimpanzees as a separate biological category is no longer considered fully accurate.

2. SOCIALITY AS AN ADAPTIVE STRATEGY FOR GROUP PERSISTENCE

Following Carthy[9], one of the primary motivations for animals to form aggregations such as flocks, herds, and schools is the enhanced security afforded by these groupings.

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8 WATSON, E. E., PENNY, D., EASTEAL, S. Homo genus: a review of the classification of humans and the great apes. In Humanity from African naissance to coming millennia: colloquia in human biology and palaeoanthropology (Firenze/Witwatersrand 2001) 1000-1012.

9 CARTHY, J. D. The behaviour of arthropods (San Francisco 1965) 52.

Within this social framework, animal societies often exhibit hierarchical structures. However, Carthy[10] also highlights the flexibility of these hierarchies, noting instances of transgression. For example, as Carthy suggests, in certain primate species, particularly those with male-dominated hierarchies, females may temporarily surpass males in social rank during mating events. However, this is not a universal pattern. In species such as bonobos (Pan paniscus), which exhibit female-dominated hierarchies, females often maintain higher social status than males across various contexts, including mating, conflict resolution, and group decision-making.

As already noted, within the group, there are negentropy forces that bind the social organisation together. Therefore, since the survival of an offspring may depend on it remaining with its parents, special forms of learning are generated that promote attraction and thus continuity of the family[11].

Group cohesion is essential for the survival and social structure of primates, as it influences cooperation, protection, and resource sharing. In species like chimpanzees, maintaining cohesion within the group is a dynamic process that ensures stability and effective functioning. A cohesive group enhances the ability to defend territory, collaborate in hunting, and protect vulnerable individuals. Moreover, achieving group cohesion is vital for social learning and the development of complex behaviors. However, cohesion can be influenced by a variety of factors, such as competition for resources, social bonds, and hierarchical relationships.

To strengthen group cohesion, various rituals have emerged, including delousing, forms of physical contact, ventral recumbency (lying with the belly down), and submissive postures (bending over). These rituals serve multiple functions, including reinforcing the group's hierarchy and the bonds that unify its members. In some instances, delousing may specifically appease dominant individuals, mitigating the potential for aggressive behaviour.

Living organisms, including animal societies, exhibit syntropic forces that maintain their existence by minimizing entropy. These forces operate at the intersection of entropy and life. To counteract the inherent degradation process over time, some open systems can offset their natural entropy by importing entropy from subsystems with which they interact. While entropy in a closed system cannot be self-reversing, open systems can achieve negentropy through the interplay of interconnected subsystems that rebalance the entropic state.

In an animal society, the concept of syntropy emerges as a collective force that promotes harmony and collaboration rather than unrestrained competition. It serves as a fundamental driver of cooperation within species, where individuals work together to

10 CARTHY, J. D. The behaviour of arthropods, cit, pp. 50-51.
11 CARTHY, J. D., The behaviour of arthropods, cit, p. 96.

achieve synergies that enhance survival and group stability. For example, in chimpanzees, alliances between high-ranking individuals create social cohesion and ensure better defence against rivals. In eusocial species like ants, the division of labour among workers, soldiers, and queens fosters a synergy that maximizes resource acquisition and colony survival. This cooperative synergy not only strengthens the social unit but also contributes to the broader ecological balance by optimizing resource use and ensuring resilience to environmental challenges. This is evident in behaviours such as cooperative hunting and food gathering, group vigilance, mutual protection against predators, communal care for offspring, and equitable resource distribution. Rather than following individualistic survival instincts, animals in a syntropic society cooperate to sustain natural balance and ensure the long-term survival of all species within the ecosystem.

Life becomes progressively more complex over time through growth and reproduction, transitioning from a state of disordered atoms in the physical universe to highly ordered molecular structures. Living systems evolve towards greater order and higher levels of organisation, diversification, and complexity. This evolutionary trajectory enhances their capacity to navigate and respond to survival challenges effectively.

According to this view, the idea of an equilibrium is the most important concept. Entropy, which is the tendency of things to become more disordered over time, is seen as a force that pushes systems towards a balanced state within a specific context and set of circumstances. This goes against the theory of evolution, which suggests that living things change and adapt to survive, not necessarily to reach a balanced state. Many systems and processes in the universe, including living things, seem to work by adapting to their surroundings in order to maintain a state of balance[12].

Biologists and physicists have been debating this paradox. Schrödinger, in answering the question of what enables life to counteract entropy, replied that:

> Life feeds on 'negative entropy. It is by avoiding the rapid decay into the inert state of 'equilibrium', that an organism appears so enigmatic; so much so, that from the earliest times of human thought some special nonphysical or supernatural force (vis viva, entelechy) was claimed to be operative in the organism, and in some quarters is still claimed[13].

As Feynmanasserts, this interplay of force distribution always operates within the closed framework of energy conservation.

> There is a fact, or if you wish, a law, governing all natural phenomena that are known to date. There is no known exception to this law—it is exact so far as we know. The law is

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12 KAPUSTA, A. Life circle, time and the self in Antoni Kępiński's conception of information metabolism. Filosofija. Sociologija 1-2 (2007) 46-51.

13 SCHRÖDINGER, E. What is life? The physical aspect of the living cell, https://www.arvindguptatoys.com/arvindgupta/whatislife-schrodinger.pdf. FLAMM, D. Boltzmann's influence in Schrödinger. Schrödinger: Centenary celebration of a polymath (1987) 4-15.

> called the conservation of energy. It states that there is a certain quantity, which we call energy, that does not change in the manifold changes which nature undergoes. That is a most abstract idea, because it is a mathematical principle; it says that there is a numerical quantity which does not change when something happens[14].

However, this process is not static but flexible; there is an evolutionary tendency towards homeostasis as the organisational system seeks to adapt to achieve internal equilibrium in response to external environmental changes. The group's norms adapt to the realities of the circumstances. One manifestation of this element is the specialization in work, which, as Carthy[15] emphasises, is not an exclusive monopoly of human societies but actually sees its greatest development in certain insect societies. As a result, these societies are as stable as ours, although they are primarily based on instinctive behaviour.

3. EQUILIBRIUMS AND CYCLES OF POWER IN POLYBIUS

Polybius, a Hellenistic aristocrat, found himself enslaved in Rome due to misfortune. Reflecting on his personal tragedy and the downfall of his esteemed Greek culture, he pondered how a society as advanced as the Hellenic could be subjugated by a culturally inferior one. He believed he found the answer by observing the counter-power mechanisms inherent in Roman society. Polybius understood that only a complex government with inhibitory checks could resist degeneration. He warned of "anacyclosis," the inevitable decay of the three simple forms of government. Polybius's formula, outlined in book VI of his Histories, significantly influenced the debates during the constituent period.

In Book VI of his monumental Histories, Polybius didn't just champion mixed government as a political system, he unveiled a hidden truth about power: its inherent instability. He identified a cyclical pattern of decay, "anacyclosis," that threatened every single form of government in the ancient world. Each simple form, like monarchy, aristocracy, or democracy, harboured a fatal flaw that caused it to degenerate over time. For Polybius, this cyclical threat made mixed government, a blend of these elements, the only viable solution. It offered a bulwark against the inevitable decline of any singular system[16].

Thus, within the relentless cycle of anacyclosis, he identified a recurring pattern with three distinct phases of politeia that a constitution naturally undergoes: growth

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14 FEYNMAN, R. P., LEIGHTON, R. B., SANDS, M. The Feynman lectures on physics, Vol. I: The new millennium edition: mainly mechanics, radiation, and heat (New York 2015).

