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Chapter 29

Human Diversity at the Individual and Population Levels, and Societal Hierarchies

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INTRODUCTION

Hierarchies are ubiquitous in human societies, but describing the multiple forms that they can take is a formidable challenge. Part of the problem is that we use the concept of hierarchies to refer to various types of relationships between people: the bully intimidating younger children in the schoolyard, the natural leader mobilizing his peers to take part in an exciting project, the director of a large corporation having formal authority over his employees, the traditional chief using his wealth to support a large network of loyal clients, the religious leader claiming authority to interpret scripture, the prosperous professional benefiting from higher standards of living than her working class peers, etc.

My objective in this chapter is not to provide an exhaustive description of the various forms that hierarchies can take in human societies. This would clearly be impossible, as potential variations are in finite. My goal is more modest. I aim to explain that hierarchies are the outcome of a limited set of mechanisms working at different levels: biological, psychological, and social. My key message is that, despite interesting parallels with animals and especially apes, humans create societal hierarchies that have no equivalent in the animal kingdom. The creation of human hierarchies is made possible by unique social-cognitive skills and is a precondition to extending cooperation beyond a few dozen people. The paradox, I will claim, is that while human hierarchies result from our exceptional capacity for cooperation, they also make possible unprecedented levels of violence and exploitation.

I begin the chapter by explaining in broad terms what dominance hierarchies in the animal kingdom consist of and present the main mechanisms that lead to their emergence (section: Hierarchies and Dominance in the Animal Kingdom). I then provide a brief overview of the research aimed at documenting the presence in humans of these mechanisms, including research on the link between social status and hormones, behavior, and health outcomes (section: Do Humans Have Hierarchies?). I will argue that the dynamics of hierarchy formation among humans differs strongly from other species because of our unique mind-reading capacity and prosocial motivations (section: Uniquely Human Social Cognition). During the evolution of the genus Homo, our ancestors gradually developed an unprecedented capacity to cooperate and resist would-be alpha males, which led to the creation of relatively egalitarian social organizations among small foraging bands (section: How Our Ancestors Challenged Hierarchies). The last two sections of the chapter examine the current paradox with human hierarchies in more detail. On the one hand, we need large hierarchical organizations to support cooperation between thousands, if not millions, of people (section: Why Hierarchies Are Functional). On the other hand, well-studied social and psychological mechanisms open up the possibility that rulers will turn into despots and use hierarchies for exploitation (section: From Cooperative to Exploitative Hierarchies).

HIERARCHIES AND DOMINANCE IN THE ANIMAL KINGDOM

Farmers and herders must have been aware for centuries, if not millennia, of the existence of relationships of dominance among animals, that is to say, of the presence of
individuals who were more assertive, aggressive, and tended to harass and impose themselves over others. It is not until the 20th century, however, that dominance hierarchies were brought to scientific attention, after Norwegian zoologist Thorleif Schjelderup-Ebbe published his dissertation on the question. Schjelderup-Ebbe (1922) crafted the concept of “pecking order” (Hackordnung) to describe the strict sequence in which chickens were allowed to access food. Since then, dominance hierarchies have become a standard object of study among biologists and have been largely documented in countless species, ranging from crustaceans and fishes to birds and mammals. A large literature has documented the factors influencing the formation and maintenance of hierarchies in different species.

A first group of variations concerns the stability of hierarchies: while ranking is fixed for long periods of time in some species (or in some contexts), it remains fluid in others. Hierarchies are sometimes linear and transitive (such that if A dominates B, and B dominates C, A dominates C), but sometimes not. Hierarchies are partly determined by individual attributes, so that larger, healthier, more aggressive and more assertive individuals tend to dominate smaller, weaker, and more diffident ones. But hierarchies also vary in function of contextual factors, such as predation pressure, environmental stress, or feeding and sexual competition. The social intelligence of a species also determines how it forms and maintains hierarchies, as cognitively more sophisticated species, such as primates can form coalitions that play a crucial role when disputing rank. Among chimpanzees, for instance, raw physical force is instrumental in rising through the ranks, but social intelligence and the capacity to forge alliances and enlist supporters are also crucial for ambitious individuals to find their way to the top (de Waal, 1982).

Significant work has been done not only to characterize dominance hierarchies, but also to explain their existence. At the higher level of explanation, one can say that hierarchies result from the very nature of social life, in which animals are simultaneously in competitive and cooperative relationships with one another. On the one hand, living in groups can be a major source of well-being for animals. Conspecifics sometimes help protect against predators, access certain sources of food (eg, larger prey), and invest in offspring. At the same time, social life is a source of rivalry, especially when it comes to feeding and reproduction. Dominance hierarchies exist because animals are at an advantage if they can avoid permanent fighting, while drawing benefits from life in society. Once in place, stable hierarchies can be to the advantage of everyone. Dominants do not need to engage in permanent combat with subordinates to maintain their privileges, while subordinates can avoid taking the risk of challenging higher-ranking individuals in vain.

A more fundamental question is why animals strive toward higher social ranks in the first place. The generally accepted answer is that high-ranking individuals have greater access to feeding and mating opportunities, which leads to higher fitness (Clutton-Brock, 1988; Buss, 2007; Cummins, 2005). This view explains why the drive toward dominance is generally greater among males than among females. In most species, males and females do not face the same evolutionary trade-offs. For males, sperm is abundant and cheap, while reproduction is generally costlier to females (this is particularly true of mammals). For this reason, male reproductive success is much more variable than women’s. As David Buss (2007, p. 360) puts it: “Nearly all fertile females will succeed in reproducing, regardless of their social status, but the same cannot be said of all fertile males. For each man who gains reproductive access to a disproportionate share of women, other men are consigned to bachelorhood and reproductive oblivion.” In his survey of 700 studies, Ellis (1995) argues that high-ranking males typically have a reproductive advantage over low-ranking ones. The link, however, is not universal, revealing that subordinate males sometimes find ways to compensate for their disadvantage and highlighting the need to pay close attention to context when studying dominance hierarchies and their impacts.

Significant research has also been conducted to uncover the neurocognitive and behavioral mechanisms involved in the creation of dominance hierarchies. These mechanisms present interesting variations and similarities across species. Sheri Johnson et al. (2012, p. 692) have used the concept of dominance behavioral system (DBS) to refer to the “series of biological, psychological, and behavioral components” that “serve the organism’s goal of control over social and material resources that are critical for survival and reproduction.” The DBS is composed of a mechanism that monitors the environment to detect threat to one’s rank, as well as a motivational system that direct action toward the goal of controlling resources. The drive to rise through the ranks is not the same for different individuals and can also vary depending on the social-cognitive abilities of each species. At the behavioral level, the DBS generally takes the form of easily recognizable gestures and displays of dominance and subordination. Among chimpanzees, for instance, dominant individuals make assertive and aggressive movements and try to appear larger and heavier, while subordinates lower their bodies, present their rear-ends or emit pant-grunts as they look up at higher-ranking individuals (de Waal, 1982). Failing to display signs of submission comes with the risk of being punished.

