

3. Aristotle, eudaimonia, neuroscience and economics

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3.1 ARISTOTLE AND EUDAIMONIA

Eudaimonia for Aristotle means a good life, a life well lived. The term *eudaimonia* is sometimes translated as ‘thriving’ and sometimes as ‘happiness’. In either case, Aristotle means it to refer to life considered as a whole, rather than to a momentary experience, psychological state or emotion.

To understand Aristotle’s conception of *eudaimonia*, we should start with Aristotle’s theory of the *psyche* (*anima* in Latin), or soul. Aristotle believed the human soul to be divided into three capacities or faculties: the vegetative or nutritive faculty; the sensitive faculty; and the rational faculty (*nous*).¹

In Aristotle’s understanding, the first faculty is shared by all life, plants and animals. It is the ability to survive through nutrition and reproduction. The second faculty is shared only with animals, and includes the sensory capacities that guide motion towards pleasurable stimuli and away from aversive stimuli. The sensitive faculty may also be called the appetitive faculty, focusing on the appetitive desires of the senses. The third faculty is purely human, the ability to reason and deliberate. The rational faculty includes both intellectual abilities, such as logic, and moral abilities, notably the ability to pursue pleasures in moderation rather than excess.

Eudaimonia, for Aristotle, is a life lived according to *arete*, translated as virtue or excellence. Aristotle is referring to a particular kind of excellence: the excellence of the faculty of reason. Aristotle distinguishes two kinds of virtues, or excellences, of reason: intellectual virtues and moral virtues. Intellectual virtues are excellences of wisdom, both theoretical wisdom and practical wisdom. Theoretical wisdom is knowledge that can be learned through study: logic and information. Practical wisdom (*phronesis*) is knowledge gained mainly by being mentored and through experience: how to choose the right action in the right context for wellbeing.

Moral virtues are the excellences of reason guiding the sensitive faculty. The sensitive faculty moves all animals, human and others, towards pleasures and away from pain. Yet pleasures can be pursued in excess (too much

of a good thing) or in deficiency (too little of a good thing). Similarly, the aversion to pain can be pursued in excess, as with cowardice, or in deficiency, as with recklessness for one's safety. Moral virtues are the excellences of using reason to steer the pursuit of pleasures and the avoidance of pain, in both cases towards moderation. Aristotle argues that wellbeing depends on moderate pursuit of pleasures and aversion to pain. Aristotle's emphasis on moderation in the pursuit of pleasures is aligned with Greek wisdom more generally, as exemplified by the inscription in the Temple of Apollo at Delphi, *Meden Agan*, Nothing in Excess.

Aristotle identifies three main moral virtues: *temperance* (*sophrosyne*), meaning the moderate pursuit of pleasures (the mean of insensibility and licentiousness); *courage* (*andreia*), meaning the moderate aversion to pain (the mean of cowardice and recklessness); and *justice* (*dikaiosyne*), meaning the proportionate treatment of other people, receiving neither too much nor too little. When *practical wisdom* is added to these three moral virtues we have the four virtues that have come down through the ages as Christianity's four cardinal virtues. Aristotle in fact discusses several other moral virtues as well, including generosity (the mean of stinginess and extravagance), gentleness (the mean of apathy and short temper), high-mindedness (the mean of pettiness and vanity) and magnanimity (the mean of meanness and vulgarity in giving by the rich).

It is worth underscoring that the excellence of justice, which is an excellence of interpersonal relations, reflects Aristotle's judgment that man is a political animal (*zoon politikon*), dependent on family, friends and fellow citizens for *eudaimonia*. The moral virtue of justice is therefore necessary for a good life. Aristotle famously writes in *The Politics*, 'Anyone who either cannot lead the common life or is so self-sufficient as not to need to, and therefore does not partake of society, is either a beast or a god'. In this context, writes Aristotle, 'justice is the bond of men in states' (*The Politics*, 1253, 35). He also underscores that 'nobody would choose to live without friends, although he were in possession of every other good' (NE, bk VIII, ch. I).

We can summarize by saying that *eudaimonia* is life lived according to the virtues, that is, according to the excellences of reason. A virtuous life does not reject the pursuit of pleasure, but calls for the pursuit of pleasure in moderation, as guided by the virtue of temperance. The crowning glory of the virtues is *phronesis*, practical wisdom, as that is nothing less than knowing how to choose the right action at the right time for the individual's highest good, *eudaimonia*. The great difficulty, notes Aristotle, is that the right choice at the right time depends on the context of each choice. The right action cannot be determined by a rigid set of rules. *Phronesis* is therefore a character trait gained by experience, the exercise of reason over time, rather than by a checklist of precepts. According to Aristotle,

only older people can achieve *phronesis*, a view that seems (to me) more accurate with each passing year. In fact, each of the virtues must be cultivated throughout a lifetime, by being mentored, through formal education, and as the result of practice. Practice leads to learning, and learning leads to habits and the formation of character. In essence, *eudaimonia* is to be achieved by cultivating the excellences of character.

