

Toward an Integrated Science
of Wellbeing

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The Integrative Science of Eudaimonic Wellbeing

Past Progress and the Road Ahead

CAROL D. RYFF ■

INTRODUCTION

The integrative science of wellbeing is covered in this chapter from the vantage point of a eudaimonic model developed more than three decades ago. In contrast to hedonic approaches that emphasise happiness and life satisfaction, eudaimonia is concerned with the realisation of personal potential and living meaningful and purposeful lives. The conceptual underpinnings of this approach are first described, followed by a brief look at its empirical measurement. Multiple topics have grown up around this model over time, such as how eudaimonia varies by age, gender, race, and educational status. Other studies have linked aspects of eudaimonic wellbeing to experiences in work and family life. Growing work has connected components of eudaimonia to health, defined not only as morbidity and mortality, but also in terms of biological risk factors. Further inquiries have linked eudaimonia to neuroscience and genetics. Lastly, whether eudaimonic wellbeing is modifiable has been the focus of numerous intervention studies. A selective look at these domains of inquiry is provided to reveal the varieties of progress made to date on the integrative science of eudaimonic wellbeing.

The remainder of the chapter then shifts to targeted directions for future research. The first topic showcases increasingly widening inequalities that have been unfolding over recent decades, especially in the United States. These socio-economic disparities have notable implications for wellbeing and health (see also Chapters 9 and 16, this volume). The urgency of this problem has been exacerbated by the worldwide COVID-19 pandemic and its economic sequelae (see also Chapter 15, this volume). These historical changes bring into high relief a critical

issue: namely, whether the realisation of human potential, arguably the essence of eudaimonia, is increasingly *not available* to large segments of contemporary societies. Continued scientific tracking of this matter is profoundly important as a window on the success or failure of the social order in our times.

The second topic brings a more hopeful future direction by seeking to build bridges to the arts and humanities as domains that may nourish wellbeing, including in the face of adversity. Scientific advances are now unfolding on these topics, though less work has examined implications for leading purposeful and meaningful lives as well as for realising personal talents and capacities. In addition, the relevance of the arts and humanities in bringing attention to human suffering greatly needs attention.

The third topic addresses environmental inputs on wellbeing, giving targeted emphasis to the natural environment as experienced in direct encounters with nature. These ideas are illustrated through poetry, literature, the visual arts, and music. The field of environmental psychology has become more prominent in recent decades with growing evidence that natural environments are linked with better mental and physical wellbeing. But again, little work has emphasised eudaimonic wellbeing and even less has focused on the role of the arts in capturing the inspirational power of nature.

Taken as a whole, the intent is to demonstrate that eudaimonic wellbeing constitutes a theoretically and philosophically rich formulation of positive functioning, which has now been empirically linked with (1) people's position in the social structure, thereby implicating differential access to power and resources; (2) proximal life experiences (stress exposures, life events, and transitions in work and family life); and (3) multiple aspects of health (disease, disability, and death) through regulation of diverse physiological systems (stress hormones, inflammatory markers, and cardiovascular risk factors), brain structures and function, and genetics. This wide panorama is nonetheless incomplete, with future work needed to showcase the import of major historical events that possibly compromise the eudaimonic potential of disadvantaged segments of contemporary societies. Alongside these distressing concerns are new inquiries on the potential of the arts to nourish wellbeing and health even during times of widespread suffering. A final new frontier brings in the natural environment and its relevance for eudaimonia and health, not only in individuals, but also in communities and societies, and importantly, for the sustainability of planet. The integrative agenda is deep and wide.

WHAT IS EUDAIMONIC WELLBEING?

This section describes a model of psychological wellbeing (Ryff, 1989) that I developed built on theories of positive psychological functioning from clinical, development, existential, and humanistic perspectives while also drawing on Aristotle's view of *eudaimonia* as the highest of all human goods (Ryff & Singer, 2008). It stands in contrast to hedonic indicators of wellbeing that are largely atheoretical in nature and focus on simple questions about happiness and life satisfaction.

This model of eudaimonic wellbeing was informed by detailed depictions of the upside of the human condition coming from the Jungian formulation of individuation (Jung, 1933), Bühler's writings about basic life tendencies that work toward the fulfillment of life (Bühler, 1935), Jahoda's perspective on positive mental health (Jahoda, 1958), Frankl's writings about the life-saving features of purpose in life (Frankl, 1959), Erikson's life-span model of ego development (Erikson, 1959), Rogers's perspective on the fully functioning person (Rogers, 1961), Allport's conception of maturity (Allport, 1961), Maslow's conception of self-actualisation (Maslow, 1968), and Neugarten's writings about the executive processes of personality in adulthood (Neugarten, 1973). These enticing perspectives had been largely missing in the empirical arena due to a lack of sound assessment procedures.

My contribution was to integrate these ideas into a model built around points of convergence among them (Ryff, 1989). This integration resulted in six core dimensions of wellbeing (see Figure 1.1). Distant philosophical input came from Aristotle's *Nicomachean Ethics* (1925), which opens with a profound query: What is the highest of all goods achievable by human action? Aristotle believed the answer was happiness but underscored notable differences in what

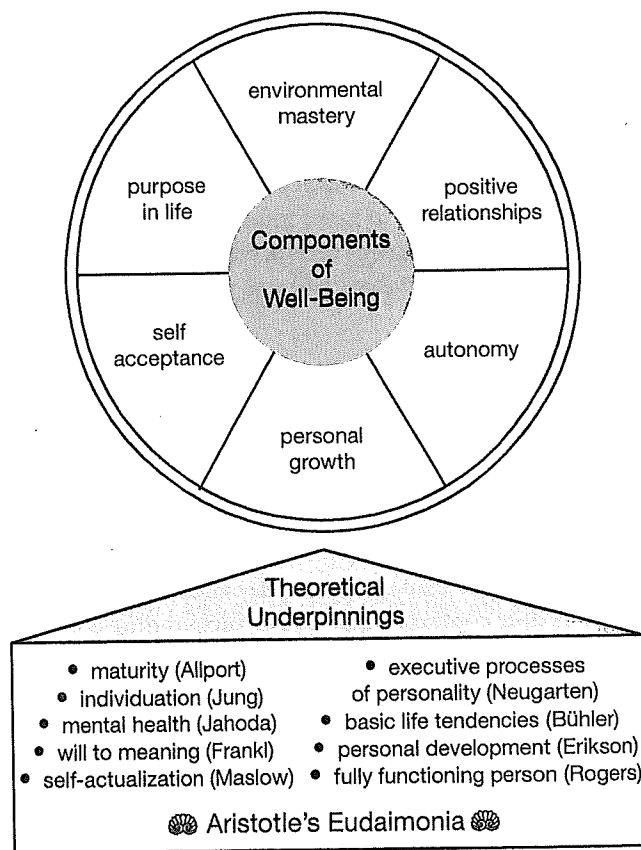


Figure 1.1 Core dimensions of psychological wellbeing and their theoretical foundations.

is meant by happiness. In his view, happiness is not about pleasure or wealth or satisfying appetites—things more aligned with hedonia, also of interest to the ancient Greeks. Instead, Aristotle defined the highest good as *activity of the soul in accord with virtue*, thereby distilling the core meaning of eudaimonia as achieving the best that is within us. It is thus a kind of personal excellence, captured by the two great Greek imperatives inscribed on the Temple of Apollo at Delphi: namely, to “know thyself” and “become who you are” (Ryff & Singer, 2008).

