"Karl Marx was right, but he picked the wrong species"

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1 The study of ant behavior, particularly their social food-sharing practices, reveals fascinating insights into how ant colonies function as highly integrated and cooperative units.

The experiment conducted by E.O. Wilson and Tom Eisner in the 1950s using radioactive-labeled sugar water allowed researchers to trace how ants share food within their colonies. By tracking the movement of this labeled food, Wilson and Eisner were able to estimate both the rate and volume of food exchange among ants. Their findings highlighted the extraordinary level of food sharing that occurs in many ant colonies, with workers regurgitating and redistributing food at high rates to ensure that all members of the colony have roughly the same amount of food in their stomachs at any given time.

This behavior is known as **trophallaxis**, a process where ants, and many other social insects, directly exchange food and fluids mouth-to-mouth or anus-to-mouth. This mechanism serves several critical functions within the colony. First, it acts as a "social stomach" for the entire colony, meaning that the food resources are evenly distributed among all the workers. By maintaining a consistent level of nourishment across all workers, the colony ensures that no individual ant is overly hungry or overly full, which helps to regulate the colony's overall behavior and activity levels.

The idea of a "social stomach" is key to understanding how an ant colony operates as a superorganism—a complex, highly coordinated entity where the welfare of the group is prioritized over the individual. The food content in an ant's stomach essentially acts as a status indicator of the entire colony's needs. If the average food content in the workers' stomachs is low, it signals that the colony may be running low on food resources, prompting the ants to forage more aggressively. Conversely, if the food content is high and evenly distributed, it suggests that the colony's nutritional needs are being met, allowing the ants to focus on other tasks, such as brood care, nest maintenance, or defense, rather than unnecessary foraging.

The implication of this uniform food distribution is that ants do not make decisions based solely on individual need but rather on the needs of the colony as a whole. This integrated decision-making process is crucial for the survival of the colony, especially in fluctuating environmental conditions. For instance, if only a few ants were well-fed while others were starving, it could lead to a misallocation of colony efforts, such as unnecessary foraging during times when food is scarce or dangerous to collect. Instead, by using the "social stomach" as a feedback mechanism, ants collectively optimize their behavior to match the colony's current situation, effectively synchronizing their actions to achieve the best possible outcome for the group.

Furthermore, this social sharing of food also plays a role in the colony's communication system. Since trophallaxis allows ants to transfer not just food but also pheromones and other chemical signals, it facilitates the dissemination of important information throughout the colony. For example, it can help spread the chemical cues related to food sources, alarm signals, or even the overall health status of the colony. This ensures that all workers are kept informed and can respond appropriately to the colony's needs.

In summary, the practice of food sharing among ants serves as a sophisticated regulatory system that balances the nutritional status of the entire colony, allowing it to function efficiently as a unified entity. This communal approach to resource management exemplifies the highly cooperative nature of ant colonies and underscores the importance of social behaviors in the survival and success of these complex insect societies. The concept of the "social stomach" demonstrates how individual ants are not merely acting on personal needs but are constantly adjusting their behavior in response to the collective needs of the colony, guided by the shared food content in their stomachs.

2 E.O. Wilson's reflection on why a communistic system similar to that of social insects does not work among humans highlights fundamental differences in reproductive strategies and social organization between humans and social insects.

Wilson humorously suggests that while Karl Marx envisioned socialism as an ideal system for human societies, it is a model that works more effectively in species like ants, bees, and termites, which have evolved highly cooperative social structures where the success of the colony as a whole takes precedence over individual interests. Wilson attributes this difference to the concept of **reproductive independence** in humans versus the **reproductive division of labor** in social insects, underpinned by kin selection.

1. **Reproductive Independence vs. Reproductive Division of La-

bor:** - **Reproductive Independence in Humans:** - Humans have reproductive independence, meaning that each individual has the ability and biological incentive to reproduce independently. Our evolutionary success, or **Darwinian fitness**, is maximized by ensuring our own survival and the survival of our direct offspring. This leads to behavior that prioritizes personal and familial interests, often in competition with others, rather than a total sacrifice for the greater good of a larger group or society. In human societies, even in the most cooperative or altruistic arrangements, individuals retain a strong sense of personal ownership over their reproductive rights and success. - **Reproductive Division of Labor in Social Insects:** - In contrast, social insects like ants and bees have evolved a reproductive division of labor where only one or a few individuals (typically the queen) reproduce, while the rest of the colony members (workers and soldiers) are sterile. These sterile individuals invest their efforts entirely in supporting the colony, particularly the queen's reproductive success, because their genetic fitness is tied to the success of the colony as a whole. In such systems, the individual's genetic contribution is expressed through the survival and reproduction of their close relatives—most notably the queen, who shares a significant proportion of their genes. This creates a scenario where individual interests are fully aligned with the colony's success.

2. **Kin Selection and the Evolution of Altruism:** - **Kin Selection:** - The concept of kin selection explains why social insects have evolved such highly cooperative, self-sacrificing behaviors. Kin selection is the evolutionary strategy that favors the reproductive success of an organism's relatives, even at a cost to the individual's own survival and reproduction. In social insects, the sterile workers are typically closely related to the queen, often sharing 75% of their genes with her offspring due to the haplodiploid genetic system found in many social insects. This high degree of relatedness creates strong selective pressures for workers to help the queen reproduce, as doing so indirectly ensures the continuation of their own genes. - **Sterile Workers and Communistic Systems:** - In these insect societies, the presence of sterile workers allows for a communistic system where the colony functions as a superorganism, and the success of the entire community is paramount. The individual members are effectively subservient to the needs of the colony, and their behaviors are highly altruistic, contributing to tasks like foraging, defense, and brood care without any expectation of personal reproductive success. This level of cooperation and sacrifice is sustainable because the workers' evolutionary fitness is entirely dependent on the reproductive success of the colony, particularly the queen.