Aristotle recognizes that the four virtues are necessary but not sufficient for *eudaimonia*. There is also the question of material life and luck. Individuals must be able to meet their needs for food, shelter, clothing and other basic needs in order to thrive. A certain level of wealth is needed in order to be able to afford the leisure needed for contemplation and political activity, both of which are parts of a good life. We may call this condition ‘material sufficiency’. Also, the individual needs good fortune for good health, adequately good looks, and the like.

Aristotle emphasizes that pleasures can easily lead to excesses unless controlled by reason. While Aristotle doesn’t invoke the concept of addiction, this seems to be what Aristotle has in mind when he warns against a slavish (or animal-like) devotion to bodily pleasures. ‘If then this disposition [to bodily pleasures] is not obedient and subject to authority, it will greatly develop. For the longing for pleasure which a foolish person has is insatiable and universal, and the active exercise of the desire augments its native strength, until the desires, if they are strong or vehement actually expel the reasoning power’ (NE, bk II, I ch. XV). Yet Aristotle clearly rejects a life of asceticism. ‘In the temperate man then the concupiscent element ought to live in harmony with reason, as nobleness is the object of them both, and the temperate man desires what is right, and desires it in the right way, and at the right time, i.e. according to the law of reason’ (NE, bk III, ch. XV).

Aristotle notes that because human souls have both a sensitive faculty and a rational faculty, they have conflicting desires, or motivations, for action. (See Pearson 2012 for an excellent discussion.) Aristotle’s general term for desire is *orexis*. He distinguishes three types of desires. Desire for *eudaimonia*, that is desire guided by reason, is *boulêsis*. It is linked to the term *boulesusis*, meaning deliberation. Desire for pleasure, especially through the sensation of touch, is termed *epithumia*. In accord with Aristotle’s classification of the sensitive faculty as the part of the soul shared with other animals, bodily pleasures are the kind of pleasures ‘the lower animals are generally capable of, and it hence that these pleasures appear slavish and brutish’ (NE, bk III, ch. XIII). Desire led by anger or threat is *thumos*, another kind of irrational desire. Aristotle describes how people under the influence of *thumos* ‘turn like wild beasts upon those who have wounded them’ (NE, bk III, ch. X). Passion, notes Aristotle, ‘is preeminently eager to encounter perils’.

The three kinds of desire give rise to internal conflicts, that is, whether to act according to reason, pleasure or passion (anger). An *akratic*, or incontinent, individual chooses pleasure over reason, acting according to *epithumia* rather than *boulêsis*. (Similarly, an *akratic* individual will pursue an action according to anger, *thumos*, rather than reason.) An *enkratic*, or continent, individual is guided by reason over pleasure, and by reason over anger, acting according to *bouleseis* rather than *epithumia* or *thumos*. The *enkratic* individual feels the tug of pleasure, but overcomes it in the pursuit of the good life. He or she craves the chocolate cake but resists the temptation to eat it. Modern psychologists use the term *inhibitory control* and *self-regulation* to describe the psychological state by which a deliberative choice based on longer-term considerations outweighs a craving.

In *De Anima (On the Soul)*, Aristotle observes that acting according to *boulêsis* rather than *epithumia* means choosing future benefits instead of immediate but ultimately harmful pleasures. Only humans can make such a choice, because it requires the (rational) ability to see into the future. As Aristotle puts it: ‘The opposition of reason and the appetites . . . is confined to those creatures enjoying resistance, while the appetite supports its case with immediate facts. Inability to see into the future underwrites the appearance that what is immediately pleasant both is so absolutely and is absolutely good’ (DA, bk III, ch. X). This is in line with the modern notion that addiction can be considered a kind of excessive time discounting, that is, an underweighting of adverse future consequences.

A virtuous person, a *phronimos* (an individual with *phronesis*), has a harmonized soul. Not only does reason predominate, but even the desire for pleasure is moderated. While the *enkratic* soul pushes away the chocolate cake despite the urge to eat it, the *phronimos* doesn’t feel the urge to eat it. The *phronimos* is not an ascetic but rather desires pleasures in moderation, as honed by reason. The result is temperance, achieved through mentorship, education, practice and eventually habit formation.

