



Understanding the Beauty Appreciation Trait

Empirical Research on
Seeking Beauty in All Things

Rhett Diessner

palgrave
macmillan

Understanding the Beauty Appreciation Trait

“This book is very interesting and engaging to read. It will definitely be a great resource for students.”

—Ines Schindler, *Senior Research Fellow at the Max Planck Institute for Empirical Aesthetics, Germany*

“Plato once wrote ‘The object of education is to teach us to love what is beautiful.’ Professor Rhett Diessner does this with great insight, passion and clarity. He writes of how beauty can be studied, codified, learned from and wondered at. But more importantly, he holds it up as a beacon that unites us all and shines through science, art and goodness itself. Also, he’s my uncle.”

—Rainn Wilson, Actor (notably Dwight Schrute from *The Office*)

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Rhett Diessner
Lewis-Clark State College
Lewiston, ID, USA

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I dedicate this book to my Best Beloved, the Artisan¹; and to my best beloved Wendy, who has taught me so much about every kind of beauty; and to my sister Lani, for talking to me about Cezanne when I was fourteen.

¹ I use “Artisan” in a similar manner to which Nobel Prize winning physicist Frank Wilczek (2015) used that concept in his *A Beautiful Question: Finding Nature’s Deep Design*.

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Julia Barrett and Tyler, Riggs, and Boone (for two years of Fridays full of poetry, music, and art); the Delva Family (for so many spiritually beautiful Wednesday evenings in your home); Rachelle and Jake Genthôs (for being beauty's cheerleaders); Angelika Güsewell (for all the unheard beautiful music and for being such a beautiful colleague); Jonathan Haidt (for many years of encouragement and for *elevation*); Andrew Hanson (so many years of beautiful lunchtime conversations); RJ and Jess Harper (for beautiful nature and beautiful spirituality); Ravi Iyer (for long-term altruistic support of my Lab's beauty research); Peter Khan (editor extraordinaire of *Ecopsychology*, and for believing I had something evocative to say about nature's beauty), Kavous Monadjemi (sigh); Na'im Nabil-i-Akbar (for teaching me about spiritual, musical, poetic, and linguistic beauty); Ferris and Linda Paisano (for your spiritual beauty and all the beautiful adventures we had together over decades; may your wisdom guide the Nez Perce Tribal Executive Committee); Bob and Patty Parrish (for doing your best to help me appreciate the beauty of Jazz, and your beautiful photography, and your skills in gustatory beauty); Rico Pohling (for beautiful collegiality in all things beautiful; may the Buddha ever bless you. Go Katrin!); PSYC 414 Psychology of Beauty students (for taking a chance with a strange course and teaching me about teaching beauty); Tim Richel and Yuki and Lio (for our adventures in beautiful philosophical ideas); Julio and Paola Savi (for mentoring me concerning every mode of beauty: natural, artistic, moral, and spiritual—and for teaching me a lived aesthetic attitude and hugely influencing my aesthetic emotion repertoire); Noah and Lana Schuerman (for natural and musical beauty); Jordan Tomczyk

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CONTENTS

1	Introduction: Why Beauty?	1
Part I Foundations		13
2	Brainiac Beauty: Philosophers and Beauty—What Some Philosophers Have to Say About Beauty That Is Relevant to Empirical Aesthetics (Or Possibly Just Interesting)	15
3	Beauty Becomes: Evolving Beauty	45
4	The Brain on Beauty: Neuroaesthetics	75
Part II Domains of Beauty		113
5	Noticing Nature's Beauty: The Trait of Engagement with Natural Beauty	115
6	Always Appreciative of Art's Beauty: The Trait of Engagement with Artistic Beauty	155
7	Magnificent Moral Beauty: The Trait of Engagement with Moral Beauty	183

Part III Human Development and Beauty	205
8 Beauty and the Be(a)st: Aesthetics, Pedagogy, and Andragogy	207
9 Bountiful Beauty: Increasing Appreciation of Beauty	229
Author Index	253
Subject Index	261

ABOUT THE AUTHOR

I love beauty. I love the beauty of nature. I love the beauty of art and design. I love beautiful virtues, that is, moral beauty. I especially love beautiful ideas. I love spiritual beauty. I love this beautiful Diné (Navajo) prayer that my mother used to read to me when I was a child:

In beauty happily I walk.
With beauty before me I walk.
With beauty behind me I walk.
With beauty below me I walk.
With beauty above me I walk.
With beauty all around me I walk. (Jones, 1951, p. 12)

A life of lived-beauty seems much more important than reading or writing *about* beauty. Why write a book *about* beauty? The great educational philosopher from Stanford University, Nel Noddings (1992), has elucidated that the most important part of any school's curriculum is to teach students to care. I think of *care* as the behavioral manifestation of *love*. Noddings has explained that when we care about something we want to know more about it and we become intrinsically motivated to seek knowledge about what we care about. This book describes what I have come to *know* about what I *love*.

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LIST OF FIGURES

Fig. 2.1	"The Birth of Venus," Sandro Botticelli 1483–5, Uffizi Gallery. https://commons.wikimedia.org/wiki/File:Botticelli_Venus.jpg	38
Fig. 2.2	Psyche on the Rock by Max Klinger. (Photo credit Rhett Diessner)	39
Fig. 3.1	Albrecht Dürer	48
Fig. 3.2	Humpback whale tattoo. A 1-minute old humpback tattoo on the author's arm; inked by the great artist Cristobal Verdin of Puerto Vallarta, Mexico in January 2017	66
Fig. 3.3	Psyche's father consulting the oracle after Raphael, sixteenth century; by Bernardo Daddi (Italian engraver, 1512–, Worked in Rome from 1532 to 1550) https://commons.wikimedia.org/wiki/File:Psyche%27s_father_consulting_the_oracle,_from_%27The_Fable_of_Psyche%27_MET_DP824471.jpg	70
Fig. 3.4	Psyche's Kin Bid Her Farewell on a Mountain Top (1908, State Hermitage Museum, St. Petersburg) by Maurice Denis (1870–1943; French painter, one of the leading artists and theoreticians of pictorial Symbolism and one of the founders of the Nabis, a secret artistic brotherhood)	71
Fig. 4.1	Palladio's Quatroportico at St. Giorgio Maggiore. (Photo by R. Diessner)	95
Fig. 4.2	St. George and the Dragon 1516 Oil on canvas, 180 × 226 cm, predella 16 × 52 cm (each) San Giorgio Maggiore, Venice By Vittore Carpaccio	96

Fig. 4.3	Bath of Psyche (c.1890 by Frederic, Lord Leighton) https://commons.wikimedia.org/wiki/File:1890s_Frederick_Leighton_-_Bath_of_Psyche.jpg . This painting is owned by the Tate museum in London. Can you believe they don't have it on display; it's in storage?! After much emailing and begging I received permission to visit the storage building and study this painting. In storage it is more than 10 feet off the floor and they invited me to use a wobbly 10-foot ladder so I could get close to it. I had a difficult time taking notes, as I was afraid to loosen my death grip on the ladder	105
Fig. 5.1	Black Bear. (Photo credit: Rhett Diessner)	118
Fig. 5.2	Don and Random Diessner. (Photo credit: Rhett Diessner)	130
Fig. 5.3	Northern Pygmy Owl. (Photo credit: Rhett Diessner)	137
Fig. 5.4	"Amor Kommend" Etching and Aquatint 1880 Max Klinger 1857 (Leipzig)—1920 (Naumburg). (Photo by Rhett Diessner; Etching in author's collection)	147
Fig. 6.1	Plate #3 from Document Decoratifs. Alphonse Mucha. Original Lithograph from 1902. (Owned by, and photo credit to, Rhett Diessner)	162
Fig. 6.2	La Pedrera. (Photo credit: Rhett Diessner)	163
Fig. 6.3	Empire State Building. (Photo credit: Rhett Diessner)	164
Fig. 6.4	Zeus. (Photo credit: Rhett Diessner)	165
Fig. 6.5	An Oil Sketch of L'Eglise St. Germain, Paris. (26.5 × 35 cm; owned by and photo credit to Rhett Diessner) By Frank Edwin Scott	174
Fig. 6.6	Photograph of L'Eglise St. Germain, Paris. (Photo credit: Rhett Diessner, 2008)	175
Fig. 7.1	Ceres (c.1910, pastel on canvas, National Museum of American Art, Smithsonian) Alice Pike Barney (1857–1931) https://commons.wikimedia.org/wiki/File:Alice-Pike_Barney-Art-Ceres-1901.jpg	197
Fig. 7.2	Sorrow and Pain (Care) Punishing Psyche by Aphrodite's Order (Engraving, 19.9 × 23 cm [image] inches pl. 23 from the series the Fable of Psyche, After drawings by Michiel Coxcie, after Raphael, sixteenth century) Bernardo Daddi (Italian engraver, 1512–, Worked in Rome from 1532 to 1550). (Etching owned by, and photo credit to, Rhett Diessner)	199
Fig. 8.1	Strength spotting form	222
Fig. 8.2	Venus Ordering Psyche to Collect the Golden Fleece by Bernardo Daddi (After Raphael) (Italian engraver, b. 1512–d.?, Worked in Rome from 1532 to 1550) https://commons.wikimedia.org/	

	wiki/File:Plate_23_-Psyche_on_the_order_of_Venus_departing_to_find_the_golden_fleece,_from_the_Story_of_Cupid_and_Psyche_as_told_by_Apuleius_MET_DP862829.jpg	224
Fig. 8.3	Venus Ordering Psyche to Take Water from a Fountain Guarded by Dragons By Bernardo Daddi (After Raphael) (Italian engraver, b. 1512-d.?), Worked in Rome from 1532 to 1550) https://commons.wikimedia.org/wiki/File:Venus_ordering_Psyche_to_take_water_from_a_fountain_guarded_by_dragons,_from_the_%27Fable_of_Cupid_and_Psyche%27_MET_DP824472.jpg	225
Fig. 9.1	The Spring 2018 and 2019 PSYC 414 The Psychology of Natural, Artistic, and Moral Beauty classes visited this Great Blue Heron rookery on an island in the Snake River in the Pacific Northwest of the USA (Figs. 9.1 and 9.2). Those birds are giants, standing up to 130 cm tall (over 4 feet) and wingspan up to 200 cm (over 6 feet). (Photo credit Rhett Diessner)	240
Fig. 9.2	Spring 2019 Psychology of Beauty Class Heron nests can be seen in the background. (Photo credit: Rhett Diessner)	241
Fig. 9.3	Eros Transports Psyche to Heaven Etching by Eugène Gaujean after the painting by Charles-Joseph Natoire in the Hôtel de Soubise, Paris. (Etching owned by Rhett Diessner. Photo credit: Heidi Simmons)	246
Fig. 9.4	The Wedding Banquet of Psyche and Eros by Giulio Romano (Julio Savi took me to see this painting in the Palazzo del Te in Mantua, Italy ca. 1999. It was awe-inspiring.) (Psyche and Eros are in the lower right corner, with their baby, “Pleasure,” between them.) Credit: Wikicommons. https://commons.wikimedia.org/wiki/File:Banquet_of_Amor_and_Psyche_by_Giulio_Romano.jpg	247



CHAPTER 1

Introduction: Why Beauty?

WHY BEAUTY?

Beauty is so profound, so deep, so meaningful. Beauty makes life worth living.¹ The great existential psychologist Rollo May (1985), as he explained in his book *My Quest for Beauty*, determined that beauty is more important than either truth or the good in Platonic philosophy: “When Plato considered the great trilogy of Beauty, Truth, and Goodness, he placed Beauty at the top because Beauty is harmony, and whether Truth or Goodness are harmonious is the test of their integrity” (p. 27). In the last century the meanings of the concepts *truth*, *beauty*, and *the good* have been relativized and deconstructed in the post-modern world. Post-modernists assure us there is no truth, only perspectives; truth is really all about power; beauty is in the eye of the beholder, there can be no objectivity in beauty experiences; morality is all about power, whoever has the power determines what is right and wrong; there is no right and wrong, they are just cultural concepts; there are no moral universals and cannot be.

¹ If Beauty is so important, why do I feel a need to reassure you that it is? Because Beauty has been given a back seat to Truth and the Good during the twentieth century. Maybe it even got tossed into the trunk behind the back seat. This is well documented in Sircello’s *A New Theory of Beauty* (1975), Elaine Scarry’s *On Beauty and Being Just* (1999), and Danto’s *Abuse of Beauty* (2003), wherein they explain that for various socio-cultural reasons artists, art critics, and the Academy all decided that beauty was not important to arts and letters, that it was superficial and consoling, was tainted by bourgeois values, and was manipulated by those in power. So it got ignored by the intelligentsia for most of the twentieth century.

Nonetheless, these concepts continue to engage human beings, one way or another (Gardner, 2011).

Aleksandr Solzhenitsyn (1970), in his Nobel lecture for the prize in Literature, said: “One day Dostoevsky threw out the enigmatic remark: ‘Beauty will save the world’. What sort of a statement is that? For a long time I considered it mere words. How could that be possible” (n.p.)? He went on to say that he couldn’t imagine how beauty could save anything based on the bloodthirsty history of our world, but he continued to reflect on what Dostoevsky meant. It dawned on him that the “ancient trinity of Truth, Goodness and Beauty is not simply an empty, faded formula as we thought in the days of our self-confident, materialistic youth” (n.p.). He then described a metaphor of three great trees, and that if our world is cutting down the great tree of Truth, and the great tree of Goodness is being crushed—“then perhaps the fantastic, unpredictable, unexpected stems of Beauty will push through and soar to that very same place, and in so doing will fulfil the work of all three? In that case Dostoevsky’s remark, ‘Beauty will save the world’, was not a careless phrase but a prophecy” (n.p., Section 2).²

MATHEMATICIANS AND PHYSICISTS CHIME IN

James McAllister (1996), a philosopher at the University of Leiden (founded in 1575 by William of Orange, the oldest university in the Netherlands), in his *Beauty and Revolution in Science*, champions the critical importance of beauty to science. He develops arguments that beauty is often used for making choices between two competing theories (the more beautiful theory wins). He notes that simplicity and elegance are associated with beauty, and are highly valued by scientists in regard to theory development. He describes the connection between beauty and truth, showing that beauty is an attribute of truth. He points out that symmetry is a common sign of beauty, and that symmetrical equations are highly attractive to mathematicians and physicists. In general, his whole book is a testament to how crucial beauty is to the success and progress of science. He cites Einstein’s son Hans, also a

²I am not arguing that Beauty is more important than Truth or the Good. But perhaps it should be valued equally. I also believe in the unity of the virtues: thus truth leads to beauty, beauty leads to truth, good to beauty and beauty to the good, and so forth. Or, as Sachs (2002) summarizes Aristotle’s view: “The true and the good stem from one source, and converge on the beautiful” (p. xxv).

physicist, as stating that Einstein's "highest praise for a good theory or good piece of work was not that it was correct nor that it was exact but that it was beautiful" (p. 96). Semir Zeki, a founding father of neuroaesthetics, has provided functional magnetic resonance imaging (fMRI) data to show that when mathematicians' brains see an equation that they consider beautiful, the same part of the brain is activated as when we perceive a painting, or a piece of music, as beautiful (Zeki, Romaya, Benincasa, & Atiyah, 2014).

The Nobel Prize winning physicist Paul Dirac has been quoted as saying that "Einstein seemed to feel that beauty in the mathematical foundation was more important, in a very fundamental way, than getting agreement with observation" (McAllister, 1996, p. 96). Well, I wouldn't want to pit beauty against observational data, but I would like to see them work hand-in-hand together. Physicist Frank Wilczek seems to think they can. He describes how beauty helped lead him to discover the equations that explain the strong force, which led to his Nobel Prize. His book, *A Beautiful Question: Finding Nature's Deep Design*, is a 328 page meditation on the question, "Does the world embody beautiful ideas?" (2015, p. 1). He makes a strong case that "Yes, it does."

A BIOLOGIST ADDS A NOTE

Richard Prum (2017) has written a very provocative book, *The Evolution of Beauty*, in which he argues that animals and humans are guided by beauty in mate choice. Prum even makes the case that animals will select mates for their beauty, even if that beauty does not signify fitness or adaptive value. Sexual selection is partially based on attraction to that which creatures find beautiful. He calls it "beauty happens" (p. 54). "Throughout the living world whenever the opportunity has arisen, the subjective experiences and cognitive choices of animals have aesthetically shaped the evolution of biodiversity. The history of beauty in nature is a vast and never-ending story" (p. 120).

AN ARCHITECT TAKES UP THE BEAT

Renzo Piano (2018) delivers a delightful TED talk concerning architecture and our desire and need for beauty. "Universal beauty is one of the few things that can change the world," he says (n.p.). "This beauty will save the world. One person at a time, but it will do it" (n.p.).

A PHILOSOPHER SINGS HIS SONG

Arthur Danto (2003), one of the greatest philosophers of aesthetics of the last half century, and professor at Columbia University, described in his *The Abuse of Beauty* that the idea of beauty entirely dominated the philosophical conception of aesthetics in the eighteenth and nineteenth centuries. But during the twentieth century, beauty was rejected by philosophers, artists, and art critics, due to its association with crass commercialism and the bourgeoisie. Beginning in the 1990s, beauty began to make a comeback among both artists and aestheticians. Danto was happy about the return of beauty because at that point he “came to view that in writing about beauty as a philosopher, I was addressing the deepest kind of issue there is. Beauty is but one of an immense range of aesthetic qualities … But beauty is the only one of the aesthetic qualities that is also a virtue, like truth and goodness. It is not simply among the values we live by, but one of the values that defines what a fully human life means” (pp. 14–15). And the last three sentences he wrote in *Abuse of Beauty* are “Beauty is an option for art and not a necessary condition. But it is not an option for life. It is a necessary condition for life as we would want to live it. That is why beauty, unlike the other aesthetic qualities, the sublime included, is a value” (p. 160).

BEAUTY WAS THERE AT THE BEGINNING OF EMPIRICAL PSYCHOLOGY

Wilhelm Wundt is often considered the founding father of empirical psychology. However, the great historian of psychology, Edwin G. Boring (1950), has written that both Gustav Fechner and Wilhelm Wundt were the founders of experimental psychology. “One may call him [Fechner] the ‘founder’ of experimental psychology or one may assign that title to Wundt. It does not matter” (p. 295). The point here is: at this very beginning of scientific psychology Gustav Fechner wrote a book entitled *Vorschule der Ästhetik* (*Introduction to Aesthetics*) and it was published in 1876. The only research topic in the field of Psychology that is older than aesthetics is psychophysics (also founded by Fechner). In Fechner’s work on aesthetics he presented several empirical principles regarding such topics as thresholds (stimulus intensity), aesthetic reinforcement (a whole of an aesthetic experience may give more pleasure than adding up the individual aesthetic pleasures, such as a melody in music), the principle of clarity (vagueness is aesthetically displeasing), and my favorite principle,

the Unitary Connection of the Manifold (we experience more beauty when diverse elements are unified, than we do in the cases of uniformity or chaotic diversity).