At the biological level, there is a close connection between dominance behavior and the neuroendocrine system that regulates the production of hormones, such as testosterone and cortisol (Sapolsky, 2004a,b; 2005). For instance,
there is an unambiguous link between aggression, the drive toward dominance, and the production of testosterone. It has long been known, for instance, that castrated rodents barely ever fight, but resume combat when testosterone is administrated to them (Beeman, 1947). Among birds, Wingfield et al. (1990) proposed the so-called “challenge hypothesis” to account for changes in patterns of testosterone production and aggression in the context of seasonal breeding. According to this hypothesis, testosterone increases among males at the onset of the breeding season and reaches its peak to support male breeding. According to this hypothesis, testosterone in-...
Dominance hierarchies are not only the outcome of dominance relationships. They also shape the brain of subordinates with blunted responses in the face of new challenges, a situation that left them ill-positioned to react to stressful events. A metaanalysis of research conducted among seven primate species has shown that stress among low-ranking primates is a function of two variables: (1) the rate of stressors to which individuals are exposed, for instance, in the form of harassment by dominants, and (2) the opportunities they have to find social support, especially among kin (Abbott et al., 2003). As a result, ranking low can turn out to be a blessing under some circumstances, for instance, in old age. As Sapolsky (2004b, p. 393) comments in the case of wild baboons, males that have always ranked low in the hierarchy often age surrounded by familiar kin and friends, among whom they can find relief in times of stress. On the other hand, former alpha males can be traumatized by the experience of losing rank and, under harassment from younger individuals, can be forced to move into another troop, where they will end their days miserably in the company of strangers.

Dominance hierarchies are not only the outcome of individual attributes and various contextual factors. As the social dynamics unfold, they shape the minds and brains of individuals in a way that determines their further capacity to thrive. In a study of squirrel monkeys, Kirk R. Manogue et al. (1975) have shown that social rank shapes individual responses to stressors. Alpha males had low baseline cortisol levels, which suggests that they had not been exposed to prolonged stress. When exposed to a stressor, however, they had a large increase in cortisol, the kind of response that prepared them well for an energetic reaction. Subordinates, by contrast, had a higher baseline and significantly lower increase in response to a stressor. This pattern suggests that chronic exposure to stress had left subordinates with blunted responses in the face of new challenges, a situation that left them ill-positioned to react to stressful events.

Dominance relationships do not only shape the brain of cognitively complex species like primates. When two male crayfish meet, for instance, they engage in a fight to establish dominance. The loser moves away and avoids further contact with the winner. Such fights have been shown to shape the responses of a specific neuron in the crayfish’s brain (Yeh et al., 1996). Among winners, the neuron is more likely to be activated in the presence of the neurotransmitter serotonin, which is associated with aggressive behavior in this species. Among subordinates, by contrast, activation of this neuron is more likely to be inhibited. This neural change is not without consequence: when two subordinate crayfish are put in competition, they engage in a fight and one ends up dominating the other. But things work out differently when previously dominant males are placed in competition; a fight is engaged, but the losing crayfish seems unable to accept his subordination, and keeps engaging the dominant one at the risk of being killed. Because of similar neural changes, social dynamics can significantly shape dominance hierarchies. Initial wins and losses in the competition for status help determine how individuals will behave in further combats. This feedback loop has been claimed to explain why initial attributes, such as size and aggressive behavior are insufficient to predict the outcome of hierarchy formation among fishes (Chase et al., 2002).

Do humans have hierarchies? Dominance hierarchies among animals are the outcome of a large complex of variables: individual attributes rooted in biological mechanisms, social and environmental factors, as well as the feedback between them. What about properly human hierarchies? I will argue, that because of our unique social-cognitive skills, we form hierarchies that are profoundly different from the ones formed by other primates. But significant research has also documented the importance of the various mechanisms among humans described earlier in this chapter. This section briefly summarizes this research before explaining how humans differ from other species in the rest of the chapter.

A first similarity between human and other animals is found in the presence of individual variations as to how people behave in competitive social settings. The presence of a drive for dominance is clearly present in humans and has been documented through various psychological constructs. Individuals with so-called “type-A personalities,” for instance, have been described as prone to being impatient, hostile, aggressive, and competitive (Friedman, 1996). In his book on the psychology of social class, Michael Argyle (1994, pp. 54–55) contrasts the behavior of dominant individuals who stand with straight posture and an expanded chest, and who look at others and gesture, with the bent posture of submissive individuals who give deferential head nods, speak less, and do not interrupt high-status persons.

Several authors have also described important gender differences with respect to dominance. Moskowitz (1993), for instance, has shown that, in a cooperative setting, men tend to be more dominant than women, especially when interacting with other men. In his study, dominance is defined as the disposition to try to influence others or the outcome of a situation, with key behaviors including telling the other person what to do, taking control of the resources necessary to solve the problem, and ignoring the other person. Reviewing the large literature on the question, Eleanor Maccoby (1990) has argued that significant gender differences with respect to dominance and competition already exist in preschool years. Boys tend to prefer a rough-and-tumble play style and use language in an egoistic fashion. Girls, by contrast, tend to use conversation as a binding process and find it difficult to influence boys. A large literature has also examined how informal hierarchies rapidly emerge through group dynamics.
p0115 Another influential stream of research has examined the hormonal correlates of aggression, competition, and dominance. As with other primates, testosterone plays a crucial role. A study conducted among inmates revealed that men with high testosterone levels were more likely to have committed crimes involving physical violence than property crimes, such as burglary and theft, and they were also more likely to have overtly transgressed prison rules (Dabbs et al., 1995). Testosterone levels are also predictive of criminal violence and aggressive dominance among women (Dabbs and Hargrove, 1997). A large number of studies have also examined changes in testosterone in competitive settings, especially in sports (for review, see Booth et al., 2006). The best-established result is that testosterone increases in the face of a challenge, as one anticipates the efforts to come. After the competition, testosterone remains high among winners but declines among losers. This pattern can also be observed among voters who win or lose an election (Stanton et al., 2009). Similar results have been used to argue that there is a reciprocal relationship between hormonal secretion and social dynamics in humans as in many other species (Mazur and Booth, 1998). Testosterone levels influence how one performs in competitive social settings, but the reverse is also true. The outcome of social interactions determines further testosterone levels.

p0120 That being said, the relationship between testosterone and dominance is far from straightforward. Studies of college students, for instance, have established that young men and women with higher testosterone levels have a more engaging and confident interaction style, which could be conducive to more helpful behavior (Dabbs et al., 2001). These findings suggest that the link between dominance and testosterone, although present in humans, is strongly modulated by our disposition to cooperate and capacity to inhibit aggression (Christiansen, 1998). It also helps explain why the relationship between testosterone and social status among humans is more intricate than among other primates. Those of us with high levels of testosterone are far from being guaranteed a high rank in society. In fact, there is a negative association between testosterone levels and social status in men, at least when status is defined in terms of occupational prestige and income (Dabbs, 1992). This negative association is of limited amplitude, however, and high testosterone men can also find their way to prestigious positions in society. Mazur and Booth (1998) have argued that high testosterone can motivate both prosocial and antisocial behaviors, pushing some individuals toward the bottom of the occupational hierarchy, and others toward the top.