Translation of the identified six different aspects of wellbeing to quality assessment tools was imperative. Such operationalisation required a comprehensive approach that has been described in multiple prior publications (Ryff, 1989, 2014; Ryff & Singer, 2008). Of critical importance at the outset were clear and coherent definitions of each proposed dimension. Box 1.1 provides these definitions,

Box 1.1

DEFINITIONS OF THEORY-GUIDED DIMENSIONS OF EUDAIMONIC WELLBEING

Autonomy

High scorer: Is self-determining and independent; able to resist social pressures to think and act in certain ways; regulates social pressures to think and act in certain ways; regulates behaviour from within; evaluates self by personal standards.

Sample item: “I have confidence in my own opinions, even if they are different from the way most other people think.”

Low scorer: Is concerned about the expectations and evaluations of others; relies on judgements of others to make important decisions; conforms to social pressures to think and act in certain ways.

Sample item: “I tend to be influenced by people with strong opinions.”

Environmental Mastery

High scorer: Has a sense of mastery and competence in managing the environment; controls complex array of external activities; makes effective use of surrounding opportunities; able to choose or create contexts suitable to personal needs and values.

Sample item: “I am quite good at managing the many responsibilities of my daily life.”

Low scorer: Has difficulty managing everyday affairs; feels unable to change or improve surrounding context; is unaware of surrounding opportunities; lacks sense of control over external world.

Sample item: “The demands of everyday life often get me down.”

Personal Growth

High scorer: Has a feeling of continued development; sees self as growing and expanding; is open to new experiences; has sense of realising his or her potential; sees improvement in self and behaviour over time; is changing in ways that reflect more self-knowledge and effectiveness.

Sample item: "For me, life has been a continuous process of learning, changing, and growth."

Low scorer: Has a sense of personal stagnation; lacks sense of improvement or expansion over time; feels bored and uninterested with life; feels unable to develop new attitudes or behaviours.

Sample item: "When I think about it, I haven't really improved much over the years."

Positive Relations with Others

High scorer: Has warm, satisfying, trusting relationships with others; is concerned about the welfare of other others; capable of strong empathy, affection, and intimacy; understands give-and-take of human relationships.

Sample item: "I enjoy personal and mutual conversations with family and friends."

Low scorer: Has few close, trusting relationships with others; finds it difficult to be warm, open, and concerned about others; is isolated and frustrated in interpersonal relationships; not willing to make compromises to sustain important ties with others.

Sample item: "I have not experienced many warm and trusting relationships with others."

Purpose in Life

High scorer: Has goals in life and a sense of directedness; feels there is meaning to present and past life; holds beliefs that give life purpose; has aims and objectives for living.

Sample item: "I have a sense of direction and purpose in life."

Low scorer: Lacks a sense of meaning in life; has few goals or aims; lacks sense of direction; does not see purpose of past life; has no outlook or beliefs that give life meaning.

Sample item: "I don't have a good sense of what it is I'm trying to accomplish in life."

Self-Acceptance

High scorer: Possesses a positive attitude toward the self; acknowledges and accepts multiple aspects of self, including good and bad qualities; feels positive about past life.

Sample item: "When I look at the story of my life, I'm pleased with how things have turned out."

Low Scorer: Feels dissatisfied with self; is disappointed with what has occurred in past life; is troubled about certain personal qualities; wishes to be different from what he or she is.

Sample item: "My attitude about myself is probably not as positive as most people feel about themselves."

Note. Response options for all above items: 1 (*strongly disagree*) to 7 (*strongly agree*)

including descriptions of both high and low scorers. These definitions, *which came from the underlying theories*, served as the basis for generating self-descriptive items intended to operationalise each dimension. Both positively and negatively worded items (drawn from the definition of both high and low scorers) were included to assess the presence or absence of each aspect of wellbeing while also guarding against response sets (e.g., the tendency to agree with all items). Detailed psychometric analyses were then conducted to refine the item pools via assessment of face and content validity, item-to-scale correlations (to ensure that each item correlated more highly with its own rather than another scale), and internal consistency (alpha) coefficients. Confirmatory factor analyses then examined whether the data supported the proposed six factor model and how the dimensions related to other constructs (convergent and discriminant validity) (Keyes, Shmotkin, & Ryff, 2002; Ryff & Keyes, 1995). In the main, these psychometric analyses, including those conducted with samples from diverse countries, have supported the proposed model. Of importance in evaluating the model's empirical structure is the need to employ scales of sufficient length (Gallagher, Lopez, & Preacher, 2009), with approaches using shortened scales showing problematic factor structures.

This detail on measurement construction is emphasised for two reasons. First, as the above progression reveals, a comprehensive approach is required to develop the high-quality measures needed to advance the field of wellbeing. Indeed, a problem with proliferating approaches to wellbeing is the lack of theoretically informed and clearly defined constructs that are accompanied by rigorous procedures to establish the validity and reliability of the relevant measures. Second, there are encouraging signs that measurement issues are receiving attention, as illustrated by the volume on *Measuring Wellbeing* (Lee, Kubzansky, & VanderWeele, 2021). This collection ends with measurement recommendations put forth by the editors and others (VanderWeele, Trudel-Fitzgerald, Allin et al., 2021) as well as a dissenting view (Ryff, Boylan, & Kirsch, 2021a) followed by a rebuttal on both sides (VanderWeele, Trudel-Fitzgerald, & Kubzansky, 2021; Ryff, Boylan, & Kirsch, 2021b). This exchange offers a useful debate on critical issues for advancing the field of wellbeing. These matters are particularly pertinent in the growing number of government surveys of wellbeing, which have been notably disconnected from the measures and findings from unfolding cohort studies (see also Chapter 13, this volume). Put another way, quality control issues in measurement of wellbeing need to be recognised because they are of no less consequence than quality control issues in assessing health or wealth.