15 CARTHY, J. D., The behaviour of arthropods, cit, 49.

16 MOORE, D. W. Roman Innovation in Polybius' Narrative. In Polybius: Experience and the Lessons of History (Leiden and Boston 2020) 111-128. Plb. 6.9.10, 6.51.4; Cic. 1.28. Before Polybius, Herodotus already records the three simple forms of government (Hdt. 3.80-82) as well as Thucydides (Th. 8.97), Plato (Pl. Lg. 710e, 712c) and Aristotle (Arist. Pol. 1279).

(α□ξεσις), rise (□κμή), and decline (φθίσις), ultimately returning to its original state. To fully understand the Greek philosopher's theories, we should not merely focus on the erosion of power. Instead, we must acknowledge that each cycle of power involves a struggle for stability, adapting to the changing circumstances that disrupt it.

Explaining anacyclosis, Polybius employs a simile: "Every variety of simple constitution based on a single principle is short-lived; it quickly degenerates into the inferior, corrupt form that naturally follows it." He compares this degeneration to "rust for iron, and woodworm and certain worms for wood, which come to destroy these materials"[17].

Polybius points to Lycurgus' Sparta. To avoid the cycle of decline (anacyclosis), Lycurgus blended the strengths of each simple government type in its early form, creating a balanced system where no single element could overpower the others.

Another significant example for Polybius was Rome. From a Hellenistic perspective, a Roman citizen could not ascertain whether his government was aristocratic, democratic, or monarchical. Observing the power of the consuls, the government appeared exclusively monarchical; considering the senate, it seemed aristocratic; and examining the popular assemblies, one could identify it as undoubtedly democratic. One of the main supporters of the inclusion of this principle in the US constitutional order, James Madison, defined this system of checks and balances in issue 51 of the Federalist, published in 1788, entitled: "The structure of Government should provide adequate checks and balances between the different departments".

While these propositions may initially engender apprehension within more conservative legal circles, a closer examination reveals their potential applicability to the study of anthropoid social structures. Building on Sullivan's observations[18], chimpanzee society prioritizes hierarchy, with daily struggles reflecting this focus. Studying ape behaviour reveals alpha males face an unavoidable decline due to biology, resulting in cyclical power dynamics and deterioration within any group.

It is important to keep in mind that some chimpanzees do not seek to establish a stable power structure but allow circumstances to randomly determine the course of the power cycle. Consequently, in structured ape communities, power is subject to

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17 Polybius 6.10 (trad. Balasch, BCG 1981).

18 SULLIVAN, A. Gombe gets a new alpha — the fall of Ferdinand, Jane Goodall Institute 2 (November 2016) https://news.janegoodall.org/2016/11/02/gombe-gets-new-alpha-fall-ferdinand/2/ Analysing the factors that determine the ability to be an alpha chimpanzee or to occupy a higher or lower role in the hierarchy she cites age, physical condition, aggressiveness, intelligence and what we would consider 'leadership' or the ability to attract others to one's side. The author describes the complex variables involved in the fall from power of an authoritarian male Ferdinand by Fudge who gradually dismantles the foundations of his power and replaces them with his own, until after a coup de main, he violently occupies power.

a constant process of revolution, with no apparent counterbalancing mechanisms, resulting in more predictable attrition. The cost of this dynamic is that, in chimpanzee communities, it is common for the alpha male, with the wear and tear of time, to be faced with a process of violent revolution. This process of power erosion is not only due to biological deterioration but also depends on whether he based his power on force or on alliance pacts created with his peers, either with a group of individuals or with the whole group.

Chimpanzees exhibit a fascinating array of power structures, demonstrating considerable heterogeneity. When the alpha male derives his dominance primarily from physical strength, this aligns more closely with a monarchical form of governance. However, there are instances where a coordinated group assumes control, reflecting a more oligarchical structure. Additionally, in some cases, the alpha male maintains his position through the collective respect and support of the group, resembling a democratic system.

The phenomenon of power erosion, as described by Polybius[19], assumes a notable nuance in the behaviour of chimpanzees. Once an alpha male establishes dominance, a subtle but persistent process of erosion begins, driven by the self-interest of group members. As a counterbalance, other individuals start forming alliances against the alpha's dominance. If the leader exceeds his limits, in the long term, he will be overthrown by a large coalition and relegated to the fringes of the group's territory, through an act of social ostracism among chimpanzees, mirroring a dynamic similar to that instituted by Cleisthenes in Ancient Greece.

These counter-alliances play a role of subtle resistance in the form of opposition, effectively serving to safeguard individuals' rights against abuses of power. In other words, the fear of a symmetric reaction functions to prevent the maximization of power asymmetries. Thus, Swiss primatologist Christopher Boehm[20] proposed that equality does not arise solely from the absence of hierarchies but is rooted in a distinct type of hierarchy itself. This hierarchy develops from anti-hierarchical tendencies observed in all great apes, seeking to avoid abuses of power stemming from increasingly asymmetrical situations.

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19 The idea of cyclical time has been present since ancient times. In Plato and the Stoics, the notion of a cosmic cycle that renews itself every several thousand years emerges. This view of time is also found in Herodotus and Thucydides, but it is Polybius in the 2nd century BC who firmly establishes it in the historiographical tradition. The concept of anacyclosis has two dimensions: the first and best known refers to the succession of political regimes, which begins with monarchy, passes to the reign or regime of reason, then to aristocracy and then to democracy, to finally degenerate into the government of the vulgar or ochlocracy. However, the dimension of anacyclosis that concerns us in this article is the one that compares the evolution of empires with living beings, where they are born, grow, reach their maximum splendour and finally decline and die.

20 BOEHM, C. Hierarchy in the forest: The evolution of egalitarian behaviour (Harvard 2009) 35 et seq.

Therefore, the origin and foundation of this counter-power, aiming to circumvent the abuses inherent in power dynamics, could precisely be found in these "reversible hierarchies". These are alliances formed and dissolved against power, thereby limiting it. Such alliances are inherently transient, aiming to achieve contingent social equilibrium over time. This idea underscores the emphasis on subordinates and their ability to form associations that maintain group parity.

Consequently, the most significant aspect of chimpanzee social structure lies in their establishment of an invisible web of silent counter-power structures, somehow perceived by the alpha male, conditioning himself against the abuse of status and position within the group.

4. HUMAN NATURE IN POLYBIUS: SELF-INTEREST AND FEAR

In the past, political theorists generally believed that human nature[21] fundamentally constrained political theory. Therefore, any political theory should begin with an examination of human nature and its capabilities.

Initially, Polybius, like Machiavelli[22] and later Hobbes[23], believed that people come together due to their own weaknesses and fears. In this respect, Polybius shares common

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21 Hence the expression "the end of the "state of nature" materialises when, out of a natural impulse, reluctant to continue the old strife, individuals come together rationally through a pact and form a political community. From an economic point of view, Buchanan highlights the existence of a "continuous contract" and how, after a cycle of upheaval or crisis, individuals renegotiate their own situation and create new commitments, which entail hidden punishments for possible cases of transgression of the new order established by the incipient status quo or period of repose. [BUCHANAN, J. M. The limits of liberty: Between anarchy and Leviathan, No. 714 (Chicago 1975) 119-121].

22 Thus, Machiavelli argues that "men are ungrateful, fickle, liars, and deceivers, they shun danger and are greedy for gain". LITTMANN, G. "American Machiavelli", in HACKETT, E. (ed.) House of Cards and Philosophy: Underwood's Republic (Chichester 2015) 81-91.