A large stream of research has looked into the physical, behavioral, and health correlates of socioeconomic status (SES). A well-researched relationship exists, for instance, between height and SES. Various explanations have been proposed to account for this link, including self-esteem and dominance, but also the presence of an advantage in cognitive skills among taller persons (Case and Paxson, 2008). In a similar spirit, Schmitt and Atzwanger (1995) measured the speed at which people walk through Vienna. They then stopped the people to inquire about their SES. They noted that men of higher SES walked significantly faster than men of lower status (although they found no such correlation among women). Height and walking speed are not the only variables predictive of SES. Mueller and Mazur (1996) have examined the link between military rank and facial dominance, indicated by a prominent chin, heavy brow ridges, and a muscular face. Using photographs from the military academy, they rated the facial dominance of 434 West Point cadets and then found that it was correlated with military ranks attained more than 20 years later. Cadets with low facial dominance—indicated by a weak chin, slight brow ridges, and a fleshy face—were less likely to have gone up in the hierarchy.

The relationship between SES and health has also attracted significant attention. The famous Whitehall study, for instance, examined the health correlates of rank among members of the British civil service over several decades (Marmot et al., 1991). The study found a strong relationship between rank and the prevalence of illness, high blood pressure, obesity, smoking, and associated mortality risks. This relationship is also supported by a large literature in public health, revealing the existence of a consistent gradient where individuals of low SES face greater health risks, independent of factors, such as access to health care or the dangers inherent in one’s occupation (Rivers and Joseph, 2010). The relationship between health and status is even stronger when subjective SES (one’s perceived status) is taken into account rather than objective SES. A study by Adler et al. (2000) found that subjective SES in women is associated with heart rate, sleep latency, abdominal body fat, and hyperactive cortisol response to chronic stress, even after controlling for objective SES. Individuals with higher perceived status are also less at risk of developing the common cold (Cohen et al., 2008). The relationship
One key question is whether the human drive to attain higher status, especially among men, is driven by the same evolutionary logic present in most other species. In other words, is the ultimate cause of the quest for high status the outcome of dominant individuals’ greater fitness? Several authors have argued in favor of this hypothesis (Cummins, 2005; Buss, 2007). Evolutionary psychologist Laura Betzig (1993), for instance, examined the link between rank and reproductive success among six early civilizations (Meso- potamia, Egypt, India, China, Incan Peru, Mexico). She found that in all cases, rulers maintained large harems composed of dozens and sometimes hundreds of fertile women. In some cases, the reproductive success of the despots has been so large that it can still be traced in contemporary populations. The most famous case is that of the Mongol ruler Genghis Khan. A study of the population from the territory covered by the former Mongolian empire suggests that no less than 8% of the men from this region descend from the famous emperor and his sons (Zerjal et al., 2003). The link between social status and reproductive success remains controversial, however, because of the way social norms (eg, monogamy) and technologies (eg, contraception) influence sexuality and reproduction. Nevertheless, studies of both premodern and modern societies have tended to find a positive link between social status, wealth, and fertility among men (but not among women), suggesting that status pays off in evolutionary terms in a broad variety of social contexts (Fieder et al., 2011).

UNIQUELY HUMAN SOCIAL COGNITION

Research reviewed in the previous sections has shown interesting parallels between human and nonhuman hierarchies. This research, however, raises important definitional issues. Human hierarchies are sometimes defined in a way that is similar to those in animal studies. A relationship of dominance is said to exist, for instance, when one individual is assertive and aggressive and the other diffident and deferent. But the concept of a dominance hierarchy is often extended to refer to any type of inequality, including the existence of social classes, occupational and wealth inequalities, and institutional authority. This extension is problematic, given the complexity of human societies. As Sapolsky (2004b, p. 363) puts it:

So, the lowly subordinate in the mailroom of the big corporation may, after hours, be deriving tremendous prestige and self-esteem from being the deacon of his church, or the captain of her weekend softball team, or may be at the top of the class at the adult-extension school. One person’s highly empowering dominance hierarchy may be a mere 9-to-5 irrelevancy to the person in the next cubicle, and this will greatly skew results.

What is often missing in discussions of human hierarchies is a cogent account of how human culture and unique social skills alter the dynamics of hierarchy formation. This is what this section and the following aim at providing. The concept of culture is arguably the most important in the study of human societies and, at the same time, the hardest to define (Kroeber and Kluckhohn, 1952). Explaining what we mean by culture is made even harder by the growing recognition that several species across the animal kingdom—including apes, but also cetaceans and birds—adopt socially transmitted behaviors (Laland and Galef, 2009). Fortunately, a rapidly expanding literature, comparing human and nonhuman psychology, helps in discerning what is so specific about human social cognition.

Summarizing human specificity in one sentence, we might say that we are wired to be attuned to one another. This attunement begins from the earliest age and shapes the way we interact with one another throughout our lives. Indeed, from their first days of life, newborns are sensitive to others’ emotional states. A baby that hears the cries of another child is more likely to start crying, just as one that sees a smile is more likely to smile, a phenomenon known as emotional contagion (Martin and Clark, 1982). Such reactions appear so early in child development that they are unlikely to be the result of social learning. In all likelihood, they are based on hardwired mechanisms that match our affective reactions of pleasure and displeasure to those of our peers.

Newborns’ attunement to others is obviously limited by the narrowness of their understanding of the world. But it offers the basis on which they build more complex cognitive skills. From 9 to 12 months, for instance, children begin to actively monitor the gaze of their parents and take an increasing pleasure in sharing their attention. The ingenious interest that a toddler finds in pointing objects out to his parents may not be impressive at first sight, but it has no equivalent in the world of primates (Tomasello, 2010, 2014). Apes, for instance, can learn hundreds of symbols from sign language, as the famous examples of the bonobo Kanzi and the gorilla Koko have shown. But they approach language in a way that is very different from toddlers. Instead of taking pleasure in the simple act of referring to things, they use language in an almost exclusively instrumental manner.

It would be hard to overemphasize how the pleasure we take in sharing each other’s attention and emotions transforms our life and societies. It is not only at the foundation of properly human language; it is also the ground on which altruism, cooperation, social norms, and morality can
It is true that apes’ social cognition is significantly more complex than once believed. There is a growing consensus, for instance, that apes are capable of representing others’ intentions. Placed in competition with an alpha male for a favored food, a subordinate chimpanzee demonstrates that, before 4 years of age, children claim that Sally will look in the basket, failing to take into account how an object looks from different points of view or to understand that appearance can differ from reality. In a classical experiment, a puppet called “Max” arrives and says he also wants to play Dax. If the puppet failed to play correctly, children intervened to stop him: “No, this is not how you play!” By contrast, if Max did not say that he wanted to play Dax, but rather that he wanted to show something interesting to the children, they did not protest. The Dax game is obviously simpler than the most complex institutions that humans have created throughout history. Nevertheless, it illustrates the foundation on which human culture is built. We do not simply develop expectations toward one another (what other primates do). We also devise abstract games in which expectations are defined in function of one’s role (Searle, 1995; Tomasello, 2014). A long learning process is needed for children to fully appreciate, for instance, how rights and obligations are allocated within complex institutions and how such institutions evolve over time.

Another important feature of human-specific social cognition is morality. There is significant controversy in psychology and philosophy concerning the exact functioning of moral judgment. Not everyone agrees on the way in which emotions, intuitions, reasons, and abstract considerations of fairness intervene in the distinction between good and evil (see, for instance, Prinz, 2007; Baumard, 2016; Mikhail, 2010; Haidt, 2012; Greene, 2013). There is broad agreement, however, that morality is somehow based on the sociocognitive and socioaffective skills that I just described, that is, on our capacity to read other minds and motivations to help and cooperate with others.

