

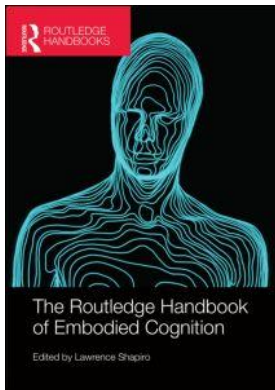
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MORALITY IN THE BODY

Brendan Strojcek and Chen-Bo Zhong

There is a long tradition of thought that conceives of morality as in opposition to the appetites and desires of the body. Such physical experiences have, at best, been seen as distractions from the expression of values guided by reason, and, at worst, as the direct cause of sin and immorality through temptation. However, this understanding is being called into question by recent theoretical and empirical work that supports the position that the body is not only an obstacle to morality and moral action, but also a contributor to moral reasoning. Moral concepts seem to be built using mental machinery that is also used for processing bodily experiences. Empirical work in social psychology has shown how intimately these two domains are intertwined, with both reason and bodily inputs feeding back into moral judgment and moral action.

This perspective is consistent with the emerging convergence in evolutionary biology, which claims that morality evolved through the body during the process of negotiating the various pressures of selection. Understanding this reciprocal relationship between morality and body may allow one to know when bodily input may result in maladaptation with regard to our current social environment. For example, the common derogation of the outsider, once perhaps adaptive to defend against invaders and the unknown, can now have many negative side effects, especially in a mass, diverse culture; this can include prejudice, fear, or discrimination when no real danger exists.

Philosophy, reason, and emotion

Historically, there have been two influential dualisms in philosophy: the ontological body/spirit duality (sometimes framed as body/mind) and the emotion/reason duality. These dualities have had numerous forebears, from the Platonic (which actually divided the soul into three parts: appetitive, rational, and spirited) to the Christian. Though several early influential philosophers, such as Democritus and Epicurus, did not separate the functioning of the mind from the functioning of the body, throughout the story of Western philosophy, dualism has mostly been ascendant. Descartes reaffirmed this tradition in the seventeenth century at the beginning of the scientific revolution by aligning dualist rationality with scientific progress in his *Discourse on Method* (1637). The dualism of Descartes was driven by a desire to find a firm basis for a developing scientific epistemology, which was ultimately provided by the dictum “I think,

therefore I am.” Though many modern proponents of morality based on rationality do not subscribe to Cartesian substance dualism, the concept has framed the debate.

In all of these dualist conceptions, morality has been identified with reason, often in tension with the appetitive, emotional body. As such, morality has been investigated through the lens of reason. Bodily influence is even used as a mitigating factor in legal cases, as emotional influence is often seen as a loss of control or decrease in free will. For example, consider the “heat of passion” defenses. Emotional and bodily influence has thus been seen as a biasing factor in the proper expression of moral behavior. It is undeniable that sometimes emotions can motivate ethically problematic behavior, but modern cognitive science has been uncovering empirical evidence that the functioning of moral reasoning is expressed through the body using emotional cues. These cues manifest linguistically as metaphors, which have become the philosophical spur of modern embodiment research.

Metaphor

Many moral concepts are described and conceptualized through metaphors, which are often grounded in bodily experiences. Some of the key foundational physical metaphors that anchor moral reasoning include uprightness/height, balance, control/freedom of movement, health/strength, and purity (Lakoff and Johnson 1999, p. 333).

The “up” metaphor is particularly potent (associated with more, control, good, and rational). The emotion associated with being uplifted by the altruistic deeds of others is often referred to as elevation (it is almost impossible to even discuss this emotion without the assistance of metaphors). Ideas of value also have physical forebears, such as the concrete experience of ownership and quantity. Well-being is considered a form of wealth, and languages are rich with examples of accounting metaphors (cost, loss, gain) regarding happiness and the good life, and these metaphors extend to fairness, reciprocation, debt, revenge, and similar concepts. Finally, purity, corruption, contagion, health, and strength are all key terms in moral discourse and are almost synonymous with concepts of good and evil (consider the meaning of the sentence “he is corrupt,” or “she is pure”). This collection of metaphors has provided a framework for social scientists to investigate the impact of bodily and physical experience on moral judgment.