23 This process appears to be described by Hobbes, who writes "And therefore if any two men desire the same thing, which nevertheless they cannot both enjoy, they become enemies; and in the way to their end (which is principally their own conservation, and sometimes their delectation only) endeavour to destroy or subdue one another. And from hence it comes to pass that where an invader hath no more to fear than another man's single power, if one plant, sow, build, or possess a convenient seat, others may probably be expected to come prepared with forces united to dispossess and deprive him, not only of the fruit of his labour, but also of his life or liberty. And the invader again is in the like danger of another. [...] Hereby it is manifest that during the time men live without a common power to keep them all in awe, they are in that condition which is called war; and such a war as is of every man against every man. For war consistent not in battle only, or the act of fighting, but in a tract of time, wherein the will to contend by battle is sufficiently known: and therefore, the notion of time is to be considered in the nature of war, as it is in the nature of weather. For as the nature of foul weather lieth not in a shower or two of rain, but in an inclination thereto of many days together: so, the nature of war consistent not in actual fighting, but in the known disposition thereto during all the time there is no assurance to the

ground with Abraham Maslow's[24] theory of human needs, where security ranks as the second fundamental need after physiological requirements. Unlike physiological needs, security is never fully satisfied and therefore conditions human behaviour. As a result, the strongest individual among them rose to a position of power. This hierarchy resembled the actions observed in flocks of sheep or birds.

Following Polybius, humans begin to distinguish themselves from animals when they apply reason. He argues that "when a human being sees another being wronged," they will "notice and be disgusted by what is happening, looking ahead and reflecting that all can be treated equally." They will "naturally feel disgusted and offended by such conduct, sharing the resentment of their aggrieved neighbour and imagining themselves in the same situation." Through moral imagination and sympathy, the idea of justice is formed. "Ferocity and force have yielded to reason," transforming the alpha; what was once an alpha now becomes a king. Polybius's account of the origins of justice bears a striking resemblance to the moral theories that Adam Smith would later articulate in *The Theory of Moral Sentiments*[25].

Polybius, mirroring later thinkers like Machiavelli and Hobbes, viewed humans as both rational and self-serving. Our lives are a dance between fear and compassion. When fear reigns, cooperation and solidarity flourish, fostering a stable society. However, trouble brews when this balance tilts. A lack of empathy or the inability to see things from another's perspective creates asymmetry within society. This allows the psychopath, free from moral constraints, to exploit others for personal gain.

5. MASLOW'S EARLY PRIMATE RESEARCH AND THE DEVELOPMENT OF THE HIERARCHY OF NEEDS

It´s important to note Maslow based his psychological studies on the behaviour of higher apes. His thesis supervisor, Robert Yerkes (1876-1956), known as the "monkey man" for his extensive research on apes, guided Maslow as the first PhD candidate in a program that spanned decades. This program focused on the development of primate behavior from early experiences of attention and affection, or the lack thereof. Another significant influence on Maslow was Harry Harlow (1905-1981), renowned for his

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contrary.". [HOBBES, T. Leviathan: Or, the matter, form, and power of a commonwealth ecclesiastical and civil (1894) 66]. Similarly, Rousseau explains the process: "the strongest is not always the master, but converts his force into right and obedience into duty". [STERBA, J.O. Social and Political Philosophy: Classical Western Texts in Feminist and Multicultural Perspectives (Belmont, CA 1995) 203].

24 MASLOW, A. H. The dynamics of psychological security-insecurity. Character & Personality, A Quarterly for Psychodiagnostic & Allied Studies (1942) 331-344.

25 SMITH, A. The theory of moral sentiments (Penguin 2010)

comparative studies between primates and humans, particularly at the neurological level[26].

Hence, the empirical foundation for Maslow's esteemed hierarchy of needs theory was grounded in his field analyses of dominance among monkeys and humans. In both contexts, Maslow concluded that an individual's capacity to dominate others stemmed from their recognised superiority. Furthermore, he observed that differences within human and monkey groups arose from variations in how individuals exercised dominance within those groups.

Recognising the behavioural similarities between humans and apes, Maslow proposed that both belong to a core group he termed "general humanness"[27]. Over time, this has resulted in a movement advocating for the recognition of higher apes' personalities. A notable example is the case of Sandra, an orangutan in Argentina, whose legal personality was acknowledged in 2014 by Judge Elena Liberatori[28].

However, Cullen[29] highlights that recent primatological research uncovers significant shortcomings in Maslow's conceptualization of dominance in monkeys and apes. Consequently, Maslow's theory is now regarded as outdated due to the flawed scientific methodology employed in his research.

6. CHIMPANZEE SOCIAL BEHAVIOUR

Chimpanzees reside in communities that can range from fifteen to over one hundred and fifty individuals, encompassing all ages and sexes. Their social system follows a fission-fusion dynamic, wherein members of a community form smaller, temporary groups in various combinations. These combinations can include single adult males, adult females with their offspring, mixed groups, solitary individuals, or a single female with her offspring. These groups may dissolve and reconstitute to forage, copulate, or rest, forming new combinations of individuals. Within these communities, well-defined hierarchies exist, typically with a dominant male who may form coalitions with other

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26 MASLOW, A. The Role of Dominance in the Social and Sexual Behavior of Infra-human Primates: III. A Theory of Sexual Behavior of Infra-Human Primates, Journal of Genetic Psychology 48 (1936) 310-338. MASLOW, A. The Role of Dominance in the Social and Sexual Behavior of Infra-human Primates: IV. The Determination of Hierarchy in Pairs and in Groups, Journal of Genetic Psychology 48 (1936) 161-198. MASLOW, A. The Comparative Approach to Social Behavior, Journal of Social Forces 15 (1937) 487-490.

27 WHITE, R. E., PIERCE, B. D. On Maslow, monkeys, and evolution. Academy of Management Review (2000) 697.

28 WOODFORD, P. Response to Shawn Thompson on 'Supporting ape rights: finding the right fit between science and the law'. ASEBL Journal, 14/1 (2019) 38-41.

29 CULLEN, D. Maslow, monkeys and motivation theory. Organization, 4/3 (1997) 355-373.

males in the group[30]. Some young females leave their community in search of a new mate. As long as there are other populations within reach, all females, once reaching sexual maturity, are likely to leave their natal group to emigrate into a new population.

Males, in contrast, exhibit philopatry, remaining within their natal community. This behaviour provides them with an adaptive advantage, as they retain access to pre-established social networks and alliances cultivated since infancy, which can contribute to social stability and dominance within the group. Conversely, dispersing individuals entering a foreign population face substantial sociobiological challenges, as they lack prior allies, social bonds, or clear supporters. These individuals must navigate the complexities of unfamiliar social hierarchies and establish their position from the ground up, often incurring significant initial disadvantages.

The interactions among members within a community are intricate, characterized by a spectrum of behaviours[31] that serve distinct purposes:

Affiliative behaviors function as pivotal ethological mechanisms that enhance social cohesion and strengthen intragroup bonding. These behaviors are expressed through a repertoire of socio-positive interactions, including but not limited to allogrooming, physical contact such as hugging and kissing, playful engagements, and cooperative undertakings, each contributing to the stabilization of social structures and the reinforcement of affiliative networks.

Conversely, agonistic behaviours are oriented towards competitive interactions over resources, involving threats, aggression, and displays of dominance, including demonstrations of strength[32].

Researchers have identified that chimpanzees possess the capacity not only to acquire knowledge from one another but also to utilize this social information for the establishment and perpetuation of local traditions. This collaborative research initiative involves Gonzaga University and the Max Planck Institute for Psycholinguistics in Nijmegen, The Netherlands[33], shows that the way chimpanzees groom each other depends on the community to which they belong. Specifically, it is the unique handshake grooming behaviour that reveals the existence of local differences.