THE NINTH SYMPHONY: LOVE

Is love really the most important force, or ability, or “thing,” in the universe? Maybe. Probably. In the *Bhagavad Gita*, a sacred book of Hinduism, one of the three central themes is love (*bhakti*). The *Torah* of Judaism emphasizes love in *Deuteronomy* in the Shema (*ahavah*). The Buddha highlighted it as *metta* in the Dhammapada and the Metta-Sutta. Jesus, founder of Christianity, cited love from the Torah to be His number one and number two commandments (*agape*). Love is mentioned 69 times in the Muslim *Qur'an* in forms of the word *hubb*. It is lauded in the Bahá'í writings as that which holds the universe together (*mahabba*).

But you don't have to be religious to appreciate that love is the foundation of a meaningful life. Nowadays many people consider themselves spiritual without being religious. When spiritual people search their heart, they can feel that love is the most important force. But what if you are an empiricist who is a philosophical materialist? Such secular humanists simply observe human behavior and notice that being in love is the happiest that a couple ever gets; and that families infused with love are the happiest and most unified and productive families; and that communities ruled by love are a joy to visit. Humanists can imagine the day when the entire planet is united through love, and all the resources spent on armaments will be spent on the kinds of science, arts, and education that provide for the betterment of all humanity, and we will live on a planet that is a garden paradise for all.

Every experience of love is an experience of beauty. That which we love is beautiful. Plato (1989), in *The Symposium*, had Socrates argue that beauty is the object of all love. The Princeton philosopher Alexander Nehamas (2007) agrees, as he points out in his *Only a Promise of Happiness: The Place of Beauty in a World of Art*. Ficino, the Italian Renaissance philosopher also agreed with Plato. Ficino wrote, “When we say Love, we mean by that term the desire for beauty, for this is the definition of Love among all philosophers” (1964, p. 207).

The empirical evidence supports this: the moral foundation of care, the Five Factor model personality trait of agreeableness, values of universalism and benevolence, and measures of universal love, all have significant and substantial correlations with engagement with beauty (Diessner, Iyer, Smith, & Haidt, 2013).

As the great Christian philosopher St. Augustine ([1961](#)) has written: I used to ask my friends ‘Do we love anything unless it is beautiful? What, then, is beauty and in what does it consist? What is it that attracts us and wins us over to the things we love? Unless there were beauty and grace in them, they would be powerless to win our hearts.’ (p. 83)

I think St. Augustine has won my heart. I want to have some friends like him, who ask me wonderful questions like that.

DRUM ROLL: WHEN LOVE IS NOT ENOUGH: JUSTICE

Love makes life worth living, but sometimes love fails. Sometimes people are selfish. Then we must resort to Justice to order our communities and our world. Plato, Kant, and the Harvard psychologist of moral reasoning, Lawrence Kohlberg, considered justice the highest moral principle ([Kohlberg, 1981](#)). And what is the relationship between beauty and justice? Harvard professor of philosophy Elaine Scarry ([1999](#)) has described their interplay in her book *On Beauty and Being Just*. She argues that truth is necessary for justice, and beauty is allied with truth. She also makes a case that engaging with beauty makes us attentive to the world, and thus more likely to notice injustice (I would argue that loving moral beauty makes us more sensitive to moral ugliness, and moral ugliness almost always has roots in injustice). Scarry wrote, “the beautiful object—in its symmetry and generous sensory availability—assists in turning us to justice. The two other sites [of beauty], that of the perceiver and that of the act of creation, also reveal the pressure beauty exerts toward ethical equality” (p. 109).

Umberto Eco ([2004](#)), in his absolutely luscious text, *History of Beauty*, cites the Delphic Oracle as saying, “The most beautiful is the most just” (p. 37).

WORLD MUSIC

The aesthetics of beauty are highly valued in many, if not all, cultures according to both anthropologists ([Brown, 1991, 2000](#)), and social psychologists, “every culture has standards of beauty” ([Haidt & Keltner, 2004](#), p. 550). Alas, although I fancy myself a world citizen, I have been heavily biased by Western culture. Thus, although I would like to take a multicultural perspective in this book, I am limited by my own limits, and

my access to mostly Western empirical research and philosophy. Although I do know that Beauty has also been crucial to philosophy in the East: Confucius emphasized the idea of “integrating beauty and goodness, cultivating goodness from beauty” (Ames, 2010, p. 25). And we know that beauty has been important since the dawn of humanity (Dutton, 2009).

MUSIC OF THE SPHERES: UNITY-IN-DIVERSITY

The most common definition, or fundamental description, of beauty by philosophers is unity-in-diversity. Chaos is diversity without unity (incomprehensible and seldom thought of as beautiful). Unity without diversity is uniformity (boring and seldom thought beautiful). Unity-in-diversity is both descriptive and prescriptive. It is descriptive of the material world, of Nature. It is prescriptive for individual and collective social flourishing. As Wilczek (2015) has written, “we discover a deep unity beneath, and supporting, the diversity of appearance” (p. 204). Wilczek passionately (well, passionately for a physicist) describes a micro-world of subatomic particles, forces, and fluids that exemplify unity-in-diversity and which he repeatedly refers to as beautiful. The same with the macro-world: the diversity of planets, suns/stars, solar systems, and galaxies is a gorgeous example of a unified whole of fabulous beauty (check out the visuals in Neil deGrasse Tyson’s *Cosmos* series). For unity-in-diversity at the mezzo level—of dirt, rocks, plants, humans, and other animals—browse papers in the journal *Ecopsychology*.

When it comes to moral beauty we encounter prescription—people should avoid fragmentation of their being and alienation from their society and culture—people should become authentic and display the beauty of their virtues in action (Aristotle, 2002; Diessner et al., 2013). Our collective flourishing is completely dependent on the beauty of unity-in-diversity for all humanity. The adversarial systems that characterize the legal systems, economic systems, and political systems of nearly every nation of Planet Earth, are the opposite of unity-in-diversity—rather than creating unity, these adversarial systems create division among winners and losers, heart-break, mistrust, and alienation. Such systems are morally ugly, and they are preventing or destroying the potential unity-in-diversity of the peoples of our world. Nationalism and racism, which are products of adversarial systems, are the cause of much of the ugliness on our planet. Whereas the vision of all nations cooperating (unity) for the betterment of all humanity (diverse peoples) is resplendently beautiful. Without international unity-in-

diversity, climate change will accelerate and pollution will continue to destroy Nature's beauty and many of her species. So Dostoevsky and Solzhenitsyn are right: Beauty really will save the world. The thought of that beauty gives us hope (Diessner, Rust, Solom, Frost, & Parsons, 2006), and we very badly need that hope to motivate us to advance the beauty of unity-in-diversity at every ontological level.

TAKE-AWAYS

1. Existential psychologist Rollo May has explained, based on Plato, that Beauty outranks Truth and Goodness, because Beauty is harmony, and the test of the integrity of Truth and Goodness are whether they are harmonious.
2. Post-modernists assure us there is no truth, only perspectives; beauty is in the eye of the beholder, there can be no objectivity in beauty experiences; morality is all about power, whoever has the power determines what is right and wrong; there is no right and wrong, they are just cultural concepts; there are no moral universals and cannot be (BTW, I disagree with the post-modernists). Nonetheless, as Howard Gardner has noted, these concepts continue to engage human beings, one way or another. (BTW, I disagree with the post-modernists; there is truth, there is objective moral truth, and there is objective beauty. However, it is very dangerous to think you or I have *the* truth and others don't. Modesty, humility, and the heartfelt realization you could always be wrong is warranted.)
3. Aleksandr Solzhenitsyn, in his Nobel lecture for the prize in Literature, pointed out that Dostoevsky's famous remark, "Beauty will save the world," is literally true.
4. Einstein's son said this father's "highest praise for a good theory or good piece of work was not that it was correct nor that it was exact but that it was beautiful."
5. Semir Zeki, a founding father of neuroaesthetics, has provided fMRI data to show that when mathematicians' brains see an equation that they consider beautiful, the same part of the brain is activated as when we perceive a painting, or a piece of music, as beautiful (Zeki et al., 2014).
6. Physicist Frank Wilczek described how beauty helped lead him to discover the equations that explain the strong force, which led to

his Nobel Prize. His book, *A Beautiful Question: Finding Nature's Deep Design*, is a 328 page meditation on the question, “Does the world embody beautiful ideas?” (2015, p. 1). He makes a strong case that “Yes, it does.”

7. Richard Prum (2017), in *The Evolution of Beauty*, argues that animals and humans are guided by beauty in mate choice. Prum makes the case that animals will select mates for their beauty, even if that beauty does not signify fitness or adaptive value.
8. Architect Renzo Piano (2018) has stated, “Universal beauty is one of the few things that can change the world,” and “This beauty will save the world. One person at a time, but it will do it” (n.p.).
9. Arthur Danto (2003), one of the greatest philosophers of aesthetics of the last half century, wrote, “Beauty is an option for art and not a necessary condition. But it is not an option for life. It is a necessary condition for life as we would want to live it. That is why beauty, unlike the other aesthetic qualities, the sublime included, is a value” (p. 160).
10. Love, and by implication beauty, is emphasized in all the world’s sacred scriptures.
11. Harvard professor of philosophy Elaine Scarry (1999) has described the intimate connection between beauty and justice in her book *On Beauty and Being Just*.
12. Confucius emphasized the idea of “integrating beauty and goodness, cultivating goodness from beauty” (Ames, 2010, p. 25).
13. The most common definition, or fundamental description, of beauty by philosophers is unity-in-diversity.
14. Plato, in *The Symposium*, had Socrates argue that beauty is the object of all love. Every experience of love is an experience of beauty.
15. Nothing is more important than love and beauty.

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PART I

Foundations



CHAPTER 2

Brainiac Beauty: Philosophers and Beauty— What Some Philosophers Have to Say About Beauty That Is Relevant to Empirical Aesthetics (Or Possibly Just Interesting)

The design for this chapter is not to be comprehensive concerning the works of philosophers on aesthetics or beauty because many compilations and explanations of philosophical aesthetics have already been published. Instead, we will focus on a few philosophers whose works on aesthetics and beauty lend a backdrop to the published empirical studies regarding beauty.

But first, a word about epistemology, philosophy of science, and truth. Because most of this book will focus on the *science* of the psychology of beauty, I would like the reader to be aware of my approach to epistemology, so that they can be a better critic of what I write. I also begin here with epistemology and philosophy of science because Truth and Beauty are so closely interconnected. I'm tempted to just cite Keats' famous line: "Beauty is truth, truth beauty" from his *Ode to a Grecian Urn* (1819/1967); but rather I refer the reader to a paper by Reber, Schwarz, and Winkielman (2004) in which they hypothesize and argue that the same psychological processes underlie judgments of truth and beauty.

It would be nice to be able to prove scientific hypotheses; in the context of this book, it would be sweet if the studies I will cite throughout the book had proven particular facts about aesthetics and the psychology of beauty.

Many scientists still hope that they can prove a theory or hypothesis by experimentation. However, Karl Popper "proved" that we cannot prove

hypotheses nor theories in his 1934 book *Logik der Forschung*, which he later translated himself and published in 1959 as *The Logic of Scientific Discovery*. He referred to the belief that we could prove hypotheses as *justificationism*. Justificationism is based on induction. If I see 1000 white swans, I might create a hypothesis that “all swans are white.” But no amount of observational data can ever prove something true, because the possibility of running into a black swan is ever present. But we can falsify the hypothesis by finding that black swan, and be confident that we have falsified the hypothesis. Thus Popper’s approach is often called *falsificationism*, and can be related to the scientific methodology taught in all university research methods classes concerning the *null hypothesis* (a term coined by biologist and statistician Ronald Fisher in 1935). In regard to Psychology, Popper often used Freud’s theory as an example of pseudoscience because he thought Freud did not make falsifiable hypotheses. Although I think Freud was a bit of a genius, I am sympathetic to Popper’s accusation (e.g., after I explain the Oedipal complex in my Intro Psyc classes, I ask all the males to raise their hands if they remember having sexual desire for their mothers when they were five years old. No one ever raises their hand. I then point out this proves Freud right, because they have all repressed the memory. Forty percent of the class then chuckles, nervously. But it does make clear that non-falsifiable hypotheses are bad science.)

Popper’s greatest student Imre Lakatos (1970), however, proceeded to modify Popper’s falsificationism, possibly calling Popper’s approach naïve, and pointed out that an experiment that falsifies one hypothesis is not enough to falsify a theory much less falsify a collection of theories within a research program. And how do we know that a mistake was not made in the research design of the refuting experiment? Or if the sample was anomalous? We find this out by replication of experiments. Are two refuting studies enough? Three? So falsificationism shares some of the same problems as justificationism. Does this leave us in epistemological relativism land? There is no truth, not even with a lower case “t”? Maybe. I prefer a *consultative epistemology*, in which we humans search for truth together, aiming to be humble and not overly attached to any particular paradigm or theory concerning truth. Nonetheless, we might have our various commitments that relate to truth seeking, but we are open and non-defensive about our commitments, and revisit them occasionally to see if they are serving the search for truth effectively. This was the approach of Socrates; he urged us not to try to *win* arguments, but rather to aim to discover truth through dialogue. This approach to truth seeking is supported by the great hermeneutic

philosopher Hans Gadamer (1975) as well as the Harvard communication scientist Chris Argyris (Argyris, Putnam, & Smith, 1985), advocated by Richard Bernstein (1983) in his brilliant *Beyond Objectivism and Relativism: Science, Hermeneutics and Praxis*, and explicated in Michael Karlberg's (2004) critically important book, *Beyond the Culture of Contest*.

We will not solve these problems in this book. But what do these philosophy of science problems have to do with Beauty? It is relevant because the trait of appreciating beauty is highly correlated with open-mindedness (Diessner, Iyer, Smith, & Haidt, 2013; Diessner, Pohling, Stacy, & Güsewell, 2018; Zabihian & Diessner, 2016). Being *open* is one of the main attitudes, or traits, necessary to be a good scientist: to be curious and open-minded. It is also important to be skeptical, which seems really easy, when we accept that we can neither prove, nor even falsify, hypotheses with anything resembling certainty. But we don't want to be cynical, because then we will not be open-minded. In the chapters in this book I have tried to write in an open-minded way, expressing my curiosity, but also skeptical without being cynical. Another critical aspect of the scientific attitude is to be humble—even when we are quite confident in our findings and interpretations, we should know and feel that we may be wrong. Which then feeds back into the beauty of being open-minded. So let's go scientifically explore the beauty of this world together. Let's be curious about the beauty of this world together and also skeptical of philosophers' thoughts and scientists' findings about beauty. Let's listen to each other's ideas and share with each other with humility. Due to my commitment to consultative epistemology I invite any reader to email me to discuss any concepts in this book (diessner@lcsc.edu); hopefully I will be overwhelmed when this becomes a bestseller. Ha.

FEATURED MUSIC

Each chapter in this book will have featured pieces of music that aim to capture the beauty of that chapter in aesthetically organized sound. For this chapter on philosophy I refer the interested reader/listener to Joseph Haydn's (Austrian, 1732–1809) Symphony No. 22 in E flat major, entitled "The Philosopher." A version conducted by Sir Neville Marriner, with the Academy of St. Martin in the Fields, can be accessed on YouTube: <https://www.youtube.com/watch?v=uaR32rtYOyo>.



And now for our first adventure in the philosophy of beauty, let's go to the most famous party ever.

PLATO'S *SYMPOSIUM*

The most influential dinner and drinking party in the history of Western world took place around 416 B.C. in Athens. It was a banquet to celebrate a young poet, Agathon, who had recently won a prize for a drama he had written. Socrates was invited. Usually such a party involved dedicated debauchery with massive alcohol consumption and “entertainment” by flute-girls. But that night they decided to dismiss the flutists and drink lightly so they could discuss the meaning of love (*eros*). A variety of brilliant, and comic, speeches was given by the various guests, and Socrates was the last to speak. Socrates, referring to wisdom given him by the priestess Diotima, outlined the stages of loving beauty (sections 210A–210D). The first stage is when, as a youth, we fall in love with one particular beautiful body and “beget beautiful ideas there” (Plato, 1989, p. 57). The second stage is to realize that there is nothing special about one particular beautiful human body, and he [*sic*] becomes “a lover of all beautiful bodies” (p. 58). The third stage is to realize that the human soul (*psyche*) is more beautiful than the human body, and that if someone is “decent in his soul” (p. 58), but unattractive in body, one should still love him. In the fourth stage the lover focuses on the social order and loves beautiful laws and customs. Next, in stage five, is to love learning and science and knowledge and wisdom (which are the basis of beautiful laws). And the final stage six is to love “the Beautiful itself, absolute, pure, unmixed, not polluted by human flesh ... but ... the divine Beauty itself” (p. 59). It is only through seeing this final Form of Beauty that the human can now enact *true virtue* and not just “images of virtue” (p. 60).

In regard to *true virtue*, note that the Positive Psychology movement turned a major spotlight on the empirical study of *virtues* and character strengths (Peterson & Seligman, 2004), and Jonathan Haidt (2003) “discovered” the moral emotion of “elevation” which is elicited by observing acts of virtue (which are termed “moral beauty” in Positive Psychology).

ARISTOTLE'S *NICOMACHEAN ETHICS*

Aristotle's (2002) *Nicomachean Ethics* was written about 350 B.C. and may be considered as the foundation work concerning the concept of moral beauty in Positive Psychology. Philosopher and translator Joe Sachs (2002)

emphasized that *to kalon*, which means “the beautiful,” has mistakenly been translated as “noble” in most translations of the *Nichomachean Ethics*. However, Aristotle (2002) has emphasized the goal, the end, the *telos*, of all the moral virtues (such as courage, justice, etc.) is Beauty: “for the sake of the beautiful, since this is the end that belongs to virtue” (p. 49; 1115b, 12–13); and “for the sake of the beautiful, since this is shared in common by the virtues” (p. 64; 1122b, 7–8). From a Positive Psychology point of view, all the great universal cross-cultural virtues, Knowledge/Wisdom, Justice, Temperance, Transcendence, Humanity/Love, and Courage (Peterson & Seligman, 2004) are beautiful, and are considered signs of moral beauty (Pohling & Diessner, 2016).