3. **Why Communism Doesn't Work for Humans:** - **Conflicting Individual and Collective Interests:** - In humans, reproductive independence leads to a fundamental misalignment between individual and collective interests. While humans are capable of cooperation and altruism, these behaviors are often moderated by personal interests and incentives. Human cooperation tends to be conditional and reciprocal, driven by personal gain or mutual benefit rather than the unconditional altruism seen in social insects. This means that human societies are inherently more competitive and less cohesive when

it comes to shared resources and reproductive opportunities. - **Evolutionary Basis for Individualism:** - The evolutionary basis for human behavior emphasizes individual survival and reproduction, where the success of one's own genes is best ensured by prioritizing personal and familial welfare. Unlike social insects, humans do not have the same high levels of genetic relatedness within groups, and thus there is less evolutionary incentive to act solely for the benefit of unrelated group members. As a result, large-scale communistic systems, where individuals are expected to prioritize the collective good at the expense of personal interests, are difficult to maintain in human societies without external enforcement or strong cultural incentives.

4. **Humans and Cooperative Systems:** - **Contractual Cooperation:** - Humans can and do form cooperative groups and societies, but these are often based on contractual arrangements and mutual agreements rather than innate altruism. Social contracts, laws, and institutions are human constructs that attempt to balance individual and collective interests by establishing rules and norms for cooperation. These systems require enforcement mechanisms, such as governance structures, to ensure compliance and to manage conflicts of interest. - **Examples of Limited Communal Behavior:** - While true communism in the insect sense does not exist among humans, we do see elements of communal behavior in certain contexts, such as within families, close-knit communities, or religious orders. However, these arrangements are usually limited in scope and rely on a combination of cultural, ethical, and sometimes genetic bonds to function. Beyond these small scales, maintaining a communistic system becomes increasingly challenging due to the diversity of human interests and the complexity of larger societal structures.

E.O. Wilson's analysis highlights that the key reason why communistic systems, as seen in social insects, do not naturally occur among humans lies in the fundamental differences in reproductive strategies and the basis for cooperation. Social insects have evolved a system where individual success is entirely tied to the colony's success through kin selection and reproductive division of labor. In contrast, humans prioritize their own survival and reproductive success, which often leads to a focus on individual rather than collective interests. While humans have developed sophisticated ways to cooperate through social contracts and institutions, these systems differ fundamentally from the innate, unconditional altruism seen in insect societies. Thus, while elements of socialism can work in human societies, they require constant negotiation and balancing of individual and collective needs, unlike the seamless integration found in the communistic colonies of social insects.

3 In the 2009 interview with *The New York Times*, Bert Hölldobler, a renowned myrmecologist and co-author with E.O. Wilson of *The Ants*, highlighted a fascinating and often provocative comparison between ant societies and human attempts at implementing communism. Hölldobler's statement, "Karl Marx was right, but he picked the wrong species," underscores the idea that while Marx's vision of a society where the individual is subordinated entirely to the collective can work in ant colonies, it has proven to be a failure among humans.

Ant Societies and Marx's Vision:

Hölldobler's remark draws attention to the nature of ant societies, where the collective interests of the colony completely overshadow the needs and desires of individual ants. In an ant colony, individuals are deeply interconnected and operate with an extreme level of altruism. Ants work tirelessly for the survival, growth, and reproduction of the colony, performing tasks such as foraging, defending the nest, and caring for the young without any regard for personal gain or recognition. This behavior is largely driven by genetic relatedness and evolutionary pressures; because ants are so closely related, their individual fitness is best served by helping the colony thrive, especially the queen who is the primary reproducer. In this sense, ant colonies function as superorganisms where the success of the group is paramount, and the individual's worth is purely in terms of their contribution to the colony's collective success.

This form of organization mirrors Marx's ideal of a communist society, where the needs of the community take precedence over those of the individual, and resources are distributed according to need rather than personal effort or merit. However, as Hölldobler notes, while this system works seamlessly in the highly cooperative and genetically unified societies of ants, it fails among humans due to fundamental differences in social structure, individual incentives, and evolutionary biology.

Why It Works for Ants but Not Humans:

In ant societies, the extreme altruism and subordination of the individual to the group are sustained by evolutionary mechanisms like kin selection, which favors behaviors that help close relatives survive and reproduce. Ants do not have individual ambitions or desires that conflict with the needs of the colony; their behaviors are instinctively geared towards the collective good. This makes the ant colony an almost perfect realization of Marx's vision, where "from each

according to his ability, to each according to his needs" is the rule of life.

In contrast, human societies are composed of individuals with diverse ambitions, personal goals, and varying degrees of relatedness. Human evolution has favored traits like individualism, competition, and personal ambition, which can often be at odds with collective interests. Unlike ants, humans are not instinctively driven to place the needs of society above their own. Moreover, humans value personal freedom, self-expression, and the pursuit of individual goals, which Marxist ideals tend to suppress. Attempts to enforce such collectivism through political or social systems have often led to inefficiency, corruption, and a lack of motivation among individuals, as the direct link between personal effort and reward is broken.

The Failure of Human Communism:

Hölldobler's statement also reflects on the historical failures of human attempts at communism. The idea that everyone should be paid the same, regardless of effort or contribution, has consistently failed in human societies because it disregards the fundamental human desire for personal achievement, recognition, and the natural variations in effort and ability. Systems that do not adequately reward individual contributions or allow for personal ambitions tend to stifle motivation and innovation, leading to economic inefficiencies and social dissatisfaction. The collapse of several 20th-century communist regimes illustrates the practical difficulties of trying to impose an ant-like social structure on humans.

In essence, Hölldobler's comparison emphasizes that while ants naturally embody a form of communism where the society is everything, this model does not translate well to human beings, whose evolutionary history and social dynamics are fundamentally different. The altruistic, collective behavior of ants is driven by genetic imperatives that are absent in humans, making the seamless operation of a communist society feasible for ants but untenable for people. This highlights a key insight from sociobiology: that the social structures and behaviors of different species are deeply rooted in their evolutionary biology, and what works for one species does not necessarily apply to another.

4 E.O. Wilson's statement draws a fascinating comparison between the social and evolutionary strategies of ants and humans, particularly in how each species engages in conflict. Wilson highlights a major difference: while humans typically send their young men to war, ant colonies send their older females. This difference is rooted in the distinct biological, social, and evolutionary dynamics that govern the behaviors of each species.

