

Biologically Similar, Environmentally Different

Harper Hallquist

Department of Political Science, Diablo Valley College

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Adjunct Professor: John Kropf

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Abstract

To argue that humans are inherently good or inherently evil, is to sum up one of the most complex math problems with number two. Human nature is fluid, and therefore the personalities of humans are fluid as well - set up with innate processes, human behavior is driven by personal experiences which shape interactions with us, others, and the world. Scientifically, people are driven by basic needs: physiological necessities - food, water, sleep - safety, belonging, esteem, and self-actualization. These biological demands push forward our lives, dictating what we do: but if we all have the same basic needs, why can some possess desires to manipulate, harm, or kill another? How can two people such as Hitler and Gandhi exist in simultaneous realities? Psychology and neuroscience, the study of the human mind, its behaviors, and its processes, point this question towards the subject of development. The lives of a child growing up poor versus rich are two polar experiences, which would dramatically alter their behaviors and personality in relation to the world around them. While humanity has seen malicious individuals and experienced the negative impacts thereof, humanity has also seen altruistic people who have sacrificed magnitudes for betterment. Therefore, human nature is multidimensional, having the ability to reshape and relearn; driven by neural adaptive abilities, humans essentially strive for survival, yet based on development and situations, the inherent needs can be overzealous - seen as greed and entitlement.

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Albert Einstein once said: “Mankind invented the atomic bomb; no mouse would ever construct a mousetrap.”. Throughout time, human nature has often been speculated, with thinkers such as Thomas Hobbes and Jean-Jaques Rousseau arguing over humanity being inherently good or inherently bad. How can a society be good while we still face extreme poverty and discrimination - having potential to be easily solved through higher power - but with that, how can human nature be summarized by the failures of one group and/or individual? Is it possible for human nature to be neutral? Can humans at times possess both positive and negative aspects? Humans are naturally equipped for survival, to meet basic standards to achieve homeostasis and maintain life: reproduction, consumption, as well as fight, flight or freeze. Human nature is more fluid compared to these basic needs. The argument over good and evil illustrates that human nature is essentially human, the characteristics of human neurology point human nature towards socially driven, complex, and adaptive: intrinsic neural systems provide the ability of transformation, making human nature and behavior not one fixed predictor, but fluid from person to person based off of developmental, biological, and psychological inheritance.

Biology/Neurology Influence

Humans strive for survival, to meet one's intrinsic desires, and to feel a sense of accomplishment. While basic needs such as food and water are important for our immediate survival, humans possess superficial needs of success and happiness - which can vary from person to person, and culture to culture. Andy Cheshire, PhD, developed an idea combining drive theory along with Newton's first law of thermodynamics; rather than accelerating, our motivation to do various tasks is either accelerated or decelerated, which can lead to varying

levels of motivation among people. Cheshire asserts that the “acceleration” of the task will increase with the factors of “Competence, relatedness, and autonomy” which determine if one feels prepared, supported, and connected to the activity at hand (Cheshire, 2018).

While Cheshire's theory of thermodynamics in relation to motivation and desire outlines why someone may consciously make a decision, biological factors such as hormones and neural signals contribute as well. A primary neurotransmitter which influences decision making, ultimately impacting behavior, is dopamine. Often known as a key catalyst in the reward center of the brain, dopamine is released in response to gratification or completion, often seen after finishing a task or scrolling on social media (Cleveland Clinic..., 2022). From an evolutionary view, dopamine is critical for survival as it rewards actions promoting survival such as eating and reproduction. However, while human brains are designed for the seeking of dopamine, the addictive wave of endorphins and happiness they trigger is often linked to substance abuse and screen addiction. Notably, recent studies have found social media to be a leading producer of dopamine, and as the reward center of the brain is able to quickly receive gratification, social media has become a quick fix for humans' dopamine addiction. Therefore, humans desire to feel good as a means of survival, however, the essential ‘biological-overdrive’ over dopamine production can contribute to addictive tendencies seen in modern society such as drug, technological, or sex addictions.

Wealth's contribution to behavior can be demonstrated somewhat through Maslow's hierarchy of needs - a ranking of survival necessities, and how important they are in comparison to one another. With Maslow's logic, those who face financial and food insecurity are not hyper focused on improving their self-esteem or are motivated to achieve self-actualization. Those who

experience greater financial security are more able to invest in others, invest in companies, buy “excessive” goods, and overall, they have the economic freedom to accomplish.