KANT'S *CRITIQUE OF JUDGMENT*

The German philosopher Immanuel Kant¹ (1724–1804) is possibly the most influential philosopher of the West since Aristotle. An important concept that Kant (1987/1790) brought to aesthetics and the contemplation of beauty is “disinterestedness.” By this term is meant that participating in beauty is an end-in-itself; that the relationship of the perceiver to the object of beauty is one of total non-utility, that is, the perceiver does not plan to use the beauty to advance other aims. It does **not** mean to be uninterested, but rather that one has no economic interest in the beauty, that one is impartial and unselfish in regard to the experience and object of beauty (Dickie, 1997). If a person does let their selfish interests enter into their observation of beauty, it will sully that beauty, and they will not “see” the beauty in its purity; they will not be engaged in an act of aesthetic appreciation.

Jerome Stolnitz, erstwhile professor of philosophy of aesthetics at City University New York, has written, “If any one belief is the common property of modern thought, it is that a certain mode of attention is indispensable to and distinctive of the perception of beautiful things. We meet it in Kant, Schopenhauer, Croce, Bergson” (1961, p. 131). Stolnitz also points out that the British philosopher Hutcheson, along with other

¹ Kant can be notoriously difficult to understand. I have read several of his works; and then read explanations of his theories, and I still only partially “get it.” If you are interested in Kant and are thinking about performing empirical aesthetics, I recommend reading this first: Hayn-Leichsenring, G. U., & Chatterjee, A. (2019). Colliding Terminological Systems—Immanuel Kant and Contemporary Empirical Aesthetics. *Empirical Studies of the Arts*. <https://doi.org/10.1177/0276237418818635>

early British philosophers, emphasized disinterest and unselfishness as critical to the appreciation of beauty. However, George Dickie (1964), professor of philosophy and aesthetics at the University of Illinois, disagreed with disinterestedness being critical to the aesthetic experience, and in a famous essay, “The Myth of the Aesthetic Attitude” argued, rather, that what philosophers have considered disinterestedness could be explained simply as focused attention. In twenty-first century Psychology we would simply call this mindfulness, with its emphasis on one’s attention focused in the here and now, and open to all sensory aspects of the beauty stimulus.

The German philosopher that took the concept of disinterest to the furthest degree, however, is Arthur Schopenhauer (1788–1860). He argued that to call an object beautiful, means that we “are no longer conscious of ourselves as individuals, but as pure will-less subjects of knowing” (1819/1969, p. 209) during contemplation of the beautiful object. He also emphasized that, to truly appreciate beauty, and to see the eternal Ideas (similar to Platonic Forms) revealed in the object of beauty (whether that is a mountain, a flower, a work of art, or a human being), one must entirely give up her “will” while engaged with the beauty of the object. Schopenhauer considers this very important for a psychologically balanced life, because *willing* something is *desiring* something and all desiring comes with suffering—we end up in bondage to our will and desires (sounds pretty Buddhist, doesn’t it? Well, it probably is: Schopenhauer read a lot of Asian and Buddhist works). And even when we attain what we desire, the happiness of attainment is brief and does not last, and ten more desires spring up. However, Schopenhauer thinks that Beauty can break this cycle of pain, because we can only really experience beauty when we are being will-less, and free of all desires. Thus our moments of engaging with beauty bring us the true peace that soothes our spirit. An experience of Beauty: “Then all at once the peace, always sought but always escaping us on that first path of willing, comes to us of its own accord, and all is well with us” (1819/1969, p. 196).

When I teach my PSYC 414 Psychology of beauty class, I try to help my students gain an “aesthetic attitude” by teaching them a combination of Savoring, Absorption, and Mindfulness, which I call SAM, when engaging with objects of beauty.

IRIS MURDOCH AND UNSELFING

Although Irish/British novelist Iris Murdoch (1992) is no fan of Kant or Schopenhauer, I believe there is some overlap between the idea of disinterest during experiences of beauty, and her concept of beauty causing *unselfing* in human beings. Besides being an accomplished novelist Murdoch was also a professor of philosophy at Oxford University. In her *The Sovereignty of Good* (1970), she emphasized the importance of unselfing (self-transcendence) and considers that engaging with beauty in art and nature provides excellent opportunities to unself. After reading the cold and detached ideas of Kant and Schopenhauer, Murdoch is a breath of fresh air. She wrote provocative passages, such as, “beauty is the only spiritual thing which we love by instinct” (p. 85; I’m not sure what that means, but it sounds intriguing).

Murdoch describes human beings as anxious and self preoccupied, and implies our biggest moral obstacle is selfishness. Thus a central moral goal for the human being is “anything which alters our consciousness in the direction of unselfishness, objectivity and realism” and thus is “connected with virtue” (p. 84). And, “[t]he most obvious thing in our surroundings which is an occasion for ‘unselfing’ is what is popularly called beauty ... Beauty is the convenient and traditional name of something which art and nature share, and which gives a fairly clear sense to the idea of quality of experience and change of consciousness” (p. 84). Following this passage Murdoch gives an example of her own experience, when she was anxious and brooding and self-absorbed ... suddenly she saw a kestrel (sparrow hawk) out the window, and she unselfs by being absorbed by its beauty ... and she forgets self and when she returned to pondering her problems, they seem less important and her mind is cleansed of selfish care. She also points out that not only the beauty of nature can help unself us, but so can good art. She emphasizes that both the creation and enjoyment of good art are opposed to selfish obsession, and that such art can inspire love in the highest part of the soul. She notes that both beautiful nature and beautiful art share “perfection of form which invites unpossessive contemplation and resists absorption into the selfish dream life of the consciousness” (pp. 85–86). Unpossessive contemplation sounds an awful lot like Kant and Schopenhauer in regard to *disinterest* when engaging with beauty.

Unselfing, presumably as a concept of self-transcendence, has been emphasized in regard to beauty in Positive Psychology. Peterson and Seligman (2004) categorized “Appreciation of Beauty and Excellence” as

derived from the universal, cross-cultural virtue of “Transcendence.” And María Martínez-Martí and colleagues (Martínez-Martí, Hernández-Lloreda, & Avia, 2016), following the lead of Peterson and Seligman (2004), have provided evidence that engaging with beauty is associated with self-transcendence. There are also empirical data (Diessner, Parsons, Solom, Frost, & Davidson, 2008) which have correlated appreciation of beauty with spiritual transcendence (see Piedmont, 1999, for a description of spiritual transcendence).

BACK TO KANT (AND HEGEL)

It appears that Kant privileged natural beauty over artistic beauty whereas his transcendental philosophy heir, Georg Wilhelm Friedrich Hegel (1770–1831), argued that artistic beauty is a higher form of beauty than nature’s beauty.

Anne Baxley (2005) in her paper on Kant entitled “Love of Natural Beauty as a Mark of Moral Character” explained that it was very important to Kant to differentiate a love of artistic beauty from a love of natural beauty. Kant concluded that appreciating the beautiful in art provided no evidence that someone was a good human being. On the other hand, Kant was convinced that engaging with the beauty of nature was always a sign of a “good soul” (1790/1987, p. 165). In Plato’s early works he wasn’t a big fan of art either; Plato called artists imitators of imitation. That is, the physical world is but an imitation of the real world, the eternal Forms, that is, our mortal world is a symbolic, ephemeral representation of Reality. It is not real, it is a fleeting shadow of the Ideal Forms in heaven. Therefore, when artists painted a scene from the mortal, physical world, they were making an imitation (the painting) of an imitation (the fleeting reflection of the Ideal Forms). In Plato’s later works, however, such as the *Ion* 534a-b, he indicated that inspired artists, particularly poets, could create something of value.

Hegel, however, considered the artistic beauty of fine art to be transcendently higher than natural beauty. He asserted “that artistic beauty stands *higher* than nature. For the beauty of art is the beauty that is born—born again, that is—of the mind” (Hegel, ca. 1835/1993, p. 4). The word “mind” has been translated from the German *Geiste*, which is commonly translated to English as *spirit*. This locution by Hegel may be a reference to the Christian concept of being born first of water and then born of the Spirit (John 3:5). Hegel also argues that fine art can live in the

same sphere as religion and philosophy and can be a “mode of revealing to consciousness and bringing to utterance the Divine Nature, the deepest interests of humanity, and the most comprehensive truths of the mind [*Geist; spirit*]” (p. 9). Hegel goes on to say that art has illustrated the profoundest intuitions of all nations, and that art is the key to understanding the wisdom and religion of diverse cultures.

There is some empirical evidence that Kant was right, at least in the sense that a love of natural beauty indicates the possession of a good soul more than love of artistic beauty. Diessner et al. (2008) demonstrated that the tendency to engage with natural beauty correlated higher with some signs of being a good soul, such as with trait gratitude and with spiritual transcendence than did the trait of engaging with artistic beauty. Likewise, engaging with natural beauty correlated lower with an indicator of *not* being a good soul than did engaging with artistic beauty, that is, with trait materialism (indicating that lovers of natural beauty are less materialistic than lovers of artistic beauty). A follow-up study, with a much larger number of participants, showed the same pattern of correlations (Diessner et al., 2013). Those two studies are by no way definitive in finding natural beauty as a higher form of beauty than artistic beauty, nor do they prove that a good soul is more attracted to natural than artistic beauty; but those studies are a hint in that direction.

UNITY-IN-DIVERSITY

It is difficult to judge when such beauty is concerned. I have not prepared my judgment.

Beauty is a riddle. (Dostoevsky, 2001, section VII, n.p.)

Are you curious about a definition of beauty? Should we ask how philosophers have defined beauty? Let us start with Crispin Sartwell (b. 1958 and still alive), a wild and crazy philosopher of anarchy, and author of the “Beauty” article in the much-esteemed *Stanford Encyclopedia of Philosophy* (free and online!). Sartwell (2004) writes, “beauty” is “famous as a word that should not be, and perhaps cannot be defined” (p. 3). Maybe we will take Sartwell’s advice and not try to “define” it, but rather we will examine the most common *concept* associated with philosophic descriptions of what constitutes beauty. That concept is *unity-in-diversity* (*UiD*).

Unity-in-diversity means that a variety of elements (diversity) is organized into a meaningful whole (a unity). Remember Aristotle’s four causes: the

efficient cause, the final cause, the material cause, and the formal cause? Unity-in-diversity taps into the relationship between the material cause (the diversity) and the formal cause (the structure, pattern, or organization). If we imagine a painting, let's say Da Vinci's Mona Lisa, the material cause is the colors and the elements—a couple of eyes, a nose, some hair, a smile (maybe), a background (also made of elements), and these are organized (the formal cause) into a unified illustration of a woman's bust. Thus the material, the contents, constitute the diversity, and the form is the unified whole of the Mona Lisa.

Unity-in-diversity, as a criterion of beauty, is a first principle. It is necessarily abstract because it (partially) explains all, or most beauty experiences. Let's examine a few concrete examples of UiD. By definition ecosystems manifest unity-in-diversity. A forest has a wide range of diversity: trees, bushes, flowers, dirt, insects, other animals, fungi, and so on. When we see the beauty of a forest we are seeing many diverse elements unified into a whole (the forest = the whole). Now imagine this forest clear-cut. Its diversity has been greatly reduced, and the form of unity it once had is destroyed; it is now an ugly space.

The Moonlight Sonata consists of various sounds (diversity) that Beethoven unified into melodies, and unified the melodies into a whole—a movement of the sonata. Now imagine how most people react to atonal music (e.g., Schoenberg; see Dutton, 2009, pp. 205, 217), with its avoidance of conjunctive melody and eschewing of harmonic melodies, and thus a severe lack of the *unity* aspect of unity-in-diversity. Most people find this lack of unity disturbing and non-beautiful (I realize some people may find atonal music beautiful, although even my music addicted friends do not find atonal music beautiful, but some find it “interesting”).

Much of the general public have had difficulty finding beauty in Jackson Pollock's drip paintings and Mark Rothko's paintings of fields of color. This may be due to a lack of unity-in-diversity in their paintings. Pollock's paintings have much diversity, but lack any formal structure—they appear to lack unity. Rothko's paintings that are variations of a single color are on the other extreme—they have little diversity other than some shading. To the uninitiated, Rothko's paintings are boring—they lack diversity and seem dull and unattractive in their uniformity (cf. Boyd, 2009). A famous Pollock at MoMA: <https://www.moma.org/collection/works/78386>.

Check out the Rothko Chapel: <http://www.rothkochapel.org/experience/gallery/>.

One way to frame the UiD issue is with Aristotle's golden mean. Unity-in-diversity is the middle path (the mean), with chaos being on one extreme, viewed as diversity without unity (content without structure), and uniformity being on the other extreme (structure without content; form without diversity). Pollock's paintings are chaotic and Rothko's are uniform. (Ok, busted—I have a personal problem with Pollock that I won't get into; and I actually like Rothko's paintings and have meditated in front of them. As to atonal music ... well, let's just say I am one of the unenlightened).

What is moral beauty? Generally, it is defined as the human virtues (Haidt, 2003) and virtues are moral traits (Diessner et al., 2013). Virtues and traits are recognized through unity-in-diversity. When we call someone trustworthy, that word unifies a variety of behaviors, across a variety of situations, in which the person did what they said they would do. When a person is brave at work, bold at school, and stands up for social justice at church (or temple or mosque), we unify those diverse behaviors by saying the person has the virtue of courage. Thus moral beauty, through the virtues, is recognized by unity-in-diversity (Diessner, 2016).

My favorite example of UiD combines moral beauty with a beautiful idea. The beautiful idea is the *oneness of humanity*. The terrans of planet earth are currently experiencing much nationalism and racism. These two forces cause disunity and are ugly and degrading. It is clear to all systems-thinkers that we will not be able to solve the problem of international poverty or pollution or climate change without the nations and “races” uniting to solve these boundary-less problems on a planet-wide basis. Developing a sane patriotism (loving one's country, but loving all humanity more) and a sense of tolerance (or better yet, love) for those of other nationalities and races, would set the conditions for a unified world and could effectively serve the entire biosphere's needs. I am not recommending uniformity or a loss of diverse cultures. Rather I prefer the metaphor of the beautiful unified garden of many diverse colors and kinds of flowers. The goal is to support the identities of our many cultures and nations, at the same time cooperating in unity to save the flora and fauna and provide a living wage for every family. That is unity-in-diversity, supported by the beautiful (and true) idea of the oneness of humanity.

Now that we have some idea what I mean by UiD, let's see what philosophers have had to say about it. Nancy Etcoff, Harvard professor and author of *Survival of the Prettiest: The Science of Beauty* (2000; a ground breaking book on human physical beauty and evolution), has summarized

Plato's view of beauty as: "Plato said that beauty resided in proper measure and proper size, of parts that fit harmoniously into a seamless whole [unity-in-diversity]" (p. 15). The neo-Platonist Plotinus (203–270 CE) has written in his *Enneads*: "And on what has thus been compacted to unity, Beauty enthrones itself, giving itself to the parts as to the sum: when it lights on some natural unity, a thing of like parts, then it gives itself to that whole" (1964, p. 143). Augustine (354–430 CE), that is, Saint Augustine of Hippo, a Roman African and perhaps first great Christian philosopher has written in *De Ordine*: "With regard to the eyes, that is usually called *beautiful*, in which the harmony of parts is wont to be called reasonable ..." (1964a, p. 175). In his *De Musica* he wrote, "Beautiful things please by proportion ..." and in visual beauty the parts must be "in harmony, *cognitum*, with our eyes" (1964b, p. 191; note that proportion and harmony are near synonyms for unity-in-diversity).

The marvelous renaissance philosopher Marsilio Ficino (1433–1499), wrote "Beauty is, in fact, a certain charm which is found chiefly and predominantly in the harmony of several elements. This charm is threefold: there is a certain charm in the soul, in the harmony of several virtues; charm is found in material objects, in the harmony of several colours and lines; and likewise charm in sound is the best harmony of several tones" (1964, p. 207). The distinguished British philosopher Francis Hutcheson (1694–1746 CE) was very explicit about stating that unity-in-diversity is the cause of beauty. Dickie (1997) has emphasized that Hutcheson argued that beauty is based entirely on one principle: "uniformity in variety" (p. 14). John Dewey (1859–1952), perhaps America's greatest philosopher, has repeatedly, in his great variety of works, attributed beauty to unity-in-diversity: "beauty is the response to that which to reflection is the consummated movement of matter integrated through its inner relations into a single qualitative whole" (1958, p. 130). Dewey also wrote, "There is an old formula for beauty in nature and art: Unity in variety ... The formula has meaning only when its terms are understood to concern a relation of energies ... For the unity in variety that characterizes a work of art is dynamic" (p. 161).

Santayana (1863–1952), Harvard professor of philosophy, born in Madrid, was a Spanish, and later, American citizen with the lovely birth name of Jorge Agustín Nicolás Ruiz de Santayana y Borrás. His writings on beauty centered on two foci, that of form and expression. In regard to form he wrote in his *The Sense of Beauty* (1896/1961), "Beauty of form, however, is what specifically appeals to an aesthetic nature" and that form

is “the unity of a manifold” (p. 77). The Italian aesthetician, Benedetto Croce (1866–1952), famous for his expressionist theory of aesthetics and beauty, did not avoid a focus on UiD. In regard to art he wrote in his *Aesthetics* (1960/1902): “Another corollary of the conception of expression as activity is the indivisibility of the work of art. Activity is a fusion of the impression in an organic whole. A desire to express this has always prompted the affirmation that the work of art should have unity, or, what amounts to the same thing, unity in variety. Expression is a synthesis of the various or multiple, in the one” (p. 20).

Susanne K. Langer (1895–1985) was a pioneering American philosopher who taught at Columbia University and Connecticut College. She also developed a theory of aesthetics and art based on expressive form. She wrote in her *Philosophy in a New Key* (1952): “Beautiful works ... contain elements. The emergent form, the whole, is alive and therefore beautiful ... Beauty is expressive form” (p. 396). Although Langer never explicitly defined beauty as unity-in-diversity, she does argue that integration of elements (diversity) into a whole (unity) is required for a work of art to become alive and beautiful. In her *Mind: An Essay on Human Feeling* (1967), she used phrases such as, “unity which is generally considered the *sine qua non* of all good art” and “The inviolable unity of the total form ...” (p. 208). Iris Murdoch, who we met in a section above, has emphasized the importance of unity in art, in her *Metaphysics as a Guide to Morals* (1992) when she stated, “All sorts of things have ‘aesthetic aspects’, but what I have in mind is the traditional concept (now under attack) of the unified work of art” (p. 2). In *The Sovereignty of Good* (1970) she wrote, “Good art reveals what we are usually too selfish and too timid to recognize, the minute and absolutely random detail [diversity] of the world, and reveals it together with a sense of unity and form” (p. 86).