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30 HARCOURT, A. H., DE WAAL, F. Coalitions and alliances in humans and other animals (Oxford 1992) 445-471.

31 As early as 1916, the economist Vilfredo Pareto articulated his theory in "Trattato di Sociologia Generale," focusing on the notion of an elite social class. He classified this elite into two types: cunning 'foxes' and aggressive 'lions'. According to Pareto's perspective, power within society undergoes continual transitions between these two groups, from 'foxes' to 'lions' and back again.

32 WILSON, M. L., WRANGHAM, R. W. Intergroup relations in chimpanzees. Annual Review of Anthropology 32/1 (2003) 363-392.

33 MCGREW, W. C., MARCHANT, L. F., SCOTT, S. E., TUTIN, C. E. Intergroup differences in a social custom of wild chimpanzees: the grooming hand-clasp of the Mahale Mountains. Current Anthropology 42/1 (2001) 148-153.

According to a study by the University of Zurich[34], cultural advances such as the use of 'complete toolkits' spread in chimpanzees through female migrations. This claim is corroborated by genetic analyses of the groups. For Gunasekaram[35], this is suggestive of a cumulative culture, albeit at an early stage of development.

A study by the Max Planck Institute for Evolutionary Anthropology[36] has found the existence of bonds of trust between chimpanzees considered friends, suggesting, according to the authors, that these feelings have a long-standing background. The study was based on the assumption that humans, at important moments, rely to a large extent only on their closest friends. According to study leader Engelmann, "In our study we investigated whether chimpanzees show a similar pattern and selectively trust those individuals to whom they are most closely attached. Our results suggest that this is the case".

The researchers[37] corroborate that chimpanzees establish emotional and enduring bonds with certain individuals, affirming that "human friendship is not an anomaly in the animal kingdom." Additionally, friendships among chimpanzees are forged based on shared personality traits. Specifically, more sociable chimpanzees are more likely to bond with each other, while shy chimpanzees seek companionship among peers who exhibit similar shyness in social interactions. This parallels the "similarity effect" observed in humans, where individuals tend to form friendships with those who share similar characteristics.

On the other hand, other studies[38] show that chimpanzees communicate with each other using hundreds of different sequences, combining up to ten types of calls in their entire repertoire. This is the first documentation of such diversity of vocal production in non-human primates.

As for the other human species, the Atapuerca team[39] managed to compare the audiograms between homos sapiens and the later homos neardentalensis and concluded

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34 UNIVERSITY OF ZURICH. "'Genetic time machine' reveals complex chimpanzee cultures." Science Daily. Science Daily, 27 de noviembre de 2024. www.sciencedaily.com/releases/2024/11/241127135912.htm.

35 GUNASEKARAM, C., BATTISTON, F., O., PADILLA-IGLESIAS, C.; VAN NOORDWIJK, M A., FURRER; R., Manica, A., Population connectivity shapes the distribution and complexity of chimpanzee cumulative culture. Science, 386/ 6724 (2024) 920-925.

36 ENGELMANN, J. M., HERRMANN, E. Chimpanzees trust their friends. Current Biology 26/2 (2016) 252-256.

37 ENGELMANN, J. M., HERRMANN, E. Chimpanzees trust their friends, cit, 252-256

38 GIRARD-BUTTOZ, C., ZACCARELLA, E., BORTOLATO, T., FRIEDERICI, A. D., WITTIG, R. M., CROCKFORD, C. Chimpanzees produce diverse vocal sequences with ordered and recombinatorial properties. Communications Biology 5/1 (2022) 410. SLOCOMBE, K. E., ZUBERBÜHLER, K. Chimpanzees modify recruitment screams as a function of audience composition. Proceedings of the National Academy of Sciences 104/43 (2007) 17228-17233.

39 CONDE-VALVERDE, M., MARTÍNEZ, I., QUAM, R. M., ROSA, M., VELEZ, A. D., LORENZO, C., ARSUAGA, J. L. Neanderthals and Homo sapiens had similar auditory and speech capacities.

that they are indistinguishable from homos sapiens. Frequencies between three and five kilohertz facilitate the pronunciation of consonants that only humans can produce, and which are unfeasible in the chimpanzee phonatory apparatus. It should be remembered that Eurasians possess between one and four percent of the Neanderthal genome.

Furthermore, returning to chimpanzees, researchers demonstrate that calls, in combination with other specific calls, occurred predictably in certain positions within the sequence, following adjacency rules. These adjacency rules also applied to sequences involving three types of calls. The cited research describes a vocal communication system in chimpanzees that is much more complex and structured than previously thought. According to Bortolato[40], observing animals in their social and ecological environment reveals a previously unknown complexity in their communication methods. Currently, most primatologists consider that chimpanzees possess metacognition, meaning they can reflect on their own thoughts and mental processes.[41]. According to multiple studies[42], these primates possess metacognitive abilities, enabling them to distinguish between what they know and what they do not know. They demonstrate varying degrees of confidence in their responses based on this awareness, adapting their behaviour accordingly. This capacity facilitates them in making more suitable decisions in response to evolving circumstances.

Parallelly, this species, similar to humans, possesses a certain sense of right and wrong. Chimpanzees also discriminate which behavior is inappropriate, especially when it affects the younger ones. In a study by the University of Zurich, as reported by the journal *Human Nature*[43] it became clear that if a chimpanzee sees scenes of an offspring being harmed or killed by another member of its own species, it reacts with indignation and anger, something that does not happen when faced with acts of violence between adult monkeys. The study indicates that these primates have a sense of justice similar to that of humans[44].

Nature ecology & evolution 5/5 (2021) 609-615.

40 BORTOLATO, T., FRIEDERICI, A. D., GIRARD-BUTTOZ, C., WITTIG, R. M., CROCKFORD, C. Chimpanzees show the capacity to communicate about concomitant daily life events. Iscience 26/11 (2023).

41 Contrary to the allegations, CARRUTHERS, P. Meta-cognition in animals: A skeptical look. Mind & Language 23 (2008) 58-89.

42 CALL, J. Chimpanzee social cognition. Trends in cognitive sciences 5/9 (2001) 388-393. Also in EMERY, N. J., CLAYTON, N. S. Comparative social cognition. Annual review of psychology 60/1 (2009) 87-113.

43 RUDOLF VON ROHR, C., VAN SCHAIK, C. P., KISSLING, A., BURKART, J. M. Chimpanzees' bystander reactions to infanticide. Human Nature 26/2 (2015) 143-160.

44 In line with this, De Waal posits, "I think if we study primates, we notice that many of these things that we value in ourselves, such as human morality, have a connection to primate survival behaviour. This completely changes the perspective if we begin to think that we actually harness our biological resources to become moral beings. That provides a completely different view of ourselves compared

Conversely, chimpanzees surpass humans in specific cognitive functions. For instance, a young chimpanzee (five years old) demonstrates a significantly superior ability to recall numbers displayed on a screen compared to an adult human[45], as evidenced by an experiment conducted at Kyoto University (Japan). Scientists attribute this phenomenon to an equivalent of eidetic or photographic memory—the capability to remember visual or auditory details with high precision—which is present in human children and tends to diminish with age. Bonobos appear to possess remarkable photographic memory capabilities. In this regard, Savage-Rumbaugh[46] demonstrates this through the case of Kanzi, a Pan paniscus, who has mastered the use of two hundred lexical units and their corresponding meanings. Kanzi comprehends simple grammatical sentences and communicates effortlessly with his caregivers and humans outside his immediate environment.