In ant societies, as well as in those of bees and wasps, all the workers are female. This is because of the unique reproductive system known as haplodiploidy, which results in female workers being extremely closely related to one another, often sharing about 75% of their genes. This high level of genetic relatedness among sisters creates strong selective pressures for altruistic behaviors, as helping close relatives directly benefits the individual's genetic fitness. In these societies, the females are the ones who perform all the work, including foraging, defending the colony, and tending to the brood, and they exhibit a high degree of dedication to the welfare of their sisters and the colony as a whole. Brothers, on the other hand, do not benefit in the same way from altruistic acts towards their sisters, so the males play a much less prominent role in the colony's daily functions.

When it comes to conflict or risky tasks, ant colonies tend to send their older females. As worker ants age, they gradually shift from performing tasks within the safety of the nest to more dangerous roles outside, such as foraging or defending the colony against threats. This progression makes sense from an evolutionary perspective: as ants age or become injured or sick, their value to the colony diminishes. By the time they are nearing the end of their lives, they are more expendable and thus are the individuals who are most likely to be sent into perilous situations. This strategy minimizes the loss to the colony because it is "cheapest" to lose individuals who have already contributed significantly to the colony's success and are close to dying anyway. This system of using older, less valuable workers for risky tasks maximizes the colony's overall efficiency and survival.

In contrast, human societies have historically sent young men to war. This difference can be explained by both biological and social factors. Young men, being physically stronger and more fit, are naturally suited for the demands of combat. Additionally, as mammals, humans live in highly competitive social structures where status, rank, and power are often contested. Young males, who are typically more willing to take risks, are driven by the desire to gain status, recognition, and upward mobility within their social hierarchies. Participation

in warfare or other risky endeavors has traditionally been one of the fastest ways for young men to achieve these goals. Their willingness to engage in such dangerous activities is fueled by the potential rewards of increased social status, leadership opportunities, and access to resources or mates, which can significantly enhance their individual success and reproductive fitness.

Moreover, the social and cultural dynamics of human societies further encourage young men to take on the role of warriors. Throughout history, being part of the warrior class has been associated with honor, courage, and a sense of duty, traits that are highly valued in many cultures. This societal framework creates powerful incentives for young men to participate in war, as it aligns their personal ambitions with the broader needs of their communities. Unlike ants, where the decision to send older females into danger is driven by straightforward cost-benefit calculations for the colony, in humans, the decision to send young men is shaped by complex interactions of biology, social norms, and individual aspirations.

In summary, the distinction that E.O. Wilson draws between ants and humans in how they handle conflict reflects the fundamental differences in their social structures and evolutionary strategies. Ants, with their high genetic relatedness and collective focus on the colony's success, send their older, less valuable workers into dangerous situations, maximizing colony efficiency. Humans, on the other hand, rely on the strength, ambition, and risk-taking behavior of young men, driven by both biological imperatives and the pursuit of social status, to engage in conflict. These contrasting approaches underscore the diverse ways in which different species adapt to and manage the challenges of survival and competition.

5 E.O. Wilson's *Sociobiology: The New Synthesis*, published in 1975, is a groundbreaking work that seeks to explain the biological basis of social behavior across all species, including humans. Wilson's central thesis is that social behaviors—such as cooperation, aggression, mating, and parenting—are not purely the products of cultural or environmental factors but are also shaped by evolutionary forces and genetic predispositions. He argues that behaviors evolve through natural selection much like physical traits, and that understanding these evolutionary underpinnings can provide profound insights into the social structures and interactions of all living organisms. Wilson builds on the concept of kin selection to explain why certain altruistic behaviors have evolved, particularly in species where individuals are closely related, such as in the social insects. By promoting the survival of relatives, these altruistic behaviors ensure the propagation of shared genes, making them evolutionarily advantageous.

Wilson's approach extends beyond non-human animals to encompass human behavior, suggesting that many aspects of human social life, including our tendencies toward aggression, altruism, and even sexual behavior, have biological roots. He proposes that these behaviors, just like those observed in other species, are influenced by the same evolutionary forces that have shaped the natural world. Wilson argues that social sciences like sociology, psychology, and anthropology could greatly benefit from incorporating biological perspectives to provide a more holistic understanding of human behavior. This proposal was revolutionary because it challenged the prevailing orthodoxy that human behavior is primarily shaped by culture, environment, and individual choice, rather than by biology.

The controversy surrounding Wilson's work, particularly Chapter 27 titled "Man: From Sociobiology to Sociology," stems from his application of sociobiological principles to humans. This chapter argued that human behaviors are influenced by genetic and evolutionary factors, a suggestion that was met with significant resistance, especially from social scientists. Critics accused Wilson of biological determinism—the notion that human behavior is rigidly determined by biology, leaving little room for cultural, social, or personal influences. At a time when the social sciences heavily emphasized the role of environment and culture in shaping human behavior, any suggestion of a biological basis was seen as reductive and potentially dangerous. There were fears that attributing behaviors to genetics could justify social inequalities, such as racism, sexism, or classism, by framing them as natural or biologically inevitable.

Wilson's ideas were also criticized for being overly reductionist, as they sought to explain the complexities of human behavior through the relatively narrow lens of genetics and natural selection. Critics argued that human societies are far too intricate to be fully understood through a biological framework alone, as they are influenced by an array of factors including cultural norms, personal experiences, and historical contexts. These critics contended that reducing human behavior to biological imperatives ignored the significant role of culture and socialization, and could lead to simplistic and potentially harmful conclusions.

The political and ideological implications of Wilson's work further fueled the controversy. Some of Wilson's most vocal critics, including Marxist biologists like Stephen Jay Gould and Richard Lewontin, were concerned that sociobiology could be used to support conservative political agendas by suggesting that existing social hierarchies are natural and inevitable. They feared that Wilson's ideas could be misused to resist social reforms aimed at addressing inequalities, under the guise that these behaviors were simply a product of our biology. The potential ethical implications of linking human behavior to genetics also raised alarms, as there were concerns that such theories could lead to fatalistic attitudes or even justify unethical interventions, such as eugenics or discrimination based on perceived biological traits.