3.2 NEUROSCIENCE AND WELLBEING

Aristotle had no knowledge of neuroscience, that is, of a scientific understanding of the brain and its interactions with the body, but he was a remarkably keen and shrewd observer of human nature. His categorization of desires into *boulêsis*, *epithumia* and *thumos*, and of the psyche into the nutritive, perceptive and rational faculties, resonates with cognitive neuroscience, which has also identified distinct circuits within the brain in ways that relate to Aristotle’s concepts.

Consider the questions of desires and behavior. Aristotle argued that

behavior could be guided by irrational or rational desires. In the first, some kind of appetitive pleasure (food, sex) would give rise to desire; in the latter, the individual would deliberate over the right kind of action. Cognitive neuroscientists similarly distinguish between behaviors with and without deliberation. A fascinating six-way taxonomy in this regard is proposed by LeDoux and Daw (2018).

In the LeDoux–Daw taxonomy, there are four kinds of non-deliberative behaviors. The first are *reflexes*, which are innate, species-specific stimulus–response patterns. The second are *fixed reaction patterns*, which are also innate and species-specific, but more complex than reflexes (and include freezing or defensive fighting). The third are *habits*, which are stimulus–response behaviors that are acquired through instrumental learning, but that continue to occur in response to the stimulus even when the reinforcements are no longer present. The fourth are *action–outcome behaviors* that are learned responses where the stimulus–response behavior continues to depend on the presence of the reinforcement.

LeDoux and Daw also suggest two kinds of deliberative behavior: unconscious and conscious. In *unconscious deliberative actions* the individual (or animal) considers the best actions according to cognitive calculations, but these cognitive processes are not conscious, that is, they do not involve the self-awareness of the individual. Nonetheless, they are goal-directed, and based on calculations of likely outcomes of alternative actions relative to goals. The final category is conscious deliberative actions. In this case the individual is aware of the decision making, and aims to calculate the best actions to achieve specific goals. Conscious deliberative action comes closest to Aristotle’s idea of actions based on rational desire.

Loosely speaking, then, the non-deliberative actions are related to Aristotle’s category of actions guided by *epithumia*, since both innate behaviors and conditioned learning generally relate to the pursuit of somatic pleasures (food, sex, comfort, addictive substances) and to the avoidance of pain or danger. Such behaviors are shared by humans and other animals. Deliberative behaviors, on the other hand, are related to Aristotle’s category of actions guided by *boulêsis*. In both the Aristotelian and neuroscientific accounts, deliberative actions are goal-directed. (Note, though, that Aristotle did not distinguish between conscious and nonconscious goal-directed deliberation.)

Of course, this kind of mapping is not precise. For example, Aristotle argues that choosing actions aimed at *eudaimonia* will eventually become habitual rather than deliberative, as the result of experience. Still, the habits learned through repeated deliberation will be different in kind from the repertoire of habits learned through stimulus–response conditioning. Yet another key difference is that when cognitive neuroscientists discuss

goal-based deliberation they are not generally specifying the *kinds of goals* being pursued, while for Aristotle rational desires aim specifically at the goal of *eudaimonia*, a thriving life. Cognitive neuroscience has not yet taken up the challenge of defining or describing the neurobiology of a thriving life.

LeDoux and Daw link their six modes of behavior to distinct neural circuitry. We can forgive Aristotle for not taking that step 2340 years ago. Most of the neural circuitry understood today has been investigated only within the past 50 years, and indeed most of the hard-won knowledge has come much more recently than that! Neuroscientific discoveries are burgeoning, so that the circuitry proposed today is still novel, somewhat speculative and contested among scholars.

Nonetheless, as a broad generalization it's fair to say that the neuroscientific findings on neural circuitry tend to support rather than refute Aristotle's claim that there is something unique about the human capacity for goal-based deliberation, while the behavioral capacities of the reflexes and conditioned learning are shared with other animals. Broadly speaking, goal-based deliberation depends on the neocortex, and especially the prefrontal cortex (PFC), parts of the human brain anatomy that grew massively in size and functionality in the course of human evolution compared with the brains of other animal species including of our closest relatives, the great apes.

Some of the circuitry recently identified by neuroscience includes:

- *Circuitry for deliberative actions*: linkages of the medial temporal lobe and other cortical areas (for episodic memory, semantic memories, cognitive maps, schema) with cortical cognitive circuitry (for conscious and nonconscious deliberation) and other systems (sensory, subcortical).
- *Circuitry for appetitive conditioning*: linkages of the basal ganglia (ventral tegmental area, ventral striatum, dorsal striatum) with cortical and other subcortical systems.
- *Circuitry for defensive action–outcome behaviors*: linkages of the sensory system with the amygdala and descending to the ventral striatum.
- *Circuitry for innate threat reactions*: linkages of the sensory system with the amygdala and descending to the periaqueductal grey (PAG).