Thus far, chimpanzees are regarded as the only non-human animal species that has exhibited the cognitive capacity to deceive and manipulate reality, underscoring their advanced socio-cognitive abilities [47]. Moreover, chimpanzees exhibit an empathetic ability to comprehend the intentions and objectives of others[48].

7. CHIMPANZEE POLITICAL DYNAMICS

The late Dutch primatologist and ethologist Frans de Waal[49] illustrates how aspiring alpha males within chimpanzee communities manipulate various factors in their pursuit of power, such as prestige, abstention, cooperation, and competition. On a daily basis, they garner followers to form a grand alliance that will eventually enable them to ascend to the top of the hierarchy. They achieve this through the strategic allocation of support to socially influential individuals during inter-individual conflicts involving tertiary actors, as well as by provisioning resources such as food to elders, females, and offspring. Moreover, they systematically engage in the deconstruction of competing alliances that may obstruct the fulfilment of their hierarchical or socio-political aspirations.

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to the view of the selfish gene that has been promoted for the last 25 years." [DE WAAL, F. B. The chimpanzee's sense of social regularity and its relation to the human sense of justice. American Behavioral Scientist 34/3 (1991) 348].

45 BOYSEN, S. T., BERNTSON, G. G. Numerical competence in a chimpanzee (Pan troglodytes). Journal of Comparative Psychology 103/1 (1989) 23. MATSUZAWA, T. Use of numbers by a chimpanzee. Nature 315/6014 (1985) 57-59.

46 SAVAGE-RUMBAUGH, S. Kanzi: The ape at the brink of the human mind (Turner 1996) 36.

47 HARE, B., CALL, J., TOMASELLO, M. Chimpanzees deceive a human competitor by hiding. Cognition 101/3 (2006) 495-514.

48 TOMASELLO, M. Cultural transmission: A view from chimpanzees and human infants. Journal of cross-cultural psychology 32/2 (2001) 135-146.

49 DE WAAL, F. Chimpanzee politics: Power and sex among apes (Baltimore, MD 1998).

The aforementioned author[50] describes a political drama within a colony of chimpanzees living in an open-air enclosure at the Arnhem Zoo in the Netherlands. In his book, the biologist chronicles the daily life of this community, detailing its conflicts and harmonies, sexual rivalries, and the surprising strategies—based on alliances and coalitions—that the apes use to compete for power and manipulate others. He also explores the friendships and reconciliations (whether genuine or opportunistic) that maintain group cohesion. Yeroom was the leader of this community, and after a long tenure in power, various group members attempted to overthrow him.

Yeroom's increasingly autocratic leadership provoked one of his younger and more ambitious rivals to gather a group of supporters. As Yeroom's self-confidence waned, the young rival felt increasingly close to victory and offered the old leader a position of power within his new social hierarchy.

Yeroom accepted this subordinate role but secretly formed a significant alliance with another young rival, Niki. Together, they managed to overthrow the new leader. Although Niki assumed power, the truly skilled and experienced Yeroom continued to control the community from behind the scenes.

De Waal generally posits that when an older male surpasses his prime and can no longer remain the alpha male, he begins to seek out and mentor a younger male whom he believes has the potential to become the future leader. This young male can ultimately become the new alpha male.

Regarding bonobos, contemporary studies of captive populations by Hohmann/Fruth[51] highlight the central role of their sexuality and their tendency to form amicable bonds, particularly among females. This contrasts with the dominance struggles, primarily among males, and intergroup warfare observed in chimpanzees.

8. THE STRUGGLE FOR POWER AMONG CHIMPANZEES

Among mammals, such as deer, dominant males exhibit the highest levels of glucocorticoids, indicating physiological stress associated with maintaining elevated testosterone levels, the primary reproductive hormone linked to individual aggressiveness in frequent conflicts. Consequently, dominant males experience increased stress due to their social rank.

However, in chimpanzee society, power dynamics and power balances assume a distinctly different and more complex dimension. In the social structure of these

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50 DE WAAL, F. Chimpanzee politics: Power and sex among apes (Baltimore, MD 2007) 392.

51 HOHMANN, G., FRUTH, B. Intra-and inter-sexual aggression by bonobos in the context of mating. Behaviour (2003) 1389-1413.

primates, according to De Waal[52], the dynamics of power are significantly distant from being merely a complex display of force: "If you have three males and one of them is overwhelmingly strong then there's a tendency for the other two to gang up together against that male. Because if they attach their political weight to the top male who is that strong male, they're just an accessory to his power".

In Tanzania's Gombe Stream National Park, Wilson[53] conducted a study on an alpha chimpanzee dubbed Freud by researchers. Freud maintained his dominance by cultivating bonds with fellow chimpanzee through grooming and increased social interaction. This strategy parallels the human political tactic of politicians kissing babies during campaigns. In return for these calculated displays of kindness, Freud garnered loyalty and enjoyed privileges such as access to food, grooming, and enhanced mating opportunities.

Chimpanzee societies are hierarchically structured around an alpha male, whose primary objective is to establish and maintain mating privileges with females, thus ensuring reproductive success and consolidating his dominance within the group; alpha leaders have access to breeding females and father most offspring. Leadership among chimpanzees is not hereditary, thus alpha males constantly face potential challenges from other males seeking dominance. As a result, many alpha chimpanzees are described as "selfish bullies" who exert considerable effort to maintain their dominant status through intimidation tactics.

However, such asymmetrical dominance has a limited lifespan among higher primates and tends to fracture and collapse due to robust egalitarian resistances that inevitably emerge over time. We concur with the distinguished Swiss primatologist Christopher Boehmen's assertion[54] that equality does not arise merely from the absence of hierarchies, but rather from a distinctive form of social relationship fostered by inherent anti-hierarchical tendencies present in all great apes.

Over time, any social structure gradually erodes, leading to reversible hierarchies. This entails alliances forming and dissolving in opposition to power, thereby constraining it. These alliances are inherently transient, as their goal is social equilibrium. This perspective underscores the agency of subordinates in forming associations that uphold group parity.

In the dynamics of chimpanzee group hierarchies, we observe genuine cycles of power, where successive waves perpetuate shifts in leadership without interruption. The mechanisms by which individuals ascend the power pyramid can be highly diverse.

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52 https://www.bbc.com/news/uk-politics-41612352.

53 WILSON, M. L., LONSDORF, E. V., MJUNGU, D. C., KAMENYA, S., KIMARO, E. W., COLLINS, D.A., GOODALL, J. Research and conservation in the Greater Gombe Ecosystem: Challenges and opportunities. Biological conservation 252 (2020) 108853.

54 BOEHM, C. Egalitarian behaviour and the evolution of political intelligence. Machiavellian Intelligence II: Extensions and Evaluations (Cambridge 1997) 361-364.

For instance, Mike, a chimpanzee from Gombe (Tanzania), gained power by exploiting fear, induced by his habit of striking empty metal barrels to produce a highly disturbing sound. Through this tactic, despite not being the strongest or most intelligent, he swiftly ascended to the top of the hierarchy, assuming the alpha position[55].

Humans and chimpanzees are among the few species worldwide known to engage in coordinated attacks against their own kind, demonstrating a deliberate provocation of conflict. Contrary to the misconception that human interference triggers such aggression in primates, recent analysis by approximately 30 primatologists[56], drawing on five decades of chimpanzee conflict research, concludes that these violent acts are driven by an adaptive strategy.