Despite the intense backlash, Wilson defended his position by emphasizing that he did not advocate for a purely deterministic view of human behavior. He acknowledged the complex interplay between genes, environment, and culture, arguing that sociobiology aimed to add a biological dimension to the understanding of social behavior rather than replace existing social and cultural explanations. Wilson's work laid the foundation for the development of evolutionary psychology, which explores how evolutionary principles can inform our understanding of human behavior, while taking into account the complex interactions between biology, environment, and culture. Over time, many of the ideas initially introduced in sociobiology were further developed and gained broader acceptance under new terminologies, as researchers continued to explore the biological basis of behavior in a more nuanced and integrated manner.

Wilson's personal experiences with the controversy surrounding sociobiology illustrate the challenges he faced as a pioneer in this field. One notable incident

in 1978, where an anti-sociobiology protester threw a bucket of water over his head, symbolized the intense opposition to his ideas. Despite such attacks, Wilson remained committed to his scientific pursuits. He eventually shifted his focus more towards biodiversity, a field that had always been his passion. Wilson was deeply aware of the global conservation challenges and recognized the urgent need for biologists who understood biodiversity, ecology, and extinction to take an active role in conservation efforts. This pivot was not a retreat from the controversies of sociobiology, but rather a return to his foundational interests in the natural world, driven by his sense of responsibility to address the critical issue of biodiversity loss.

In summary, E.O. Wilson's *Sociobiology* provided a provocative and pioneering perspective on the biological basis of social behavior, extending evolutionary theory beyond physical traits to encompass the complex social dynamics of all species, including humans. The controversy over Chapter 27 reflects broader debates about the role of biology in shaping human behavior, with critics concerned about the implications of attributing behaviors to genetic factors. Wilson's work challenged existing paradigms, sparked significant debate, and ultimately contributed to the development of interdisciplinary approaches that integrate biological and social perspectives on behavior. His shift towards biodiversity conservation later in his career highlights his enduring commitment to understanding and protecting the natural world, showcasing the breadth of his contributions to both biology and the broader scientific community.

6 E.O. Wilson's books *On Human Nature* (1978) and *The Meaning of Human Existence* (2014) build on his foundational work in sociobiology, exploring the implications of biological principles for understanding human behavior, culture, and the broader human condition. Both works delve into the biological roots of human nature and consider the broader philosophical and existential questions about what it means to be human, reflecting Wilson's continued interest in integrating biology with the humanities.

Main Points of *On Human Nature*:

1. **Biological Basis of Human Behavior:** - In *On Human Nature*, Wilson extends the ideas from his earlier work in sociobiology to human behavior,

arguing that much of human nature—including our social behaviors, emotions, and cultural practices—can be understood through the lens of evolution and genetics. He explores how traits such as aggression, sexuality, and morality are not just cultural constructs but have deep biological roots shaped by natural selection. Wilson contends that behaviors that enhance survival and reproductive success have been favored by evolution, and thus many aspects of human behavior can be traced back to these adaptive functions.

2. **Genetic and Cultural Co-evolution:** - Wilson introduces the concept of gene-culture co-evolution, which suggests that human genetic evolution and cultural evolution are interconnected processes that influence each other. He posits that as humans developed complex social structures and cultures, these cultural practices fed back into the process of natural selection, shaping human genetic evolution. This concept emphasizes that culture is not entirely independent of biology; instead, it evolves alongside and in response to our biological makeup.

3. **Implications for Ethics and Society:** - Wilson argues that understanding the biological basis of human behavior has profound implications for ethics, religion, and society. He suggests that many moral systems and ethical behaviors have biological origins, emerging as adaptations that promote group cohesion and cooperation. However, he also cautions that this biological perspective should not lead to a deterministic view of human behavior; rather, it provides a framework for understanding why certain behaviors and beliefs may be prevalent across different societies.

4. **Humanity's Place in Nature:** - *On Human Nature* challenges the traditional view that humans are separate from or above the rest of nature. Wilson argues that humans are a product of the same evolutionary processes that govern all life and that recognizing this interconnectedness can help us better understand our place in the natural world. He stresses the importance of integrating biological insights with the humanities to develop a more holistic understanding of what it means to be human.

Main Points of *The Meaning of Human Existence*:

1. **Humanity's Evolutionary Journey:** - In *The Meaning of Human Existence*, Wilson reflects on humanity's evolutionary journey and its significance. He explores how humans, through their unique cognitive abilities, have become a dominant force on the planet. Wilson examines the implications of human evolution for understanding our purpose and place in the universe, emphasizing that the human capacity for language, art, and complex social interactions is rooted in our evolutionary history.

2. **The Search for Meaning:** - Wilson argues that the search for meaning is a fundamental aspect of the human experience, driven by our need to understand our origins, purpose, and place in the cosmos. He contends that science, particularly the biological sciences, can provide profound insights into these existential questions by revealing the mechanisms behind human existence and our relationship with the natural world. Wilson acknowledges the limits of science in addressing questions of purpose and meaning but believes that a scientific perspective can complement and inform philosophical and spiritual inquiries.

3. **The Role of Science and the Humanities:** - Wilson advocates for a synthesis between science and the humanities, arguing that neither can fully answer the questions of human existence alone. He calls for a consilience, or unity of knowledge, that integrates insights from biology, anthropology, philosophy, and the arts. This interdisciplinary approach, he believes, can provide a richer, more comprehensive understanding of human nature and the human condition.

4. **Human Impact on the Planet:** - Wilson addresses the profound impact humans have had on the planet, highlighting both the achievements of human civilization and the environmental challenges we face. He emphasizes the responsibility that comes with humanity's unique position and calls for a renewed commitment to conservation and stewardship of the Earth. Wilson argues that understanding our evolutionary past can help us make more informed decisions about our future, particularly in addressing issues like biodiversity loss and environmental degradation.

Influence of Sociobiology on These Books:

Wilson's earlier work in sociobiology profoundly influences both *On Human Nature* and *The Meaning of Human Existence*. In *On Human Nature*, Wilson directly applies the principles of sociobiology to human beings, arguing that many aspects of human behavior are rooted in our biology and shaped by evolutionary forces. This perspective is a direct extension of his sociobiological framework, which seeks to understand behavior through the interplay of genetics, evolution, and the environment. By framing human nature within the context of evolutionary biology, Wilson challenges the prevailing notion that human behavior is primarily determined by culture and environment, advocating instead for a more integrated approach that recognizes the biological underpinnings of human actions.