There is also no doubt that morality, through its connections with affects, motivates behavior in important ways. Indeed, moral judgment is linked to both positive and negative emotions, directed both toward oneself and others (Haidt, 2003). Good deeds, for instance, inspire pride in those who commit them, and admiration in observers.
Moral violations, by contrast, tend to elicit negative emotions, including guilt and shame in transgressors and indignation and anger in victims or third parties who witness the transgression. Here again, there is significant debate as to how exactly moral emotions motivate behavior (Fessler and Haley, 2003; van Winden, 2007; Clavien and Klein, 2010; Batson, 2011). There is no doubt, however, that under a broad range of circumstances, positive and negative emotions steer us away from moral transgressions. A large literature in experimental economics, for instance, has examined how emotions, such as anger and indignation can, under many circumstances, motivate the punishment of unfair behavior and promote cooperation (Gintis et al., 2006; Dubreuil, 2015).

Human-specific disposition to altruism, cooperation, norm following, and morality do not offset the mechanisms, discussed in the previous sections, that explain the formation of dominance hierarchies in the animal kingdom. They explain, however, why the process of hierarchy formation is much more complex among humans. Developmental psychology can shed a unique light on how the progressive integration of young children into the world of norms and morality influences dominance behavior. It is well established, for instance, that during preschool years, important changes happen as to how children try to influence others and take control of resources (Hawley, 1999; Pellegrini et al., 2007). While younger children tend to coerce others into doing what they want, older preschoolers switch to more subtle approaches based on cooperation, negotiation, and alliance formation.

This is not to say that coercion, aggression, and intimidation play no role among older children. As adults, they remain capable of gross forms of violence and abuse. Nevertheless, the socialization process, the development of social norms and moral judgment, changes what can and cannot be an effective way of influencing others dramatically. In the social world of humans, the drive to dominance can rapidly lead to appalling consequences if one is incapable of controlling one’s impulses and regulating one’s emotions. In fact, we care so much about how people regulate the drive to dominance that we recognize various conditions that prevent people from regulating their emotions as mental disorders. This is the case for antisocial disorders and psychopathy and also for disorders, such as narcissism and mania, related to an inflated view of one’s power and value (Johnson et al., 2012).

Most humans today live in societies where hierarchies and inequalities are ubiquitous: large corporations, religious organizations, and governments are all organized hierarchically, and there is a dramatically unequal distribution of wealth, health, and well-being. This makes it easy to lose sight of the fact that, from the perspective of our evolutionary history, this situation is totally extraordinary. For hundreds of thousands of years, our ancestors lived in small foraging bands with limited inequalities and no wealth as we know it. How did our ancestors evolve, from ape-like dominance hierarchies to a properly human way of life? Reconstructing our evolutionary past cannot be done through direct observation. It must rely on an inference to the best explanation, drawing from research from a variety of disciplines, including paleoanthropology, archeology, anthropology, theoretical biology, and comparative cognitive neurosciences.

Ethnographies of historical foragers offer a good starting point for an inquiry into our evolutionary past, although it is true that the Inuit, Australian Aborigines, or San and Mbuti people are not relics of the distant Paleolithic. Indeed, most foraging people, even at the time of their first contact with European explorers, had already had significant contact with nonforaging people and, in some cases, had themselves been involved in agriculture in the past. Furthermore, questions can be raised as to whether modern foragers live in habitats that are representative of the ones found in the Paleolithic (Porter and Marlowe, 2007). Holding these caveats in mind, however, a comparative analysis of foraging societies can undeniably reveal how Homo sapiens tends to organize its social life in the absence of a state and wealth. One of the most common traits of foraging societies, for instance, and one that drew the attention of the first European explorers and ethnographers, was the absence of coercive political authority (Clastres, 1989). Indeed, throughout the world, foragers spend most of their time in small mobile bands comprised of a few dozen individuals, who are generally related to one another (Kelly, 1995; Lee and Daly, 1999). These bands are embedded in a broader social landscape and participate in fission-fusion networks: groups split and new groups are formed periodically as a function of marriage, affinity, and necessity.

Life in small bands and the fission-fusion dynamic are not proper to Homo sapiens but can be found in several primate species. What is interesting about human foragers, though, is the lack of a clear hierarchy, in which more robust and aggressive individuals impose themselves over others through bullying and harassment. Foraging societies are not strictly egalitarian. A division of labor exists along gender lines, as well as a marked power differential between younger and older individuals. Nevertheless, among adults, no one is in position to dominate others through the use of naked force. Moral suasion exists and individuals can demonstrate leadership, but there is no ruler capable of imposing his will to the group. Henrich and Gil-White (2001) described this form of leadership as “freely conferred deference” and contrasted it with dominance based on fear and threat.
The relative egalitarianism of foraging societies is facilitated by the very nature of their mode of subsistence. In the vast rainforest, desert, or tundra, most adults or households have the capacity to leave one group and join another one. In some cases, they can even exist on their own. But the possibility of escaping potential bullies is not the main reason for the infrequency of open forms of dominance. The key to more egalitarian social relations among foragers is the disposition to cooperate, enforce social norms, and develop a sense of fairness. Anthropologist Christopher Boehm (2012) completed ambitious surveys of the ethnographic literature on foraging societies in order to find out how they counteracted the drive to dominance of more aggressive individuals. Among other things, he looked for instances in which capital punishment had been imposed on an individual. Not only did he find several instances of executions, but found that, in about half of the cases, the person put to death was a man who was intimidating the group through malicious sorcery or different forms of aggression (Boehm, 2012, pp. 83–85). In the other cases, the execution targeted individuals who had committed serious moral breaches (eg, violation of a taboo, sexual transgression, betrayal of the group).

Capital punishment is obviously a rare and extreme form of punishment. Imposing it is dangerous. There is a risk of retaliation, unless the entire group is in agreement with the sanction. Moreover, by carrying out an execution, a foraging band loses one of its members, someone who could contribute to the group’s subsistence. As a result, social control takes significantly milder forms most of the time. Gossip, ridicule, and ostracism, for instance, are favored tools used against arrogant individuals who try to impose themselves over others, refuse to share, or adopt all kinds of antisocial behaviors. Such tools are efficient not only because foragers want to avoid the negative feeling of shame, but also because they care about social status. In a world in which cooperation is often needed for survival, maintaining a good reputation is crucial for finding partners and allies. In this sense, Baumard (2010) has argued that open and direct punishment is rather unusual among foragers, and that the motivation to behave fairly is, more often than not, driven by the need to position oneself as a partner of choice in the market of cooperation.