In summary, many philosophers, across two and a half millennia, both Continental and American, both female and male, consider unity-in-diversity as an important criterion for an experience of beauty. Although not a philosopher, one of the most famous and accomplished psychologists of the twentieth century, Hans Eysenck (1916–1997), a German born British psychologist, wrote about UiD and beauty in the 1940s and 1950s. In an early paper (1942), and again in a chapter entitled “The Psychology of Aesthetics,” Eysenck invoked the concept of “unity in variety” (1942, p. 346, 1957, p. 327), and then elaborated on it by arguing that the aesthetic measure (*M*) of an object is the product of its complexity (*C*; similar to diversity) and order (*O*; its unity or structure): “ $M = C \times O$ ”

(p. 329). American philosopher Denis Dutton (1944–2010), who was professor of philosophy at the University of Canterbury in New Zealand, also viewed “complexity” as the diversity pole in UiD. He wrote in *The Art Instinct: Beauty, Pleasure, and Human Evolution* (2009), under the subheader, “Complexity,” that “Aristotle … [said that in] all adequate works of art their elements are meaningfully interrelated within a whole work” (p. 236). Dutton goes on to claim that “Artistic masterpieces fuse myriad disparate elements, layer upon layer, into a single, unified, self-enhancing whole” (p. 237). As an example Dutton uses opera: the composer is playing at something analogous to six dimensional chess: she must take a story, some characters, a plot, with action, some poetic lyrics, and a musical score and make all those layers of diversity cohere into a unified whole. Complexity indeed! (The more diversity of elements that are unified into a whole in UiD, the more *complex* is the object of beauty—both Eysenck and Dutton agree on this.)

The philosophically sophisticated psychologist D. E. Berlyne (1971), of the University of Toronto, in his masterpiece, *Aesthetics and Psychobiology*, also emphasized the relationship between UiD and beauty. He wrote, “many later definitions of beauty are traceable to Leibnitz’s definition of ‘perfection’: ‘to obtain as much variety as possible but with the greatest order that one can’ (p. 125). Berlyne goes on to note that Hegel “equated beauty with the imposition of unity on the variety of external phenomena through regularity, symmetry … and harmony” (p. 125); as well as Fechner laying “down the ‘Principle of the Unitary Connection of the Manifold’” (p. 125).

There are, of course, other candidates for definitions of beauty. Sartwell (2004) has noted that the Swiss art historian, Heinrich Wölfflin (1864–1945) emphasized the Renaissance’s goal of beauty as *perfection*. Sartwell (2004) also refers to Thomas Aquinas (1225–1274 CE), perhaps the greatest Christian philosopher, as emphasizing *perfection* as one of the required principles of beauty. There are likely other universal principles of beauty, besides perfection and unity-in-diversity. Sartwell (2004) describes such possibilities as the Japanese concept of *wabi-sabi* (which includes the ideas of humility and imperfection); the Hebrew *yapha* as glow or bloom; the Navaho *hozho* as health or harmony; and the Sanskrit *sundara* as holiness. Nonetheless, unity-in-diversity is the most common definitional component of beauty, across various philosophers, in the Western canon.

To critique this notion of beauty as unity-in-diversity is to notice that everything in the macro-world (and perhaps in the micro-world) has form

and content, that is, all things are made up of diverse elements into a whole, a unity: a molecule, a bacteria, a flower, a chair, a planet, a star, a human being, a cat, and the like. Does this then devolve into meaninglessness? Perhaps not. One of the greatest living philosophers, Alexander Nehamas of Princeton University, has written in his very readable and engaging *Only a Promise of Happiness: The Place of Beauty in a World of Art*, “Beauty is everywhere” (2007, p. 95). Philosopher Crispin Sartwell, in his Six Names of Beauty, has written, “It is, I think, in principle possible to experience the beauty of anything” (2004, p. xii). So perhaps if we turn to any object with a mindful aesthetic attitude we can find the gems of beauty that are sometimes hidden and unrevealed to the non-aesthetic eye (cf. Stolnitz on the aesthetic attitude, 1960; it’s a form of Kantian disinterested contemplation or Schopenhauerian will-less contemplation).

RELIGION AND SPIRITUALITY

What is a section on religion and spirituality doing in a chapter on Philosophy? Well, I had to put it somewhere: and we can’t really authentically discuss beauty if we ignore all the beauty that has been created in the name of religion (architecture, paintings, poetry, sculpture, drama, literature and even dance [think Sufis and the whirling dervishes]). But there also is a logical reason to pair religion with philosophy. Both religion and philosophy have aimed to help humanity understand our deepest existential issues. Is Beauty a deep existential issue? If you are reading this book you probably think so, but just to clarify, let’s again mention physicist Frank Wilczek’s (2015) fabulous book that is a meditation on two deep existential questions: (a) “Does the world embody beautiful ideas?,” and (b) “Is the world a work of art?” (p. 1). Now those are two HUGE existential questions, and Wilczek even gives the creator god of beauty a name: The Artisan. As Howard Gardner (1998) has noted, humanity has turned to two classes of people to help them answer the difficult existential questions: prophets and philosophers. So let’s check out what the prophets have to say about beauty. But first, a trip down memory lane.

On my first visit to Venice I was accompanied by the Bolognese poet, theologian, physician, and aesthetician Julio Savi (2002a, 2002b). When he took me into my first ever Venetian church he was greatly amused by my reaction to finding a Titian (Tiziano Vecelli) hanging on the wall just a few feet inside the door—with no guards, no Plexiglas, no protection of any kind. I could have simply put my hand on the painting and no one would

be the wiser. And, of course, the theme of the painting was inspired by Christian theology. Religion inspires, art inspires. My wife and I, on our first trip to Paris, walked from our motel down to the Seine, looked up, and saw the Cathedral of Notre Dame (so sad it has burned). I was totally transported; transcendently lifted out of myself and was a pure will-less being in total awe. The Buddhist Miaoying Temple in Beijing, also known as the “White Stupa Temple,” is a wondrous, stark white magnificent tower building in Beijing, and for centuries was the tallest building in Beijing. We gazed upon it with great warmth in our hearts every morning, while having tea, on the upper terrace of our Beijing bed and breakfast. Otto Wagner’s art nouveau church on the outskirts of Vienna is a contender for most beautiful place of worship on our planet (and it’s in the middle of an insane asylum, wherein my wife and I had a very strange, disturbing, and amusing adventure). The Cultural Center for the Yakama Nation (Washington State, USA), a stylized Native winter lodge, is a beauty to behold, and evokes the centuries of Native prayer-songs recited by the Yakama people. In 1978 we had the honor of visiting the gorgeous Dome of the Rock in Jerusalem (Qubbat al-Ṣakhrah; the oldest Islamic edifice). It was a feast for the eyes and the spirit. We also visited the Wailing Wall, and found beauty there too, albeit of a more subtle kind than the Byzantine glory of the Dome of the Rock. We recently (2018) visited the only authentic Shinto shrine (the pre-Buddhist ancient religion of Japan) in North America, in Vancouver, Canada. It moved our hearts. Oh, how I would love to go to India to see the Bahá’í nine-sided Lotus Flower house of worship that carries the symbolism of the oneness of humanity in Bahapur in Delhi State (it is visited by 300,000 people a month—possibly the most visited edifice on earth). Well, you get the idea: the inspiration from religion has erected some of the most beautiful architecture in the history of humanity.

It seems that in religious scripture the prophets as well as the English translators prefer to use the word “glory” for “beauty.” This makes some linguistic sense, as the definitive dictionary of international English, *Webster’s Third New International Dictionary of the English Language* (Gove, 1993), indicates that glory and beauty are synonyms: “glory: 4a(1): great beauty or splendor” (p. 967). Many of the world’s sacred books emphasize the role of beauty/glory. From the 29th Psalm of King David we have, “Give unto the LORD the glory due unto his name; worship the LORD in the beauty of holiness” (29:2, King James Version). In Hinduism’s holy text, the *Bhagavad Gita*, Chapter XI is known as *Viswarupdarsanam* in the original Sanskrit, and typically translated as “Of

the Manifesting of the One and Manifold” (note that is a way of phrasing Unity and Diversity). In that chapter is the verse, “Fain would I see, as thou Thyself declar’st it, Sovereign Lord! The likeness of that glory [great beauty] of Thy Form wholly revealed. O Thou Divinest One!” (chap. 11, no p., E. Arnold edition). In the *Book of John*, from the Christian *Evangel*, is written, “And the Word was made flesh, and dwelt among us, (and we beheld his glory [great beauty], the glory as of the only begotten of the Father,) full of grace and truth” (*John*, 1:14). In the *Qur’án*, the holy book of the Muslim faith is recorded, “And he said, ‘Truly do I love the love of good, with a view to the glory [great beauty] of my Lord’” (38:32; Yusuf Ali edition). The *Dhammapada*, in which are recorded the sayings of the Buddha, written in the ancient Pali language, and sacred to Theravadan Buddhism, we find, “At all times, by day and by night, the Buddha shines in his glory [great beauty]” (chap. 26, no p., J. Richards edition). In Bahá’u’lláh’s great mystical work, the *Seven Valleys*, a text from the Bahá’í writings, is mentioned, “In every face, he seeketh the beauty of the Friend” (p. 7, Bahá’í Publishing Trust edition).

Albert Einstein has stated:

The most beautiful thing we can experience is the mysterious. It is the source of all true art and science. He to whom this emotion is a stranger, who can no longer pause to wonder and stand rapt in awe, is as good as dead; his mind and eyes are closed. The insight into the mystery of life, coupled though it be with fear, has also given rise to religion. To know that what is impenetrable to us really exists, manifesting itself as the highest wisdom and the most radiant beauty which our dull faculties can comprehend only in their most primitive forms—this knowledge, this feeling, is at the center of true religiousness. In this sense, I belong in the ranks of the devoutly religious. (quoted in Untermeyer, 1955, pp. 540–541)

So, for Einstein the mysterious is the most beautiful thing we can experience. I find that concept mysterious; but, it makes me want to be devoutly religious.

SUBJECTIVE OR OBJECTIVE OR BOTH

Is beauty in the eye of the beholder? Are experiences of beauty relative and subjective based on personal tastes? Or is there some form of objectivity to beauty? Are some things *really* beautiful? What am I to say to my art-loving poet-friend Julio Savi, who after he read the draft Introduction to

this book, then told me he could never find a mathematical formula beautiful?

Philosophers have not agreed on whether beauty is subjective or objective (big surprise). The ancient greats, Socrates, Plato, Aristotle, and Plotinus all agreed that beauty was primarily objective—beautiful things really are beautiful regardless of what one or another individual may think or feel (Sartwell, 2016). On the other hand, Enlightenment period philosophers, such as Hume argued that beauty was primarily subjective, and thus in the eye of the beholder. This appears to be a common view among us modern common folk—everyone has different ideas about what is beautiful. “There is no accounting for taste,” goes the meme.

However, I agree with Crispin Sartwell—beauty has both subjective and objective aspects. He (2004) explains that beauty is the feature of a situation that contains both a beholder and an object of beauty, “We give beauty to objects and they give beauty to us; beauty is something that we make in cooperation with the world” (p. 5). Sartwell asks a question that is like a Zen koan: if there were no humans to look at the beautiful starry sky above, would that night sky be beautiful? I am tempted to say, “Yes,” but Sartwell makes a case that the beauty experience is a dialectic between objective properties of an object and our subjective response to those properties. Both are required. Just because the experience of beauty takes place in our head/mind/soul does not mean that the objective properties of an object are not beautiful.

So why does my friend Julio not find symmetrical math formulae beautiful? Based on a discussion with my Psychology of Beauty class, I am pretty sure Julio might be in the majority ... I suspect most people do not find math beautiful. Looking back on my youth, I’m pretty sure I found geometric proofs beautiful; but now I find it difficult to see Wilczek’s (2015) math as beautiful, despite getting a vicarious beauty rush from his enthusiasm. We do bring our own subjectivity to all our experiences, and a combination of genes, exposure, and role models will set us up to find some things beautiful. Our genes influence our levels of mathematical intelligence, and intelligence is correlated with finding complexity (diversity) beautiful when it is ordered (unified) (Eysenck, 1942; however, mathematical intelligence would not be the reason Julio doesn’t find formulae beautiful, because he is brilliant). But genes are likely not enough. Have we had exposure to beautiful mathematics, and more critically, have we had a teacher that found such formulae beautiful, and could communicate that to us? Based on Barrett’s (2017) theory of constructed emotion,

it seems likely that if we had a role model that emotionally responded to the beauty of math, and communicated that *concept* of beauty to us, the chance we would find mathematical formulae beautiful is high. Thus, as in (nearly?) all experiences, the dialectic between our genes and our environmental experiences will influence whether we subjectively experience something as beautiful.

WHAT COUNTS AS POTENTIALLY BEAUTIFUL?

... The mighty abstract Idea I have of Beauty in all things ...
 (Keats, 1818/[2011](#), p. 347)

What constitutes the realm(s) of the beautiful? In my own work I surveyed philosophers' approaches and determined that three major domains of beauty are natural beauty, artistic beauty, and moral beauty (Diessner et al., [2008](#)). Later my German colleague Rico Pohling and I decided that "ideas" may also be beautiful and began to empirically investigate them (Pohling, Diessner, Iyer, Stacy, Woodward, & Strobel, [2019](#); cf. Zeki, Romaya, Benincasa, & Atiyah, [2014](#); Wilczek, [2015](#)). Contra to this approach, Jonathan Haidt discouraged me from relying on philosophical works to determine the domains of beauty experiences but rather to examine how the brain processes different beauty stimuli and how the brain categorizes them (Haidt, personal communication, January 18, 2006).

Another issue regarding the domains of beauty concerns which perceptual systems can perceive beauty and which cannot. For instance, nearly all philosophers agree that our visual and auditory systems are conduits of beauty experiences; but a variety of philosophers think that other perceptual systems, such as the olfactory and gustatory systems, do not deliver an experience of beauty (Diessner, Genthôs, Arthur, Adkins, & Pohling, [2019](#)). This is also linked to the question of whether every stimulus has some potential beauty in it, just waiting for someone with a deep "aesthetic attitude" to notice it. Let's start with this wide view.

Sartwell ([2004](#)), in his *Six Names of Beauty* wrote, "It is, I think, in principle possible to experience the beauty of anything" (p. xii). He then advised that if someone does not believe all senses are open to beauty, they need only consult a chef or perfumer. Similarly, Santayana (1896/[1961](#)), in his *The Sense of Beauty* wrote, "Our pleasures are thus described as the pleasures of touch, taste, smell, hearing, and sight, and may become elements of beauty at the same times as the ideas to which they are attached

become elements of objects” (p. 62). He also stated, “[e]verything is beautiful ... but things ... differ immensely in beauty” (p. 96). Princeton philosopher Alexander Nehamas (2007) has written, “Beauty is everywhere” (p. 95). In regard to our olfactory and gustatory systems, the Irish philosopher Edmund Burke (1757/1968), in his *A Philosophical Enquiry into the Origin of our Ideas of the Sublime and Beautiful*, took an unusual textured stance that “smoothness is beautiful” (p. 151) and “smell and taste [of things] which are commonly called sweet [are] of a smooth nature” (pp. 151–152), and thus can be perceived as beautiful. I’m not sure I totally follow Burke’s argument, but for our situation, I’m simply noting that an accomplished Enlightenment philosopher did think that smells and tastes have the potential to be considered beautiful.

On the other hand, Thomas Aquinas (1260/1947), noted that we simply do not use the language of beauty in regard to smells or tastes:

Those senses chiefly regard the beautiful, which are the most cognitive, viz., sight and hearing, as ministering to reason; for we speak of beautiful sights and beautiful sounds. But in reference to the other objects of the other senses, we do not use the expression *beautiful*, for we do not speak of beautiful tastes, and beautiful odors. (p. 707 [Q. 27 art. 1])

I don’t know if it is a change in language over the last 800 years, or if Aquinas was simply wrong, or perhaps it’s a cultural thing—but I had a guest speaker, Gary MacFarlane, Ecosystem Defense Director for the Friends of the Clearwater, in my Psychology of Sustainability class this last week (September 2018), who took pains to emphasize that the scent of lodge pole pines is beautiful. I didn’t argue with him. It is.

Why do modern philosophers think that it is not possible to have a beauty experience through scent or taste? It is because they think that smells and tastes do not deliver unity-in-diversity experiences; smells and tastes lack unity, they lack form. British philosopher Frank Sibley (2001) and American philosopher Monroe Beardsley (1975) debar tastes and smells from the entire field of aesthetics; their main argument being that an object of aesthetic experience “must exhibit patterning, structuring, or ordering of some kind” and this is “not possible with tastes and smells” (Sibley, 2001, p. 226). But this is an open question: perhaps scents and tastes do have form. American philosopher Larry Shiner (2015) emphasized the form of fragrance, as he believes “some perfumes and other olfactory works are as formally complex, expressive and meaningful in their way as many paintings, musical compositions, novels, or installation

works” (p. 392). Botanist and entomologist Stephen Buchman (2015), in his completely delightful *The Reason for Flowers*, compares the scent of perfumes to a fugue by Bach: Structurally, perfumes have three notes, which can be compared to a chord: (a) a top note, or head note, which evaporates first and lasts about 5–30 minutes, (b) a middle note, or heart note, which reveals itself 10–60 minutes after application and *mixes* with the top notes, and (c) the base notes, which *blend* with the middle notes, and can last for a whole day. Buchman states that the interaction of these three scent notes create “their harmonious scented performance” (p. 201).

Is there empirical evidence that people may consider tastes and scents beautiful? Very little. But some. Two recent studies have found that people will identify tastes as beautiful; one with Jolly Rancher candies (Brielmann & Pelli, 2017) and one with Werther’s butterscotch candies (Diessner et al., 2019). As to the olfactory system, there is surprisingly little empirical research concerning scent and beauty—perhaps none, until a recent study demonstrated that some people considered Joy perfume as beautiful (Diessner et al., 2019).

TAKE-AWAYS

Part of the goal of this chapter was to introduce influential concepts from philosophers that may relate to research in empirical aesthetics. Although there are many philosophers of aesthetics we did not cite, and much that they have to say about art that we missed, we did address several major issues. Let’s review.

1. With Plato we emphasized the relationship between **love and beauty**; with the possibility that the object of all our experiences of love is beauty (i.e., when we love something or anything, it is that thing’s beauty that we love).
2. Aristotle defines all of the human virtues as being beautiful, and that the *telos* (the purpose) of the virtues is to manifest **moral beauty**.
3. Kant and Schopenhauer emphasized **disinterest**, which indicates that to have an authentic beauty experience a person must have no goal concerning the object of beauty other than to appreciate it. The beauty is an end-in-itself, and not just a means to an end.
4. Iris Murdoch focused on the ability for natural and artistic beauty to help us **unself**, and transcend our puny selves, and become better human beings.