In *The Meaning of Human Existence*, Wilson builds on his sociobiological insights by exploring the broader philosophical and existential implications of human evolution. While the book delves into deeper questions about purpose and meaning, it remains grounded in the idea that our understanding of human existence must begin with our biological roots. Wilson's call for consilience—the unification of science and the humanities—reflects his belief that insights from biology, particularly sociobiology, are essential for understanding the full scope of the human experience. This interdisciplinary approach is a natural extension of sociobiology's goal of explaining social behavior through a biological lens, but it also seeks to bridge the gap between scientific and humanistic perspectives, offering a more holistic view of what it means to be human.

Overall, Wilson's sociobiological framework serves as the foundation for his exploration of human nature and existence in these two books. By emphasizing the evolutionary basis of human behavior and the interconnectedness of biology and culture, Wilson provides a unique perspective on humanity's place in the natural world and the broader cosmos. His work challenges readers to reconsider the relationship between science and the humanities, advocating for a unified approach that draws on the strengths of both to address the fundamental questions of human existence.

7 Ludwig von Mises' *Human Action: A Treatise on Economics* is a foundational work in the Austrian School of economics that presents a comprehensive theory of human behavior, emphasizing the role of individual action and decision-making in economic phenomena. Published in 1949, *Human Action* is based on the concept of **praxeology**, the study of human action, which Mises defines as purposeful behavior aimed at achieving specific goals. Mises argues that economics is a branch of praxeology, and he uses this framework to analyze the workings of markets, the role of prices, and the impact of government intervention.

Main Ideas in *Human Action*:

1. **Praxeology and the Nature of Human Action:** - Mises introduces praxeology as the study of human action, which he defines as any purposeful behavior directed towards achieving desired ends. Unlike reflexive or instinctual behavior, human action is characterized by conscious decision-making and the weighing of alternatives. Mises argues that all human actions are motivated by the desire to improve one's situation, and that individuals act based on their subjective preferences, knowledge, and expectations. - He emphasizes that human action is always forward-looking, involving choices among various means to achieve desired ends. This implies that individuals must deal with uncertainty, as they cannot fully predict the outcomes of their actions. Mises views human action as inherently rational in the sense that it is purposeful, even if the outcomes are not always successful.

2. **Subjective Value Theory:** - Mises builds on the Austrian School's subjective theory of value, which holds that the value of goods and services is determined by the individual preferences of consumers rather than intrinsic properties. He argues that value is entirely subjective and personal, reflecting the importance of the good to the individual at a given moment. This subjectivity of value underpins the entire economic process, influencing how resources are allocated and how prices are determined in the market. - This theory contrasts with objective value theories, such as the labor theory of value, and emphasizes that value is not inherent in objects but is assigned by individuals based on their personal needs and circumstances. Prices, therefore, are the result of these subjective valuations interacting in the marketplace through the processes

of supply and demand.

3. **The Role of Prices and the Market Process:** - Mises stresses the importance of prices as signals that guide the allocation of resources in a market economy. He argues that prices are not arbitrary but are the result of countless individual actions and exchanges, reflecting the preferences and scarcities of goods and services. Prices provide critical information to producers and consumers, helping them make decisions about production, investment, and consumption. - The market process, according to Mises, is a dynamic system of voluntary exchanges where individuals seek to maximize their satisfaction. He views the market as a coordination mechanism that reconciles the diverse plans and actions of individuals, leading to an efficient allocation of resources without the need for central planning.

4. **Critique of Socialism and Government Intervention:** - One of the key arguments in *Human Action* is Mises' critique of socialism and central planning. He argues that socialism fails because it abolishes private property and market prices, which are essential for rational economic calculation. Without prices to signal the relative scarcities of resources, central planners cannot make informed decisions about production, leading to inefficiencies and waste. - Mises also critiques various forms of government intervention in the market, such as price controls, tariffs, and subsidies. He argues that these interventions distort the price signals that are necessary for efficient resource allocation, leading to unintended consequences and often exacerbating the problems they were meant to solve. Mises advocates for a free market system with minimal government interference, where individuals are free to act according to their own preferences and plans.

5. **Entrepreneurship and the Role of the Entrepreneur:** - Mises places significant emphasis on the role of the entrepreneur in driving economic progress. Entrepreneurs are individuals who take on the uncertainty and risk of bringing new ideas, products, or processes to the market. They are motivated by the potential for profit, which serves as a reward for successful innovation and resource allocation. - Entrepreneurs are seen as the key drivers of economic change, as they are constantly seeking out new opportunities and adjusting to changes in consumer preferences and market conditions. Mises argues that entrepreneurial activity is essential for the dynamism and adaptability of the market economy, and that profit and loss are important mechanisms for guiding entrepreneurial decisions.

6. **The Importance of Individualism and Freedom:** - At the core of Mises' philosophy is a strong belief in individualism and personal freedom. He argues that individuals should be free to pursue their own goals and make their own choices, as this is the basis of human flourishing and economic progress. Mises views the market as a manifestation of individual freedom, where voluntary exchanges allow people to cooperate and achieve mutual benefits. - Mises contends that any attempt to restrict individual freedom through government intervention or collectivist policies undermines the functioning of the market and leads to less efficient outcomes. He champions the free market as the best way to harness the creativity, knowledge, and efforts of individuals in service of

the common good.

7. **Human Action and the Limits of Knowledge:** - Mises emphasizes the limits of human knowledge, particularly in the context of economic planning and decision-making. He argues that the decentralized nature of knowledge—where information about preferences, resources, and conditions is dispersed among individuals—means that no central authority can possess all the information needed to manage an economy effectively. - This insight underscores Mises' criticism of central planning and supports his advocacy for the market as a discovery process, where prices and competition reveal information and guide decisions. Mises sees the market as a way to utilize the dispersed knowledge of millions of individuals, something that no single planner or government could replicate.