PAST ADVANCES ON EUDAIMONIC WELLBEING: WHAT HAVE WE LEARNED?

The above model of wellbeing has had widespread impact across diverse scientific fields, with the measures translated to more than 40 languages and more than 1,200 publications generated on the antecedents, consequents, and correlates of

wellbeing (Ryff, 2014, 2018). Such extensive use likely reflects, in the spirit of Aristotle, a commitment to reach for essential meanings of what constitutes the best within us. That is, the guiding model was founded on intellectually vital ideas and ideals which are seen to have relevance across multiple life domains, fields of scientific inquiry, and cultural contexts.

Many emergent findings are from the Midlife in the US (MIDUS) national longitudinal study (www.midus.wisc.edu), which has collected comprehensive biopsychosocial data on large, population-based samples of Americans. MIDUS includes measures of both eudaimonic and hedonic wellbeing and is deeply multidisciplinary in scope. Thus, the publicly available data have allowed investigators to link wellbeing to numerous domains (e.g., adult life experiences and aging, health, biology, and neuroscience). The overview below draws on previous summaries of key advances (Ryff, 2014, 2018), which include numerous findings prior to MIDUS as well as more recent reviews, with one covering sociodemographic and health correlates of both eudaimonic and hedonic wellbeing (Ryff, Boylan, & Kirsch, 2021c) and another examining the emerging science that has grown up around a specific aspect of wellbeing: namely, purposeful life engagement (Ryff & Kim, 2020).

Sociodemographic Factors and Eudaimonic Wellbeing

Initial studies based on single-point-in-time data from smaller convenience samples showed age differences in aspects of eudaimonic wellbeing (Ryff, 1989, 1991; Ryff & Keyes, 1995). Some dimensions showed increments with age (autonomy and environmental mastery), decrements with age (personal growth and purpose in life), no age differences (self-acceptance), or inconsistent patterns (positive relations with others). Subsequent longitudinal findings based on national samples offered reliable evidence of a decline from midlife to old age in personal growth and purpose in life (Springer, Pudrovska, & Hauser, 2011). Such decline may reflect structural lag—that is, the notion that social institutions have not kept up with the added years of life that many older adults now experience (Riley, Kahn, Foner, & Mack, 1994). Thus, insufficient opportunities may be available for older individuals to contribute, thereby limiting opportunities for personal growth and purposeful engagement. These hypotheses are worthy of future study, particularly given emerging links between purpose in life and numerous indicators of health, as detailed in a separate section below.

Regarding gender differences, early evidence from the Wisconsin Longitudinal Study showed that women scored higher on positive relations with others and personal growth (Marks, 1996), findings also seen in other small-sample studies (Ryff, 1995; Ryff & Heidrich, 1997). Other dimensions of eudaimonic wellbeing have not shown gender differences, and longitudinal evidence on whether life course changes in wellbeing vary for men and women have not been reported. Socioeconomic status has been linked to eudaimonic wellbeing, mostly in terms of educational attainment. Data from multiple studies (the National Survey of Families and Households, MIDUS, Whitehall, and Wisconsin Longitudinal

Study) have shown that those with higher levels of education report higher levels on all six dimensions of eudaimonic wellbeing (Marmot et al., 1998; Marmot et al., 1997). Thus, greater educational opportunities, which implicate not only access to knowledge but also to good jobs, higher incomes, and greater wealth, likely enhance all that eudaimonia entails (autonomy, mastery, personal growth, purpose in life, positive relations, and self-acceptance). Causal directionality is unclear, although there are credible reasons to believe the influences are bidirectional.

With regard to race, an early and unexpected finding from MIDUS was that African American adults reported higher levels of eudaimonic wellbeing (Ryff, Keyes, & Hughes, 2003) compared to their White counterparts. At the time, we speculated that the challenges of minority life, including unfair and unjust treatments, may hone a sense of purpose as well as inner perceptions of personal growth, autonomy, and mastery. Victor Frankl (1959) long ago put forth a powerful case that purpose and meaning are critical and life-sustaining in the face of major adversity. Subsequent work from MIDUS showed that the minority advantage in wellbeing would be even greater were it not for experiences of discrimination (Keyes, 2009). These findings point to important future hypotheses regarding the role of eudaimonic wellbeing and its consequences for health and longevity among racial/ethnic minorities.

Importantly, evidence is growing showing that sociodemographic factors often work together in shaping wellbeing. This knowledge calls for greater emphasis on intersectionality going forward—namely, how age, gender, socioeconomic status, and race/ethnicity *interact* in accounting for levels of eudaimonic wellbeing and their links to health (see Ryff, Boylan, & Kirsch, 2021a).

Experiences in Work and Family Life

Eudaimonia needs to be understood in terms of the actual experiences of people's lives, which can be examined in multiple ways. Numerous studies have shown that greater involvement in multiple life roles (e.g., worker, spouse, or parent) appears to promote higher wellbeing (e.g., Ahrens & Ryff, 2006), although the actual activities in these roles matter (e.g., helping others seems to enhance purpose and self-acceptance) (Greenfield, 2009). Those who are married have a wellbeing advantage compared to the divorced, widowed, or never married, although single women score higher on autonomy and personal growth compared to married women (Marks & Lambert, 1998). Parenting seems to enhance adult wellbeing, particularly if one's children are doing well (An & Cooney, 2006; Schmutte & Ryff, 1994), whereas the loss of a child predicts impaired wellbeing even decades later (Rogers, Floyd, Seltzer et al., 2008). Similarly, loss of a parent in childhood predicts lower levels of multiple dimensions of adult wellbeing (Maier & Lachman, 2000). Experiencing psychological or physical violence from a parent in childhood compromises adult wellbeing (Greenfield & Marks, 2010), as does caring for an ageing parent, although less so for daughters with high environmental mastery (Li, Seltzer, & Greenberg, 1999).

With regard to work, wellbeing appears to contribute to and be influenced by career pursuits, with findings varying depending on the types of work pursued (e.g., paid or unpaid) and differences between men and women (Lindfors, Berntsson, & Lundberg, 2006). The interplay between work and family life has been extensively linked to wellbeing, with findings showing both negative and positive spillover between these domains (Grzywacz, 2000; Marks, 1998). Cohort differences have been observed in how young men and women manage work and family roles, with related differences for wellbeing (Carr, 2002). For example, older women and younger men who adjusted their work schedules to meet family demands had higher self-acceptance, whereas older men and younger women had lower self-acceptance if they cut back on paid employment to accommodate family demands.