5. *Unity-in-diversity* is the most commonly described criterion for beauty by philosophers; and it is a principle that helps explain natural beauty, artistic beauty, and moral beauty.
6. Beauty is mentioned in most of the world's sacred scriptures, often under the guise of *glory* (which is a synonym for beauty).
7. The human experience of beauty is in the eye of the beholder, but that doesn't mean beauty is only in the eye of the beholder. Beauty experiences have *both subjective and objective* aspects. The feeling of beauty happens "inside" us, but there is something "real" about the beauty stimulus that is beautiful. It is the dialectic, the *relationship*, between the inner and the outer that create an experience of beauty.
8. Some of the domains of the beautiful are natural beauty, artistic beauty, moral beauty, and beautiful ideas.
9. With an ideal *aesthetic attitude*, perhaps we could find beauty in all things.
10. The modalities of beauty extend beyond vision and hearing, and likely include taste and smell.

PSYCHE AND EROS INTERLUDE ONE

The Most Beautiful Story/Myth in the World

One of the most beautiful stories I have ever encountered is the ancient Greek myth of Psyche and Eros. Experiencing the myth as a story can arouse many of the major aesthetic emotions, including a variety of prototypical, pleasant, cognitive, and negative aesthetic emotions, and has the tension and resolution of a classic dramatic work (cf. Menninghaus et al., 2019; Schindler et al., 2017).

It's a beautiful narrative story² about beauty: about loss, love, loss, and gain. The word "psyche" ($\psi\chi\eta$) is importantly homonymous. In Greek it means "soul" or "spirit" (cf. Webster's Third New International Dictionary, 1961/1976, p. 1832), but also "butterfly." These two metaphors dominate this myth: (a) Psyche, as the most beautiful being in Greece (the

²Note, as described in the next chapter on Evolution and Beauty, that story-telling may actually be the one *instinct* for art that humans have. It's the best candidate for a naturally selected adaptive trait. All other art *may* be a by-product of evolution.

world), is a metaphor for the soul; and (b) Psyche, as butterfly, is the metaphor of transformation, as we make our way from being a little worm in a womb into an immortal being soaring on divine wings to our eternal abode.³

The Psyche Myth, as described here, is based on Apuleius' classic text, *The Metamorphoses*, also known as the *Golden Ass*, a book of 11 chapters, written in Latin in the second century CE. In that text, a person named Lucius is metamorphosed into a donkey, and experiences a series of adventures. The oldest extant copy of the myth is from the eleventh century CE, written in Latin and is housed in Florence, Italy (Kenney, 1990).

Although “Psyche” is a Greek word, it is retained throughout Apuleius’ original Latin text. The name of Eros, the god of love, is written by Apuleius in its Latin form, “Cupido.” Nonetheless, as this is a Greek myth, I will refer to him as Eros. It is worth noting that in paintings and sculptures of Eros/Cupid, from the time of ancient Greece and Rome, through the present day, he is shown as *either* a beautiful, virile young man, or as a weak, pudgy, child. In the Psyche and Eros Myth he is most definitely depicted as a young man who has the beautiful body of a Greek god (well ... he is a Greek god). The great existential psychologist Rollo May (cf. 1969, Ch. 3, “Eros in Conflict with Sex”) makes a case that the young man Eros represents a psychologically healthy approach to sex and love, whereas the weak, pudgy baby represents a cultural deterioration of love into something banal, childish, and insipid. This problem arises when a culture does not differentiate between two kinds of erotic love: one physically passionate but empty, and the other spiritually ardent and rich.

I will include a story-telling portion of the Psyche and Eros Myth between each chapter of this book, and then will explain how I use the Myth in my PSYC 101 Introduction to Psychology class in Chap. 8: Aesthetics and Pedagogy.

Dramatis Personae of the Psyche and Eros Myth:

1. Aphrodite/Venus: She is the mother of Eros (Fig. 2.1).
2. Psyche: the most beautiful being in the world (Psyche means Soul in Greek; Fig. 2.2).
3. Eros: the god of Love (AKA Cupid or Amour).

³If you are an ontological materialist, and the concept “soul” seems superstitious to you, that’s alright, after all, this is a *myth* I am describing.



https://commons.wikimedia.org/wiki/File:Botticelli_Venus.jpg

Fig. 2.1 “The Birth of Venus,” Sandro Botticelli 1483–5, Uffizi Gallery.
https://commons.wikimedia.org/wiki/File:Botticelli_Venus.jpg

Check out this sculpture by Antonio Canova (greatest Romantic Period sculptor) of Eros (and Psyche); it is on display in the Louvre, Paris: http://musee.louvre.fr/oal/psyche/psyche_acc_en.html.

The first time I went to the Louvre, my main goal was spend time with that sculpture. It was glorious.

Our story begins ...

Beauty as the Royal Daughter

A king and queen, somewhere in ancient Greece, had three daughters. Two of the daughters were quite attractive, but “The loveliness of the youngest, however, was so perfect that human speech was too poor to describe or even praise it satisfactorily ... [all] were struck dumb with admiration of her unequalled beauty (Kenney, 1990, IV.28.2–3).” This youngest daughter was named Psyche.

Fig. 2.2 Psyche on the Rock by Max Klinger.
 (Photo credit Rhett Diessner)



Venus Is Jealous and Then Envious of Psyche

The fame of Psyche's beauty spread, and soon everyone left Venus' (Aphrodite's) temples empty, and even began to offer their prayers to Psyche (Kenney, 1990, IV.28–IV.29.4). This caused jealousy and great anger in Venus and she decided to punish Psyche, thus revealing her envy of Psyche's adoration by the populace. By way of punishment she asked Eros, her son, to cause Psyche to fall in love with the most degraded and wretched man on earth.

Will Eros obey her?

To be continued ... (You will find the next installment of the story at the end of Chap. 3).

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CHAPTER 3

Beauty Becomes: Evolving Beauty

Anjan Chatterjee (2014), director of the Penn Center for Neuroaesthetics at the University of Pennsylvania, has stated that evolutionary psychology explains *the why* of appreciation of beauty and that neuroaesthetics explains *the how* of appreciating beauty.¹ Among many psychologists and other scientists there is high hope for the explanatory power of evolutionary psychology. For instance, Steven Pinker, when he was a psychology professor at MIT (currently he is at Harvard), wrote, “In the study of humans, there are major spheres of human experience—*beauty*, motherhood, kinship, morality, cooperation, sexuality, violence—in which evolutionary psychology provides the only coherent theory” (Pinker, 2002, p. 135; italics added).

FEATURED MUSIC

I recommend late romantic period composer Gustav Mahler’s Third Symphony. As the Harvard mathematical biologist Martin Nowak & Highfield (2011) has suggested, this monumental piece (nearly 2 hours long!) is literally about evolution, from its primeval opening (which is actually about rocks!), through stages of plants, animals, and humans, to conclude with divine love. Nowak writes, this “symphony is a pantheistic vision of the universe, a gigantic musical poem, a hymn to the natural world in the form of a step-by-step ascent of the great Ladder of Creation” (p. 274). I suggest the

¹ Check out Chatterjee’s TED talk, “How Your Brain Decides What Is Beautiful,” at https://www.ted.com/speakers/anjan_chatterjee

version available on YouTube, conducted by the legendary American genius Leonard Bernstein with the Vienna Philharmonic Orchestra, the Vienna State Opera Chorus and the Vienna Boys Choir. <https://www.youtube.com/watch?v=1AwFutIcnrU>.

Mahler holds a special place in my heart. When I was 19 I fell in love with my best beloved, and she introduced me to Mahler at the dawn of our love ... and we know the object of all love is beauty. Thus, love and beauty and Mahler are forever intertwined in my heart and mind. Warning: Mahler is not easy to listen to. He is deep, serious, and in pain.

EVOLUTION AND APPRECIATION OF NATURAL BEAUTY

Evolutionary psychologists focus on two major reasons for why we admire the beauty of nature: sexual selection and natural selection/adaptation. Thus we will divide this section into two subsections: human physical beauty (based on sexual selection) and landscape beauty (based on natural selection).

Human Physical Beauty. As Chatterjee (2014) points out, in our more recent history we have more access to looking at faces than looking at bodies, because people wear clothes. How much clothing did hunter-gatherers wear? I suspect less, although that must be influenced both then and now by climate: I assume people wear less clothing in hot climates.

Beautiful Faces. Gillian Rhodes (2006), with a PhD from Stanford and currently professor of psychology at the University of Western Australia, has described and explained three of the most studied aspects of beautiful faces: averageness, symmetry, and sexual dimorphism. Averageness refers to a person looking like the average person in a population, and the research on this is typically being done with computer-generated averaged composites of faces. I know this seems counter-intuitive, the beautiful are the extraordinary! Maybe being average is rarer than you think (that's a joke). However, evolutionary psychologists think that looking average may indicate a healthy overall condition as well as the ability to resist disease, which are signs a person might pass on some good genes to their offspring.

“Symmetry” is one of the most common concepts encountered in appreciation of beauty research. There are many studies on facial symmetry, body symmetry, symmetry in artworks, and symmetry in mathematical formulae, all related to beauty. Evolutionary psychologists (summarized by Buss, 2015) have evidence that symmetrical faces (and bodies) are

indicators of health, and thus would signal to a potential mate that they would live long enough to help rear the children, as well as pass on genetic benefits. However, we may need to take facial symmetry as a marker of health cautiously; Rhodes (2006) explains that the evidence that facial symmetry indicates health is very weak; and Prum (2017) says “that we have evolved a preference for symmetry because it is an indicator of genetic quality is a zombie idea that refuses to die despite all the evidence to the contrary” (p. 368; also see below a further discussion of symmetry).

Sexual dimorphism refers to the physical appearances that differentiate women from men. Women seem to be attracted to the testosterone induced facial features of men, which include strong brow ridges, broader and longer jaws, facial hair, and pronounced cheekbones (Buss, 2015; Rhodes, 2006). By a weird twist, these attributes of beautiful male faces indicate health. Why weird? Well, testosterone weakens the immune system, making a guy less healthy; so only a male with an extra-strong body can afford to let their testosterone run wild and create such faces. It's like the handicap hypothesis about the peacock: that huge tail is a handicap, making the bird easier to kill by predators and making it more difficult for the peacock to obtain food. But if the peacock is so strong that it has survived, despite that dysfunctional tail, he must be a wonderful genetic catch for a peahen. It is thus for those badass manly looking men. (Or maybe not ... see Prum's [2017] critique of the handicap principle below.)

A variety of studies show that men find various feminine facial features beautifully attractive: high cheekbones, small chin, small lower face area, full lips (Rhodes, 2006), as well as clear, smooth skin, clear eyes, large eyes, thinner jaws, and lustrous hair (Buss, 2015). The evolutionary reasons for these attributes to be attractive to males include: youth (the older women get, the less feminine their faces are); estrogen helps produce feminine faces, and estrogen makes women fertile; and feminine facial features are correlated with being healthy (Buss, 2015). Healthy looking skin and hair may also signal to potential mates that the female is a good protein producer, and it's primarily protein that builds fetuses.

The dimorphic features of women and men occur at puberty, which then signals to potential mates that they are old enough to reproduce, which may be another reason we find such features attractive. Ah, it's time for that one to be able to spread their genes.

It seems we do not like to use the word “beautiful” to describe men, at least in American English. I'm thinking this might be an unwarranted gender bias, and possibly a form of sexist prejudice. In Buss's (2015)

Evolutionary Psychology, in the section on “Women’s Mate Preferences,” beauty is only mentioned one time, and that was not by Buss, but in a quotation from a Brazilian tribal woman. In the section on “Men’s Mate Preferences” beauty is mentioned at least 25 times Hmmmmmm

This reminds me of the sixteenth-century artistic giant Albrecht Dürer. You might ask me why. “Why?” Because if we can trust the accuracy of one of his self-portraits, he is one gorgeously beautiful man (although this particular self-portrait may have been idealized). If this is an e-version of the book, check him out here: <https://www.sammlung.pinakothek.de/en/artist/albrecht-duerer/selbstbildnis-im-pelzrock#&gid=1&pid=1> at the Alte Pinakothek in Munich; otherwise google Albrecht Dürer Selbstbildnis im Pelzrock (Fig. 3.1).

I also thought of Dürer because Chatterjee (2014) describes how he published a book in 1582 entitled *De Symmetria* in which he reduces the body to simple forms that can be measured, and he developed a propor-

Fig. 3.1 Albrecht Dürer



tional system of the perfect body based on his own hand. (Maybe he thought: “If this hand of mine can produce so many beautiful and wondrous works of great art, then perfect bodies could be based upon it.”)

Beautiful Bodies. As Plato (1989) wrote in the *Symposium*, in our youth we are attracted to a particular body and lovingly find it beautiful. Men find an hour-glass figure to be a fitness indicator that they find beautiful in women (a waist-to-hips ratio of 0.70 seems to be ideal); and a V-shaped body is a fitness indicator that women find beautiful in men (Chatterjee, 2014; Etcoff, 2000). Women and men who have these qualities are perceived as likely to produce strong babies who will survive and later reproduce.

Chatterjee (2014) notes that men with strong symmetry of body, “symmetrical feet, ankles, hands, elbows, wrists, and ears” (p. 18), are attractive to women and thus have sex younger, sex earlier when courting a particular woman, and their women partners consider them better in bed. He also describes men as preferring symmetrical women; and then notes that women with large symmetrical breasts are more fertile than non-symmetrically breasted women, and that women’s bodies become more symmetrical during ovulation (making them even more desirable to men at the time they could become pregnant and pass on some of his genes).

Rhodes (2006) summarizes research on *asymmetry* of bodies by noting that it increases with premature birth, inbreeding, mental retardation, and psychosis; and thus may be a sign of potential mates to avoid. Symmetry good; asymmetry not so good. On the other hand, Richard Prum (2017) makes a case that we find asymmetry in faces beautiful. He notes that some of the most beautiful women of the late twentieth century had moles on their faces that made them asymmetrical (Cindy Crawford, Madonna, and Marilyn Monroe²). He also notes that we like asymmetrical hairdos (sometimes). He states that facial symmetry is bland and is not “especially beautiful” (p. 368), whereas we find asymmetry attractive because it allows us to better identify individual faces. Prum goes even farther and argues that

²Although I wonder if having the mole actually emphasizes the beautiful symmetry of their faces (a small flaw can alert us the perfection of the rest of the scene?). Note: In Persian poetry, for example, Rumi or Hafez, the mole is celebrated as a beauty mark. Although finding symmetry beautiful seems almost universal among philosophers (cf. Scarry, 1999), physicists (cf. Wilczek, 2015), and evolutionists (Buss, 2015), Prum is an exception. Is he right? I’m not sure. Feel free to email me, diessner@lcsc.edu, if you have strong evidence one way or the other.

body symmetry, as an honest signaling mechanism, collapsed in the field of biology in the late 1990s, with a variety of papers and meta-analyses of multiple data sets showing that it was not an indicator of genetic quality.

Dangling Bling. Prum also criticizes evolutionary psychologists for writing so little about the penis as a sexual ornament. I checked in Buss's (2015) *Evolutionary Psychology* textbook, and sure enough, there is no index entry for "penis." When I looked through Buss's sections in the textbook on what females find attractive about male bodies, I saw no mention of penises either. Prum actually accuses male evolutionary psychologists of lacking courage because they write so much about female anatomy but then skip the most important part of their own anatomy. Hmmmm Prum argues that the human male penis has been shaped by both natural selection and sexual selection. The human penis is bigger in both relative and absolute size when compared to other apes: erect gorilla penis 1.5 inches; erect chimp penis 3 inches; erect human penis 6 inches. The human penis is also wider than any ape penis and although the human testes are smaller than a chimp's, the human scrotum is bigger and dangles down farther. Chimps have huge testes due to sperm competition with other chimps, and thus the evolutionary shrinking of the human testes indicates sperm competition among human males has decreased. Sperm competition is relevant when a female has lots of males having sex with her, which is the case for chimps, so male chimps aim to get a massive amount of sperm into her to displace the sperm of other males.

So why has the human penis evolved to be so big and dangly? Prum (2017) says it's due to aesthetic and sexual pleasure preferences of human females. The long, wide penis gives more sexual pleasure to the female than a short, skinny one (like apes have), and she associates seeing a dangling penis and a dangling scrotum as signs of future pleasure; and thus she evolves an aesthetic attraction to the beauty of that dangling bling. Prum calls the penis a visual ornament that is also a tactile, interactive, sculpture.

Is bigger better? Prum (2017) says that human women universally like a penis bigger than a chimp's penis (which is 3 inches or 7.6 centimeters), but that women vary greatly when asked if penis size matters to them. He then points out that human penis size also varies greatly. If women's preferences for penis size, and actual penis size, are both highly variable, those variabilities may have coevolved.

LANDSCAPE BEAUTY

Chatterjee (2014) has noted that “[s]trong evolutionary forces selected minds that find some places more beautiful than others” (p. 48). Chatterjee’s view is concretized in Buss’s (2015) little scenario—“it’s time to head off for the day. You pack your gear and look around you. In which directions are you drawn? Some seem beautiful. They promise attractive vistas, perhaps a running stream for water and fishing, lush vegetation, and a safe place to camp” (p. 83). Chatterjee and Buss are convinced that natural selection has shaped us to enjoy the beauty of nature. I can’t disagree with them. Although at this current point in our evolution we must always remember that culture has re-shaped the outcomes of the biological shaper. It is difficult to think of any human experience that is not simultaneously, and reciprocally, influenced by genes and culture.

Dutton (2009) cites an international study by the artists Komar and Melamid, which may represent the views of up to 2 billion of our fellow earthlings, finding that our most preferred painting is a landscape that looks like an African savanna, with a nice blue sky. In fact, Orians and Heerwagen (1992), in their seminal paper, Evolved Responses to Landscapes, coin the phrase, “the Savanna Hypothesis,” that argues that it was adaptive to evolve to find attractive: (a) open spaces with short grass and some thickets and groups of trees; (b) water nearby, and preferably in view; (c) an unimpeded view into the distance; (d) animals and birds present, or the signs thereof; and (e) greenery with flowers and fruits. Dutton (2009) points out that such a savanna contains more protein per square kilometer than any other type of landscape.

Although the savanna hypothesis holds water (get it?), Chatterjee (2014) points out that it can’t be the whole story. Humans migrated out of Africa to live in nearly every kind of habitat on earth. The two main criteria for what we find beautiful in nature are safety and sustenance (Chatterjee, 2014). We like to live with a nice vista view, as we can be safe there (able to see enemies or predators before they see us), and also see where the water and food sources are. This might be reflected in the fact that, in nearly every town and city on our planet, property on the hill, or any elevated spot (penthouse), costs more (Dutton, 2009).