It is thought that the evolutionary experience of survival has equipped the mind with a number of concrete concepts used for day-to-day survival (more nutrition is desirable, dirty things are sources of contagion, and so forth). These concepts were then available for repurposing in a pre-adaptive fashion (Rozin, 1999). This perspective is often discussed as a form of scaffolding, as the concrete experience being scaffolded into our conceptual development (Williams, Huang, and Bargh, 2009), which informs much of the rest of the analysis below. Though the structure of metaphors may be stable across cultures, specific expression can vary dramatically across time and space (thus, the unclean may be universally associated with the malevolent, but exactly what is considered to be unclean will likely vary by culture). That is, the concrete objects that satisfy specific metaphors are malleable, but the mental subsystem of, for example, disgust/dirtiness and avoidance seem to be available to people in general.

These associations are empirically observed in our use of language, but they do not in themselves lead to the conclusion that morality is shaped by bodily experience (as opposed to just being used descriptively). To make this link, both experimental psychology and neuroscience have found that experiences of these physical metaphors can affect moral judgment and moral action in measurable, significant ways.

Social intuitionism

Instead of seeing moral judgment as the process of rational analysis, numerous studies in experimental and social psychology have found that moral judgment tends to happen quickly and intuitively and is often influenced by bodily experiences. Haidt and Hershey (2001), for example, constructed hypothetical situations designed to be socially repugnant, but not harmful in any way, to question the idea that moral judgment was carefully and rationally constructed. They found that people's affective reactions to those vignettes were much stronger predictors of moral judgment than analysis of harm and moral principle. Participants in their studies typically express strong moral opposition against disgusting but harmless acts such as a consensual kiss between siblings; when pressed to explain their moral reasoning, however, a common reaction was moral dumbfounding – strong moral condemnation with an utter inability to rationally explain their position.

The social intuitionism model proposed by Jonathan Haidt to explain this phenomenon holds that moral reasoning is retroactive, with rational processing often happening after the fact to justify and explain decisions previously determined by non-rational means. Thus, the model questions the causal power of reasoning in moral judgment. This is congruent with the perspective of embodied morality, which sees morality arising through bodily experience often expressed as emotions. These means are primarily emotional, and involve revulsion and disgust. The emotions seem to be expressed through the medium of the body and understood using the language of metaphors (Haidt, 2001).

Social neuroscience

Historically, when confronted with different explanations for moral action, the tools for investigation were limited. Epicurus conceived of the functioning of the mind as physical movements in the chest, but this was almost more of a metaphysical position derived from the earlier Presocratic atomists. Now, with fMRI machines and the beginnings of brain maps, we begin to have a better picture of what goes on in the human body when thinking happens and decisions are made.

A number of prominent studies found that the brain regions that govern emotion regulation are intimately connected to moral reasoning and contemplation (Damasio, Tranel, and Damasio, 1990; Greene, Sommerville, Nystrom, Darley, and Cohen, 2001). Different parts of the brain are active when thinking about moral dilemmas that have rationally identical outcomes but different emotional engagement. For example, one intriguing thought experiment involves two structurally equivalent dilemmas in which a runaway trolley is headed toward five people and will kill them if not stopped. This dilemma is framed in two ways, a stand-in-distance “switch” version and an up-and-close “push” version. In the switch version, the only way to save the five is to hit a switch that will turn the trolley onto an alternate set of tracks where it will kill one person instead of five; in the push version of the dilemma, the only way to save the five is to push a stranger onto the tracks from a footbridge spanning the tracks. The stranger will die, but his body will stop the trolley from reaching the others. In both cases, people decide whether it is right to kill one person to save five others. Yet most people say that they would pull the switch but not push the person.

The former response represents utilitarian reasoning – people seem to suggest that sacrificing one person to save five is the right course of action because it produces greater good; the latter response represents Kantian reasoning that emphasizes the intrinsic value of a human life and the recognition that the rightness of an action is independent of its consequences (hence the

outcome of saving five others cannot justify the killing of one). It is not hard to see that these two perspectives have irreconcilable principles: while utilitarian thinking puts the “good” before the “right,” the Kantian perspective emphasizes that what is right precedes what is good. So how could rational thinking lead simultaneously to contradictory principles? A recent fMRI study found that this inconsistent moral aversion against pushing down a person to save others may stem from increased emotional engagement (Greene *et al.*, 2001) – the horrific thought of pushing someone to his or her death is much more emotionally arousing than pulling a switch. This again shows that emotional involvement is an important contributor to moral reasoning.