Boehm (1993, 1999) argues that the human capacity for social control and cooperation has led through evolution to the emergence of “reverse dominance hierarchies.” In contrast to what happens in ape societies, aggressive and intimidating foragers generally fail to establish dominance over others and are instead pushed toward the bottom of the hierarchy, reversing the usual pyramid. There is little doubt that such a reversal occurred at some point in the human lineage. An interesting question, however, is when did it happened and what prompted it? Unfortunately, we do not have direct access to the social life of our forebears. We cannot directly observe how australopithecines, Homo erectus or Neandertals treated more aggressive individuals who tried to dominate others. Nevertheless, the archeological and paleoanthropological records can help document major transitions in social organization and modes of subsistence. A reasonable assumption is that we can read the gradual emergence of the disposition for cooperation in the human lineage in these transitions. As cooperation is what stands behind the capacity of foragers to oppose more aggressive and dominant individuals, finding the roots of cooperation is tantamount to finding the origins of equality among foragers.

In previous works (Dubreuil, 2010a,b; Henshilwood and Dubreuil, 2011; Dubreuil and Henshilwood, 2013), I argued that three major transitions can be identified in the human lineage, each of them coinciding with a significant change in social cognition and an increase in our forebears’ capacity to cooperate. The first transition came with the slow emergence of the genus Homo, between 2.5 and 1.5 million years ago. This transition is linked with major changes in hominin morphology, including increased brain size in Homo habilis, Homo ergaster, and early H. erectus, the progressive loss of upper limb morphology facilitating climbing, and the evolution of morphological features adapted to long-distance walking and running (McHenry and Coffing, 2000). In all likelihood, this new morphology was linked to early humans moving into a new ecological niche. Early members of the genus Homo, in contrast with australopithecines, could not easily climb trees to find protection, but could walk long distances through more open landscapes in search of plants, small prey, or fresh carcasses to butcher, thanks to an increasingly regular use of stone tools (Ungar et al., 2006). I have argued that this new mode of foraging implied a greater capacity for cooperation, the kind that could be supported by a growing motivation to share attention and collaborate on joint tasks (Dubreuil, 2010a). Indeed, early humans could stay on the ground while protecting themselves against powerful predators (eg, lions, hyenas), they could support less mobile members of the group (eg, pregnant women, small children, wounded individuals) through long-distance walking, and could confront other scavengers to access carcasses early on.

The colonization of this new niche by early members of the genus Homo triggered an evolutionary process that spanned several hundreds of thousands of years. During the period between 1.5 and 0.3 million ybp, human brains grew slowly but steadily, suggesting a sustained evolutionary pressure for more advanced cognitive skills (Rightmire, 2004). Technology also progressed slowly, but major changes were introduced in the organization of social life. By the end of this period, our ancestors had mastered control over fire, which provided protection against predators and cold, but also facilitated digestion, leading to...
important improvements in human diet. *Homo heidelbergensis* and Neandertals were no longer limited to small-game hunting and scavenging, but became top-level predators who could switch to large-game hunting when appropriate (Thieme, 1997; Richards et al., 2000). Large-game hunting provides strong evidence of advanced cooperation among early humans, not only because it has to be conducted in groups to be efficient, but also because there is no point in adopting such a risky mode of subsistence if hunters cannot find ways of sharing meat with one another and of bringing back carcasses to a base camp to feed small children, pregnant women, and incapacitated individuals, as modern *H. sapiens* do (Garven, 2004).

Additional evidence of improving cooperation during this period is found in the changing life-history patterns of hominins (Kaplan et al., 2000). Indeed, one of the most striking characteristics of modern humans is the time they need to become adults. While chimpanzees can feed autonomously at about four years of age, human children typically cannot before adolescence. This prolonged period of dependence plays a crucial role for human children: they use it to develop their big brains. In fact, social, emotional, linguistic, and technical skills keep developing well into teenage years and young adulthood. But a longer childhood also has significant energetic implications: while female chimpanzees care for only one child at a time, women in foraging societies must typically care for two, three, or four. They can do it because, in contrast with female chimpanzees, they can count on the support of both female and male members of their band. Human cooperation and sharing is the key mechanism that explains the evolution of modern human life history, by supporting massive energetic transfers from adults to children.

Several studies have attempted to reconstruct the evolution of life history in the human lineage, by analyzing changes in morphology and, more precisely, patterns of dental and brain development (Robson and Wood, 2008). Although the evidence is generally hard to decipher, a prudent interpretation is that early *H. erectus* had already departed from the ape-like life history, indicating significant changes in the organization of its social life, but was also far from having developed the modern pattern. By contrast, more recent hominin species, such as *H. heidelbergensis* and Neandertal were closer to modern humans. Childhood and adolescence may not have followed exactly the same pattern, suggesting some differences at the cognitive and behavioral levels, but there is little doubt that raising children in these populations was a long and largely cooperative venture (Hublin et al., 2015).

A third key transition in the history of mankind is associated with the emergence of so-called “behavioral modernity,” that is to say, of the set of behavioral traits typically associated with *H. sapiens*, including more complex and rapidly evolving technologies, as well as abstract representations and symbols. At least three major points of contention remain in the literature concerning the evolution of behavioral modernity. First, when exactly did behavioral modernity first emerge in the human lineage? For a long time, it was thought to coincide with the arrival of *H. sapiens* in Eurasia between 50,000 and 40,000 years ago. It is now broadly accepted that strong evidence of behavioral modernity—including abstract engravings, personal ornaments, and compound tools—were already in Africa in the period between 100,000 and 50,000 years ago, and arguably earlier (Henshilwood and Dubreuil, 2011). One possibility is that modern behavior progressively emerged with the evolution of morphologically modern *H. sapiens* around 200,000 years ago, but the evidence remains scarce and contested.

A second point of contention is the alleged presence of modern behavior among closely related Neandertals. Although the majority opinion among archeologists has long been that there was a significant cognitive and behavioral gap between Neandertals and *H. sapiens*, a number of findings raise questions about how the two groups differed from one another. One of them is the presumed existence of interbreeding between *H. sapiens* and Neandertals, as evidenced by the presence of Neandertalian genes in human population originating outside Africa (Green et al., 2010). Other findings concern material culture, including an abstract engraving found in a late Neandertal site in Gibraltor more than 39,000 years ago and the well-known existence of personal ornaments from the Grotte du Renne in France (Caron et al., 2011; Zilhão, 2012; Rodriguez-Vidal et al., 2014). Although substantial controversy remains concerning the modernity of Neandertals, a prudent conclusion is that they formed a highly cooperative population, with advanced social cognition, and that the behavioral gap between them and *H. sapiens* may not have been unbridgeable.

A third open question concerning modern behavior is how to account for its evolution at the neural and cognitive levels. Although most authors agree that its emergence had something to do with the evolution of social cognition (including language or culture), researchers do not necessarily agree on what particular changes in the human mind and brain led to the emergence of symbolism, art, and rapid technological progress. My own proposal (Dubreuil, 2010a; Henshilwood and Dubreuil, 2011; Dubreuil and Henshilwood, 2013) is that modern behavior resulted from advancements in mind reading and, more precisely, from the development of the capacity, described earlier (section: Uniquely Human Social Cognition), to represent the world through the eyes of others. The capacity to imagine how people see things (and not simply to understand, as apes do, that they see things) has allowed early *H. sapiens* to develop an interest in their own appearance and reputation, as well as in objective representations of situations and meanings.
Independent of the details of our evolutionary history, a few indisputable facts need to be emphasized. The main one is that humans, over the past 2 million years, moved into an evolutionary niche that fostered the adoption of new modes of subsistence based on unprecedented levels of cooperation. There is no question that this new social organization was accompanied by major cognitive and affective changes through the selection of unique prosocial motivations, mind-reading skills, and forms of communication.