Rachel Kaplan and Steven Kaplan are a wife and husband team of environmental psychologists at the University of Michigan. They are famous for developing Attention Restoration Theory in regard to the restorative effect of nature and green spaces on fatigue of the mind (Kaplan & Kaplan,

1989). The Kaplans, as described in their book, *The Experience of Nature: A Psychological Perspective* (1989),³ have found that people are most attracted to natural spaces that are coherent, with repeated scenery and somewhat uniform, but at the same time complex (rich with diversity) and mysterious. I translate that to: people find a natural scene beautiful if the scene has both diversity and unity. Too much diversity, such as a deep jungle, is scary; too little diversity, like the grasslands of Middle America, is boring (of course, we can find beauty in jungles and prairies). Moderate complexity is just the right kind of unity-in-diversity porridge. As to “mystery,” this is an *inviting* form of the mysterious, which indicates that if we explored we might find even more sustenance or something else useful to survival. “*Mystery*. This informational factor also involves promise, but here it is the promise that one could learn more” (Kaplan & Kaplan, 1989, p. 55).

In summary: we now find scenery beautiful that afforded our ancestors refuge and nutrition, because our ancestors that found a safe place to live, and which had food and water nearby, had a lot of babies. Then those babies, due to the nice refuge with a vista, and meat and veggies from the nearby savanna, survived to reproductive age and had even more babies. Repeat.

EVOLUTION AND ARTISTIC BEAUTY

Art is *pretty* ancient. Chatterjee (2014) notes that colored pigments were used 800,000 years ago in the Wonderwerk Cave in South Africa. There is even some evidence that *Australopithecus* may have collected stones that were aesthetically (symbolically) important to them millions of years ago. Neanderthals made use of red pigment 250,000 years ago, and also carved attractive lines on mammoth molars. Australian natives were painting and engraving 40,000 years back. The famous cave paintings in Lascaux, France were made 15–20,000 years in our past, and the ones at Chauvet may be 32,000 years ancient. What made us this way? Is art some kind of adaptation that helps us survive? Were artists sexually selected because they are hotter than the rest of us? (Would you like to see my etchings?)

³I have nothing but respect and admiration for the Kaplans; but I find it a little sad that the word “beauty” did not find its way into the index of their book. Perhaps they, like artists and art critics, and university departments of humanities, suffered from the cultural suppression of beauty in the twentieth century (Danto, 2003; Scarry, 1999; Sircello, 1975). However, if you read their book more carefully than I did, and find where they refer to beauty, please let me know: diessner@lcsc.edu

Denis Dutton's book, *The Art Instinct: Beauty, Pleasure, and Human Evolution* (2009) is a magnificent work, but he probably is wrong about human's actually having an art *instinct*. If we accept biologists' definition of an instinct as inborn and unlearned, then producing art is not an instinct. Chatterjee (2014) cleverly challenges the instinct argument, based on four criteria, using the diagnostic medical approach of sensitivity (is the test positive if the person has a particular disease) and specificity (is the test negative if the person does not have the disease). (1) Art is not based on an instinct for beauty, because much of (modern) art is not beautiful, and there are many beautiful things that are not art.⁴ Thus beauty is neither specific nor sensitive to art. (2) Art is not a costly signal of genetic strength (like the peacock's tail might be), because humans use many costly signals that are not art (expensive watches, cars, and homes). Again, the costly display argument is not specific and not sensitive. (3) Is art so useful in our lives that artists were naturally or sexually selected? No, because there are many useful things that are not art, and much art is not useful—failing specificity and sensitivity. (4) And art is not an “expression of our instinct for social cohesion” (p. 170), because much art does not cause social cohesion, and many factors besides art do cause such cohesion. Thus social cohesion is a criteria that is neither sensitive nor specific to art.

There is still a possibility, however, that some aspects of art were naturally selected. For instance, story-telling, which may be the root of such arts as novels, plays, movies, operas, poetry, painting, and sculpture, was almost certainly being enacted in the Pleistocene. Dutton (2009) notes at least three ways in which such story-telling art may be adaptive: (a) stories prepare us for life and its surprises, (b) they are didactic and richly instructive, and (c) they help develop interpersonal intelligence through taking others' perspectives, and provide guidelines to regulate social behavior.

There is also a notion that the ability to produce art was sexually selected. One such approach is called the *display hypothesis* (Buss, 2015). It may be that the performing arts (such as playing a musical instrument, dancing, story-telling, singing, etc.) are a fitness signal; and we may desire to procreate with mates that *display* such fitness signals. According to the display hypothesis, men have been the primary producers of art, because art is like the peacock's tail, and attracts females as mating partners (picture a guy on

⁴ Although I hold out the possibility that we do have an instinct for beauty. As Iris Murdoch wrote, “beauty is the only spiritual thing which we love by instinct” (p. 85; it's likely that Murdoch meant this metaphorically and not biologically ... or did she?).

a beach by a campfire, playing a guitar, with females' eyes riveted upon him and they have smiles on their faces). One problem with the display hypothesis is that it seems gender biased. For instance, Buss (2015) does not mention the oppression of women in regard to producing the arts. Most cultures, over the last millennia, have curtailed women's creative expressions in the arts, often limiting them as to the subject matter they may select and the media they are allowed to use, and a variety of social rules limiting their showing (displaying) of their art. It seems to me that as these limits are slowly being lifted, as women achieve equal rights, women produce art that is just as wonderful, attractive, and beautiful as the art produced by men. If that is the case, then it seems that whatever genes were "sexually selected" for men to display art, were passed on to women just as much ... or perhaps the display hypothesis is (mostly) incorrect.

FEATURED MUSIC MOMENT

One of the greatest Romantic Period composers was Felix Mendelssohn (German, 1809–1847). You may have heard of him; but you probably haven't heard of his sister Fanny Mendelssohn, who composed at least 460 pieces of music. Why haven't you? Well, my music teacher (Na'im Nabili) told me it is because Fanny did not have a penis (i.e., sexism is why you have not heard her music). Let's rectify that a bit. I am writing this chapter in November, so let's listen to her tone-poem about November, played by Sarah Rothenberg. You can access it at YouTube: <https://www.youtube.com/watch?v=q0ahjf0t5wE> (Spotify has it too).

* * *

If art is not a straight up instinct, and the display hypothesis is weak, then perhaps art is a by-product of evolution. A by-product is an ability that was not naturally selected for the purpose that humans use it; but by-products can become useful as the environment changes. If they do become useful, they are called exaptations. Being able to read may be an exaptation. We have only been reading for a few thousand years; it seems impossible that being able to read was naturally selected in that short of a time. But our ability to think symbolically, which developed over eons of evolutionary time (but perhaps very rapidly after 70,000 BCE during the cognitive

revolution [Harari, 2015⁵]) gave us much survival value, and reading is an ability oriented to decoding symbols. Several major evolutionary theorists think that the arts are by-products of evolution (Gould & Lewontin, 1979; Pinker, 1997). Gould and Lewontin (1979) applied an architectural metaphor to evolutionary by-products: they called them spandrels, because a spandrel is a by-product of arches and columns, and is the space between the arches. Spandrels are typically not load bearing, but are often used for *decoration*, hence the metaphor.

For example, Dutton (2009), Chatterjee (2014), and Buss (2015) all invoke Pinker's (1997) (now apparently classic) example of cheesecake. Pinker notes that we didn't directly evolve a liking for cheesecake, rather, we evolved to like fat and sugar. Thus cheesecake is a modern by-product of the adaptation of being attracted to fat and sugar. Pinker refers to music as cheesecake for the ears; he says it's a by-product of our adaptive need for auditory analyses and emotional processing. The by-product view tends to see all (or most) forms of art (painting, sculpture, music, architecture, theater, poetry, etc.) as not coming from an instinct for art, and noting that artistic skills were not naturally selected, but rather, we clever humans co-opted brain functions, that had evolved for other reasons, to produce beautiful (or not) art.

There is a way out of the debate between instinct versus by-product that is explained by Chatterjee (2014) as the “third way” (p. 172). He used the example of the Bengalese finch, which has been domesticated in Japan for 250 years, and bred through 500 generations to produce birds with colorful plumage. The male Bengalese Finch was initially a wild munia. Munias have a stereotypical mating song—all the males sing the same song over and over. After centuries of captive breeding, however, the Bengalese finch's song became irrelevant to its mating and reproduction, and became sensitive to its social environment. This finch's song became more complex and variable; and a baby finch could learn a munia's song, but a munia could not learn the new finch's more creative songs. Thus, being freed from the constraints of sexual selection caused the finch's artistic repertoire to increase. Chatterjee notes this is the opposite of the evolution of the peacock's tail: selective pressures produced the tail, but for the finch the relaxation of selective pressures created its complex and variable catalog of songs. He describes this as an analogy to human artists. Although there

⁵If you haven't had a chance to read Harari's *Sapiens: A Brief History of Humankind* you have a treat in store for you; it's wonderful page-turner.

may be some instinct involved in human art, and artistic abilities may be by-products of adaptations, it was the freeing of humanity from selective pressures that helped produce the great variability and creativity of art.

Art and Beauty. Art is difficult to define. Many, perhaps most, art critics have made a dividing line between crafts and fine art. Fine art has no utility, beyond the intrinsic pleasure of enjoying it; crafts are the making of useful things, although all may agree that crafts can be made artistically and beautifully. Post-modernists point out that the dividing line between fine art and crafts is created artificially by those in charge (have the power) of the art-world. My own view is radical. I think anything designed by a human (and perhaps by [some] animals) is art; and any design can be intended to be beautiful. That is, any time a human designs something, she can consciously consider how to make that design beautiful (whether she succeeds or not is another question).

Relevant to my definition of art is a conversation I had with Kevin Locke in Spokane, Washington in 2007. Kevin is a member of the Lakota Tribe (Sioux), Hunkpapa band (Locke, 2018). He is world renowned for his traditional flute playing and was the greatest hoop dancer on our planet (check out his dancing and flute playing on YouTube). He told me that he has traveled to more than 100 tribes in North America, and not a single one of those tribes, in their native languages, had a word for “art” or “artist” (unless introduced into the language after the European invasion). Yet members of all those tribes produced beautiful art. He said this was because Native people did not separate their world into art and non-art, and that all activities they performed, and all things they made, were art. I am not saying that I have culturally appropriated a Native concept of art; I am just noting that it corresponds to my own conclusion that anything that can be designed by a human is art and could be beautiful.

You may have noticed that the last few pages have mentioned art frequently, but beauty infrequently. One reason for this is that art became detached from beauty in the twentieth century (Danto, 2003; Scarry, 1999; Sircello, 1975); and the late twentieth century witnessed the birth of evolutionary psychology during this anti-beauty era of the Academy. The art of the twentieth century demonstrated that it need not be concerned with beauty, but could focus on a variety of goals, ranging from issues of social justice to just plain aiming for shock value (Danto, 2003). Evolutionary psychology may have been influenced by this Western culture-wide devaluing of beauty and thus has examined the evolution of artistic ability and art much more than the evolutionary factors that

influence our love of beautiful art. For example, Buss (2015), in his *Evolutionary Psychology* textbook does not once mention beauty in his section on “The Evolution of Art, Fiction, Movies, and Music.” In fact, in the long index to Buss’s textbook, “beauty” is not listed even once; on the other hand, in Chatterjee’s (2014) *The Aesthetic Brain: How We Evolved to Desire Beauty and Enjoy Art*, “beauty” has 32 entries in his index (although Chatterjee seems to identify more with being a neuroaesthetician than an evolutionary psychologist), and the first chapter in his book is entitled “What Is This Thing Called Beauty.”

There is an evolutionary *biologist* who is concerned with the relationship between beauty and art. Richard Prum (2017), Professor of Ornithology, Ecology and Evolutionary Biology at Yale University, defines beauty as “the result of a coevolutionary dance between desire and display” (p. 334). What he means by that, for example, is that the evolution of the peacock’s sexually ornamental tail coevolved with the cognitive aesthetic preferences of the peahen. Prum says human art coevolves in a similar manner. Mozart’s display of music transformed his audiences’ appreciation of beauty, and these new preferences by the audience transformed future composers’ music. Likewise with the Impressionist and neo-Impressionists: they changed what the artistic audience appreciated in beauty, and then that feedback changed what future artists painted. Prum states “that all art is the result of a coevolutionary historical process between display and desire, expression and taste” and is “*a form of communication that coevolves with its own evaluation*” (p. 336). It generally seems impossible to support statements that use words like “all” (“all art”), but I do find Prum interestingly provocative. He is also at pains to get us to go to a “post-human” view of art, and learn to appreciate the artworks of “all” non-human animals (think bowerbirds’ bowers or manakins dancing). Perhaps Richard Prum is the biologist’s version of Frank Wilczek the physicist, when Wilczek (2015) argues that nature’s deep design embodies beautiful ideas.

Evolutionary psychology is not without its critics. Prum (2017) criticizes their work throughout his *The Evolution of Beauty*. Harvard Professor Howard Gardner (2011) disses evolutionary psychology in regard to the “why” of beauty. He mainly argues that culture is so powerful regarding notions of beauty that it has far transcended any small influence that genetics could have. President of Pomona College, G. Gabrielle Starr (2013), has argued that evolutionary psychology is a poor foundation for neuroaesthetics due to the high degree of variability in modern human tastes, and that it impoverishes our experiences of beauty by reducing

complex aesthetic emotions to crude drives. I'm not saying that Prum, Gardner, and Starr are correct in their criticisms, but they do encourage the scientific attitude in me of skepticism, curiosity, and humility.

I'm now trying to think of a beautiful and clever way to end this section on evolution and artistic beauty and segue into evolution and moral beauty. Wish me luck.

EVOLUTION AND MORAL BEAUTY: SEX HAS MADE US GOOD

Moral beauty rocks. It makes life worth living and gives life meaning and purpose. By moral beauty I mean the *display* of moral virtues (Aristotle, 2002; Haidt, 2003); and by “moral” I mean “prosocial.” Positive Psychology tends to focus on six big cross-cultural universal moral virtues: wisdom, courage, justice, love, temperance, and transcendence (Peterson & Seligman, 2004); this is clearly not an inclusive list, but it gives one a good idea of what is meant by *moral beauty*.

Both natural selection and sexual selection have been major causes of the development of morality, and thus moral beauty. Such qualities as caring for others, and a sense of fairness (justice) may have come about through natural selection based on kin altruism and reciprocal altruism (Buss, 2015). Kin altruism refers to us helping care for those that are related to us. If we do so, then they are more likely to survive, reproduce, and send some of our genes into the future (because our kin have some of our genes in them). Reciprocal altruism refers to helping those that are not our kin. We help a friend or acquaintance survive (give them some resources when they are in need), and later they reciprocate and give us some resources when we are in need. We both survive and spread our genes. This kind of reciprocity may have been the basis for our sense of fairness (Haidt & Graham, 2007). Natural selection may also have favored indirect reciprocity, wherein I help you, and then you help someone else. Indirect reciprocity may be a major basis for human cooperation in general (Nowak & Highfield, 2011; Nowak & Sigmund, 2005).

As to sexual selection, Chatterjee (2014) wrote, “The idea that sex was fundamental to our evolution and that women were driving players in this unfolding drama was even harder to accept [in the Victorian age] than the idea that there was no God to create us in His image” (p. 38). Yep, as sexist and traditionalist as it may sound, women made humanity good. But men helped.

Dutton (2009) has claimed that courtship, in particular women selecting men for mates, has “done more to create the human personality as we know it today than any other single evolutionary factor” (p. 140). He points out that both women and men consider the #1 most important quality of a future mate is *kindness*. Other moral qualities that mates look for in each other are generosity, dependability, and industriousness.

The morally beautiful qualities for which women have selected men can be seen in the subchapter headings of Buss’s textbook concerning women’s mating preferences (2015): Industriousness; Dependability and Stability; Love and Commitment; Willingness to Invest in Children; and Kindness ... and Incest Avoidance. Buss cites data that women in Taiwan, Bulgaria, and Brazil consider a hardworking man 26–30% more important than men value a hardworking female as a potential mate. He cites research indicating that both women and men rate dependability and stability as the second and third most desirable qualities in a mate (love is #1, of course!). Speaking of love, Buss notes that 88.5% of 168 cultures promote “romantic” love, and thus romantic love is not just a Western idea, and probably quite ancient evolutionarily. Buss cites research by La Cerra that shows that when women are shown photos of men in various situations, they select the man interacting positively with a child as the most attractive man; whereas when men looked at various photos of women, they did not rate the woman interacting positively with a child any higher than the woman standing alone. This may indicate that women have selected men for mates that will invest in children, but men may not select female mates on that basis. In summarizing the research on kindness and mate selection, Buss (2015) wrote, “Women strongly preferred men with altruistic tendencies as long term mates” (p. 121).

Chatterjee (2014) has noted that women have selected men for long-term mates if they appear less domineering (less sexual dimorphism in facial features) and more likely to invest in her (their) children; they want men that look masculine, but also somewhat feminine. Chatterjee speculates that the attractive feminine features that women find desirable in a man’s face signals that he is warm, emotionally friendly, and more likely to be committed to a long-term relationship.

Prum (2017) points out that men are picky too. He notes that the James Bond legend shows Bond being very sexually selective, even refusing the availability of the attractive Ms. Moneypenny. Our close relatives, male chimps, gorillas, and orangutans all pursue every sexual opportunity possible, but not so with human males. Again, Prum takes evolutionary

psychology to task, and says that field needs to explain why human males are so choosy (unlike other apes) instead of why they are sexually profligate. Contra to male apes, human males invest in the care, protection, socializing, and feeding of their young and thus are carefully selective about their mates. What males found sexually beautiful in females coevolved with men's investment in parenting. For example, the hour-glass body shape, and permanent breasts that men find aesthetically pleasing are not shared with any other apes. Granted, wide hips and large breasts were also naturally selected, but Prum says they cannot be accounted for by that alone, as they go beyond the optimum called for by natural selection. Of the more than 5000 species of mammals only humans have permanent breast tissue, and the collapsing breast tissue of apes has worked just fine, thus indicating that human permanent breast tissue is not needed. Prum thinks the evidence points toward the aesthetic sexual preferences of men—they have selected mates with large permanent breasts, and enhanced curvature of the buttocks and hips (beyond what is necessary as a fitness indicator). This may be accounted for by what Chatterjee (2014) calls a *peak shift*. If a little is desirable, more must be better. He uses the example of the depiction of Hindu temple goddesses who are shown with impossibly huge breasts and waist-to-hip ratios of 0.3 (0.7 is the “normal” hour-glass figure).

Although Prum (2017) is pretty cranky about evolutionary psychologists, he may not be completely prejudiced against them. He clearly admires the work of Paul Eastwick, a social/evolutionary psychologist who is currently a professor at UC Davis. Eastwick and Eli Finkel (2008) replicated the common finding that males *state* that their ideal female partner is physically attractive and females *state* their ideal male partner has good earning potential (cf. Buss, 2015). But then they followed their subjects into their dating life and tested them again, and found no sex differences regarding the desirability of physical attractiveness and earning potential and the subjects' level of romantic interest in their real-life dating partners.

Eastwick and Finkel also showed that the subjects' ideal preferences for a mate, recorded before dating, did not predict what they found desirable in an actual speed dating partner.