But some would go even further to suggest that emotional engagement may be necessary to moral choices. This is based on research showing that brain activities during contemplation of utilitarian dilemmas resembles non-moral dilemmas (Greene *et al.*, 2001) as well as the observation that individuals with antisocial traits tend to make more utilitarian choices in moral dilemmas (Bartels and Pizarro, 2011). Thus, Bloom (2011) questioned the moral nature of utilitarian reasoning altogether in that it is based on pure calculations that are largely devoid of context and meaning. This stronger view coincides with research based on patients with brain damage to their ventromedial prefrontal cortex (vmPFC), an important brain region that is involved in emotion regulation. These patients retain full capability of rational thought and reasoning, which are the type of processes required for utilitarian reasoning, but seem to have lost emotional connection and, more importantly, the ability to adapt to social and moral conventions. Over time, these patients tend to grow more antisocial (Damasio, Everitt, and Bishop, 1996).

One underlying theory is that emotional experience guides moral judgment and decision making through a series of bodily signals labeled as somatic markers. Lacking proper somatic markers, as in the case of vmPFC damaged patients, an otherwise functional brain is unable to attach moral weight or value to outcomes effectively (Damasio *et al.*, 1996). This proposition that emotional impairment leads to moral malfunction corroborates the position that moral reasoning can’t only be the product of rationality (Lakoff and Johnson, 1999, p. 327).

Thus, research on linguistics, emotion, and neuroscience converge on the involvement of bodily experiences in moral development and reasoning. Not only do people appropriate physical concepts such as up vs. down and clean vs. dirty and recast them in social and moral terms, but also “recycle” emotions and associated brain circuitries developed for rudimentary, physical tasks in early development and survival (e.g. disgust to avoid poisonous food) to help make sense of more abstract moral situations (e.g. disgust of betrayal and cheating). In the next section, we will discuss specific bodily experiences that may inform moral judgment and decision making to demonstrate how the physical and moral domains continue to overlap cognitively, emotionally, and neurologically.

Bodily experiences that influence morality

Several specific physical experiences that are related to the primary linguistic metaphors discussed above seem to contribute in various ways to moral judgment and moral decision making. The physical experiences most potent in influencing morality are those regarding disgust and purity, but many other embodied concepts such as position, color, and interior states have weight as well.

Emotion

The emotion of disgust was originally a gustatory emotion rooted in our evolutionary past as a motivational mechanism that avoids the consumption of contaminating substances. At the basic

physical level, disgust serves as a guide for approach and avoidance, and it is obvious how to reason evolutionarily about how this function might have arisen, as it results in avoidance of external dangers (such as contamination from rotting organic matter) and enhancement of survival fitness. Disgust operates on many sensory levels, from visual to taste (which functions as a last line of defense against ingesting potentially harmful food). This low level, physical aid to behavior, rooted deeply in bodily experience, has been co-opted for use by high-level, social functions, as a guide for avoiding potential social danger such as transgressions by others (Rozin, 1999).

Many studies have been done recently in social psychology that link moral transgression and physical contamination (Rozin, Haidt, and McCauley, 1993). Physical and moral disgust seem to use brain regions that overlap within the frontal and temporal lobes (Moll *et al.*, 2002; Borg, Lieberman, and Kiehl, 2008). Additionally, similar facial expressions have been found in response to both moral and physical disgust (Chapman, Kim, Susskind, and Anderson, 2009; Rozin, Lowery, and Ebert, 1994). These studies form a good foundation for the evolutionary concept of preadaptation and the reuse of cognitive capabilities shaped first for interacting with the physical environment but later conscripted for use by moral cognition.

This has particularly interesting implications for moral judgment being affected by indirect physical stimuli, such as when an emotion is not specifically elicited by a particular target of judgment. This has been shown in studies using hypnotism (Wheatley and Haidt, 2005), ambient smell (Schnall, Haidt, Clore, and Jordan, 2008; Jones and Fitness, 2008), and gustatory experiences such as bad taste (Eskine, Kacirik, and Prinz, 2011). All of these manipulations were found to impart negative qualities from the realm of the physical to the realm of the moral. These effects probably have differing magnitudes based in individual disgust sensitivity, as Jones and Fitness (2008) found that those who are more easily disgusted by physical contaminants are also more likely to engage in harsher moral judgment.