Additionally, genes play a significant role in personality and overall human behavior, they are individual and therefore can cause differences among people. Researchers from Yale studied the overlap between genetics and personality traits/mental health conditions: Daniel Levey, PhD, the assistant psychiatry professor at Yale School of Medicine states that while genetic predisposition to personality traits has strong correlation, “[y]our personality will adapt and change over time, so there’s a temporal relationship” as well as “[j]ust because we’re finding these genetic variations doesn’t mean that these are things that are fated that you can’t change about your life.” (Cornman, 2024). Levey’s research emphasizes the dynamic ability of the human mind, that despite likely propensity to destructive behavior, one has the ability to cultivate change - if someone were to suffer from anger issues, what is to say they cannot build tools to redesign their temperament? What can impact one’s ability to transform one’s nature: neuroplasticity and nurture.

A prime example of human’s intrinsic ability for growth rather than a fixed characteristic of good versus evil, is the neuroscience principle of neuroplasticity: the structural and adaptive changes, rewiring the brain in order for growth and accommodation. This process reflects human’s innate abilities for development and rewiring; this gives people the ability to change their behaviors, thinking, and over all mental processing in order to be more efficient. This process, as outlined in Sapolsky’s *Behave: The Biology of Humans at Our Best and Worst*, highlights neuron plasticity and anything within the nervous system as capable of change that is “often reversible in a different environment” (Sapolsky, 2017, p. 149) Demonstrating that despite change in one aspect of neural cognition, one is able to revert back to old habits or reverse

progress made. Another key factor laid out in Sapolsky's work is that optimism is a byproduct of neuroplasticity - a key component of positive psychology - however, he also argues that neuroplasticity is “finite” and that the time in which it takes to make tangible change does not necessarily result in prodigies.

Building off of neuroplasticity, the human brain is wired for socializing. Inherent functions such as mirror neurons allow for the human brain to transform into the social brain. Mirror neurons are “specialized neurons that ‘mirror’ the actions and behaviors of others and they play a crucial role in the realms of cognition, language, and empathy” (Pilat, 2024). Socialization is made possible through these neurons, which imitate and reflect the actions of others, playing a crucial role in understanding the behaviors and intentions of other individuals. While interaction with others is crucial for support, it is necessary for survival as well as hardwired into the mind. Without mirror neurons, communication and empathy would dwindle. They provide a foundation for socialization and therefore contribute to the human nature of community and interaction with others.

In regard to the interaction with others, unconscious mental processes known as heuristics are unique and have a generous contribution towards outward demeanors and personalities - it is important to note these interactions do not necessarily have to be at the hands of another, but rather the environment as a whole. Heuristics are the mental shortcuts which allow for quick and simplified decision making; while they contribute noteworthy benefits such as reducing cognitive load, heuristics are the basis of biases and judgements. A type of short cut, known as the availability heuristic, can lead to biases as it occurs when the probability of an event is based on the frequency and speed at which it comes to mind. Often times, this can result in generalizations, potentially at the detriment of others as heuristics “risk ignoring important

information and overvaluing what is less relevant” (Pilat & Krastev, n.d.), allowing factual information and rational thinking to ‘slip through the cracks’, leading to confirmation of the bias. These split-second decisions are necessary for survival - instead of evaluating the nutrients of each food item in the fridge, heuristics allow for split decision making on previous information of what is the most nutritious - however, they can lead to harsh and sometimes cruel judgements, all partially due to innate human processing.

Developmental/Environmental Psychology

While the ideals of self-actualization between the two ends of the wealth divide differ extremely, there are still significant interest differences in similar classes, lying within the difference of a millionaire investing in sending themselves to space versus a millionaire donating large portions of their income to charities. Take Billie Eilish for example. Recently at the *Wall Street Journal Innovator Awards*, Eilish announced she was donating \$11.5 million to charities and organizations - notably to organizations tackling food insecurity. In her speech she argued against fellow wealthy individuals: “If you have money, it would be great to use it for good things, maybe give it to some people that need it”. While generous people like Eilish exist, making regular contributions to the needy, there are still people such as Elon Musk, whose company - *Tesla* - has reportedly not paid a cent in federal taxes, despite their estimated income being somewhere between \$5.5 and \$7.6 billion. This exaggerates the statement that there are still divides within wealth groups; and while groups, such as Eilish, are able to make significant contributions, many of the other elite fail to provide even taxes to support social programs and overall stability of the United States (BBC, 2025).

The reason for divides within similar social classes can be somewhat answered by the study of psychology and development. One of the primary ways in which personality develops is

through parenting styles: authoritative, authoritarian, and permissive. These styles work together to essentially train a young child in certain responses, making them predisposed towards reactions to future situations. A study done by WashU projected that “parents have a special and important impact on their kids. For example, kids with extraverted parents tend to have lower grades. Kids with neurotic parents score relatively low on several measures” (Woolston, 2023) Whether growing up with relaxed parents or strict parents, the environment in which one was raised can contribute to motivation, self-image, and confidence. The research of both Jackson and Wright illustrates the contribution families make on child development - later adding a personal reflection on the likely causes of low grades in children of extraverted parents being due to a lack of encouragement towards studying and homework. It is statistically unrealistic one would have a “perfect” parent, naturally conflicts arise and negative learned behaviors occur from time to time, but even children with perfect home lives have the ability to experience struggles in other regards. One might have a close relationship with a parent but still struggle academically. Overall, the impact immediate interactions have on child development directly contributes to later learned behaviors.