There is no single conductor of this orchestra of brain circuitry, though the anterior cingulate cortex (ACC), which receives signals from the other brain networks, is sometimes hypothesized to play at least a limited role as an aggregator of the circuitry for deliberative, sensory, and conditioned

behaviors, and to be a key part of metacognition, that is, the self-aware thinking about one's own thinking (Metcalf and Schwartz 2016). The insula too has been identified as playing an integrative function.

What seems clear, and is the subject of considerable ongoing research, is that the various brain circuits can give rise to competing behavioral responses. A conditioned stimulus might trigger the circuitry for appetitive conditioning and cause an addict to crave the addictive substance or behavior, but simultaneously trigger the circuitry for deliberative actions to resist the craving. The individual feels like two minds, just as Aristotle described the battle between desires for the good (*eudaimonia*) and desires for the appetitive pleasures.

A great deal of addiction-related research therefore examines when behaviors are based on deliberation or conditioned learning. Both kinds of decision making are present and indeed important in a healthy individual. Deliberative decision making is appropriate for more complex and novel situations when the possible future consequences of alternative actions must be assessed. Such decision making is arduous, time-consuming and burdensome in terms of attention, working memory, energy inputs and time commitment. Conditioned responses, by contrast, are much faster, with far lighter loads on cognitive circuitry, and the outcomes can be highly desirable if circumstances are familiar, speed is of the essence and the conditioning is to appropriate stimuli, not to cues for addiction or other self-harms.

The key behavioral question is which one of the motivation systems wins out when there is a conflict between the outputs of the deliberative circuitry and the conditioning circuitry. Neuroscience is beginning to give answers, and again Aristotle had some crucial intuitions more than 2300 years ago. Certain kinds of pleasures, those that are associated with a phasic release of the neurotransmitter dopamine from the ventral tegmental area to the ventral and dorsal striatum, seem to be most addictive, and therefore most likely to elicit behaviors that are conditioned rather than deliberative.

The brain apparently produces the sensations of pleasure both in response to the *anticipation* of a reward and also to the *consummation* of the reward. The anticipation of a reward is closely linked with a phasic release of dopamine, leading to the sensation of 'craving'. The consummation of a reward is apparently linked with other non-dopamine systems, such as the release of endogenous opioids such as endorphins in response to satiety. Amazingly, addiction can persist on the basis of craving alone, even when the consummation of the reward is no longer present, and indeed when the addictive behavior leads to an aversive outcome rather than a reward outcome. This has led Berridge and Kringelbach (2013) to differentiate the brain mechanisms that cause 'wanting' (craving or anticipatory pleasure) versus 'liking' (consummatory pleasure).

It is hypothesized that both the release of dopamine (craving) and endorphins (consummation) are closely linked to *homeostasis*, the tendency of the brain and body to seek a return to normal operating parameters for physical functions (adequate water, food, salt, sexual function) and for social attachments (aversion to physical isolation). Craving is then associated with stimuli that signal the ability to restore homeostasis, and consummatory pleasure is the signal that homeostasis has been achieved (through rehydration, ingestion of food, sexual activity, etc.). For this reason, many of the most powerful addictions are related to the craving and consummation of basic bodily functions (food, sex). Aristotle intuited the same when he noted that the active exercise of appetitive pleasure ‘augments its native strength, until the desires, if they are strong or vehement, actually expel the reasoning power’.

Yet the circuitry for appetitive conditioning also creates other kinds of addictions that similarly stimulate the phasic release of dopamine and thereby lead to conditioned learning that creates a craving for the behavior. Various addictive drugs, alcohol, compulsive shopping, gambling, online pornography, online gaming and other behaviors have been linked experimentally with such dopamine-mediated craving. The irony – indeed at the profound cost of suffering in our modern economy – is that businesses have widely recognized the profitability of selling addictive goods and services and marketing them through advertising stimuli that aggressively promote the addictions, a point recently emphasized by Courtwright (2019).

A key challenge, therefore, for Aristotle and for modern neuroscience, and for each of us as individuals, is to understand how the various brain networks – cognitive, conditioned, emotional, defensive – determine actual behavior. When does the *akratic* individual give in to pleasure? When does the addict succumb to craving? Or when does Aristotle’s rational faculty, or neuroscience’s goal-based cognition, win the battle over motivation?

Addiction researchers aim to understand why deliberative behavior sometimes dominates (the addict successfully stays away from the addictive substance or behavior) and sometimes fails (the addict relapses). By scanning the brains of addicts confronted with addictive stimuli, the evidence suggests that addictive behaviors reflect both the hyperactivation of the reward-conditioning circuitry of the basal ganglia and a weakening of the cortical deliberative circuitry, especially the ventral medial PFC. Addiction seems to be a manifestation both of heightened craving due to conditioned learning and weakened goal orientation.