Sensory perception

Cleanliness

Cleanliness and purity have been an important part of religious ceremony for most major world religions throughout history. Given the importance of religion in our moral code, scholars such as Haidt argue that purity and sanctity constitute a fundamental moral foundation. It is not until recently, however, that empirical research in social psychology has started to demonstrate that the bodily perception of cleanliness can be both a consequence of moral status as well as a determinant of moral judgment and behavior.

This connection between physical purity and morality has been corroborated by several experimental findings. One set of results verifies this connection by observing that morally threatening situations prompt physical cleansing much like actual, physical dirtiness. For example, the following transgressions have all been found to induce a greater desire for cleansing products: reminding people of their own, past immoral acts (Zhong and Liljenquist, 2006); leaving false voicemail messages or lying through email (Lee and Schwarz, 2010); or playing violent video games (Gollwitzer and Melzer, 2012). Though these effects are similar, and presumably activate the same underlying cognitive machinery, the effects also have unique manifestations appropriate to a particular modality. Thus, mouthwash was most desired in Lee and Schwarz's voicemail experiment, whereas hand sanitizer was more strongly desired in the case of deception through email.

The most important aspect of these findings is how the physical and moral domains overlap and spill over into each other. Because of this relationship, the way that cleanliness signals the

absence of contaminants and the way disgust alerts the body to the presence of contaminants can have moral ramifications as well. This sometimes irrational metaphorical link is nonetheless often quite potent in practice. One hypothesis based on this connection between the two domains is that not only does the immoral feel impure, but also the pure should feel moral. If that were true, then an increased sense of personal cleanliness might trigger feelings of moral superiority or moral righteousness. Cleanliness has been found in the lab to trigger feelings of moral purity (e.g. Helzer and Pizarro, 2011; Xu, Bègue, and Bushman, in press; Yan, Ding, and Yan, 2011; Zhong, Strejcek, and Sivanathan, 2010), and even proximity to symbols of cleanliness seems to affect moral standing. For example, Helzer and Pizarro measured harsher moral judgments arising from standing next to a hand sanitizer and Zhong, Strejcek, *et al.* (2010) found that feeling physically clean moralized various contested issues (such as littering and homosexuality) more harshly.

In addition to the influence of cleanliness on moral judgment, physical cleansing may also directly impact moral behavior because it alters people's moral self-image (Zhong, Strejcek, *et al.*, 2010). Thus, individuals who have transgressed are less likely to engage in compensatory and restitution behaviors if they have a chance to physically clean themselves, which serves as a symbolic means to restore moral balance. This was indeed what Zhong and Liljenquist (2006) found. In their study, participants who recalled past unethical behaviors who had a chance to wipe their hands using an antiseptic wipe were less likely to volunteer to help others compared to those who did not wash hands. Further, Reuven, Liberman, and Dar (in press) replicated this finding and found that this effect is more pronounced among patients with obsessive-compulsive disorder.

The moral appropriation of physical cleanliness can be seen dramatically throughout political and religious history. The untouchables in the Indian caste system and the Japanese Burakumin are clear examples of this tendency, and the book of Leviticus in the Old Testament, which is a guide to morality, is organized around differentiating the clean from the unclean. Purity of tradition is also central to nationalist discourse and has been used repeatedly to combat "foreign" influence or deflect anxiety onto convenient out-group scapegoats, which may be the basis of much anti-Semitism and other racial, cultural, or minority derogation (Strejcek and Zhong, 2012).

Color

Stain is another potent metaphor, connected in its physical manifestation to the experience of cleanliness at base, but also resulting in a complex visual metaphor system on its own. As any experience with mixing things of different colors will make clear, light colors are more easily besmirched than dark colors, and are thus more vulnerable to corruption or irreversible change. The structural concepts of pollution in food safety and other physical domains also map to this visual metaphor of whiteness as purity and blackness as dirt. If this visual color metaphor has moral relevance, it would be expected that various moral processing tasks would be affected by color, such as the degree to which things are judged to be good or bad.