In a series of later studies Eastwick and his colleague Lucy Hunt (2014) examined both classic mate value (physical attractiveness and earning potential) and relational mate value (predicting whether one would have a satisfying relationship). They showed that initial impressions of possible partners tended toward the classic mate value qualities, but soon both

females and males dating each other began to value uniquely desirable qualities about each other that contributed to the quality and satisfaction of the relationship. In summary, although males all over the world say they value physical attractiveness in a female mate, and females all over the world say they value a male mate with resources, for actual long-term relationships females and males value idiosyncratic qualities that lead to socio-relational satisfaction. Perhaps this is a change-up from our Pleistocene years, due to modern cultural changes, or maybe we have always valued unique character in our spouses since the dawn of culture.

Prum (2017) has emphasized that due to the coevolution of human mutual mate choice that we select mates based on the beauty of their social personalities. The social traits he mentions are exceptionally similar to the character strengths and virtues studied by Positive Psychology (Peterson & Seligman, 2004) and described as moral beauty by Jonathan Haidt (2003). Prum specifically mentions such morally beautiful virtues as “kindness, empathy, thoughtfulness, honesty, loyalty, curiosity” (p. 242) as being what we select in mate choice. Prum argues that the reason there are so few physical ornaments in human males is because women’s mate choices have focused on these (morally beautiful) social traits over male bodily beauty. He says this is because women have selected for male traits that contribute to men being good long-term parents and partners.

A Paradigm Breaker? Richard Prum (2017) intends his arguments in *The Evolution of Beauty*⁶ to be paradigm breakers in the general field of evolutionary science. He argues logically, and supplies empirical evidence, that animals and humans will sometimes select what they find beautiful in a mate with no regard for any kind of adaptive value in the beautiful ornament. Prum calls this “beauty happens” (p. 226). He accuses mainstream evolutionists of being dogmatic in their attachment to natural selection being the only methodology of evolution. He criticizes them for thinking that during sexual selection the only possibility is to select mates based on signs of fitness. He also criticizes Amotz Zahavi’s *handicap principle*.

⁶The *New York Times* proclaimed *The Evolution of Beauty* to be one of the Ten Best Books of 2017; it also managed to be one of three finalists for the 2018 Pulitzer Prize in General Nonfiction. The book, however, has garnered much criticism from evolutionary biologists, and may misrepresent the relationship between natural and sexual selection, among other possible errors (cf. Borgia & Ball, 2018). If Prum is breaking the paradigm concerning complete reliance on natural selection, then one would expect those thinking in the old paradigm to be defensive. On the other hand, if Prum has made mistakes, you would expect evolutionists to point this out.

The handicap principle was developed to explain why females will select males that have handicaps, such as the peacock and his handicapping tail. The tail slows him down, makes it easier for predators to catch him, and harder for him to forage. But the tail is a huge ornamental sexual display that peahens find very beautiful. The handicap principle says this: if I am so tough, that even with this huge handicapping tail I have still survived, indeed, flourished, then I would make a great daddy for your future chicks and pass on great genes.

But Prum (2017) casts doubt on the handicap principle. First with logic, then math, and then with Saturday Night Live. He points out that logically the sexual selection advantage of the costly ornament will be canceled out due to its survival costs. Next he cites a mathematician who published a paper with a mathematical proof entitled “The Handicap Mechanism of Sexual Selection Does Not Work” (p. 46). Then Prum refers to the “Smucker’s Principle.” Smucker’s is a jelly that flooded American advertising with the byline “With a name like Smucker’s, it has to be good.” Smucker’s was using the handicap principle: a name as ugly and off-putting as Smucker’s proves that the jelly must be good. If that is true, than a company could step up with an even more disgusting name, thus proving its jelly is even better. Step in Saturday Night Live and a skit on Smucker’s in the 1970s:

Jane Curtin: And so, with a name like *Flucker’s*, it’s got to be good.
 Chevy Chase: Hey, hold on a second, I have a jam here called *Nose Hair*. Now with a name like *Nose Hair*, you can imagine how good it must be. MMM MMM!!.. (p. 47)

Prum is trying to make the case that creatures sexually select mates partially because of what they simply find beautiful and aesthetically pleasing about the potential mate. He asks: If a sexual display is supposed to show off that a male has survived the great burden of his handicap, why are sexual displays attractive ornaments? He then points out that acne is an honest indicator of youth and a surge of hormones useful for reproductive acts, but we do not find acne beautiful nor attractive. Finally he asks, if the handicap principle works, why don’t creatures develop *genuine* handicaps, like partially formed limbs, or gnaw off a limb, to attract females?

Prum quotes Darwin several times, noting that Darwin himself supported the idea that creatures may sexually select for purely aesthetic reasons. Prum (2017) wrote:

The most notable and revolutionary feature of Darwin's theory of mate choice is that it was explicitly *aesthetic*. He described the evolutionary origin of beauty in nature as a consequence of the fact that animals had evolved to be beautiful to *themselves*. What was so radical about this idea was that it positioned organisms—especially female organisms—as active agents in the evolution of their own species. (p. 23)

He then quotes Darwin from his 1871 book, *The Descent of Man, and Selection in Relation to Sex*:

With the great majority of animals ... the taste for the beautiful is confined to the attractions of the opposite sex ... If female birds had been incapable of appreciating the beautiful colours, the ornaments, and voices of their male partners, all the labour and anxiety by the latter in displaying their charms before the females would have been thrown away; and this is impossible to admit ... (Prum, 2017, p. 23–24)

Prum concludes that Darwin argued “beauty is not merely utility shaped by adaptive advantage” (p. 15). Prum states that nature’s creatures’ desire for beauty can be just as dynamic, irrational, and unpredictable as the human experience of desire and beauty.

THE MORAL BEAUTY OF COOPERATION

Harvard Professor of Biology and Mathematics, Martin A. Nowak, has written a fascinating book entitled, *Super Cooperators: Altruism, Evolution, and Why We Need Each Other to Succeed* (Nowak & Highfield, 2011). Nowak argues that natural selection and mutation are not enough to understand evolution and life: *natural cooperation* is the third fundamental principle of evolution. He points out that cooperation draws life upwards toward ever higher levels of organization (think: *unity*), and this cooperation “generates the possibility for greater diversity” (p. 280). It is cooperation that drove genes to collaborate in chromosomes; and then chromosomes cooperated in genomes; and then genomes collaborated in cells; next simple cells cooperated in complex cells; then complex cells collaborated to make bodies, including insect superorganisms (ants, bees, termites, etc.); and now human bodies super cooperate in huge societies.⁷ Through the five mechanisms of cooperation that Nowak explicates (direct reciprocity,

⁷I thank Ines Schindler for pointing out two forms of cooperation; one is a natural principle (that which influences genes to cooperate or cells to cooperate, etc.), and the other is cooperation as an intentional action. Genes do not make decisions to cooperate, but human can.

indirect reciprocity, spatial games, group selection, and kin selection) a variety of beautiful moral traits have been selected. Nowak especially mentions that natural cooperation has helped lead human beings to such virtues as love and friendship. The virtues of hope, generosity, and forgiveness have been influenced by natural selection through direct and indirect reciprocity (one good turn deserves another). The cooperative force in group selection has selected for people to become less selfish and more willing to sacrifice for others. Nowak even argues that we have the ability to super cooperate across the whole planet and stop climate change in its tracks.

THE MORAL BEAUTY OF ALTRUISM

Another champion of group selection is David Sloan Wilson, SUNY Distinguished Professor of Biology and Anthropology at Binghamton University in New York. His book, *Does Altruism Exist? (2015)*, is a page-turner. He lucidly explains that altruism has evolved in the human species through group selection. Alas, I am very attached to defining altruism based on human intention: if a person helps another, with no intention of any self-gain (material or emotional), then I think it is altruistic. But Wilson does an end run and says it matters little what thoughts or feelings are involved in altruism. “When Ted benefits Martha at a cost to himself, that’s altruistic, regardless of how he thinks or feels about it” (p. 9). He points out that people can have many differing motivations, intentions, emotions, goals, etc. for helping others, but the bottom line is helping others at a cost to the self. And group selection has shaped humans so that many, in fact probably most, of us are altruistic, and will come to the aid of others, even when we have to make a small, or large, sacrifice to do so.

To explain how we have evolved to be altruistic, Wilson (2015) invokes the foundational evolutionary principle of natural selection being based on *relative fitness*. This means that for a creature to win the evolutionary game it only needs to survive and reproduce better than the competition. Wilson uses the game of Monopoly to illustrate this principle. Economists often assume that people want to maximize their *absolute* wealth—people just want to have more, regardless how much wealth others have. But if I am playing Monopoly, and I offer you 1000 dollars with the condition that every other player gets 2000 dollars, you might think, “Wow, I will be a \$1000 richer. Great.” However, you will then lose the game, because the game is based on *relative* wealth. This is what happens in evolution *within a group*. Thus, it appears to pay off to be selfish within one’s group; the selfish

person will survive and reproduce better than the altruistic. But this is not the case *between groups*. Groups with more altruists will produce more babies than groups that have more selfish persons. Wilson (2015) wrote:

Just as Rabbi Hillel was able to state the meaning of the Torah while standing on one foot (“What is hateful to you, do not do to your neighbor: that is the whole Torah while the rest is commentary; go and learn it.”), E. O. Wilson and I provided this one-foot summary of sociobiology in a 2007 article: “Selfishness beats altruism within groups. Altruistic groups beat selfish groups. Everything else is commentary.” (p. 23)

Wilson illustrates this with an example from water striders. That's right, the very cool insects that skate across the top of little ponds and creeks; we called them water skimmers when I was a kid, and I found them fascinating.

It turns out that water strider males have differing levels of aggressiveness toward female striders. Some strider males are mean rapists and will attempt to mate with females regardless of how receptive the females are. Other male striders are gentlemen, and only mate with females that approach them. (I didn't notice this when I was a kid; maybe striders are modest and don't have sex in front of minors.) When striders are in a mixed group of rapists and gentlemen, the rapists outperform the gentlemen and get more of the females pregnant. Based on *within group* natural selection the gentlemen striders would eventually go extinct. However, the rapist striders are mean bastards and actually interfere with the pregnant females feeding, and this causes them to lay less eggs. “This effect was so large that females in groups of all gentlemen laid over twice as many eggs as females in groups with all rapists” (Wilson, 2015, p. 24). This illustrates that *within group* selfishness wins; but *between groups* altruism wins. Thus, because humans are group creatures, altruism has been naturally selected to be an important function of many (most?) human beings. There are still selfish rapists among human beings, and they can out compete the nice human beings within a group, but the fact that humans have spread all over the planet is primarily due to our altruistic capabilities of helping others.

MORAL BEAUTY IN ANIMAL BEHAVIOR? IN PLANT BEHAVIOR?

How about those humpback whales (*Megaptera novaeangliae*)? We know they sing eerily beautiful songs. You may know they were badly endangered (humans killed 90% of them, dropping to a world population nadir

of about 5000 individuals), but are making a big comeback (approx. 80,000 worldwide now). But did you know they may be the #1 altruists of the animal kingdom? Robert Pitman, of the National Marine Fisheries Service, and a team of researchers, published a paper in [2017](#) entitled “Humpback Whales Interfering When Mammal-eating Killer Whales Attack Other Species: Mobbing Behavior and Interspecific Altruism?” in the journal *Marine Mammal Science*. In their paper they document 115 interactions between humpbacks and killer whales, with many of the interactions demonstrating that humpbacks will come to the rescue of animals of other species, such as gray whales, minke whales, Dall’s porpoise, Steller sea lions, California sea lions, Weddell seals, crabeater seals, harbor seals, northern elephant seals, and ocean sunfish. The authors state they can think of no obvious benefit to the humpbacks to defend other species from the attacks of killer whales. That, by the way, is a definition of altruism: helping others without any benefit to self (Fig. [3.2](#)).

Fig. 3.2 Humpback whale tattoo. A 1-minute old humpback tattoo on the author’s arm; inked by the great artist Cristobal Verdin of Puerto Vallarta, Mexico in January 2017



German forester Peter Wohlleben (2017) has written an absolutely delightful book, *The Hidden Life of Trees*. If you love trees, or would like to love trees, this is the book for you; it is chock full of documented amazing factoids about trees, and their memory, learning, and communicative abilities. What struck me as a potential act of moral beauty by trees is the relationship discovered between paper birches (*Betula papyrifera*) and Douglas firs (*Pseudotsuga menziesii*) in British Columbia, Canada. Wohlleben cites the work of Suzanne Simard, who is currently a Professor of Forest Ecology at the University of British Columbia. Simard, working on her dissertation in the 1990s noticed that when paper birches were weeded out of forests of Douglas fir, the firs often sickened and failed. She eventually discovered that a network of mycorrhizal fungi (which she later coined as the “wood wide web”) connected the roots of the birches and the firs, and that the fungi were transferring nutrients from birches to the firs. Later she discovered there was seasonal cycle, during which the firs then also transferred nutrients to the birches. She published these findings in the highly reputable peer review journal *Nature* (Simard et al., 1997). Perhaps psychologists would call this reciprocal altruism: you help me, and I’ll help you. That isn’t exactly my definition of altruism, but we could certainly call this sharing between two very different families of trees a fine example of prosocial support. Sharing is caring. It makes me proud to share the planet with such good-hearted trees. (It is also possible that the fungi are running the whole show. They take a toll-booth’s share of nutrients every time either type of tree passes nutrients on to the other species. It is in the fungi’s best interests to keep both trees alive and sharing).

A BRIEF NOTE ON CULTURE

In this chapter we have focused on the biological forces of evolution shaping our taste for beauty. I hope you have enjoyed the beautiful *idea* of the evolution of attraction to beauty. It’s a gorgeous idea. But, as a reminder, since the dawn of culture, culture has interacted with the expression of our genes, including epigenetics (turning on, turning off, and modifying the expression of genes through environmental influences, such as culture). Everything to do with the current human perception, attraction to, creation of, and celebration of beauty has been influenced by the interaction of biology and culture (Nadal & Chatterjee, 2018). And possibly by some magic too, such as free will in the choices we make that may influence the behavioral expression of our genes and the rewards and punishments of the environment/culture.

TAKE-AWAYS

1. Evolutionary psychology explains *the why* of appreciation of beauty and neuroaesthetics explains *the how* of appreciating beauty.
2. Evolutionary psychologists focus on two major reasons for why we admire the beauty of nature: sexual selection and natural selection/adaptation. Human physical beauty is based on sexual selection and what we find beautiful in nature is based on natural selection.
3. Gillian Rhodes ([2006](#)) has described and explained three of the most studied aspects of beautiful faces: averageness, symmetry, and sexual dimorphism.
4. Men find an hour-glass figure to be a fitness indicator that they find beautiful in women (a waist-to-hips ratio of 0.70 seems to be ideal); and a V-shaped body is a fitness indicator that women find beautiful in men. Women and men who have these qualities are perceived as likely to produce strong babies who will survive and later reproduce.
5. The Savanna Hypothesis argues that it was adaptive to find attractive: (a) open spaces with short grass and groups of trees; (b) water nearby; (c) a panoramic view; (d) animals and birds present; and (e) greenery with flowers and fruits.
6. Dutton ([2009](#)) cites an international study by the artists Komar and Melamid, which may represent the views of up to 2 billion of our fellow earthlings, finding that our most preferred painting is a landscape that looks like an African savanna, with a nice blue sky.
7. The Kaplans have found that people are most attracted to natural spaces that are coherent, with repeated scenery and somewhat uniform, but at the same time complex (rich with diversity) and mysterious.
8. Art is *pretty* ancient. Chatterjee ([2014](#)) notes that colored pigments were used 800,000 years ago in the Wonderwerk Cave in South Africa. There is even some evidence that *Australopithecus* may have collected stones that were aesthetically (symbolically) important to them millions of years ago. Neanderthals made use of red pigment 250,000 years ago, and also carved attractive lines on mammoth molars. Australian natives were painting and engraving 40,000 years back. The famous cave paintings in Lascaux, France were made 15–20,000 years in our past, and the ones at Chauvet may be 32,000 years ancient.
9. It is unlikely that we have an *instinct* to create art; art came about with the rise of human culture. It is possible, however, that the art of story-telling was directly naturally selected as it gives an adaptive

- advantages. (a) stories prepare us for life and its surprises, (b) they are didactic and richly instructive, and (c) they encourage interpersonal intelligence and the regulation of social behavior.
10. Chatterjee (2014) has explained that although there may be some instinct involved in human art, and artistic abilities may be by-products of adaptations, it was the freeing of humanity from selective pressures that helped produce the great variability and creativity of art.
 11. Both natural selection and sexual selection have been major causes of the development of morality, and thus moral beauty. Such qualities as caring for others, and a sense of fairness (justice) may have come about through natural selection based on kin altruism and reciprocal altruism.
 12. Richard Prum (2017) has argued with logic, based on empirical evidence, that animals and humans will sometimes select what they find beautiful in a mate with no regard for any kind of adaptive value in the beautiful ornament. Prum calls this “beauty happens” (p. 226).
 13. Martin A. Nowak explains that natural selection and mutation are not enough to understand evolution and life: *natural cooperation* is the third fundamental principle of evolution, and is a source of moral beauty.
 14. According to David Sloan Wilson (2015) the main evolutionary cause of altruism is group selection. Groups with a higher number of altruists keep more babies alive than groups with a lower number of altruists. Altruism is morally beautiful.
 15. Do humpback whales, paper birches, and Douglas firs show moral beauty?

PSYCHE AND EROS INTERLUDE TWO

Eros never got a chance to make Psyche fall in love with the most degraded man on earth ... because in the meantime ...

The Oracle Speaks to the King

Psyche's father, the king, had consigned her two older sisters to political marriages with elderly, decrepit, yet rich and powerful men. But, alas, because of the awe in which Psyche was held by the populace, she had no suitor. The king then went to the oracle of Apollo and asked what would become of Psyche, and Apollo told him that he needed to prepare a funeral wedding on a mountain for her, that Psyche would marry a non-human being, who was cruel and fierce [Can Love be cruel? Hell yes.], that plagues the world and soars aloft on wings (Fig. 3.3).



Fig. 3.3 Psyche's father consulting the oracle after Raphael, sixteenth century; by Bernardo Daddi (Italian engraver, 1512–, Worked in Rome from 1532 to 1550) https://commons.wikimedia.org/wiki/File:Psyche%27s_father_consulting_the_oracle,_from_%27The_Fable_of_Psyche%27_MET_DP824471.jpg

The Funereal Wedding Is Prepared

The king and queen realize that they must obey Apollo's prophecy and instructions and prepare Psyche for her wedding funeral. The king and queen are sad and cry, but Psyche, with some compassion, urges them not to cry, and assertively begins to prepare herself for her funereal wedding march. The whole populace turns out to escort Psyche to the top of a crag on a high mountain. Once there, they post the wedding torches, and all leave her to her fate. However, just as she is about to leap off the mountain to die on the rocks below (Fig. 3.4).