Further debates concern the precise selection mechanism that led to the evolution of human-specific cognitive skills. Some authors contend that natural selection, operating at the individual level, is sufficient to account for the evolution of cooperation and morality (Baumard et al., 2013). From this perspective, humans moved into a niche where more prosocial individuals were more fit than others, and that cooperation evolved through the mechanism known as group selection (Bowles and Gintis, 2011). Individual and group selection are not mutually incompatible, and both may have played a role in the evolution of human cooperation.

Although reconstructing the social life of extinct species is challenging, we now know enough about it to make an informed guess about when humans got rid of ape-like dominance hierarchies. The first point that we can make is that early Homo species, living roughly between 2.5 and 1.5 million years ago, had departed from the typical ape niche and adopted a more cooperative way of life. This trend became even more pronounced during the long reign of H. erectus, spanning more than a million years. If ape-like dominance hierarchies still existed during this long period, it must have been in a diminished form. That being said, the level of cooperation observed over the last 300,000 years in late H. erectus, H. heidelbergensis, Neandertal, and early H. sapiens—as is evidenced by their changing life histories, the adoption of large-game hunting, and the controlled use of fire—strikes me as entirely incompatible with the existence of dominance hierarchies, at least as they exist in ape societies. The cooperative skills of these human populations were clearly sufficient to keep would-be tyrants under control.

WHY HIERARCHIES ARE FUNCTIONAL

I have argued so far that dominance hierarchies are ubiquitous among social animals and result from increasingly well-understood neurological and behavioral mechanisms, as well as social dynamics. Although many of these mechanisms are present in our species, I explained that the comparison between human and animal hierarchies is often misleading. Indeed, humans have unique cognitive skills that support exceptional levels of cooperation and that have led in our evolutionary history to what Boehm (1999) calls “reversed dominance hierarchies,” where uncooperative and aggressive bullies are pushed toward the bottom of hierarchies instead of rising to the top.

This account, however, raises further questions. The fact is that over the past 10,000 years or so most humans stopped living in relatively egalitarian foraging bands and were absorbed into increasingly large polities. They were brought—willingly or not—under the control of chiefs, kings, and presidents. Despite the success of some of these polities at maintaining relative equality between their subjects or citizens, the undisputable fact remains that most existing and past civilizations involved massive inequalities and forms of exploitation rarely seen in the animal kingdom. The existence of large-scale hierarchies as we know them raises an interesting scientific puzzle. How is it that humans—who, for most of their history, have been successful in tackling the ambitions of would-be alpha males—ended up creating forms of social organizations in which wealth and power is more often than not concentrated in the hands of the few? The question is the object of old controversies in philosophy, anthropology, and other social sciences. Why do chiefdoms and states exist? What are the origins of political power and domination?

Despite the variety of answers that these questions have received, two opposite views seem to have resisted the passage of time. The first contends that hierarchies exist because they yield collective benefits. Political centralization provides cooperation the scaffolding necessary to flourish beyond the foraging band. In philosophy, this view is generally associated with social contract theorists, such as Hobbes, Locke, and Rousseau. A similar perspective is also present in the more recent work of various social scientists inspired by functionalism and systems theory and, perhaps most prominently, those of Talcott Parsons (1966) and Elman Service (1962). The latter proposed an influential typology of “stages” in the evolution of human societies (from bands to tribes, chiefdoms, and states), with each stage leading to larger polities and more centralized leadership. A second view on the origin of hierarchies is that they result primarily from strategies of aggrandizing rulers, mindful of their own interests. This view is associated with the works of Marxist authors, including most prominently, Friedrich Engels (1884), and also with the classical work of Franz Oppenheimer (1972 [1908]), neo-evolutionary anthropologist Morton H. Fried (1967), and more recently, anthropologist Brian Hayden (2008, 2011). I will call the first perspective the functionalist approach and the second the conflict-based approach to hierarchies. Economist Paul H. Rubin (2000) proposed a similar distinction when he opposed “dominance hierarchies,” based on fear and exploitation, to “production hierarchies.”
supporting cooperation. At first sight both perspectives seem plausible. Anyone who has spent more than a week in a large organization will recognize that some form of hierarchical control is necessary for things to function. At the same time, the idea that leaders and rulers care more about their self-interest than about the well-being of their group or community sounds reasonable as well. I will argue that we do not have to choose between the functionalist and conflict-based approaches to hierarchies. As is often the case in the social sciences, a closer examination of the cognitive and behavioral mechanisms behind the phenomenon can help bridge the gap between the two positions (Bloch, 2013). My claim is that, given the nature of human cooperation, the creation of hierarchies is indeed a precondition to sustaining cooperation in very large groups, but that, depending on the form they take, hierarchies also create room for unprecedented exploitation.

Over the past decades, a large literature examined the dynamics of cooperation in the context of economic experiments (Fehr and Gächter, 2000; Camerer, 2003; Henrich et al., 2004; Gintis et al., 2006; Guala, 2012). This research established without any doubt that, under a broad range of circumstances, people are willing to incur some personal costs to punish unfair and opportunistic behavior and that this motivation is instrumental in supporting high levels of cooperation. For practical reasons, experimental research on cooperation focuses on the dynamics of small groups, where the behavior of individuals can be easily observed and measured. Research on small groups is crucial to understand the conditions under which people engage in cooperative ventures with colleagues, friends, and relatives. These are the most meaningful relationships we take part in, but they are not the only ones. Most of us are not afraid to take a walk alone at night because we know that police officers actively work to protect us. Most of us benefit every day from dozens of goods that would not exist if thousands of people—if not millions—across the world did not coordinate their actions through an amazing number of legal and economic arrangements. The crucial question is: why do we put our subsistence and well-being in the hands of people that we will never meet?

The question is relevant because the cooperative disposition we inherited from our foraging ancestors, although in many ways impressive, is also severely limited. We love to cooperate, but our prosocial motivations rapidly vanish when others deceive us or take advantage of us. Moreover, we are inclined to do less than our share as soon as we can. But keeping score of everyone’s actions becomes rapidly impracticable when cooperation involves too many people. Time is a scarce resource and much of it is needed to find out who did what to whom and under which circumstances. Gossip can provide information about people outside our immediate vicinity, but it is also time consuming and inefficient when too many people are concerned (Dunbar, 1996).

Cognitive limitations thus impose design constraints on the main institutions of human societies. For all time, meaningful cooperation between more than a few dozen people has depended on the presence of institutions that can, in one way or another, support trust between individuals that are not actively monitoring each other: trust that your colleagues in the other branches of the firm are doing their work, trust that the members of the other regiments are not deserting, trust that your fellow citizens are paying their taxes and respecting the law, trust that the school personnel is taking care of your children, etc. Tribal systems, premodern states, modern governments, and large corporations have at least one design feature in common: they are all based on some form of grouping, in which the opinions and preferences of a representative reliably indicates the behavior of his peers, followers, or subordinates. Such groupings are extremely diverse—clans, lineages, societies, corporations, patronage networks, divisions, branches, departments, regiments, political parties, etc.—and can generally be treated as group agents, in the sense that they have a capacity to form beliefs and desires of their own, as well as to act upon those intentional states (List and Pettit, 2011). At the cognitive level, the creation of group agents is closely linked to the human social-cognitive capacity to create institutional facts (Dubreuil and Henshilwood, 2013; Tomasello, 2014).