How Sociobiology Affects These Ideas:

Mises' emphasis on individual choice and subjective values in *Human Action* aligns with some of the principles in E.O. Wilson's sociobiology, particularly the idea that behaviors, including economic behaviors, can be understood as purposeful actions driven by underlying needs and motivations. However, while Mises grounds his theories in the subjective and purposeful actions of individuals within a social framework, Wilson extends this to consider how biological factors and evolutionary pressures also shape behavior.

Wilson's insights could deepen Mises' framework by providing a biological basis for some of the individual behaviors Mises describes, such as risk-taking, cooperation, and competition. While Mises focuses on the economic implications of individual actions and market dynamics, Wilson's sociobiological perspective would add a layer of understanding regarding why individuals might act in certain ways, based on their evolutionary history and biological predispositions. For example, Wilson's concept of kin selection and the evolution of social behaviors could help explain why individuals are motivated by not only personal gain but also by altruistic behaviors towards others, which Mises might interpret in terms of broader economic or social benefits.

Overall, integrating Wilson's ideas with Mises' praxeology could provide a more comprehensive view that accounts for both the economic logic of human action and the biological influences that shape human motivations and behaviors. This synthesis would highlight the multifaceted nature of human action, incorporating both the subjective choices emphasized by Mises and the evolutionary context explored by Wilson.

8 Deirdre McCloskey's statement underscores a critical distinction between the basic economic behaviors shared by all living organisms and the uniquely human elements that define our economic interactions.

She argues that the pursuit of profit and the maximization of utility—concepts central to traditional economics—are not exclusive to humans but are universal traits observed across all forms of life, from the simplest bacteria to complex organisms like great apes. These behaviors, driven by the fundamental biological need to survive, reproduce, and optimize resource use, are not sufficient to capture the richness and complexity of human economic activity. McCloskey contends that, to truly understand the "ordinary business of life," as Alfred Marshall phrased it in his definition of economics, we must incorporate ethics and other uniquely human factors into economic analysis, an approach she calls "humanomics."

1. **Profit and Utility Maximization as Universal Behaviors:**

- **Biological Basis:**

- McCloskey points out that the behaviors of profit-seeking and utility maximization are deeply rooted in biology and are not unique to humans. From bacteria that maximize their access to nutrients, to plants that optimize their growth conditions, to animals that seek to maximize their chances of survival and reproduction, these behaviors are seen throughout the natural world. This biological drive is governed by the principles of natural selection, where organisms that best optimize their resources tend to survive and pass on their genes. In this sense, economic-like behaviors are part of the broader natural world and not confined to human society.

- **Shared Traits Across Species:**

- The pursuit of self-interest and efficient resource use can be observed in non-human primates, our closest evolutionary relatives, who also display behaviors such as trading, reciprocity, and strategic cooperation. These behaviors highlight that the basic principles of economic decision-making—seeking to maximize benefits and minimize costs—are widespread in nature and not a defining feature of human uniqueness. This recognition challenges the idea that economic rationality is the sole domain of human beings.

2. **The Need for a Human Science of Economics:**

- **Beyond Biological Imperatives:**

- McCloskey argues that while utility maximization and profit-seeking are fundamental to life, they do not fully capture what makes human economic activity distinct. Humans are not just driven by biological imperatives; they are also guided by complex social, cultural, and ethical considerations. Unlike bacteria or apes, humans create intricate social structures, engage in symbolic communication, and develop moral and ethical systems that influence their economic decisions. For instance, people often make choices based on fairness,

justice, compassion, or long-term societal benefits, which cannot be fully explained by simple utility maximization.

- **Alfred Marshall's Vision:** - Alfred Marshall, a foundational figure in economics, defined the discipline as the study of "the ordinary business of life," emphasizing that economics is not merely about wealth or profit but about human behavior and social interactions. McCloskey echoes this vision, arguing that a human science of economics should encompass the full range of human motivations and behaviors, including those that transcend purely economic considerations. This broader approach acknowledges the role of values, ethics, and cultural narratives in shaping economic activity.

3. **Introducing Humanomics:**

- **Humanomics as an Integrated Approach:** - McCloskey calls for an approach she terms "humanomics," which integrates economics with insights from other disciplines, such as ethics, sociology, history, and psychology, to better understand human behavior. This interdisciplinary perspective is necessary because traditional economic models, which often assume purely rational actors motivated solely by self-interest, fail to account for the complexity of human decision-making. Humanomics recognizes that humans are influenced by social norms, ethical principles, and narratives that shape their economic actions in ways that go beyond the simplistic pursuit of profit or utility.

- **Contributions by Vernon Smith and Bart Wilson:** - The concept of humanomics is further developed by economists like Vernon Smith and Bart Wilson, who emphasize the importance of ethical considerations and social contexts in economic behavior. Their work explores how markets and economies are embedded within social systems that are governed by rules of conduct, trust, and shared understandings. This perspective challenges the purely mechanistic view of markets and highlights the role of human interaction, cooperation, and ethical behavior in shaping economic outcomes.

4. **Bettering Humanomics:**

- **McCloskey's Vision for Economics:** - In her book *Bettering Humanomics*, McCloskey expands on the idea that economics must go beyond mathematical models and profit-maximization frameworks to incorporate the study of human values, virtues, and narratives. She argues that to improve our understanding of economic phenomena, economists must consider how human dignity, ethics, and the stories we tell about ourselves influence our economic lives. McCloskey contends that this approach not only makes economics more humane but also more accurate in describing and predicting real-world behavior.

- **The Role of Ethics in Economics:** - By advocating for the integration of ethics into economics, McCloskey emphasizes that economic decisions are often guided by moral judgments and ethical considerations. For example, decisions around charitable giving, environmental stewardship, or corporate responsibility cannot be fully understood through the lens of profit maximization alone. A humanomic approach recognizes that individuals and organizations frequently act based on principles of fairness, justice, and care for others, which are central to the functioning of a cohesive society.

Deirdre McCloskey's argument highlights the limitations of traditional eco-

nomic models that focus solely on profit and utility maximization—behaviors that are not uniquely human but shared with all life forms. To develop a true science of human economics, McCloskey calls for an interdisciplinary approach that incorporates ethics, culture, and social values, reflecting the full complexity of human motivations. By embracing humanomics, as advocated by Vernon Smith, Bart Wilson, and McCloskey herself, economics can better capture the "ordinary business of life," recognizing that human behavior is shaped not just by self-interest but also by ethical considerations, social norms, and the narratives that define our identities. This approach offers a richer, more nuanced understanding of economic activity that is grounded in the realities of human experience.