As population densities escalate, the incidence of aggressive encounters intensifies, concomitant with an augmentation in the complexity of the group's social structure. This complexity demands more nuanced social dynamics and interactional strategies to preserve group cohesion and stability. Moreover, the increased male population often directs aggression towards individuals from rival communities, thereby amplifying intergroup conflict. Pan troglodytes (chimpanzees) defend their territory with the cooperation of several males and, if necessary, females. This defence involves a degree of violence that can, in extreme cases, result in the killing of conspecifics, though instances of cannibalism are exceedingly rare. While there have been occasional reports of such behaviour, it is important to note that no clear correlation between group size, defence strategies, and the consumption of conspecifics has been established in the existing literature. According to the Wrangham [57], palaeontology views violence as a tool that has accompanied us throughout history, serving as a mechanism for survival.

In his book "African Genesis," playwright Robert Ardrey[58] popularized the term "killer ape," originally postulated in the 1950s by Professor Raymond Dart. According to Mitani[59], chimpanzees are intensely territorial and defend their space by organising patrol groups, with dominant males seeking out external threats or individuals attempting to enter their territory. These perimeter patrols occur during the night and morning hours. Thus, when faced with an external threat, primate groups unite and set aside their

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55 BOEHM, C. Hierarchy in the forest: The evolution of egalitarian behavior (Harvard 2009).

56 PRUETZ, J. D., ONTL, K. B., CLEAVELAND, E., LINDSHIELD, S., MARSHACK, J., WESSLING, E. G. Intragroup lethal aggression in West African chimpanzees (Pan troglodytes verus): inferred killing of a former alpha male at Fongoli, Senegal. International Journal of Primatology 38 (2017) 31-57.

57 WRANGHAM, R. W., GLOWACKI, L. Intergroup aggression in chimpanzees and war in nomadic hunter-gatherers: Evaluating the chimpanzee model. Human nature 23 (2012) 5-29.

58 ARDREY, R. African Genesis, A personal investigations into the animal origins and nature of a man (New York 1961).

59 MITANI, J. C., WATTS, D. P., AMSLER, S. J. Lethal intergroup aggression leads to territorial expansion in wild chimpanzees. Current biology 20/12 (2010) R507-R508.

internal conflicts. This behaviour reflects a concept from political science that is applicable here: "rallying around the flag effect."

Related to the above, we encounter the concept of obedience to authority as studied by Milgram[60]. In his renowned experiment in social psychology, the aim was to measure participants' willingness to obey orders from an authority figure, even when these conflicted with their personal conscience.

The results indicated that the vast majority of subjects lacked the ability or knowledge to make decisions, particularly in a crisis, leading them to defer decision-making to the group hierarchy to which they belonged. Therefore, the hierarchical organs of the group serve as the behavioural model for the individual. According to Milgram, the essence of obedience lies in the fact that a person views themselves as an instrument carrying out the desires of another, thus absolving themselves of responsibility for their actions. Once this shift in personal perception has occurred in the individual, all essential characteristics of obedience ensue. This forms the basis for military respect for authority: soldiers will follow, obey, and execute orders and instructions issued by their hierarchical superiors, understanding that the responsibility for their actions lies with the command of their superiors. Recent variations of Milgram's experiment suggest that the interpretation involves more than mere obedience to authority; participants experience learned helplessness, feeling incapable of controlling the outcome, thereby abdicating their personal responsibility. In a recent experiment using a computer simulation instead of a learner was unreal, yet the results were nevertheless the same[61].

In any case, as Davis[62] points out, hierarchy is still an adaptive behaviour that makes it possible for species to survive. In chimpanzees, this hierarchy only exists among males and only includes two categories, while in bonobos, the hierarchy of males is established in line with the hierarchy of females. Males remain attached to their mothers all their lives. Even if they are elevated to the highest status in the group. According to the author, this hierarchy is a manifestation of the symbolic thinking that chimpanzees do possess.

9. MAMMALIAN EMPATHY: INSIGHTS INTO SOCIAL AND EMOTIONAL CAPACITIES

In the realm of mammals, apes and proto-humans exhibit comparable disruptive traits in their group dynamics and power organisation. Given that groups can sometimes

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60 MILGRAM, S. Behavioural Study of Obedience, Journal of Abnormal and Social Psychology 67 (1963) 371-378. Also in his book, Obedience to authority (New York 1974).

61 SLATER, M., ANTLEY, A., DAVISON, A., SWAPP, D., GUGER, C., BARKER, C., PISTRANG, N., SANCHEZ-VIVES, M. V. A virtual reprise of the Stanley Milgram obedience experiments. PloS one, 1/1 (2006) e39.

62 DAVIS, W. J. Behavioural hierarchies. Trends in Neurosciences 2 (1979) 5-7.

comprise hundreds of individuals, individual physical strength becomes less relevant and gives way to a complex interplay of alliances and counter-alliances aimed at achieving dominance.

As De Waal[63] writes, the notion that empathy is part of our animal heritage should be a source of joy, yet we are often reluctant to accept our own nature. The author cites the example of an eight-year-old gorilla, Binti Jua, who on August 16, 1996, saved the life of a three-year-old boy who had fallen into an 18-foot moat at Brookfield Zoo in Chicago. The gorilla picked up the child, cradled him, and handed him over to zoo personnel. Rituals of mourning have also been observed in wild horses when a foal is killed by wolves[64].

Empathy should be recognised as an alternative survival strategy among social animals[65]. It is for this reason, Carthy[66] highlights a significant dynamic known as social facilitation, arising from group living, wherein animals tend to stimulate and imitate each other. Within a social framework, each animal reacts to the presence of others; if one displays aggression, the other responds with either aggression or submission, but never with neutrality. At its core, social organisation involves the continuous exchange of stimuli and responses among all members[67].

Likewise, Aristotle's concept of humans as "zoon politikon" underscores their innate social nature, highlighting the crucial role of maternal care in monkeys, involving activities like carrying, grooming, nursing, cleaning, and nurturing during infancy. These interactions significantly enhance empathy, reflected in the limbic system and neocortex, albeit exceptions exist such as borderline personality disorders or psychopathy. This evolutionary aspect of empathy suggests a fundamental neural mechanism in human development, likely originating from primates needing to discern conspecifics' intentions. In early human communities, this ability to interpret mental states and empathize helped assess newcomers' intentions. Empathy remains pivotal for human relationships, with almost all individuals exhibiting high levels, except those with certain disorders. Nevertheless, not all distressing situations evoke empathy; instances like war veterans begging or cancer patients' suffering may activate other brain regions such as the premotor cortex or primary somatosensory cortex, involved in

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63 DE WAAL, F. Our inner ape: A leading primatologist explains why we are who we are (New York 2005) 7.

64 RINGHOFER, M., MENDONÇA, R. Life and death of feral horses: predation by wolves and horses' recognition of death. Revista General de Derecho Animal y Estudios Interdisciplinares de Bienestar Animal: Journal of Animal Law & Interdisciplinary Animal Welfare Studies 4 (2019) 6.

65 De Waal states: "Those who say that, because nature is governed by a struggle for survival, we must live in the same way cannot be trusted. Many animals do not survive by eliminating each other or by hoarding everything for themselves, but by cooperating and sharing.Principio del formulario". DE WAAL, F. The Age of Empathy (London 2010) 6-7.

66 CARTHY, J. D. The behaviour of arthropods., cit, p.53.

67 CARTHY, J. D. The behaviour of arthropods, cit., p. 50.

mirror processes. "Brain areas associated with empathetic distress also activate during our experience or observation of actions, sensations, and facial expressions."[68].

Interestingly, Jane Goodall[69], the most famous primatologist who has studied chimpanzees for decades, believes there's a key difference between human and chimpanzee compassion. Humans, she argues, show compassion more broadly. While chimpanzees might exhibit it between mothers and their young, it's rarely seen in other situations.