This has been characterized by Bickel and colleagues (2015) as a steep rise in the addict’s time discounting of future adverse consequences,

recalling Aristotle's observation that appetitive pleasures tend to block out consideration of the future. In Bickel's interpretation, the current 'benefits' of anticipatory and consummatory pleasure (even when consummatory pleasure is not attained) outweigh the discounted long-term costs because of a high discount rate attached to the future costs. The addiction disorder is characterized as a disorder of time discounting, suggesting a therapeutic goal of reducing the individual's time rate of discount.

Bickel et al. (2015) report two kinds of cognitive training to reduce the discount rate: working memory training and episodic future thinking (EFT). In memory training, subjects are given various working memory tasks over a number of sessions. Alcohol-addicted subjects and obese children both showed significant therapeutic benefits of the working memory training. In EFT, subjects are asked to consider themselves in various future scenarios ('mental time travel'). This treatment too is shown to result in a significant reduction of addictive behaviors. The authors suggest that self-control, or inhibitory processes emanating from the PFC, work like a muscle, in that they need exercise and strengthening, especially when individuals are suffering from addictions.

Aside from addictions, and other behavioral disorders such as obsessive-compulsive disorders that also relate to the dysregulation of the conditioning circuitry, there are mood and anxiety disorders that deeply compromise the attainment of *eudaimonia*. Mood disorders include massive depressive disorders (MDD) and bipolar disorder, and anxiety disorders include panic disorders, post-traumatic stress disorder (PTSD), generalized anxiety and phobias. One persistent theme in all of these cases is that life experience matters enormously. One important finding is that *chronic stress*, leading to a chronically excessive load of stress-related cortisol (through the release of cortisol stimulated by the hypothalamus-pituitary-adrenal network), can damage the PFC and other brain circuitry and thereby lead to lifelong impairments of brain functioning. It is hypothesized, for example, that exposure to chronic stress in the highly vulnerable years of early childhood development (under the age of five) significantly raises the risk of adult-onset depression.

3.3 ECONOMICS AND WELLBEING

Neoclassical economics, especially before the recent advances of neuroeconomics, adopted a model of human nature that dropped the Aristotelian notions of a divided psyche and rejected any objective standards of a good life. The core notion of the virtues was replaced in nineteenth- and twentieth-century economics by a theory based on individual preferences,

or utility, without reference to benchmarks of a good life or the need to cultivate virtue. The story of this shift in perspective has recently been described by Wootton (2018). The broad cultural abandonment of virtue as a shared benchmark for human wellbeing was famously and persuasively described by MacIntyre (1981).

According to the new economic viewpoint, each individual has his or her own tastes or preferences, and these preferences cannot and *should not* be judged by the standards of reason. The individual is not torn between desires of reason and pleasure, as in Aristotle (or neuroscience). Individuals have one motivation and one motivation alone: to maximize wellbeing according to their own personalized preferences, whatever those might be. Economists in this line also lost any interest in accounting for those preferences, and instead invoked the Latin saying, ‘*De gustibus non est disputandum*’ (tastes should not be disputed or debated). In other words, each to his own tastes. Neoclassical economics also assumes that preferences do not change over time, or that if they do they change in a way that is known to the individual beforehand, and therefore in a way that can be taken into account in advance. Individuals are not torn by temptation, addictions, compulsions or other internal conflicts, and are not beset by regrets. Even if addictions occur, in this view, they are rational addictions in the sense that the addict knew what was coming, and rationally balanced the short-term pleasures of the addiction with the long-term costs.

These assumptions are taught to economics students today around the world, and described by introductory economics textbooks. The six main assumptions are:

- Utility is egoistic, meaning that each individual’s utility depends only on individual consumption of goods and services, not on relations with others or the wellbeing of others.
- Moment-to-moment (flow) utility is based on the consumption of goods and services.
- Lifetime utility is determined by the discounted sum of moment-to-moment utility.
- The utility function is based on a consistent set of preferences over goods and services, with minimal consistency standards such as the transitivity of preferences.
- The utility function is stable over time, not subject to experience or learning, or subject to learning in a known and predictable manner.
- The individual maximizes utility through the choice of market transactions subject to a budget constraint.

Notice that three features of utility theory are deeply contrary to Aristotle's theory of the psyche and to the findings of modern neuroscience:

- Utility (wellbeing) is defined only relative to the consumption of market goods and services, not to personal relationships (with family, friends, and fellow citizens).
- Utility is a single-value function, rather than the result of distinct valuations arising from different faculties of the psyche.
- Preferences do not change in response to experience and learning, or only in ways that the individual knows beforehand and takes into account in utility maximization.