Life experiences have also been studied as stress exposures that accumulate over time. Such topics have been of interest in MIDUS (Ryff, 2019) and linked with diverse health outcomes. For example, Gruenewald et al. (2012) found links between socioeconomic adversity in childhood (i.e., parental education and welfare status) and adulthood (i.e., education, income, and difficulty paying bills) to a multisystem biological risk (i.e., allostatic load). Another example focused on the lives of African Americans, where Slopen et al. (2012, 2013) linked cumulative stress across multiple life domains (i.e., neighborhood, financial, relationship, work, perceived inequality, discrimination, and childhood adversity) to smoking behaviour. Numerous other such studies exist in MIDUS (see www.midus.wisc.edu), although few have investigated potential associations between cumulative stress exposures and eudaimonic wellbeing. An interesting hypothesis is whether the aforementioned eudaimonic advantage observed for Blacks compared to Whites constitutes a buffer (protective resource) against the adverse effects of cumulative stress.

Eudaimonia and Physical Health

Growing research has linked eudaimonic wellbeing to diagnosed disease or disability. For example, purpose in life, after adjusting for multiple covariates, has been associated with a reduced incidence of Alzheimer's disease and mild cognitive impairment (Boyle, Buchman, & Bennett, 2010) and reduced risk of stroke (Kim, Delaney, & Kubzansky, 2019; Kim, Sun, Park, & Peterson, 2013) and myocardial infarction among those with coronary heart disease (Kim, Sun, Park, Kubzansky, & Peterson, 2013). Indicators of poor health or the presence of disease have also been associated with compromised eudaimonic wellbeing (Costanzo, Ryff, & Singer, 2009; Schleicher et al., 2005), underscoring the need for longitudinal research to investigate possible bidirectional relationships.

Longitudinal community samples of older adults have shown that those with high purpose in life had reduced rates of mortality 7 years later (Boyle, Barnes, Buchman, & Bennett, 2009). Findings from MIDUS (Hill & Turiano, 2014) replicated and extended these findings, showing greater survival 14 years later among

those with higher purpose in life at baseline after adjusting for numerous covariates. Findings from the Health and Retirement Study (HRS) showed lowest risk of all-cause mortality among those with highest levels of purpose in life as well as reduced risk of mortality from heart, circulatory, and blood conditions (Alimujiang et al., 2019). A meta-analysis of 10 prospective studies reported significant associations between purpose in life and reduced all-cause mortality and reduced cardiovascular events (Cohen, Bavishi, & Rozanski, 2016). What makes these results noteworthy are the previously discussed findings that many older adults experience a decline in their sense of purpose in life as they age, with such declines having potentially serious consequences for health and longevity. What the mortality findings also underscore, however, is within age group variability among the aged. That is, some maintain high levels of purposeful engagement, which could inform strategies for enhancing sense of purpose in older adults (see also chapter 11, this volume). Also relevant for profiles of morbidity and mortality are findings showing that those with higher eudaimonic wellbeing are more likely to use preventive healthcare services and to practice better health behaviours (e.g., diet and exercise) (Chen, Kim, Koh, Frazier, & VanderWeele, 2019; Hill & Weston, 2019; Hooker & Masters, 2016; Kim, Kawachi, Chen, & Kubzansky, 2017; Kim, Strecher, & Ryff, 2014; Steptoe & Fancourt, 2019). Taken together, these results underscore notable benefits associated with purpose in life. The larger literature also provides evidence for other aspects of eudaimonia, some of which are covered in the next section.

Biological and Neurological Underpinnings of Eudaimonia

Researchers have been interested in possible mechanisms and processes through which eudaimonic wellbeing has its salubrious effects. Early findings showed that higher wellbeing (particularly personal growth, positive relations with others, and purpose in life) was linked with better neuroendocrine regulation, better inflammatory profiles, lower cardiovascular risk factors, and better sleep profiles (e.g., Friedman et al., 2005; Ryff, Singer, & Love, 2004). More recent findings with national samples show that aspects of eudaimonia are also associated with better glycaemic regulation (Boylan, Tsenkova, Miyamoto, & Ryff, 2017; Hafez et al., 2018), better inflammatory profiles (Friedman & Ryff, 2012; Morozink, Friedman, Coe, & Ryff, 2010), better lipid profiles (Radler, Rigotti, & Ryff, 2017), lower risk of metabolic syndrome (Boylan & Ryff, 2015), and lower allostatic load (Zilioli, Slatcher, Ong, & Gruenewald, 2015a). However, not all studies have found significant associations between eudaimonic wellbeing and biological risk factors (Feldman & Steptoe, 2003; Sloan et al., 2017), with the differences possibly linked to use of measures that were not explicitly constructed to measure eudaimonia.

Underscoring protective effects in the face of adversity, eudaimonic wellbeing may buffer against the adverse health effects of inequality. Multiple studies have shown evidence of the mitigating effects of eudaimonic wellbeing for self-rated health (Ryff, Radler, & Friedman, 2015), chronic conditions (O'Brien, 2012), inflammatory markers (Elliot & Chapman, 2016; Morozink et al., 2010), diurnal

cortisol (Zilioli, Imami, & Slatcher, 2015b), glycosylated haemoglobin (HbA1c, which is relevant for diabetes; Tsenkova, Love, Singer, & Ryff, 2007), and cardiovascular recovery following an acute stressor (Boylan, Jennings, & Matthews, 2016). The general pattern in these outcomes is that, among those with lower educational standing, having higher eudaimonic wellbeing predicts health outcomes comparable to that observed for higher educational groups.

With regard to neuroscience, an initial study using electrophysiological measures showed that higher eudaimonic wellbeing was linked with greater left than right superior frontal activation in response to emotional stimuli (Urry et al., 2004) after adjusting for hedonic indicators. Another study (van Reekum et al., 2007) used functional magnetic resonance imaging (fMRI) techniques to show that those with higher eudaimonic wellbeing had less amygdala activation in response to negative stimuli as well as more activation of regions (ventral anterior cingulate cortex) that help regulate emotion. Heller et al. (2013) used fMRI techniques to show sustained activation of reward circuitry (striatal activity) in response to positive stimuli among those with higher eudaimonic wellbeing, a pattern that was further linked with lower cortisol output over the course of the day. Schaefer et al. (2013) showed that higher purpose in life predicted less reactivity (eye-blink startle response) to negative stimuli. Finally, eudaimonic wellbeing has been linked with greater insular cortex volume, which is involved in an array of higher-order cognitive functions (Lewis, Kanai, Rees, & Bates, 2014).