The question of nature versus nurture in regard to development can be seen with the social environment one grew up in. An individualistic society, such as America or the United Kingdom, focuses on individual success - sometimes at the expense of others; a collectivist culture focuses on group harmony and dynamics, such as China and Guatemala: within a collectivist culture, it is unlikely one would pursue self-interest over the desires of a family or group. A primary example of an individualistic society is America, as the root of American culture is the mentality of “if you can believe it, you can become it”, meaning many people are personally driven with a large emphasis on doing what it takes for individual success over the

ideas of others. These differences in environment can contribute to deep rooted beliefs: if someone were to grow up in a household that emphasized family, is it likely one would make selfish decisions with a lack of regard for others? Similarly, is it likely those from an individualistic society would prioritize others' happiness over personal dreams? The probable answer is no, as these factors, along with personal experiences and environments, contribute to deep rooted beliefs - shaping an individual experience rather than one collective personality.

Growing up in either an isolated or communal setting can contribute to one's overall motivations: as noted in *Understanding the Individualism-Collectivist Cleavage and its Effects* from Gorodnickenko and Roland, "freedom is a paramount value in an individualist culture as it is necessary to provide the conditions for self-achievement" (Gorodnickenko & Roland, n.d., p. 22) which contrasts with the feelings of familial and group obligation in collectivism. The differing values contribute to differing outcomes; individualistic cultures contribute to long term growth, motivation, and innovation, which drastically differs from the ideals of community guided cultures. Growing up focused on family versus focused on one's dream can alter future perceptions and thinking.

Social Psychology

Patterns can be drawn between collectivist and individualistic cultures in regard to the Cold War. The Soviet Union, an empirical body which focused on collective prosperity through communism, was in conflict with America, a rising world power built on the idea of the American dream and self-made success. These two combatting nations fought for their ideals, and as a result, a sentiment between the collective and the individual societies drew them apart. Cold War sentiments resulted in a lack of empathy towards the other side through the growing support of McCarthyism; this lack of empathy can demonstrate a humanistic innate process of

selfishness for survival. If looking at the events of both the Red Scare and the reign of influence of McCarthy, many would report neighbors, friends, anyone, in order to avoid being under scrutiny or suspicion. Selfishness is defined as a “concern for one's own welfare or advantage at the expense of or in disregard of others: excessive interest in oneself” (Miriam Webster).

Accusations towards others with little correlation to the communist party during the Red Scare represent inherent selfishness as a byproduct of survival needs; the reporters accusing disregarded the well-being and interests of others in order to protect themselves. While this selfishness had potentially life altering consequences for the time, an innate selfishness within humans can be drawn back to survival needs - those unable to gather the fastest, eat the most, fight for the best shelter, were likely to die. Selfishness is not necessarily a negative quality to have, it can mean life or death in some situations, however, it can have detrimental social consequences.

A social principle of behavior and decision-making is conformity: a biological drive which shapes how humans confront and approach situations, often “conforming” one’s ideas and actions to meet the consensus. Numerous studies laid out in “The Biological Bases of Conformity” illustrated that decision making in group scenarios is contingent on the maximization of reward, information given from the individual as well as peers, and the gravity of the cost of failure if making the wrong decision. When put in a situation to come to a group consensus, a typically psychological phenomenon known as both normative and informative social influence which allows for agreement with group decisions either to fit in or because the information presented is perceived as valid. The layer of conformity adds to the discussion of human nature, as it dictates minute decisions every day: picking an outfit for school or advocating for political causes after seeing your friends do so. Conformity is a major contributor

to human behavior. Not only is it intrinsic, it is necessary for survival; the ability to adapt and come to agreement with a group allows for human survival, as it can lead to harmony which may prevent conflict or potential life-threatening aggression (Morgan and Laland, 2012).

Similar to that of conformity, psychologist B.F. Skinner proposed a hypothesis in his *Science and Human Behavior* in which operant conditioning and reinforcement play a crucial role in shaping the nature of an individual. The overarching message of B.F. Skinner's work is that "Social behavior arises because one organism is important to another as part of its environment. A first step, therefore, is an analysis of the social environment and of any special features it may possess." (Skinner, 1953, p. 299) Demonstrating human interaction being crucial to survival, as well as having a large impact on the functioning of society as a whole. Skinner additionally argues that the reinforcement of behaviors partially occurs due to social reinforcement: social behavior is rooted in approval, admiration, attention, and submission, overseen by others. This represents the situation and often more fluid responses an individual can give in a certain situation; the desire for social acceptance reveals much in regard to an innate desire for community in addition to basic survival needs. Human survival's contingency on connection and social interactions is laid out in Maslow's hierarchy of needs, which presents itself above safety and below self-esteem - if one has safety needs met, the next desire faced will be social connections. Social groups help form bonds, which in turn have historically provided safety and support, notably in the times of hunter-gatherers.