These features of modern utility theory do not withstand empirical scrutiny, either by economists when examining economic behavior or by psychologists examining decision making and wellbeing more generally. For example, individuals clearly make choices (such as altruistic gifts, or highly cooperative actions) based on interpersonal relationships and norms of fairness and friendship. Individuals battle with conflicting desires, and sometimes succumb to addictions that cause great remorse and unhappiness. Individuals change their preferences over time as the result of experience, learning, coaching and reflection. Choices in the marketplace and laboratory settings are subject to subliminal cues, priming, framing, stress and the presence of irrelevant alternatives. Individuals have a shaky conceptualization of healthful behaviors, risks of addiction, vulnerabilities to priming and biases in reasoning. Individuals are notoriously weak at managing probabilities and uncertainties in a consistent manner. And individuals are poor forecasters of their own emotional responses to future behaviors.

Modern neuroeconomics and its close cousin, behavioral economics, aim to update the assumptions of economic decision making to take into account the anomalies and inconsistencies. There is now a widespread recognition of the importance of social norms, temptations and addictions, interpersonal relations and weak capacities to maximize utility, for example to forecast the affective states that will result from alternative future conditions. Yet these fields have not yet produced a new 'standard' model of behavior aligned with the empirical findings. Instead, the field of neuroeconomics has mainly catalogued the behavioral anomalies (measured against the standard utility theory) and proposed to address those anomalies mainly through policies that 'nudge' individuals into making better choices. Little headway has been made on more fundamental challenges, such as the pervasive addictions and consequent unhappiness that is widespread in modern societies.

3.4 TOWARDS A NEW SYNTHESIS OF ARISTOTLE, NEUROSCIENCE, POSITIVE PSYCHOLOGY AND ECONOMICS

The basic aim of economic science should be *eudaimonia*, thriving and well-lived lives, taken as a whole, for members of society. To put *eudaimonia* at the center of economics and public policy, we will need a framework to measure *eudaimonia* and relate it to life choices, and to identify the pathways to achieve *eudaimonia*. This in turn will require an accurate science of individual motivations and the ways to cultivate human actions consistent with *eudaimonia*. The way forward must be deeper and more consequent than ‘nudging’ individuals to counteract their *akratic* or poorly motivated behaviors.

I propose the following basic approach. First, in line with Aristotle, we should recognize that *eudaimonia* depends on the combination of two factors: life circumstances (wealth, health, friendship, family, citizenship, etc.) and personal traits (virtues, personality, brain circuitry). This proposition is illustrated in Figure 3.1.

Wellbeing cannot be achieved when life circumstances are harsh (such as ill-health or poverty), but neither can wellbeing be achieved without adequate personal traits (such as practical wisdom and temperance) and mental health (such as freedom from addiction and from mood and anxiety disorders). The two-way arrow linking circumstances and traits emphasizes that the two domains inevitably interact. Poor personal traits diminish life circumstances (e.g. by occasioning the loss of friends or business opportunities), while poor life circumstances (e.g. loneliness, absence of friends, poverty) cause stress and possibly a weakening of character traits and mental stability.

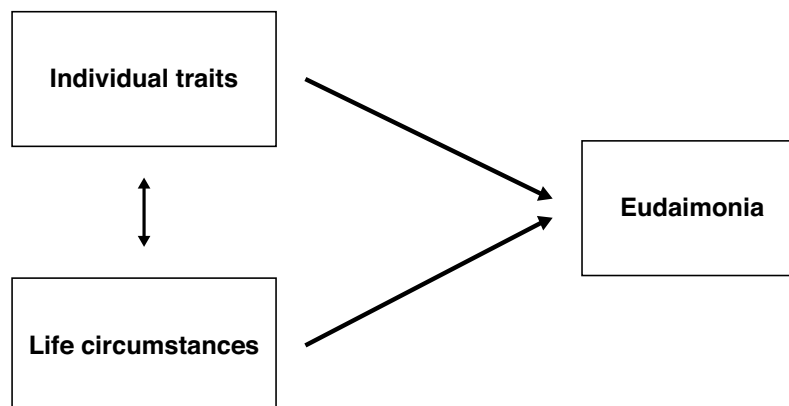


Figure 3.1 *The two pillars of eudaimonia: individual and life circumstances*

Second, again following Aristotle, the individual virtues include both personal virtues (such as practical wisdom and temperance) and interpersonal virtues (notably justice). Individual wellbeing depends on choices over goods and on relations with other people. In both cases, actions need to be guided by the rational pursuit of the good rather than the irrational craving for pleasure. On the personal level that means cultivating moderation in the pursuit of pleasures. On the interpersonal plane it means treating others in a manner that leads to trust, friendship, mutual support and love. In interactions that are characterized by a ‘social dilemma’, where an individual may gain personal wealth, fame or glory by deliberately hurting others, the interpersonal virtue of justice requires choosing sociality (trust, honesty, adherence to norms) rather than short-term personal advantage.