The most basic form of this effect could be the speed of valence categorization, a type of moral Stroop effect, where incongruent visual presentation (i.e. combining white color and "bad" things) slows recognition time. In the classic Stroop effect, given the word "red" written in blue ink, it takes longer to state the actual color (blue) than if the word matches the color (such as the word "red" written in red ink). A similar effect was found based on the interaction between color and moral implication of words. In one experiment, Sherman and Clore (2009) found that hand-copying a story about an immoral action sped up reaction times for both words

written in black and immoral words. Using a similar design to Zhong and Liljenquist (2006), the same experimenters found that cleaning products were also more desirable to those showing such a moral Stroop effect, which is another suggestion that the physical and moral domains overlap.

While perception of color as related to pollution and dirt has effects based on the experience of purity, the experience of darkness and light can have independent moral impact. This is based on research showing that people seem to feel more anonymous and uninhibited when they experience dim lighting (Hartley, 1974; Karnes, 1960; Page and Moss, 1976), which enables them to engage in more unethical behaviors. In one recent experiment, participants were assigned to rooms with either bright lighting or dim lighting and were asked to engage in some decision-making tasks where they could cheat. Even though it was made clear to them that all decisions were anonymous, those in the dim room tended to cheat more than those in the well-lit room. Another experiment had participants wear sunglasses (to create the experience of darkness) or regular glasses and found that those wearing sunglasses were more likely to cheat than those wearing regular glasses (Zhong, Lake, and Gino, 2010). One might object that darkness does in fact increase anonymity. It is important to note, however, that in neither study did the lighting have anything to do with anonymity. Instead, these results seem to suggest that cues of reduced lighting create an illusionary sense of anonymity, which licensed unethical behavior. The observation that moral decision-making processes take cues from sensory perceptions of color and lighting provides further support to the somatic markers hypothesized by Damasio. If moral decisions were being made independently of physical and perceptual biases, the rational mind should easily be able to factor in the function of sunglasses, but empirically it does not seem to do so.

Taste

The experience of taste has been found to inform moral judgment in ways other than disgust. One might expect the opposite of disgust to also have effects, though in the other direction. As one test of this, researchers investigated the effect of sweetness. Specifically, in one experiment those described as liking sweet foods were judged to be more agreeable and in another experiment the preference for sweet foods was indeed associated with agreeableness. People who desired sweet foods more were also more likely to exhibit altruism in the form of intention to volunteer for clean-up efforts (Meier, Moeller, Riemer-Peltz, and Robinson, 2012). Related to taste, fishy smells have also been found to increase the sense of suspicion even to abstract things unrelated to physical or gustatory concerns, such as economic trust decisions (Lee and Schwarz, 2012). These results strengthen the case that bodily influence feeds into morality by showing associations with prosociality in addition to rejection and aversion.

Balance

Much of the Western philosophical foundations of moral codes rests upon the concept of reciprocity and justice. Both have to do with the idea of balance, whether it is in the “tit-for-tat” sense or the idea of fairness and equal rights before the law (Lakoff and Johnson, 1999). Even as early as the classical Greeks and Romans, justice was personified as a goddess bearing a scale. The dominant modern discourses about fairness also heavily make use of physical metaphors, such as the level playing field (which means that all participants operate under similar constraints), or the redistribution of benefits (so that different participants have balanced amounts of whatever

resource is limited) (Leamer, 2007). The moral relevance of physical balance may manifest in two forms.

First, metaphors of balance of accounts are often used in moral conceptualizations. Well-being is seen as a form of wealth, something you can have more or less of, and thus something that can be compared (in quantity) with others. Justice, in this formulation, is the pursuit of fairness with regard to this quantitative well-being. This also holds with regard to the handling of debts; that is, one can have a moral debt to someone that must be “paid off,” either in positive or negative senses, which is how retribution, revenge, and reciprocity play into this metaphorical scheme (Lakoff and Johnson, 1999).