Recent studies of gene expression show differential linkages to eudaimonic versus hedonic wellbeing. Specifically, eudaimonic wellbeing predicted down-regulation of the conserved transcriptional response to adversity (CTRA; Cole, 2013), marked by a healthy pattern of lower expression of pro-inflammatory genes and higher expression of antibody synthesis genes. Hedonic wellbeing, in contrast, was associated with the opposite pattern (i.e., up-regulation of CTRA; i.e., the unhealthy pattern). Further studies have replicated these findings (Cole et al., 2015; Fredrickson et al., 2013, 2015). These inquiries are at the forefront of the science illuminating the mechanisms through which eudaimonia may be beneficial for health.

Taken together, notable scientific strides have occurred in linking higher eudaimonic wellbeing to reduced disease and disability, greater longevity, better regulation of multiple biological systems, brain-based assessments of adaptive emotion regulation, and healthy gene expression related to inflammatory processes. Although more research is needed, such work exemplifies an important shift in empirical research away from the long-standing focus on physiological and neurological underpinnings of psychological distress and toward the beneficial health sequelae of eudaimonic wellbeing.

Intervention Studies to Promote Wellbeing

Conceptualised as the striving to realise personal potential, eudaimonic wellbeing is not something achieved once and for all, but instead represents a life-long

challenge wherein incremental improvements are always possible (Ruini, 2017). Accordingly, the main therapeutic goals of eudaimonic interventions have centred on identifying opportunities for continued personal growth and purpose, even in difficult contexts, such as dealing with the diminished health and functional capacities that accompany aging (see also Chapter 11, this volume). A recent meta-analysis (Weiss, Westerhof, & Bohlmeijer, 2016) showed that interventions can, in fact, improve wellbeing, with some targeted specifically on eudaimonia (Cantarella, Borella, Marigo, & De Beni, 2017). These endeavours build on prior work in clinical settings, such as wellbeing therapy (Fava et al., 2004; Ruini & Fava, 2009), which was designed to treat depression, mood, and anxiety disorder through the promotion of eudaimonic wellbeing. Several community-based interventions have shown gains in multiple aspects of eudaimonia among patients dealing with various health challenges (e.g., multiple sclerosis and rheumatoid arthritis) (Hart, Fonareva, Merluzzi, & Mohr, 2005; Pradhan et al., 2007). Interventions with nonclinical samples have been conducted with adolescents to prevent the emergence of psychological disorders (e.g., depression) as well as with adults to promote resilience in the workplace (Milllear, Liossis, Schochet, Biggs, & Donald, 2008; Ruini et al., 2009). A program for older adults living in community settings showed enhancement of multiple aspects of eudaimonic wellbeing along with declining profiles of psychological distress (Friedman et al., 2019). Taken together, growing evidence supports the idea that eudaimonic wellbeing is modifiable and can be promoted, including in the face of significant life challenges.

TERRITORIES AHEAD IN EUDAIMONIC SCIENCE

Building on the progress described above, this section targets key directions for future, integrative research. Although socioeconomic inequality has been part of previous work, this topic now takes on great urgency due to recent historical events, including the Great Recession that began in 2008 and, more recently, the COVID-19 pandemic. Both have deepened already existing problems of inequality. The first section below frames these historical happenings as powerful forces that work against the realisation of personal potential (eudaimonia) among disadvantaged segments of society. Scientific research is essential to both document the scope of these problems and seek to address them.

The second topic below considers the interface of wellbeing with realms of life that until recently were largely absent in extant research—namely, the role of the arts and humanities in nourishing eudaimonia and thereby possibly impacting health. These lines of inquiry are about the power of art, music, and literature in uplifting the human spirit, but also encompass powerful portrayals in art of suffering and injustice that may activate needed compassion and caring among the privileged (see also Chapter 4, this volume). Such work brings to the fore problems of complacency and indifference among advantaged segments of society, topics also largely absent in prior research on health inequalities.

A final section attends to a central pillar of this edited collection: namely, environmental influences on wellbeing. These have been largely missing in prior research on eudaimonia. To consider such possibilities, focus is primarily on the natural environment, as directly experienced in nature or as taken in via multiple art forms (i.e., paintings, poetry, literature, and film). The central question is whether nature contributes to diverse aspects of eudaimonic wellbeing, and, if so, how and why. Also of interest is whether higher eudaimonia predicts greater concern about and commitment to issues of climate change, sustainability, and protecting the wellbeing of the planet. Numerous exciting hypotheses await scientific study regarding the interplay between the wellbeing of individuals and their participation in and commitment to natural environments.

Eudaimonia in Turbulent Times

As described above, considerable work has documented educational gradients in levels of eudaimonic wellbeing (Marmot et al., 1997, 1998; Ryff, 1989, 1995; Ryff & Keyes, 1995). That said, there is marked heterogeneity within educational groups (Markus, Ryff, Curhan, & Palmersheim, 2004; Ryff, 2016), which has led to important findings that document the role of eudaimonic wellbeing as a protective buffer against adverse health among less-educated adults who nonetheless report high levels of purpose, mastery, growth, positive relations, and so on.

Numerous indicators show that inequality is worsening over time (Cohen; 2018; Piketty & Saez, 2014) particularly in the United States. Referred to as the 'hoarding' of the American Dream (Reeves, 2017), the top 20% of income earners have privileged access to better educations, jobs, income, and wealth along with a greater likelihood of stable marriages to successful partners, thriving neighbourhoods, and healthier lifestyles. Such discrepancies in life opportunities and income have been linked with compromised levels of optimism, life satisfaction, and happiness among those who are disadvantaged (Graham, 2017). The Great Recession that began in 2008 exacerbated these problems, fueling dramatic increases in poverty rates (Bishaw, 2013) and accompanying health costs due to job loss, unemployment, and financial strain (Burgard & Kalousova, 2015; Kirsch & Ryff, 2016).