Third, personal character is shaped by early upbringing, education and habit formation, as depicted in Figure 3.2.

The virtues are not merely inborn personality traits, though they surely depend in part on genetics. They also depend on family and socialization, not least of which is through education and the good examples and guidance of mentors. Early socialization and a safe family environment matter enormously. Early lifetime stress, for example, predisposes the individual towards adult psychopathologies such as addictions and mood and anxiety disorders.

Aristotle’s substantive recommendations regarding *eudaimonia* hold up very well in the research findings of positive psychology and cognitive neuroscience. Some of the most pertinent findings of positive psychology

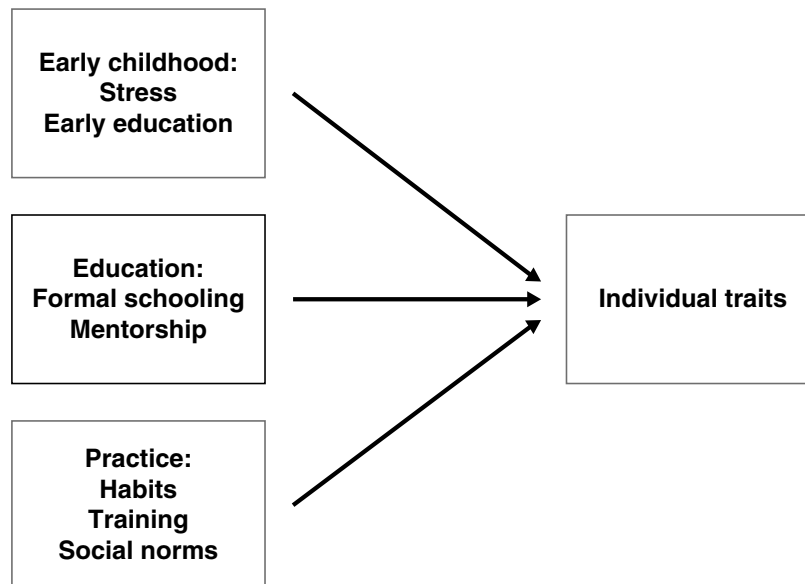


Figure 3.2 *The fostering of individual traits*

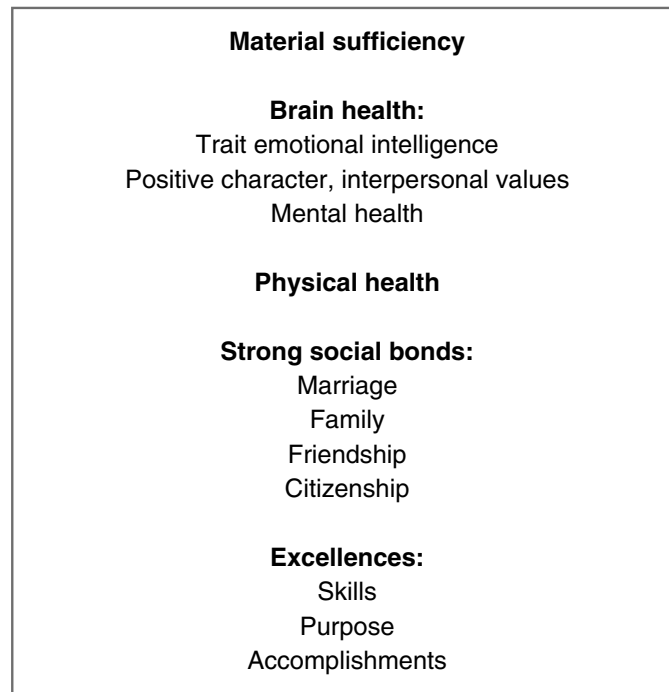


Figure 3.3 The conditions of eudaimonia: life well lived

come from studies of subjective wellbeing (SWB), meaning the subjective evaluations of the life course in survey data. One of the key measures of SWB is the Cantril ladder, which asks individuals to evaluate the quality of their life according to a ladder with rungs ranging from the bottom 0th rung (worst life imaginable) to the top 10th rung (best life imaginable). By design, the Cantril ladder requires a conscious, reflective evaluation. It is the PFC's standard of a good life.