Second, the experience of physical balance may tip moral judgment. The physical experience of balance seems to make abstract, conceptual metaphors such as parity and fairness more accessible implicitly. This bodily priming has been found to modify the judgment of political categories, which are often also labeled in a metaphorical (though arbitrary) way, such as the description of political philosophies as left or right. A study that shifted participants’ physical balance slightly to the left or right demonstrated a tendency to judge an unrelated political position (note the metaphorical language that must be used even to discuss the concept) either as more left wing or right wing (congruent with the experimental manipulation). Thus, what one might expect to be a purely rational determination is shaped by the physical experience of the subject. The sense of balance has also been found to affect judgment, leading to an increase in the value placed on compromise choices. The mechanism behind this observed effect was hypothesized to be a metaphorical link between the concrete, physical sensation of balance and the abstract concept of parity, which is connected to moral ideas of fairness (Larson and Billeter, 2013). As categorization of political ideas tends to have moral weight (based on whether or not the person making the judgment has sympathy for those positions), the fact that physical balance can affect that judgment seems to offer at least further tangential evidence for the impact of the body on shaping moral judgment.

Interoception

Physical experiences are not limited to the perception of external reality; they also include interior states. Disgust, in addition to a response caused by external stimuli, can also be evoked by internal states such as nausea, and nausea is in fact the primary experience that results in permanent food dislike (Rozin, 1999). Not only can the real interoceptive experience influence decisions, the perceived experience can, too. This has been studied using sensory input masquerading as internal sensations, such as with false heartbeat. For example, images were judged more attractive when accompanied by false (recorded), fast-heart-rate recordings that were presented as the subject’s own heart rate (Valins, 1966). Thus, as Valins writes, “internal events facilitate emotional behavior,” which is a sort of prelude to the more sophisticated somatic marker hypothesis. False feedback has also been used for behavioral therapy, to help alleviate irrational phobias. Specifically, avoidance behavior regarding snakes has been found to decrease when subjects were led to believe that their own internal reaction was lessened via false feedback (Valins and Ray, 1967).

A similar false feedback paradigm has also been found to affect more directly moral behaviors, such as volunteering and deception. Specifically, increased heart rate was found to increase the incidence of volunteering for a charitable cause, reduce self-interested lying, and be less morally potent in the face of rational, deliberative framing (Gu, Zhong, and Paige-Gould, 2012). Self-perception of heartbeat is hypothesized to be a somatic marker that signals situational stress and contributes to people’s decisions regarding how much moral weight to give potential actions.

Thus, it seems like moral decision making in practice requires actual physical feedback as would be experienced at the time of action, not just an abstract formulation of the stakes and options. That is, if the perspective of embodied morality advanced in this chapter were true, it would be likely that people would potentially predict different actions than they might actually take. Experimentally, people have indeed been found to predict that they would take less moral action than they actually do, because moral forecasting does not sufficiently engage the emotions due to lack of somatic feedback (Teper, Inzlicht, and Page-Gould, 2011).

Discussion and conclusion

Though the effects discussed so far have important theoretical consequences, they may also have dramatic, real-world effects. For example, there is a cliché that justice is “what the judge ate for breakfast” (as stated by Judge Jerome Frank), meaning that the mood imparted by feelings of satiety or hunger affects judgment of guilt or innocence. More formally, the philosophy known as legal realism holds that legal decisions in practice depend on much more than just the letter or intent of the law, but rather are influenced by all manner of extraneous factors, some of which may be bodily factors. A study tested this by examining parole hearings where the default decision was to deny parole. The chance of parole being granted was highest at the beginning of the day or right after a food break, and decreased gradually as the session progressed, from over 60 percent on average to barely above 0 percent right before the next break. The subject judges (all of which were experienced, with greater than twenty years of practice on average) were thus found to become more severe in parole hearings the more depleted their resources became, whether that was due to hunger or exhaustion (Danziger, Levav, and Avnaim-Pesso, 2011). The exact connections of this sort of effect to metaphor-based embodied cognition remain to be elaborated, but the potential for significant impact in diverse areas of society is clear.

It might be asked whether these effects are merely biases, errors of judgment that should be overcome given sufficient cognitive effort. However, the neuroscience findings point in another direction. Though some of these bodily influences on morality do indeed result in biases, the elimination of emotional or bodily influence would likely not have the desired effect, due to the importance of somatic markers for identifying moral action. The patients that Damasio investigated in his fMRI studies were not deficient in any way regarding rational-processing power, but lacking appropriate bodily feedback, were unable to accurately weigh moral consequences in their decision making.

Taken together, these findings create a compelling case for a strong relationship between mental activities regarding low-level, physical tasks and high-level, abstract tasks, particularly socially potent abstractions such as morality. They also create a robust empirical basis for theoretical understanding in myriad fields, from psychology to philosophy and practical domains such as law.

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