In modern urban societies, large-scale cooperation is supported by complex group agents, such as governments and corporations, with long chains of command through which a CEO or a minister provides directives to senior managers, who in turn oversee the work of middle and lower management, who oversees the work of the rank and file. Management specialists study what they call “span of control,” that is to say, the number of employees under the supervision of a manager in an organization (Keren and Levhari, 1979; Meier and Bohte, 2003; Topp and Desjardins, 2011). Optimal span of control, which makes the organization most efficient, is known to vary importantly depending on context. When work is highly routinized, a manager can supervise up to 25 employees without too much difficulty. But when work is more analytic in nature, a narrower span of control is needed, with a ratio that can go down to three to five employees per manager in information-rich environments. Variations in spans of control further suggest that managers are “nerve centers” who sustain trust across the organization by creating bridges between multiple “bands” (Mintzberg, 1971).
The creation of group agents to support large-scale cooperation is not specific to modern societies. Ethnographies of the most egalitarian hunters-gatherers, horticulturalists, and agriculturalists reveal that clans (or other kindred structure) play a central role in the establishment of alliances and exchange networks between bands, settlements, or villages. Thanks to their existence, individuals do not have to track the deeds of every person they might interact with and can focus on the reputation of a few group agents: which clan is reliable when it comes to paying the bride price or the wergild, partaking in raids against neighboring tribes or contributing to public work projects.

Group agents are necessary for large-scale cooperation to flourish, but they can take wildly different forms. The most prominent distinction concerns the way they make decisions. On the one hand, there are groups where everyone has her say and decisions are made mostly consensually. On the other hand, there are groups where one or a few individuals make decisions that they impose on subordinates. Let’s call the first form of decision making “collegial” and the second “autocratic” (and let us acknowledge that there is a continuum between the two models). Autocratic and collegial decision making can both predominate in one society, just as they can coexist under various forms. For instance, traditional chiefdoms and premodern states are autocratic, but generally coexist with institutions like kindred structures, age grades, corporations, or secret societies, in which decision making can be more collegial. Similarly, modern governments and large corporations are structured mostly autocratically but coexist with a vast array of associations where individuals have more or less of an equal say. Even smaller work units within large hierarchical organizations generally have some room for collegial decision making (in fact, a general trend in management science over the past decades has been to emphasize the importance of fostering some form of collegiality in large organizations in order to empower employees and support their engagement).

Collegial and autocratic models have strongly divergent implications for the organization of cooperation. I want to mention two: the costs of decision making and the alignment of individual motivations with group decision, what List and Pettit (2011) call “incentive compatibility.”

Costs of decision making: Under the collegial approach, decision making is time consuming. Long discussions are needed to reach consensus. By contrast, autocratic decision making can go quickly (to fully appreciate the point, compare decision making by an academic department and by an army regiment).

Alignment of individual motivations: Under the collegial model, securing individual motivation to comply with group decisions is typically easier, because everyone takes part in the decision. The situation is more complex under the autocratic approach, where individuals do not have their say.

Understanding the costs and benefits of both models is crucial in explaining why hierarchies exist among humans and what form they take. In many circumstances of social life, collegiality is an obvious choice. It works especially well among small groups, when there is no pressing need to make critical decisions or when individuals’ beliefs and interests are well aligned with one another. This is generally the case within the household, within friend networks, or within small work units in larger organizations. By contrast, collegiality becomes ineffective when too many people are concerned, when urgent decisions must be made, and when opinions are too divergent.

More autocratic decision making addresses the problems of collegiality, but comes with its own challenge. Indeed, people need good reasons to comply with decisions they did not contribute to making. Generally, this good reason is some form of material compensation. Throughout history, autocratic decision making appears when leaders have the capacity to redistribute wealth and gifts of all sorts to secure the compliance of their subordinates (Earle, 1997; Trigger, 2003; Hayden and Villeneuve, 2011). This is the case with “big men” in traditional societies, chiefs in so-called complex chiefdoms, and aristocrats and kings in both premodern and modern states. This is also the case with managers in modern firms or government, where subordination to a chain of command is a condition of employment. Autocratic decision making typically persists as long as subordinates depend on rulers for their subsistence and well-being. This reality imposes a constraint on the expansion of autocratic group agents, which is limited by the capacity of leaders to extract resources and turn followers into subordinates.

FROM COOPERATIVE TO EXPLOITATIVE HIERARCHIES

The discussion outlined in the previous section clearly has a functionalist flavor. My claim is that, without hierarchies, large-scale cooperation would be impossible. Several people, however, are not satisfied with a purely functionalist explanation of hierarchies. It is easy to understand why. Chiefdoms, states, and other large organizations often involve such dramatic forms of violence, mistreatment, and injustice that it is hard to deny that not everyone benefits from them. From the perspective of a slave, a serf, or a member of a subordinate cast, hierarchies are more about exploitation than cooperation. My claim is that both the functionalist and conflict-based approaches capture part of the truth about hierarchies. In this section, I present three of the main reasons why hierarchies, although functional in
The first reason is linked to the very nature of human hierarchies. Leaders, even when they are constrained by collegiality, can draw some advantages from their position: prestige, credibility, discretionary control over resources, access to privileged information or contact networks, etc.

The most egalitarian nonstate societies have rules and strategies to ensure that these advantages remain limited (Clastres, 1989; Boehm, 1999, 2012). Norms against polygyny, ostentatious displays of wealth, debt bondage, or slavery, for instance, help restrain the power of chiefs. In Iroquois society, for example, chiefs could capture slaves during raids against neighboring tribes, but after a few months, these slaves had to be adopted into an Iroquois family (replacing a deceased person) or tortured to death. As a result, ambitious leaders could not accumulate large numbers of slaves that they could then use as a power basis to dominate the rest of their community (Viau, 1997). But even under the best circumstances, controlling leaders and rulers in a hierarchical context presents challenges. As the organization grows, members lose the capacity to track the behavior of their superiors directly and might start suspecting that the latter are taking advantage of their position (which may or may not be true). The challenge can never be fully eradicated in a world in which time is a scarce resource, although attempts can be made to minimize it. (In fact, a central objective of extremely popular leadership studies is to identify ways in which leaders of large organizations can build trust and keep their base engaged.)

I have argued elsewhere (Dubreuil, 2010a) that the main determinant of exploitative relationships is not the presence of hierarchies per se, but the existence of strong relationships of debt and dependence between leaders and their subordinates. The argument is that, once subordinates become highly dependent on leaders, they lose the capacity to exert an ethical check on them. The centrality of debt and dependence in the emergence of domination is a classical theme in political philosophy. It is ubiquitous in the work of Machiavelli, but was never so clearly described as in La Boetie’s (2012 [1549], p. 30) Discourse on Voluntary Servitude:

> There have always been five or six who had the tyrant’s ear, and have gotten there by themselves or else were called by him to be accomplices in his cruelties and companions in his pleasures, to pander to his lusts and share in the goods he pillages. These six manage their chief so well that, out of solidarity, he has to be wicked not only for his own wickedness but also for theirs. These six have six hundred who profit under them and they do to their six hundreds what the six do to the tyrant. These six hundred hold under themselves six thousand whom they have raised up in state, to whom they grant either the governing of provinces of the handling of funds, so they will have a hand in their rapacity and cruelty and carry it out when the time comes, and otherwise do so much evil that they can only endure in their shadow, and be exempt from the law and punishment through them.