According to the extensive range of studies of SWB using the Cantril ladder and other related measures, a good life is promoted by the following, as summarized in Figure 3.3:

- *Personality traits*, including the 'big five' (neurosis, extraversion, openness, conscientiousness and agreeableness). As expected, greater interpersonal skills (extraversion and agreeableness) and rational skills (openness to new ideas, people, and circumstances, conscientiousness) are conducive to happiness, while neuroticism results in lower happiness.
- *The ability to regulate emotions* as a key character trait. Studies demonstrate that 'trait emotional intelligence' (TEI) is conducive to happiness. TEI measures whether individuals believe that they are

‘in touch’ with their emotions and able to regulate them effectively to promote wellbeing.

- *Strong interpersonal relations*, measured by friendships, marriage and social support networks. The evidence suggests that interpersonal relations are key for happiness (humans are social animals after all) and that interpersonal traits including honesty, agreeableness, trust and generosity are inputs to successful interpersonal relations. Again, *eudaimonia* depends both on circumstances and character. (See Helliwell and Aknin 2018.)
- *Good mental (and brain) health*. The single most important group of factors leading to low SWB is mental illness, including mood disorders (such as massive depressive disorders), anxiety disorders (PTSD and others) and impulsive/compulsive disorders such as substance abuse and behavioral addictions.
- *Favorable life conditions*. These include adequate income, with a sharply declining marginal utility of income once basic needs have been met, good health and physical safety (e.g. absence of war and rule of law). (See Helliwell and Aknin 2018.)
- *Meaning in life*. Individuals find meaning and satisfaction in the exercise of their reason, that is, in making good life decisions. Achieving virtue is itself a source of meaning, and so too are developing satisfying relations with others. Mastery of skills and contributions to society are further sources of meaning. According to Aristotle (NE, bk X), the life of politics (of a citizen of the *polis*) can bring happiness, but the most sublime happiness comes through contemplation or ‘speculative activity’ according to reason.

Positive psychology (Seligman 2011) has coined the acronym PERMA to summarize: *Positive emotions, Engagement (in activities of excellence), Relationships, Meaning and Achievement*.

Psychological and sociological studies have also suggested several ways that the organization of high-income modern society is directly inimical to the achievement of *eudaimonia*. These include:

- *Hyper-consumerism*, overemphasizing the importance of market goods over interpersonal relations.
- *Hot-button advertising*, designed to appeal to the mesolimbic system through Pavlovian and operant conditioning (selling jeans through sexual imagery, obesogenic beverages through smiling faces of young people engaged in social activities, etc.).
- *Unregulated marketing of addictive substances*, such as synthetic opioids, online gambling, social media and processed foods

with addictive additives (salt, sugar, fats, processed grains) (Sachs 2019).

- *High inequalities of income and social status*, leading to chronic stresses and cortisol loading (Wilkinson and Pickett 2019).
- *Weakening social ties*, disrupting interpersonal relations and social support networks.
- *The political appeal to fear*, through broadcast and social media.
- *Childhood poverty and chronic stress*, leading to lifetime impairments of brain physiology.
- *Social norms of libertarianism*, which emphasize personal freedom over wellbeing. Libertarianism is based on the false proposition that humans are by nature solitary and that they come together in a political community only as contractual matter for individual benefit, with politics properly limited to the minimal functions of security and property protection under that social contract.

Achieving a new synthesis around *eudaimonia* is at once a scientific task, to identify empirically the attributes of good lives and how they can be pursued; a social task, to create a broader consensus around the ideas and goals of *eudaimonia*; an economic task, to shift society's resources (including the limited attention span of citizens and economic institutions) towards *eudaimonia*; and a political task, to mobilize politics towards the thriving lives of the citizenry. This challenge also must be carried out in the context of rapid technological change, massive economic upheavals (including mass urbanization, globalization and migration) and enormous global diversity and indeed distrust.

A starting point will be for economics and neuroscience to turn increased attention to the ancient aims of Greek philosophy and the modern aims of positive psychology: to understand the sources of human thriving and thereby to raise the happiness of individuals and societies. Adam Smith, under the influence of British empiricism, launched modern economics as the study of *The Wealth of Nations*. With the end of poverty easily within reach (if indeed the world were more just in its treatment of the poor), it is certainly overdue to relaunch economics as the study of *The Happiness of Nations*.

NOTE

1. In a general way Aristotle follows Plato, who in *The Republic* also divides the soul into three parts, though not exactly the same as Aristotle's three parts: the rational (*logistikon*), appetitive (*epithymetikon*) and spirited (*thymoeides*) faculties. Plato holds

that the three parts of the soul should function in harmony, and uses the word *dikaiosyne*, justice, for an individual with harmony of the soul. Similarly, in the dialogue *Phaedrus*, Plato imagines a human being to be a chariot with two horses. The charioteer is reason, which aims to steer the two horses, one being the appetitive faculty and the other being the willful faculty.

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