A unique feature of MIDUS was recruitment of two national samples situated on either side of the Great Recession. The baseline sample (aged 25–74) was recruited in 1995, followed by recruitment of a new national sample (same ages) in 2012. Over the period covered by these two samples, educational attainment in the United States improved: college-educated adults increased from 24.8% to 33.2%, and those with less than a high school level of education decreased from 15.3% to 11.3%. Despite such gains, the post-Recession sample reported less household income (after adjusting for inflation) and lower financial stability than the pre-Recession sample (Kirsch, Love, Radler, & Ryff, 2019). Similarly, the post-Recession sample had worse general health, more chronic conditions, higher body mass index (BMI), more functional limitations, and more physical health

symptoms than the pre-Recession sample. With regard to psychological health, the post-Recession sample had significantly lower levels of multiple aspects of eudaimonia (i.e., autonomy, self-acceptance, and personal growth) and hedonia (i.e., positive affect and life satisfaction) than the pre-Recession sample. Further analyses revealed a steeper educational gradient in the post-Recession compared to the pre-Recession sample for BMI, functional limitations, and physical symptoms (Kirsch et al., 2019).

Other MIDUS findings (Goldman, Gleib, & Weinstein, 2018) compared these two national samples on a wide array of mental health measures (positive and negative) and found that mental health was more compromised in the post-Recession sample compared to the pre-Recession sample among those with a lower socioeconomic position (measured as a composite of education, occupation, income, and wealth). This worsening of mental health among disadvantaged Americans was framed in the context of the opioid epidemic, growing alcoholism, and increased death rates, including suicide, among middle-aged White persons of low socioeconomic status (SES) (Case & Deaton, 2015; Grant et al., 2017; Kolodny et al., 2015; Schuchat, Houry, & Guy, 2017). The nomenclature increasingly used to describe these trends is *deaths of despair* (Case & Deaton, 2020; see also Chapter 15, this volume).

These findings underscore historical change in opportunities to experience eudaimonia. The central message is that the realisation of personal potential now exceeds the reach of many. Sadly, the COVID-19 pandemic exacerbated these inequities. A recent report (Pew Research Center, 2020) shows that the economic fallout from COVID-19 hit lower-income Americans the hardest, 46% of whom had trouble paying their bills compared to 16% of upper-income adults. Similarly, 35% of lower-income adults received help from a foodbank compared to 1% of upper-income adults, and 32% of lower-income adults had problems paying rent or mortgage compared to 3% of upper-income adults. Overall, 25% of US adults said they or someone in their household lost their job because of the coronavirus outbreak. Lower-income adults who were laid off due to the coronavirus were less likely to return to work compared to middle- and upper-income adults who lost their jobs. Similarly, those whose ability to save money was curtailed by the recent economic upheaval were mostly lower-income adults. Another trauma has been eviction—loss of home due to inability to pay rent. Desmond (2016) brought attention to this problem in the city of Milwaukee, Wisconsin, and now runs the Eviction Lab (www.evictionlab.com) at Princeton University, where data from 25 cities are being tracked. Since the pandemic, landlords in these locations have filed about 2,500–3,000 evictions per week. Dire consequences follow for families forced out of their homes.

What is the relevance of these happenings for those interested in human well-being? A major point is that meaningful, happy, and fulfilled lives are increasingly not available to many individuals due to gaping discrepancies in life opportunities and resources. This renders the preoccupations with the upbeat phenomena that characterise the positive psychology movement (Seligman, 2011) strikingly out of touch with the suffering now experienced by many. Such trumpeting of the positive, alongside with negativity about the negative, was recognised well before

the pandemic (e.g., Held, 2004). A voice from France depicted the problem as *Perpetual Euphoria: On the Duty to be Happy* (Bruckner, 2010), which likened preoccupations with the positive as signaling the advent of banality akin to Voltaire's *Candide*, wherein felicity and vacuity went hand in hand.

In sum, the *intersecting catastrophes* of widening inequality subsequently compounded by the health and economic consequences of the coronavirus pandemic, demand scientific attention around the globe. On the one hand, these happenings raise the troubling possibility that wellbeing, however defined, will increasingly become the purview of privileged segments of societies. This is cause for concern: human history is replete with dire consequences that followed when blind eyes were turned toward dramatic disparities in human opportunities to lead meaningful and fulfilling lives. It is worth remembering that the ancient Greeks were also concerned about problems of greed and injustice (Balot, 2001), which they saw as violating virtues of fairness and contributing to civic strife. In turn, Dante (1308/2006) placed the sins of greed and gluttony prominently in his nine circles of hell. Will these be forces that undermine the wellbeing of many in our era? Or, alternatively, might rampant inequality carried to even greater heights by the pandemic be seen for what it is: stark evidence of societal dysfunction at structural levels that demands social change toward more equitable opportunities to realise human potential?

Nurturing Eudaimonia Through the Arts

Paradoxically, as inequality has worsened, other encouraging advances have pointed to beneficent impacts of the arts and humanities on wellbeing and health (Crawford, Brown, Baker, Tischler, & Abrams, 2015; Lomas, 2016; Royal Society for Public Health, 2013; Stuckey & Nobel, 2010; Tay, Pawelski, & Keith, 2017). A report from the World Health Organization (Fancourt & Finn, 2019) summarised evidence on the role of the arts in improving health and wellbeing in many countries. It thus appears that creating and consuming literature, poetry, the visual arts, music, dance, and film may nourish good lives even though the larger field of subjective wellbeing (eudaimonic and hedonic) has largely neglected such topics. Instead, the lion's share of inputs on wellbeing and health has focused on stress exposures and negative experience (detailed in Ryff, 2019).

An important future question is 'What cultivates sensibilities to partake of the arts?' I have argued that a broad liberal education may be important (Ryff, 2016) and have illustrated these ideas via the teaching of great literature and poetry in higher education as venues for strengthening the self and nourishing inner vitality. What we know is that the best sociodemographic predictor of attendance at arts events (e.g., music concerts, theatre, museum, and gallery exhibitions) is years of schooling (DiMaggio & Mukhtar, 2004), although less is known about whether participation rates vary depending on fields of study pursued at college or university. Such research would illuminate other questions, such as whether liberal arts training—and learning in the humanities (e.g., art, philosophy, and

history) more generally—produces the capable and competent citizens needed by democratic societies (Nussbaum, 1997, 2010). Others have framed college as critical in building a defensible self that is guided by more than the bromides exchanged every day on Facebook (Deresiewicz, 2014).

Embedded within these queries is the thorny problem of elitism in higher education—something perceived long ago by Benjamin Franklin as the problematic cementing of privilege that occurs at private institutions (see Roth, 2014). In recent times, Bourdieu and Passeron (1977, 1990) have argued that elite institutions in France are the primary mechanisms through which class hierarchies are maintained across time. The miseducation of the American elite has been described as nurturing a false sense of self-worth, compromising capacities to relate to non-elites, and promoting a view of intelligence narrowly anchored in academic achievement, especially courses needed for success in law, medicine, science, and business (Deresiewicz, 2014).