La Boetie’s description can be linked to my argument earlier regarding autocratic decision making. Autocracy reduces the cost of decision making, which explains why it can emerge in the first place. But to impose themselves, autocratic rulers need to make sure that the preferences of their subordinates align with theirs, which typically necessitates the transfer of a large number of resources and privileges. These transfers, in turn, make subordinates dependent on their rulers (through the system so brilliantly described by La Boetie) and unlikely to bite the hand that feeds them. In some circumstances, these mechanisms can lead to a vicious circle of growing oppression. The more the rulers and their subordinates oppress the masses to extract resources, the more they fear losing power and, as a result, the more they oppress the masses to extract more resources to consolidate their oppression (Fig. 29.1). Typically, oppressive systems collapse when rulers become unable to find the resources they need to support the loyalty of their subordinates, provoking defection in the ruling elites and the creation of new alliances with formerly excluded political actors (Tilly, 2004, 2007).

The role of debt and dependence in the emergence of exploitative hierarchies is a common theme in anthropology and archaeology. In his classical work on Highland Burma, for instance, Edmund Leach (1954) describes the fluctuation between two types of political structures, one where power is in the hands of a single chief with loyal subordinates and the other, more republican, where a balance of power exists between different clans. A similar distinction is at the foundation of the dual-processual diagram.
The third reason why hierarchies, while in some sense functional, often lead to injustice and exploitation is found in our psychological reactions to inequalities between groups. Sidanius and Pratto (1999) developed the concept of social dominance to refer to the nexus of psychological mechanisms activated when a group is perceived as having higher status, prestige, and power. There is strong evidence that hierarchies trigger asymmetric behavioral responses among high-status and low-status groups. While in-group favoritism predominates among members of dominant groups, out-group favoritism is often observed among members of subordinate groups. For instance, members of low-status groups tend to perceive themselves and their peers as less competent and less deserving than members of high-status groups. As a consequence, emphasizing the lower status of a group can lead its members to adopt self-defeating behavior that reinforces the very negative stereotypes from which they suffer. Such behavioral asymmetries are particularly well documented in the case of African Americans, but seem to be a central feature of all social hierarchies.

Low-status groups face a conflict between favoring their ingroup and living within a system that devalues it, so they show more ambivalence toward their own group than high-status people show toward theirs. The more low-status groups view hierarchy as inevitable, the worse is this internal conflict between valuing their group and acknowledging society’s contempt for it.

Reframing the situation and representing social arrangements as fair does not improve the material conditions of underprivileged groups, but can relieve the significant displeasure resulting from cognitive dissonance.

The concepts of social dominance and system justification do not explain why marked group-based inequalities became so important with the centralization of political power (while they were much more limited among our foraging ancestors), but they partly explain why exploitative social arrangements often persist and remain unchallenged by those who suffer under them.

CONCLUSION

This chapter aimed at providing a general overview of the diversity of social hierarchies in human populations. I had no intention of being exhaustive, as literally thousands of books—in virtually all disciplines in the humanities, the social sciences, and the life sciences—have been written on one aspect or another of this question. My objective was more modest: to provide a broad overview of the main mechanisms behind the creation of hierarchies in humans. I have shown that these mechanisms operate at various levels (biological, psychological, and social) and interact with one another to produce myriad outcomes. From mostly egalitarian foraging bands to large repressive regimes, as well as from small despotic chiefdoms to large democratic states, formal and institutionalized hierarchies often coexist with informal ones, and both can have wide-ranging influences on people’s attitudes, behaviors, beliefs, well-being, health, fertility, and countless other variables.

My argument was broad, but can be summarized in a few key points:

- Social animals benefit from living in groups but are also in competition with one another when it comes to
feeding and mating. Dominance hierarchies are the outcome of an animal’s interest in having privileged access to resources and mating opportunities, but also of avoiding aggression and maintaining relatively peaceful relationships with their conspecifics. The formation of hierarchies is influenced by several variables, including individual attributes, environmental factors, and social dynamics within groups.

The basic mechanisms supporting an animal’s drive to dominance are also present in humans and their effects can be observed in multiple ways. Nevertheless, humans do not form dominance hierarchies in the way that primates do. Their unequal capacity for cooperation, rooted in unique social-cognitive skills and prosocial motivations, gives them the capacity to collectively resist potential alpha males.

Control over aggressive and antisocial individuals is ubiquitous in small foraging bands and was the norm before the Neolithic. It appeared gradually during the long evolution of the genus *Homo*, supported by changes in human social cognition. In all likelihood, ape-like dominance hierarchies disappeared some hundreds of thousands of years ago and were absent in *H. heidelbergensis*, Neandertals, and early *H. sapiens*.

Humans are experts at cooperating, but face significant difficulty when they try to extend cooperation beyond a few dozen individuals. Because of their limited capacity to monitor what people are doing, they need to design hierarchical institutions—based on collective agents with a reputation of their own—to maintain trust in large-scale cooperative networks. Some collective agents make decisions collegially, which is time consuming but helps to secure legitimacy, whereas others do it autocratically, which is more efficient but requires resources to secure the alignment of individual motivations with rulers’ decisions.

Hierarchies are functional in that their existence is a precondition of large-scale cooperation. On the other hand, they can easily lead to forms of inequality, exploitation, and mistreatment unobserved in the animal kingdom. Exploitative hierarchies develop for a number of reasons, but most notably when subordinates depend on rulers for their well-being and have no incentive to exert an ethical check on them. Once in place, exploitative hierarchies persist partly because underprivileged and exploited groups are biased in favor of the status quo, even when they suffer from it.

The account proposed in this chapter provides no roadmap to the abolition of exploitation and injustice, but the mechanisms it described should be of interest to anyone who wishes to transform hierarchies we are a part of to promote greater respect, equality, and cooperation. There is no question that securing the subsistence and well-being of billions of people does and will continue to require high levels of cooperation. Humanity will not return to hunting and gathering and, in this sense, there are no alternatives to hierarchies. Nevertheless, an understanding of the mechanisms behind them can explain why they can be poorly designed and how they can be changed for the better.

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Abstract
Hierarchies are ubiquitous in human societies and take multiple forms. They are sometimes highly visible and institutionalized; while at other times they are subtler and informal. They are sometimes based on fear and exploitation but can also rest on merit, respect, and cooperation. This chapter aims to present the main mechanisms—biological, psychological, and social—that account for hierarchy formation in humans. My key message is that, despite interesting parallels with animals and especially apes, humans create societal hierarchies that have no equivalent in the animal kingdom. Human hierarchies are made possible by unique social-cognitive skills and are a precondition to extending cooperation beyond a few dozen people. The paradox, I will claim, is that while human hierarchies result from our exceptional capacity for cooperation, they also make possible unprecedented levels of violence and exploitation.

Keywords:
Cooperation; Equality; Exploitation; Hierarchy; Human evolution; Social cognition.