Theories similar to that of B.F. Skinner include the work of John Watson through Behaviorism: a psychological field which specializes in identifiable and observable behaviors, rather than internal processes. Furthermore, the growing field of Behaviorism contributed to the work of Pavlov and Pavlov's dogs. The Pavlov dog experiment was a classical conditioning

experiment in which Ivan Pavlov accidentally trained dogs to salivate at the sound of the food cart (“Classical Conditioning”). While the study was representative of an animal population, it can be noticeably applied to human behaviorism: an example would be if one was nervous to receive a text from a significant other, every time a text alert would go off they would begin to be trained into a physiological response to the ringer - tachycardia, sweating, and blushing. This is a prime example of the classical conditioning principle put into place into human life; humans are able to be molded depending on situations, repeated exposure, and the scale of reactions to situations. Now, looking at modern day politics, many politicians receive sponsorships and donations from corporations in order to fund campaigns: when applying this to the lens of conformity, it is likely the politician will then side or invest in platforms which would align with corporate desires rather than moral reasoning. This can be further represented with the growing capitalistic industry in most industrial nations, and the entrenchment of individualistic practices and growing wealth divides - a byproduct of a capitalistic society.

Modern human existence - if observing from a capitalistic perspective - is individualistic. The ideas of capitalism critiqued by Marx, stating that the capitalistic man was interested in gaining profit at the exploitation of the workers. Recently, minimum wage jobs failed to pay a decent salary to compensate with the standard of living prices, despite the companies making millions of dollars every year in revenue. While exploitive labor and economic practices existed prior to the shift from feudalism to capitalism, Marx - a critical theorist at the turning point of capitalism - saw the shift to be detrimental, eventually inspiring his *Communist Manifesto* and other notable works. Stevenson's *Twelve Theories on Human Nature* went on to argue that “the real nature of man is the totality of social relations” and “all history is nothing but a continuous transformation of human nature” (Stevenson, 2012, p.196). Marx’s theories on human nature

reflect the belief that it is fluid, evolving with time, and that humans are naturally social creatures. The intersection between conformity and social drives concludes with humanistic sacrifices for the betterment of a group - often at the expense of others.

Conclusion

In the end, humans are naturally complex organisms, with internal processes such as neuroplasticity, mirror neurons, and heuristics contributing to overall desires, emotions, and lifelong growth; they can also come at a cost. These intrinsic internal processes along with dopamine can contribute to biases, selfishness, and even addiction. All of these drives center around basic desires for food, safety, security, and community. Additionally, it is built within everyone to socialize - originally as a means of survival - now rewarded and supported with dopamine fixes and the function of mirror neurons. Humans, therefore, are naturally social, and naturally built to strive to meet survival needs.

While the innate inheritance of humans is stagnant, the cognitive processes can vary. While often broadly categorized under psychology, the more specific studies of development and nature versus nurture illustrate environment and interactions impact on child and adolescent development. Parenting styles, social norms, and socioeconomic status can contribute to one's responses to stimulus and the ability to meet basic physiological needs. Growing up poor versus rich, with an accepting family versus not, a collectivist versus individualistic culture, all contribute to the thinking patterns of an individual: impacting behavior in the long run.

Human behavior is not fixed, adaptation is possible regardless of the situation; therefore, human nature is not fixed but rather varies from person to person while everyone strives to be social and to form connections. The fate of humans is not fixed, we have the ability to grow and change based on situations which will rise in the future. While many people have varying

opinions for the aforementioned reasons above in regard to development of personality and beliefs, humans still possess capabilities to change their beliefs, change their mindsets, and use logic and reasoning to conform. Even within this, some innate processes will not change; unless the next capitalistic market trend is to learn to photosynthesize or transcend desires, humans will still seek food, safety, and community. Humanity will continue to be social, and yet, will continue to fight one another. For that reason, the future of humanity is both doomed and saved by our nature, we are unable to agree on fundamental principles of equality, however, we all come from the same neural composition, we all have the ability to utilize our psychological/physiological make-up and empathy to guide us towards salvation. However, the human mind also possesses the capability for our demise through dopamine addictions and heuristic led biases.

The security of humanity has been at threat numerous times throughout the centuries, from world wars to nuclear missile crises, yet an agreement or resolve has always blossomed. While this may be a more optimistic approach, humans have the capability to rework society, to put our neural plasticity into the external world.

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