These problems of elitism likely play a role in fueling the rampant inequality described above. Mendelberg, McCabe, and Thal (2016) used a large sample of US students to show that norms for financial gain are more prominent at affluent colleges compared to public universities. In addition, psychologists have shown that those from higher- compared to lower-class backgrounds have a greater sense of entitlement and higher levels of narcissism (Piff, 2014; Piff, Stancato, Côté, Mendoza-Denton, & Keltner, 2012). Those motivated by primarily extrinsic factors (e.g., financial success) also have lower wellbeing and adjustment compared to those motivated by less materialistic values (Kasser & Ryan, 1993).

Bringing these observations back to the arts and humanities, it is important to remember that much of the world's great literature has been about the suffering of the disadvantaged (e.g., Dickens, Hugo, Steinbeck, and Tolstoy). These themes are evident in contemporary fiction as well, such as *Call Me Zebra* (Van der Vliet Oloomi, 2018) and *Exit West* (Hamid, 2017), both of which tell tales of the refugee experience. Contemporary film (e.g., *The Florida Project*, *American Honey*, *Paterson*, *Parasite*, and *Nomadland*) also reveals the lived experiences of inequality, including homelessness, having parents with substance use problems, finding poetry in working-class lives, and the cleverness of those at the bottom vis-à-vis insensitive elites. The relevance of these domains for contemporary research on eudaimonic wellbeing is the call to investigate the role that the arts play in depicting and perhaps overcoming contemporary societal challenges. For example, do encounters with such art forms increase national quotients of caring and compassion? Do they challenge complacency and indifference among those who are not suffering? Such questions elevate themes of social justice in ongoing scholarship on wellbeing and health while pointing to the arts as venues to inform and mobilise individual and societal action about such issues.

The Natural Environment and Eudaimonic Wellbeing

Environmental psychology has come into its own as a scientific field with wide-ranging objectives (De Young, 2013; Gifford, 2014; Proshansky, 1987), such as

how to address contemporary environmental problems as well as design environments to promote human capacities. Prominent distinctions are made between natural and built environments. For this chapter, I focus exclusively on natural environments (green spaces) that implicate growing concerns about urbanisation, loss of biodiversity, and environmental degradation. Substantial science now links natural environments to improved functioning, including diverse mental health outcomes, cognition, stress physiology, and sensory systems. A review by Mantler and Logan (2015) described theoretical orientations emphasising the role of nature in stress recovery processes and restoration of cognitive attention while also summarising empirical findings between 'nature connectedness' and reported vitality, positive affect, and life satisfaction as well as lower levels of anxiety and anger (see also Chapter 2, this volume). In contrast, the health correlates of 'grey space' (e.g., high in industrial activity, traffic, and noise) showed adverse links with mental health. Triguero-Mas et al. (2015) also summarised emerging links between natural outdoor environments and mental and physical health and considered intervening mechanisms (e.g., increased physical activity, social contacts, and stress reduction). Cross-sectional data from a large sample of adults in the Catalonia Health Survey did not provide evidence of these as mediators (possibly due to measurement issues), although green spaces were associated with better self-perceived health (physical and mental) across different degrees of urbanisation, levels of SES, and gender.

The above literature is interesting and important, although assessments of eudaimonic wellbeing are largely missing throughout. Most work has focused on negative indicators of mental health or limited indicators of hedonic wellbeing. Thus, questions worthy of future inquiry are whether and how encounters with nature might enhance people's knowledge of themselves (self-acceptance), their capacities to find meaning and direction in their lives (purpose in life), their sense of self-realisation (personal growth) and self-directedness (autonomy), whether they feel capable of managing their own situations (environmental mastery), and how they see the quality of their ties with others (positive relations). Collectively, these queries bring to the fore the role of nature as a source of solace and inspiration for leading well-lived lives, broadly defined. To consider how this might work, I return to the arts and humanities (including philosophy and history) as they offer long-standing evidence that nature is a profound influence on what it means to be fully alive and well.

A powerful example is the life of Alexander von Humboldt (1769–1859), beautifully written about in *The Invention of Nature* (Wulf, 2016). Primarily a scientist, naturalist, and explorer (of South America and Siberia), Humboldt influenced many of the great thinkers of his day, including Jefferson, Darwin, Wordsworth, Coleridge, Thoreau, and Goethe. Humboldt was notably ahead of his time in thinking about the degradation and exploitation of nature, warning that humankind had the power to destroy the natural environment, and he believed the consequences would be catastrophic. Humboldt had a sense of wonder about nature and believed our response to it should be based on the senses and emotion: he wanted to excite a 'love of nature' and thereby revolutionised how the natural world was seen. He believed that nature speaks to humanity in a voice 'familiar

to our soul' (p. 61), thereby aligning himself with the Romantic poets of his time who believed nature could only be understood by turning inward.

Mountains, in particular, held a spell over Humboldt in a transcendental way: 'When he stood on a summit or a high ridge, he felt so moved by the scenery that his imagination carried him even higher. This imagination, he said, soothed the "deep wounds" that pure "reason" sometimes created' (p. 97). Thus, drawing on Goethe's inner circle representing German Idealism and Romanticism, Humboldt saw no irreconcilable chasm between the internal and the external world. He embraced the rationality and methods of the Enlightenment thinkers while seeing nature, not as an external mechanical system, but as a living organism that required subjectivity. This constituted a revolution in science because it required turning away from the 'dry compilation of facts' and 'crude empiricism' (p. 151). Both Goethe and Humboldt advocated for the marriage of art and science rather than seeing them as great antagonists.

An essential feature of eudaimonic wellbeing is its emphasis on inner, subjective experience, partitioned into different perceptions about the self, relationships, and life pursuits. How might nature, as expressed in poetry, nurture these subjective parts of who we are and hope to become? Mark Edmundson, Professor of English at the University of Virginia shows the way. He draws on great literature and poetry to nurture wellbeing, including ideals (values) needed by the human soul such as courage, contemplation, and compassion (Edmundson, 2015). In *Why Read* (2004), Edmundson elaborates what a liberal, humanistic education can contribute to personal becoming. Inundated with input from the internet, television, journalism, and advertising, he sees no better medium for helping young people learn how to live their lives than poetry and literature. When teaching about these works, he repeatedly asks his students 'Can you live it?', that is, does the work offer a new or better way of understanding the self and others, or point to alternative paths for living a better life?