9 Deirdre McCloskey's trilogy—*The Bourgeois Virtues: Ethics for an Age of Commerce* (2006), *Bourgeois Dignity: Why Economics Can't Explain the Modern World* (2010), and *Bourgeois Equality: How Ideas, Not Capital or Institutions, Enriched the World* (2016)—offers a profound reinterpretation of the causes behind the wealth of nations, revisiting themes originally laid out by Adam Smith in *The Wealth of Nations*.

McCloskey's work provides both a new and old account of economic growth, drawing on classical ideas about virtues and human behavior while offering fresh insights into the role of culture and ethics in economic development. Unlike conventional economic narratives that emphasize capital accumulation, institutional frameworks, or purely material factors, McCloskey argues that the true driver of the unprecedented economic growth witnessed since the 18th century is the cultural shift towards valuing innovation, dignity, and personal freedom—core tenets of liberalism.

McCloskey's reinterpretation begins by revisiting Adam Smith's vision of economics. In *The Wealth of Nations*, Smith highlighted mechanisms like the division of labor, free markets, and the "invisible hand" of self-interest, which together foster economic efficiency and growth. However, Smith also acknowledged the broader social and moral context of economic life, emphasizing that human motivations extend beyond mere self-interest and include virtues such as prudence, justice, and benevolence. McCloskey expands upon these insights by arguing that the ethical and cultural dimensions of commerce are crucial for understanding economic success. She emphasizes that the virtues Smith saw as

integral to human behavior are not just peripheral aspects of economic life but central to the prosperity of commercial societies. By focusing on these broader, more humanistic elements, McCloskey reintroduces and enhances Smith's original vision, providing a richer account of the factors that drive the wealth of nations.

In her trilogy, McCloskey introduces a new account of economic development that places ideas and liberalism at the forefront. She argues that the Great Enrichment—the extraordinary rise in living standards and economic growth since the 18th century—was driven primarily by a cultural transformation that embraced innovation, entrepreneurship, and individual rights. This shift occurred in northwest Europe and its cultural offshoots, where liberal ideas took root, promoting freedom of expression, personal initiative, and a belief in the potential of every individual to contribute to societal progress. McCloskey contends that this cultural shift was far more significant than traditional explanations that focus on capital accumulation or institutional reforms. The rise of liberalism, according to McCloskey, was the true catalyst for modern prosperity, as it created an environment where people were free to think, create, and innovate without the stifling constraints of traditional hierarchies or authoritarian control.

McCloskey's work also revisits older conceptions of economics that integrate ethics and virtues into the understanding of economic behavior. She argues that the bourgeoisie—the middle class often criticized for its materialism and self-interest—actually embodies the full range of the seven classical virtues of the Western tradition: prudence, temperance, justice, courage, faith, hope, and love. In *The Bourgeois Virtues*, McCloskey challenges the negative stereotype of the bourgeoisie, suggesting instead that their ethical behavior plays a crucial role in the functioning of prosperous societies. She contends that capitalism and commerce are not inherently corrupting but can foster virtues that promote trust, cooperation, and innovation. This perspective aligns with a broader, classical view of economics that sees human behavior as deeply intertwined with ethical considerations, moving away from the reductive focus on self-interest that characterizes much of modern economic theory.

One of McCloskey's key critiques of traditional economic explanations is the emphasis on capital and institutions as the primary drivers of economic growth. While she acknowledges that these factors are important, she argues that they do not fully account for the magnitude of the Great Enrichment. McCloskey asserts that it was the spread of ideas that respected and elevated the dignity of the individual, rather than just the accumulation of material resources, that truly transformed economies. In *Bourgeois Dignity*, she challenges the conventional narrative that attributes the rise in living standards to capitalist accumulation alone, positing instead that the real driver was the explosion of innovation fueled by the newfound respect for the bourgeoisie and the liberal values that allowed them to thrive. This rethinking of economic growth underscores the importance of ideas and cultural values in shaping economic outcomes, offering a more comprehensive understanding of the nature and causes of the wealth of nations.

McCloskey's popular work, *Leave Me Alone and I'll Make You Rich*, co-

authored with Art Carden, distills the key themes of her trilogy into an accessible format, making her arguments about the role of bourgeois virtues and liberal ideas in economic growth available to a broader audience. The book emphasizes the "Bourgeois Deal," a social contract that suggests if individuals are left free to pursue their own interests within a framework of respect and ethical behavior, they will generate prosperity not just for themselves but for society as a whole. This message reinforces the central argument of McCloskey's trilogy: that liberal values—more than any other factor—are what made the modern world rich. By highlighting the ethical foundations of commerce and the importance of individual dignity and freedom, McCloskey's work reaffirms the idea that economic growth is not merely a mechanical process but a deeply human one, driven by cultural and ethical shifts that empower people to innovate and contribute to the common good.

In her more recent work, *Why Liberalism Works*, McCloskey provides a robust defense of true liberalism, arguing that the values of individual freedom, equality of opportunity, and the freedom to innovate and trade are essential for creating a prosperous, just, and free society. She addresses common criticisms of liberalism, such as concerns about inequality and environmental impact, arguing that these challenges can be addressed within a liberal framework that respects human dignity and ethical behavior. McCloskey advocates for a balanced approach that respects individual freedom while ensuring that economic and social policies promote the welfare of all citizens. Her work suggests that liberalism, when properly understood and practiced, is not just a political ideology but a fundamental driver of human progress and well-being.

Overall, Deirdre McCloskey's trilogy and subsequent works offer a new and yet old account of the nature and causes of the wealth of nations by emphasizing the central role of ideas, culture, and ethics in economic life. By revisiting the broader, more integrated view of human behavior that characterized early economic thought and expanding upon it with a focus on liberal values, McCloskey challenges the conventional focus on capital and institutions. She argues that the true driver of the extraordinary economic growth of the modern era is the cultural shift towards valuing individual dignity and freedom. McCloskey's work reintroduces and enriches the insights of classical economists like Adam Smith, providing a comprehensive and humanistic perspective on what drives prosperity in societies and highlighting the enduring importance of liberalism in shaping the modern world.