On the other hand, Pankseep[70] suggests a different explanation. He believes our ability to connect and comfort others might be linked to the hormone oxytocin. Studies have shown that when this hormone was blocked in voles, their empathetic behaviour towards others disappeared[71].

In the experiment, it was observed that rodents, akin to humans, displayed empathy in the form of emotional contagion, evidenced by anxiety traits observed in rodents that had not been subjected to electric shocks. Concurrently, the researchers measured elevated levels of corticosterone, a stress-related hormone, in relatives and peers of the "tortured" rodents, suggesting a stress response that mirrored that of the distressed individuals.

In their Science article, the authors propose that many intricate social behaviors, such as empathy and pair bonding, likely originated from biological adaptations that initially supported parental care of offspring. These bonding systems, underpinned by oxytocin and related neurochemicals, are hypothesized to have emerged prior to other cognitive and social processes previously considered exclusive to humans.

The cooperation among individuals to achieve seemingly unattainable outcomes is another distinguishing characteristic of chimpanzees. Suchak's study[72] involved a series of experiments with a group of eleven chimpanzees. Human cooperation is facilitated by energy savings associated with competitive tendencies through enforcement mechanisms such as punishment and mate choice. To investigate whether chimpanzees

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68 ASHAR Y. K., ANDREWS-HANNA, J. R., DIMIDJIAN, S., WAGER, T.D. Empathic Care and Distress: Predictive Brain Markers and Dissociable Brain Systems", Neuron 94/6 (2017) 1263-1273.

69 GOODALL, J. The sentience of chimpanzees and other animals. In Animals, Ethics and Trade (New York 2012) 3-11. See also CARDENAS, J, Inside Jane Goodall's Revolutionary Approach to Animal Research, Sentient Science & Breakthrough (2024) https://sentientmedia.org/jane-goodall-animal-research/

70 PANKSEPP, J., PANKSEPP, J. B. Toward a cross-species understanding of empathy. Trends in neurosciences 36/8 (2013) 489-496. BARRAZA, J. A., ZAK, P. J. Empathy toward strangers triggers oxytocin release and subsequent generosity. Annals of the New York Academy of Sciences 1167/1 (2009) 182-189.

71 BURKETT. J. P., ANDARI, E., JOHNSON, ZV., CURRYF D.C, DE WAAL F.B., YOUNG, L. J. Oxytocin-dependent consolation behavior in rodents, Science 351/6271 (2016) 375-378.

72 SUCHAK, M., EPPLEY, T.M., CAMPBELL, M.W., FELDMAN, R. A., QUARLES, L.F., DE WAAL, F.B.M. (2016) How chimpanzees cooperate in a competitive world, PNAS, Biological Sciences 113/36 (2016) 10215-10220. See also, SUCHAK, M., EPPLEY, T. M., CAMPBELL, M.W, DE WAAL F.B.M. Ape duos and trios: spontaneous cooperation with free partner choice in chimpanzees, Peer J 2 (2014) e417.

possess similar abilities to mitigate competition, they set up a cooperative task in the presence of the entire group of eleven adults, requiring two or three individuals to pull together to obtain rewards. This open-group setup provided ample opportunities for competition (e.g., monopolizing, displacements) and aggression. Despite this unique competitive setup, cooperation ultimately prevailed, being at least five times more common than competition. The chimpanzees engaged in 3,565 cooperative acts while employing a variety of enforcement mechanisms to overcome competition and free-riding attempts to obtain rewards.

10. THE CHALLENGE OF ANTHROPOMORPHISM

The term 'anthropomorphism,' deriving from the Greek philosopher Xenophanes, who in the 5th century BC criticized Homer's poetry for portraying gods with human-like attributes. Xenophanes ridiculed this notion and suggested that if horses had hands, they would depict their gods in equine form. Drawing parallels between entities is one matter, but equating them as identical entities is quite another." As Wynn[73] points out, it is necessary to give language a more neutral meaning, as it is not possible to project human traits and experiences onto other species. Animals do not engage in sex, but in reproductive behaviour. They do not have friends, but preferred mates.

For instance, Horner/ De Waal[74], on the other hand, through his own research with macaques, bonobos and chimpanzees, studies by other scientists and ingenious reflections, comes to argue that apes have their own culture. However, the term has anthropomorphic connotations which, in our opinion, make the term misleading.

In line with the above, Van Leeuwen[75] maintains that chimpanzees' social lives are influenced by cultural transmission biases that hitherto were thought to be uniquely human. But using the concept of culture can be distorting, perhaps it would be more appropriate to coin a proper term that encompasses the behaviours of both species.

11. CONCLUSIONS

Like a tenacious vine weaving through the undergrowth, every organisation, by its very being, strives for continued existence. Within each community of individuals, there exists a tendency toward balance, seeking to resolve internal tensions among group

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73 WYNNE, C. D. What are animals? Why anthropomorphism is still not a scientific approach to behavior. Comparative Cognition & Behavior Reviews, 2 (2007) 125-135.

74 HORNER, V., DE WAAL, F.B. Controlled studies of chimpanzee cultural transmission. Progress in brain research 178 (2009) 3-15.

75 VAN LEEUWEN, E. J., HOPPITT, W. Biased cultural transmission of a social custom in chimpanzees. Science advances 9/7 (2023) eade5675.

members, aiming to establish a state of equilibrium or a stable situation conducive to harmonious coexistence. It's crucial to recognise that this equilibrium is not static or permanent but evolves continuously in response to changing life circumstances. This ongoing pursuit to improve social status involves an intricate network of influences and is evident across various aspects of the lives of social animals, especially in groups characterized by individuals with greater cognitive abilities.

Even though the essence of human beings as Homo sapiens[76] rests on an indisputable foundation—their biological existence as living beings—we observe a deep-seated tendency to marginalize and disregard this genetic foundation[77]. This Cartesian reductionism likely stems from metaphysical perspectives tinged with religious overtones, which elevate intellectual activities as uniquely characteristic of human behaviour [78] or the

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[76] As early as the 6th century BC, Pythagoras postulated that animals and humans share the same kind of soul. Pythagoras thought that the soul of animals was immortal, made of fire and air, and that it was reincarnated in a human to animal or vice versa. [RYDER, R. D. Animal revolution: Changing attitudes towards speciesism. Animal Welfare 10/2 (2001) 222-222]. Justinian posits in the Institutions of his Corpus Iuris Civilis that "the law of nature governs all animals, a law not specific to humans alone, but shared by all living beings, whether they dwell in the heavens, on dry land, or in the sea." According to the philosophy of St. Thomas Aquinas, grounded in Aristotelian hylomorphism (the union of body or matter and soul or form), the soul is singular yet endowed with three types of faculties. These include purely organic vegetative powers, enabling functions akin to those found in plants; sensitive powers, facilitating animal-specific functions such as sensory perception of material objects and innate inclinations towards them; and ultimately, intellectual faculties unique to humans, namely understanding and free will [Aquinas, T. (1869). Summa theologica (Vol. 5). Guerin.I, C. 76, a. 1].

[77] In Freud's words: "In the course of his development towards culture, man acquired a dominant position over his fellows in the animal kingdom. Not content with this supremacy, however, he began to place a gulf between his nature and theirs. He denied the possession of reason in them, and attributed to himself an immortal soul, and claimed a divine descent which enabled him to annihilate the bond of community between himself and the animal kingdom" [FREUD, S. Mourning and melancholia. The standard edition of the complete psychological works of Sigmund Freud 14 (1914-1916) 243-258]. To which he adds: "Man is nothing different from the animal, nor something better than it; he comes from the zoological scale and is closely related to some species and more distantly related to others. His subsequent acquisitions have not succeeded in erasing the evidence of his equality, given both in his physical constitution and in his mental dispositions. This is the second offence — the biological offence — inflicted on human narcissism".