Apropos of Humboldt and his contemporaries, Edmundson examines Wordsworth's famous poem, 'Lines Composed a Few Miles from Tintern Abbey', written in 1798. The context is that Wordsworth's life had become flat—'he lived in a din-filled city, among unfeeling people, and sensed that he is becoming one of them . . . there is a dull ache settling in his spirit' (p. 57). Returning to a scene from his childhood, he remembered himself as a young boy, free and reveling in nature. The return to nature, which is the heart of the poem, reminds him of its role in nurturing his own vitality. 'Wordsworth's poem enjoins us to feel that it (the answer to one's despondency) lies somewhere within our reach—we are creatures who have the capacity to make ourselves sick, but also the power to heal ourselves' (p. 49).

Not emphasised by Edmundson but of note is that Wordsworth's poetry served the same vital function in the life of John Stuart Mill (1803/1873) who, in his early adulthood, realised something deeply troubling: that he lacked the happiness central to the utilitarian philosophy in which he was immersed. Reflecting on his life, Mill described an early educational experience that was unquestionably exceptional but also profoundly deficient. His father began teaching him Greek

and Latin at a young age and then expanded the pedagogy to fields of philosophy, science, and mathematics. However, his father was deeply opposed to anything connected to sentiment or emotion. To escape the logic machine he had become, Mill began a quest to feel, and it was the poetry of Wordsworth, mostly about nature, that ministered deeply to the longings in his soul. He credited it for helping him recover from the crisis in his mental history.

Nature is powerfully present in other art forms as well. On the heels of the Romantic era in literature was a dramatic happening—namely, the French impressionist movement (1860–1910). After centuries of religious art, mostly dark and dreary in content, the impressionists embraced a revolutionary idea: to paint outside (*en plein air*). Thus, their subject matter was suffused with light—the sun shining down on all manner of nature’s beauty. This new vision gave us Monet’s famed *Waterlilies*, his magnificent *Poppies*, and his *Garden at Giverny*. Cezanne captured the *Forest*, Sisley the *Fog*, and Pissarro the French countryside (*Paysage aux Patis*). Van Gogh dazzled the world with his *Starry Night* and *Sunflowers*, while Klimt, known for figurative art, created breathtaking scenes from nature (*Beech Forest* and *Fruit Trees*). From Spain, Sorolla captured seascapes (*Biarritz Beach*) and children frolicking in waves (*Ninos en el Mar*). Taken as a whole, the world came to love this art for its magnificent celebration of nature that brought joy and inspiration to all.

While the impressionists were immersed in outside adventures, others drew on nature to inspire musical creativity. From the same era were Debussy’s three symphonic sketches (*La Mer*) that captured the changing moods, rhythm, and power of the sea. Other nature-inspired music included Beethoven’s *Pastorale* symphony, Chopin’s *Raindrop* prelude, Rimsky-Korsakov’s *Flight of the Bumblebee*, and Smetana’s symphonic poem about a beloved river, *The Moldau*. Important to underscore is that these works continue to evoke rich emotions in others more than a century later. That is, the glory of nature inspires enormous creativity, the products of which enrich the human experience again and again through time.

Contemporary art forms do the same, though justice cannot be done to such topics here. Of note is that the 2019 Pulitzer Prize in Literature was awarded to Richard Powers (2018) for *The Overstory*, a novel about the impact of giant, memorable trees on the lives of several distinctive people. Indeed, it is a tale about how trees changed their lives. Similarly, the 2013 Pulitzer Prize in Music was awarded to John Luther Adams for his orchestral work *Become Ocean*, which ‘immerses the listener in a sonic churn, ebb and roar that conjures a world inundated by rising sea levels’ (Fonseca-Wollheim, 2020). Adams thus combines musical composition with environmental activism, a theme also evident in Powers’s book. On a journalistic level is *The Nature Fix* (Williams, 2017) that reports on investigations (e.g., forest-healing programs and ecotherapy) from around the world showing how nature is critical for health, happiness, and creativity. Speaking personally, great literature, art, music, and contemporary poetry about nature (e.g., Berry, 2012; Oliver, 2017) have been huge in ministering to my soul. To illustrate, I conclude with Mary Oliver’s poem ‘The Poet with His Face in His Hands.’ It is about wanting to cry aloud for our mistakes. She admonishes us to cross forty fields and

forty dark inclines to get to the place where the falls are flinging out their white sheets. In the cave behind all, you can stand there

... and roar all you want
and nothing will be disturbed, you can
drip with despair all afternoon and still,
on a green branch, its wings just lightly touched
by the passing foil of the water, the thrush,
puffing out its spotted breast, will sing
of the perfect, stone-hard beauty of everything.

What, then, is the import of such nature poetry and other art forms about nature on the theme of this chapter—namely, the integrative science of eudaimonic wellbeing? It is simply this: alongside extant research examining people's proximity to green or grey spaces and how it matters for their mental and physical health, we need studies of how often (frequency) and how deeply (intensity) they are out in nature and, importantly, are taking it in via great literature, poetry, art, music, and film. This is not outlandish thinking: we routinely study what people eat (nutrition surveys) and drink (alcohol intake), whether they smoke, and how much physical activity they get. Varieties of participation with nature thus constitute new frontiers for what people take in as they journey through life. The central hypothesis needing careful scrutiny is whether those with higher levels of nature consumption are better able to make the most of themselves and their capacities while attending to the needs of others and the planet.

SUMMARY

This chapter revisited a model of eudaimonic wellbeing that has had widespread scientific impact. Past advances were highlighted, including how wellbeing is contoured by demographic factors, how it is linked with work and family life, and how it matters for health, including risk for disease and length of life as well as biological risk factors, neuroscience, and genetics. Whether eudaimonic wellbeing is modifiable via intervention studies was also considered. Building on these advances, three directions for future research were put forth. The first topic emphasised growing inequality and its exacerbation by the COVID-19 pandemic and its economic sequelae. Such historical change elevates the troublesome possibility that eudaimonia may increasingly be out of reach for many, a matter of grave concern. The second direction examined the role of the arts and humanities, broadly defined, as domains that may nourish eudaimonic wellbeing, including in contexts of adversity. The third topic addressed environmental inputs on wellbeing, with specific emphasis on natural environments. Although the field of environmental psychology increasingly investigates links to mental and physical health, little prior work has focused on eudaimonic wellbeing. Extending the preceding future direction, emphasis was given to depictions of nature in poetry, literature,

the visual arts, and music. These constitute inputs that provide solace and inspiration, thereby likely enhancing people's capacities to make the most of their lives while also being caring and responsible citizens. Numerous future venues to investigate these hypotheses were put forth. Taken together, the overall objective has been to make the case that the pursuit of human potential (eudaimonic wellbeing) is beautifully suited for integrative science.

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