10 Integrating E.O. Wilson's main ideas from *Sociobiology: The New Synthesis*, *On Human Nature*, and *The Meaning of Human Existence* into Deirdre McCloskey's trilogy—*The Bourgeois Virtues: Ethics for an Age of Commerce*, *Bourgeois Dignity: Why Economics Can't Explain the Modern World*, and *Bourgeois Equality: How Ideas, Not Capital or Institutions, Enriched the World*—could deepen the analysis of how ideas, virtues, and human behavior contribute to economic growth and social progress. By incorporating Wilson's insights on the biological basis of human behavior, gene-culture co-evolution, and the interplay between biology and culture, McCloskey's argument for the role of ideas and liberalism in driving the Great Enrichment can be expanded to include a richer understanding of human nature and its evolutionary context.

1. **Integrating the Biological Basis of Virtues:** - McCloskey emphasizes the importance of the bourgeois virtues—such as prudence, justice, and courage—in fostering a thriving commercial society that values innovation and individual dignity. Wilson's insights into the biological basis of human behavior can add a foundational layer to this argument by highlighting that many of these virtues are not purely cultural constructs but have evolutionary roots. For example, traits like trust, cooperation, and reciprocity, which are essential for economic transactions, can be traced back to adaptive behaviors that have evolved to enhance group cohesion and survival. - By incorporating Wilson's idea that social behaviors have biological underpinnings, McCloskey's analysis can be enriched to show that the virtues she champions are not only culturally valuable but also biologically grounded. This connection could provide a more comprehensive explanation of why these virtues are so resilient and effective in driving economic progress. It suggests that the spread of bourgeois virtues is not just a cultural phenomenon but also a natural extension of human evolu-

tionary predispositions, which have been shaped by the needs of complex social living.

2. **Expanding on Gene-Culture Co-evolution and Economic Development:** - Wilson's concept of gene-culture co-evolution—the idea that human genetic and cultural evolutions are intertwined and influence each other—offers a valuable framework for understanding how ideas drive economic growth. McCloskey argues that the explosion of ideas and the embrace of liberal values were crucial to the economic transformations of the 19th and 20th centuries. By incorporating Wilson's framework, McCloskey could argue that the cultural shifts towards liberalism and individual dignity not only influenced economic behavior but also fed back into the evolutionary process, reinforcing traits that favored innovation, entrepreneurship, and risk-taking. - This perspective would deepen McCloskey's explanation of the Great Enrichment by suggesting that the adoption of liberal values and ideas did not occur in a vacuum but was part of a broader evolutionary trajectory that shaped human behavior. For instance, as societies began to value individual initiative and free enterprise, these cultural norms could have created selective pressures that favored individuals who were more innovative or entrepreneurial. This feedback loop between culture and biology could help explain why certain societies thrived economically while others lagged, providing a more integrated view of how economic and social systems evolve.

3. **Addressing Human Nature and the Limits of Rationality:** - McCloskey often critiques the narrow focus of traditional economics on rational utility maximization, advocating instead for a more humanistic approach that considers ethics, culture, and rhetoric. Wilson's exploration of human nature, particularly his insights into the biological basis of irrational behaviors, emotions, and ethical impulses, can enhance this argument by providing a scientific basis for why humans do not always behave as perfectly rational agents. - By incorporating Wilson's understanding of human nature, McCloskey could bolster her case for a more nuanced economic science—what she calls "humanomics"—that accounts for the full spectrum of human motivations. This would include not only rational self-interest but also the deeper, often subconscious, drives that influence decision-making, such as the need for social acceptance, the fear of loss, or the instinct to cooperate with others. Recognizing these biological influences would reinforce McCloskey's call for an economics that respects the complexities of human behavior and the diverse factors that drive it.

4. **Linking the Pursuit of Meaning with Economic Progress:** - In *The Meaning of Human Existence*, Wilson argues that the human search for meaning and purpose is a fundamental aspect of our nature. McCloskey's trilogy could incorporate this idea by exploring how the pursuit of meaning—through work, innovation, and contributing to society—has been a powerful driver of economic and social progress. The liberal values McCloskey champions, such as individual dignity and freedom, can be seen as frameworks that allow people to find purpose and fulfillment in their economic activities. - By connecting Wilson's ideas on the search for meaning with her own arguments, McCloskey could offer a more profound justification for the importance of liberal values in

economic development. She could argue that when individuals are free to pursue their own paths, motivated by personal meaning and purpose, they are more likely to engage in the kinds of creative and entrepreneurial activities that drive economic growth. This connection between personal fulfillment and economic progress would strengthen her case for the societal benefits of liberalism.

5. **Emphasizing the Need for Interdisciplinary Integration:** - One of Wilson's key contributions in both *On Human Nature* and *The Meaning of Human Existence* is his advocacy for the integration of science and the humanities. McCloskey's call for "humanomics" aligns with this vision, and Wilson's emphasis on consilience—the unity of knowledge—can further support her argument for a more interdisciplinary approach to understanding economic and social phenomena. By explicitly drawing on Wilson's call for consilience, McCloskey could reinforce the need for economists to go beyond their traditional boundaries and engage with insights from biology, psychology, and other fields. - This interdisciplinary integration would not only enrich McCloskey's analysis but also provide a more holistic understanding of how economic systems operate within the broader context of human behavior and social evolution. By acknowledging the contributions of diverse fields, McCloskey could strengthen her argument that the wealth of nations is not solely a matter of capital and institutions but a complex interplay of ideas, virtues, biological drives, and cultural evolutions.

In summary, integrating E.O. Wilson's main ideas into McCloskey's trilogy would provide a more comprehensive framework that combines cultural, ethical, and biological perspectives on human behavior and economic development. By acknowledging the biological roots of the virtues she champions, McCloskey could offer a deeper explanation of why these values are so effective in driving economic progress. Wilson's insights into gene-culture co-evolution, human nature, and the search for meaning would enhance McCloskey's arguments for the importance of liberal values and interdisciplinary integration, ultimately leading to a richer and more nuanced account of the factors that have shaped the modern world.