[78] Since Descartes, animals have been thought to lack consciousness, being mindless biological automatons. The French philosopher defended his position by claiming that non-human species were absolutely incapable of using language [HARRISON, P. Descartes on animals. The Philosophical Quarterly 42/167 (1950-) 219-227]. In the early stages of sociology's development, Spencer initiated the influence of biology, although sociology's need for autonomous development and the socio-political projection and scope of social Darwinist approaches, coupled with the bad press of Spencer's organicist approaches, blocked mutual collaboration in this field. Alongside the influence of these historical discrediting factors, there has sometimes been a psychological resistance to an unbiased consideration of these problems. Freud interpreted this resistance as a defensive psychological reaction of "human narcissism". However, already during the Renaissance some thinkers, such as Montaigne and Charron, argued that animals possessed a certain degree of reason.

existence of a longed-for immortal soul[79]. Many human behaviors, such as mobbing, have been previously analyzed in animals and only subsequently extrapolated to sociology. According to Von Holbach[80], the perspective that animals lack ideas, judgment, and reasoning is refuted by empirical evidence.

Starting from this approach, which rejects the anthropocentric approach[81], it is easy to recognise that the polybic anacyclosis (the wear and tear in the exercise of power) is fully perceptible in chimpanzee society.

An organised group requires a clearly defined structure and boundaries to specify which behaviours are acceptable within that framework of coexistence. The wider the sphere of individual self-determination, the less cohesive and compact the group will be. The rules of synergy, framed within Von Bertalanffy's General Systems Theory, explain how systems evolve and adapt to their environment. In modern social organisations, these rules are seen as open complex adaptive systems, subject to internal and external forces that can contribute to chaos. The metaphor of chaos, used in verbal theories and based on mathematical models, provides a useful insight to describe the complexity of the behaviour of all higher apes at both the individual and collective levels. In short, animal societies also show complexity in their social structure, where hierarchical groups form and alliances are established to maintain order and ensure the survival of the system.

Nature demonstrates that gregarious animals living in groups accumulate synergies in their efforts, providing them with a competitive advantage in the struggle for survival by achieving goals unattainable for solitary individuals. This phenomenon is evident in chimpanzee communities, where leaders or alpha males emerge to organise and coordinate the group in addressing environmental challenges. Their primary

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79 In Judeo-Christian tradition, the act of divine creation distinctly differentiates animals from humans. Thus, in Genesis 1:21: "So God created the great sea creatures and every living thing that moves, with which the waters teemed according to their kinds, and every bird of flight after its kind. And God saw that it was good." This divine creative act, however, appears clearly differentiated when God creates man: " So God created man in his own image, in the image of God he created him; male and female he created them " (Genesis 1:27). The new Gospels omit any spiritual reference to the animal world. Moderating this drastically negative position, Pope John Paul II in his Sunday locution, states: " the animals possess a soul and men must love and feel solidarity with our smaller brethren" published on 14 January 1990 in "L'Osservatore Romano".

80 The author argues that: "It is the height of folly to deny the intellectual faculties to animals. They feel, they have ideas, they judge, they compare, they choose and deliberate, they have memory, they show love and hate, and their senses are often more delicate than ours". The fox does not open two exits to her burrows, nor does she chase the hens into the pens by instinct alone, but deliberately. It is not instinct that makes older animals wiser than younger ones, but experience [HOLBACH, P.H.T. The system of nature: Or, laws of the moral and physical world (London 1835)].

81 That being so, for Garner, advances in science lead us back to a vision of how to approach our relationship with the animal world. [GARNER, R. Political ideologies and the moral status of animals, Journal of Political Ideologies 8/2 (2003) 233-246].

responsibilities include collective activities such as obtaining resources (hunting and gathering fruits), intervening and resolving internal conflicts, defending against predators, and patrolling their borders at dusk to deter intruders.

However, empirical observations reveal that not all leaders and chimpanzees consistently fulfil their roles. Consequently, to ensure the survival of the group and its individuals, alpha males must be replaced when necessary. Chimpanzee social organisation involves continuous, silent, and latent mechanisms for leadership replacement.

In our view, the most significant aspect of chimpanzee society is not the various strategies individuals use to achieve the role of alpha male or the hierarchical status of leader. Instead, it is the generation of alternative counter-powers within the group that checks the dominant individuals and gradually and sinuously undermines their aegis of power. As these leaders' hold on power diminishes, a series of silent forces, interwoven over time, orchestrate their displacement through ongoing coups d'état that vary in violence based on the circumstances of power exercise and the forces shaping the opposition.

Additionally, the chimpanzee brain appears predisposed to form continuous counter-alliances, ready to displace leaders when their role becomes excessively asymmetrical. In contrast, experiments like Milgram's suggest that humans tend to be more docile and inclined towards blind obedience to institutionalized hierarchy, unlike our more unruly primate relatives. Nature's balance isn't achieved by simply avoiding conflict, but rather by skilfully managing opposing forces to minimize disruption. Crises lead to the establishment of a new order that replaces the old. This constant cycle ensures continual renewal, echoing Heraclitus's observation that everything changes, all is in permanent flux.

Polybius' central approach emphasizes the analysis of the complexities of power dynamics, underscoring the crucial role of countervailing forces. These counter-powers play a beneficial role in rectifying imbalances and simultaneously contribute to the system's stability. Such power mechanics are present in all gregarious animals, where cooperative constructive forces coexist in a bipolar manner[82] with egocentric forces that tend toward the exploitation of individuals within the group.

Perhaps our main conclusion could be that, despite the innate inclination of dominant primates to abuse their power by using physical or psychological violence, the group

[82] Thus, De Waal states in Nova Interview: "It is true that the chimpanzee is dominance-oriented, violent, territorial. But it's also cooperative in many ways, and so that side is sometimes forgotten. The bonobo is sensual, sensitive, sexual, a peacemaker, but also can have a nasty side, and that's sometimes forgotten. So, both species are sort of the ends of the spectrum, and we fall somewhere in between. Clearly, we have both of these sides in us, and that's why I sometimes call us "the bipolar apes."". [DE WAAL, F. The Bonobo in All of Us (2007) https://www.pbs.org/wgbh/nova/article/bonobo-all-us/]

has also evolved to generate checks and balances and means of reaction that monitor the behaviour of these hierarchs. It is highly likely that the first glimmerings of a balance of power emerged in the deep recesses of the jungle millions of years ago. In essence, both chimpanzees and humans share similar goals and follow parallel political paths in our evolution, for once security is achieved, we all try to avoid, as far as possible, the abuses of tyranny.

The principal aim of Law is to foster social harmony by mitigating the inevitable conflicts that arise from coexistence, essentially striving for peace. In the same vein, constitutional law seeks to establish a system that facilitates stability and maintains the balance of power, in order to prevent chaos and discords. In parallel, observation of nature reveals that social groups always seek to re-establish their internal equilibrium by adapting to the environment and its continuous changes[83].

Analysing the contradictions between human and higher ape societies, De Waal argues that:

> Being both more systematically brutal than chimps and more empathetic than bonobos, we are by far the most bipolar ape. Our societies are never completely peaceful, never completely competitive, never ruled by sheer selfishness, and never perfectly moral[84].

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83 As Richard Dawkins quotes: we admit that we are like apes, but we seldom realise that we are apes. [DAWKINS, R. A devil's chaplain: Reflections on hope, lies, science, and love (Boston 2004)].

84 DE WAAL, F. Our inner ape: A leading primatologist explains why we are who we are (New York 2005) 23-24.

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