Fig. 3.4 Psyche's Kin Bid Her Farewell on a Mountain Top (1908, State Hermitage Museum, St. Petersburg) by Maurice Denis (1870–1943; French painter, one of the leading artists and theoreticians of pictorial Symbolism and one of the founders of the **Nabis**, a secret artistic brotherhood)

The Story of Cupid and Psyche: The [Funereal] Procession to the Hill (Right Half)

By Sir Edward Burne-Jones. See the drawing here: <http://ruskin.ashmolean.org/collection/8979/object/13542>.

Burne-Jones did a large series of drawings of the Psyche Myth. John Ruskin was the first Art Appreciation Professor at Oxford and perhaps the first professor to ever teach a class on art appreciation in any university. Ruskin considered Burne-Jones' Psyche Cycle the best drawings in existence.⁸

⁸ After I read about Ruskin's view of Burne-Jones' cycle of Psyche drawings I got the hots to see them. After multiple emails of request I was given permission to go to the Ashmolean Museum at Oxford and have a personal audience with them. I was ushered into the research room, and politely waited. A curator brought me a pair of white gloves and reminded me I could not have a pen in the room. This curator seemed to think I was a wild west cowboy and barely a sentient being. But maybe he felt that way about all Americans. Or maybe about everyone. Regardless of the "chill" in the room, I had a terrific time studying the drawings and being able to hold them in my own hands. Thrilling really.

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CHAPTER 4

The Brain on Beauty: Neuroaesthetics

Hooray! Finally a chapter on real science. All of us believe in brains—and neuroaesthetics is all about brains. But who can trust the philosophers from Chap. 2? Sure, they use reason and logic, but if reason and logic are so effective for finding truth, why don't philosophers agree with each other? Shouldn't reason lead them to the same conclusions? Don't get me wrong, I love philosophy and have read it continuously since I was a teenager. One of the things I like about it is that it's full of beautiful ideas. Some might even be true. And, Chap. 3, Evolutionary Psychology—is that actually even a science¹? It reminds me of when behaviorists criticized psychoanalysis as being arm-chair science. (You kick back in your arm-chair and think up cool ideas, like the Oedipus complex. The reverse engineering of Evo Psyc is like that.) Do you think Sheldon² would tolerate evolutionary psychology? But, neuroaesthetics collects real data in real time in a nice physical, measurable brain.

On the other hand, neuroaesthetics is in its near-infancy; it's even younger than evolutionary psychology. The great pioneering neuroaesthetician Semir Zeki (1999a, 1999b), Professor of Neurobiology and later Professor of Neuroaesthetics at University College London, only coined the word “neuroaesthetics” (“neuro-esthetics”) in print in 1999. Anjan Chatterjee (The University of Pennsylvania) and Oshin Vartanian

¹ Just kidding. Buss (2015) describes eight different scientific methodologies that evolutionary psychology uses.

² Sheldon the physicist from the TV show The Big Bang Theory.

(University of Toronto, and superb co-editor of the APA journal *Psychology of Aesthetics, Creativity, and Art*) define neuroaesthetics as an “emerging discipline that investigates the biological underpinnings of aesthetic experiences” (2014, p. 370; also cf. Chatterjee, 2011; Nadal & Pearce, 2011; Skov & Vartanian, 2009). As described above in Chap. 2, Chatterjee (2014) has noted that evolutionary psychology will tell us *why* we love beauty and neuroaesthetics will tell us *how* we appreciate beauty.

Neuroaesthetics utilizes brain imaging techniques such as functional magnetic resonance imaging (fMRI). Plain MRI uses a powerful magnet to create images of internal organs; it does so because the strong magnet influences the magnetic nuclei of atoms in the body’s cells, and the MRI then sends a pulse of radiofrequency current through the subject. The MRI sensors can read the energy released by the protons in the atoms in the magnetic field as they realign themselves after the radiofrequency pulse. When you add the “f” to MRI, which means “functional,” the scanner measures blood flow because it can differentiate the magnetic signals between oxygenated and deoxygenated hemoglobin. Wherever the oxygenated blood is flowing to is where the most brain activity is occurring. Thus, when subjects look at a painting or listen to music while in the fMRI machine, researchers can discover what parts of the brain are most stimulated by the experience.

Although fMRI seems to be the most common tool of neuroaestheticians, there are several brain reading methodologies. For example, functional near-infrared spectroscopy (fNIR), like fMRI, detects blood flow, but it does so because oxygenated and deoxygenated hemoglobin absorb the near-infrared light differently. Thus, fNIR allows researchers to see what parts of the brain are using more oxygen, which indicates which areas of the brain are being stimulated by the aesthetic object being presented to the research participants. Another methodology is with the electroencephalograph (EEG), which measures the electrical activity of the brain; and some neuroaestheticians use magnetoencephalography (MEG). MEG directly measures the neuromagnetic signals from groups of neurons; thus, stronger signals indicate which areas of the brain are being stimulated by the aesthetic object. MEG uses a cool helmet with lots of wires coming from nodes all over it; it looks like it’s from a sci-fi movie. MEG has some advantages over fMRI, for example, MEG can indicate the timing of when neurons fire during an aesthetic experience better than fMRI. One must hold absolutely still in an MRI machine, whereas subjects can move their heads around when the MEG helmet is on them.

Each approach to reading the brain's activity has some advantages and disadvantages. EEG is very good for *timing*, it lets you know any changes in the brain's response to stimuli as soon as the brain senses a change in stimuli; whereas EEG is not as good for showing exactly where in the brain the changes are taking place (spatial resolution). It is the opposite with fMRI; it is very good for spatial resolution (where things are happening in the brain), but not so good for temporal resolution (fMRI reads blood flow, but it can take several seconds for the brain's blood flow to change in response to stimuli).

According to historian of art and ideas Jon Lauring (2014), of the University of Copenhagen, Denmark, the very first neuroaesthetic research was published by Hansen, Brammer, and Calvert in 2000 in the journal *NeuroImage*. This first study used fMRI to see if they could identify any neural processes in the brain related to judging artworks (yep, they did). Next, three seminal neuroaesthetic empirical papers were published in 2004: Vartanian and Goel used fMRI to identify brain regions that correlated with preferences in regard to representational and abstract paintings; Kawabati and Zeki, using fMRI, had subjects identify portrait, landscape, still life, and abstract paintings as beautiful or not; and Cela-Conde and team, using magnetoencephalography, found the prefrontal area activated during perception of beautiful objects.

WHAT IS (ARE) AESTHETICS?

I wrote above that this chapter would be about “real” science, but now we need to take a conceptual-philosophical pause to think about what *aesthetics* is, so that we know what these neuroscientists, called *neuroaestheticians*, are examining. The *Merriam-Webster Dictionary* (the best dictionary of *international English*) defines aesthetics as “a branch of philosophy dealing with the nature of beauty, art, and taste and with the creation and appreciation of beauty” and also “a pleasing appearance or effect” (<https://www.merriam-webster.com/dictionary/aesthetic>). Neuroaesthetics research has confirmed the connection between “pleasing appearance” and beauty, as noted by Chatterjee and Vartanian (2014) in their review paper, simply entitled “Neuroaesthetics,” “[t]he pleasure that people derive from looking at beautiful objects automatically taps into our general reward circuitry” (p. 370). On the other hand, philosophers are having a difficult time defining aesthetics, as shown by the entry in the *Stanford Encyclopedia of Philosophy* by James Shelley (2017), “the term ‘aesthetic’ has come to be

used to designate, among other things, a kind of object, a kind of judgment, a kind of attitude, a kind of experience, and a kind of value” (n.p.). That leaves me wondering, “What kind?” Chatterjee and Vartanian (2016) describe neuroaesthetics as seeking understanding of the biology of our aesthetic experiences. They note that aesthetic experiences include appraisals of artifacts, environments, and natural objects. Some of our aesthetic appraisals and experiences do not involve experiences of beauty, but many do. We will be concentrating on the neuroaesthetics of experiences of beauty in this chapter.

Aesthetics may be defined as “The philosophic and scientific investigation of the pleasure³ (and thus displeasure) experienced during perceptual and cognitive processing.” Note that there seems to be at least two major categories of pleasure. Positive psychologists call them hedonic and eudemonic. Hedonic is concerned with physical pleasures and eudemonic are intellectual pleasures and pleasures of meaning-making (finding things meaningful). These two types of pleasure may be experienced by different systems in the brain. The hedonic pleasures relate to the amygdala, striatum, nucleus accumbens; whereas the eudemonic pleasures may be processed in the insula, prefrontal cortex, and anterior cortex (Christensen, 2017).

I believe the feeling of beauty is the most important aesthetic emotion, but there are many other aspects of aesthetics besides beauty; for instance, Schindler et al. (2017) identified at least 21 aesthetic emotions, only one of which is the feeling of beauty. When we are feeling pleasure (or displeasure) from observing an object in nature we are having an aesthetic experience. When we are feeling pleasure (or displeasure) from experiencing an object of art (a painting, theater, poem, music, etc.) we are having an aesthetic experience. More controversial: when we feel the pleasure (or displeasure) of observing a virtuous act (or a vice) we may be having an aesthetic experience (which is why we refer to it as *moral beauty*).

³The Greek word *aisthēsis*, from which the English word aesthetics is derived, means *perception*. However, here is much more to an aesthetic experience than simply perceptual pleasure. For example, Leder, Belke, Oeberst, and Augustin (2004) suggest an information processing model of aesthetic experience in five stages: (1) perception, (2) explicit classification, (3) implicit classification, (4) cognitive mastering, and (5) evaluation. I agree that all five of these processes may occur in aesthetic experience, but I disagree with them when they propose that aesthetic emotion is the *output* of this five-step process. I think aesthetic emotions can occur immediately after the perception stage (and the emotions from that first stage can change to other emotions by the time they get to the fifth stage or any of the other stages).

The pleasure derived from aesthetic experience is emphasized by most, if not all, neuroaestheticians (and philosophers). For instance, Chenier and Winkielman (2009) wrote, “the *sine qua non* [essential or necessary conditions] of the aesthetic experience: aesthetic pleasure—the immediate hedonic experience elicited by the perception of an object” (p. 275). Chatterjee and Vartanian (2016) have noted that

pleasure itself is underpinned by a rather small set of hedonic hot spots within the limbic system. It is perhaps even more surprising that a diverse set of pleasures—including those derived from food, drink, sex, addictive drugs, friends, loved ones, music, and art—activate the same limbic hot spots in the brain. (p. 184)

Thus it appears that our brains may think this definition of aesthetics, the study of pleasure, may not be too far wrong. It is also echoed by the founder of empirical aesthetics, the German philosopher, experimental psychologist, Gustav Fechner (1801–1887). He wrote that aesthetics is the “theory of pleasing and displeasing” (cited in Berlyne, 1974, p. 2). Daniel Berlyne, the seminal empirical aesthetician from the University of Toronto, saw the goal of experimental aesthetics as “unraveling the determinants of *hedonic* processes and unraveling the role of *hedonic* processes in the determination of behavior (1974, p. 5; italics added).

Lisa Feldman Barrett (2017a, 2017b; Barrett & Russell, 1999), a University Distinguished Professor at Northwestern University in Boston (and she also has an appointment at Harvard Medical School), has written an amazingly interesting and enlightening book entitled, *How Emotions Are Made* (2017b). She argues that the experience of pleasure is not an emotion, but rather part of our basic *affect* system. The affect system consists of two simple feelings, *valence* (the pleasure to displeasure continuum) and *arousal* (the calm to energized continuum). She notes that the pleasant feeling of eating delicious food and the unpleasant feeling of a tummy ache are examples of valence; and the jittery feeling of lots of coffee and feeling weary after not sleeping enough, are examples of arousal. She argues that we are born with these two basic feelings, but all of our emotions, including aesthetic emotions, are constructed through interaction between our brain and its environment.

Alexander Gottlieb Baumgarten, a German philosopher (1714–1762), gets the credit for bringing the word aesthetics into modern usage. Arthur Shimamura, editor of, and author of the first chapter in, *Aesthetic Science*

(2012), states that Baumgarten considered appreciation of beauty as *the* goal of the aesthetic experience. Go Baumgarten! But Shimamura goes on to write that, perhaps in the past, the goal of art was to create a beautiful experience, but in our modern age that definition is inadequate. Art can arouse many kinds of emotions and aesthetic experiences can range far from beauty. Shimamura then suggests an inclusive definition of aesthetics: “any ‘hedonic’ response to a sensory experience” (p. 4). By the way, hedonic means pleasure in everyday language, but Shimura wants it to include “any preference judgment: an object may be preferred or not, liked or not, interesting or not, approached or avoided” (p. 4).

THE AESTHETIC TRIAD

The reviews of neuroaesthetics by Chatterjee and Vartanian (2014, 2016) emphasize “the aesthetic triad,” which comprises the interaction of three neural systems to create our aesthetic experiences: the sensory-motor system, the emotion-valuation system, and the knowledge-meaning system. An example of the sensory system would be the activation of the visual cortex when we *look* at something beautiful; or activation of the auditory cortex when listening to music. In fact, a study by a team from MIT’s Department of Brain and Cognitive Sciences have found an area of the auditory cortex that may be specific and selective for listening to music (Norman-Haignere, Kanwisher, & McDermott, 2015).⁴ Likewise, the motor system in our brain (the part that sends signals to our muscles to move) will activate when looking at a painting that appears to have movement in it (e.g., a painting of someone running or jumping or playing tennis).

The knowledge-meaning system is considered to have a top-down processing influence on our aesthetic experience. Our prior knowledge of the world, of art, of the culture the art comes from, and so on influences our aesthetic interpretation of the perception of the aesthetic object. Likewise with meaning; if the art of painting is important to us, we will have a different aesthetic experience looking at paintings than someone who thinks of buying paintings for a museum as a waste of tax payers’ money. This

⁴If they are correct, this has interesting implications for the evolutionary psychology of aesthetics. If we have a part of the brain that is especially dedicated to listening to music, it may mean that listening to music was adaptive and naturally selected. Music has been part and parcel of humanity for a long time.

system influences our aesthetic experiences, and our experiences of beauty, in at least three ways. One way is the level of *expertise* we bring to our aesthetic encounter. If we are very familiar with impressionistic paintings, or with heavy metal music, we will have a different aesthetic experience than a person who has never seen a painting by Renoir, or a person that has never listened to Metallica. *Context* also makes a difference; if we see a painting in a respected museum we will have a different experience than if we see it lying on a table in a second hand store. *Culture* is the third way that our aesthetic experiences are influenced by the knowledge-meaning system. If you grew up in a culture that greatly valued the beauty of pottery, you are going to think about pottery in a different way, and it will mean something different to you, than someone in a culture who places a low value on pottery.

The third member of the aesthetic triad is the emotion-valuation system, which involves emotions, the reward system (pleasure), and issues regarding wanting and liking. Although perceptual and cognitive aspects of processing aesthetic objects are very important, I consider the emotional response to aesthetics and beauty to be the most important and most central characteristic of a beauty experience (cf. Armstrong & Detweiler-Bedell, 2008; Menninghaus et al., 2019). There is a broad range of emotional responses to aesthetic objects as shown in the research of Ines Schindler (a Senior Research Fellow at the Max Planck Institute for Empirical Aesthetics in Frankfurt, Germany) and colleagues (2017). Schindler and team have shown that such emotions range from *prototypical* aesthetic emotions (e.g., feeling of beauty/liking, fascination, being moved, and awe), *pleasing* aesthetic emotions (e.g., joy, humor, vitality, energy, and relaxation), *epistemic* aesthetic emotions (e.g., surprise, interest, intellectual challenge, and insight), and *negative* aesthetic emotions (e.g., feeling of ugliness, boredom, confusion, anger, uneasiness, and sadness).

The valuation aspect of this emotion-valuation system seems connected to the basic affect system of valence (see paragraph above regarding affect). Valence refers to the pleasure-displeasure continuum, and as described above, the pleasure of observing the aesthetic object is central to an aesthetic experience. By the way, we often evaluate aesthetic objects, as to whether we find them rewarding and pleasing or not, in less than one second. For example, in an EEG study Noguchi and Murota (2013) demonstrated that the sensory-motor system and the contextual system (knowledge-meaning system) integrate in under 300 milliseconds when viewing a work of art.

Chatterjee and Vartanian (2016) point out that the interaction of the three systems of the aesthetic triad creates our aesthetic experiences as emergent mental states. An *emergent* state is a new property which a complex system has, but which the individual members of the complex system do not have. That is, the whole is greater than the sum of the parts; the full-blown aesthetic experience cannot be reduced to one of the triad's systems—it typically only emerges when the three systems interact in complex ways. Needless to say, within any aesthetic episode each of the three systems can contribute to varying degrees to the emergence of the aesthetic experience.

THE BRAIN ON BEAUTY⁵

Chatterjee (2014) has explained that the “evidence from brain studies shows that there is no specific neural network dedicated to aesthetics” (p. xxii). Lisa Feldman Barrett (2017a, 2017b), and her theory of constructed emotion, would agree. When it comes to emotions, and aesthetic emotions as well, *degeneracy* rules. Barrett defines degeneracy as a *many to one* phenomenon, such that many dissimilar brain systems and different neural processes can give rise to identical functions and similar emotional experiences; and this may well be the case for thoughts and perceptions as well. Brains have ensembles of various neural subsystems that combine in flexible ways to provide us with aesthetic experiences (Starr, 2013). Barrett described how the brain is constantly reading signals arriving to it from throughout the body, which is called interoception, to keep the body in balance (what she calls the body budget). It is interesting to speculate about what the interoceptive features and influences of an appreciation of beauty experience are (T. Ishizu, personal communication, November 12, 2017). Although Barrett cautions against trying to find the fingerprints of specific emotions in the brain, we will boldly review the evidence for what brain structures, and brain networks, are involved in various experiences of beauty.

Semir Zeki and his colleague Tomohiro Ishizu have put forward a provocative and focal brain-based theory of the beauty experience (Ishizu & Zeki, 2011). Their theory states

⁵This section is based on a review paper: Diessner, R., Pohling, R., Stacy, S., & Güsewell, A. (2018). Appreciation of beauty: A story of love, transcendence, and inquiry. *Review of General Psychology*, 22(4), 377–397. doi: <https://doi.org/10.1037/gpr0000166>

that all works that appear beautiful to a subject have a single brain-based characteristic, which is that they have as a correlate of experiencing them a change in strength of activity within the mOFC [medial Orbito-Frontal Cortex] and, more specifically, within field A1 in it. (p. 8)

This orbitofrontal cortex is right behind and a little above your eyes in the very front of the brain. Ishizu and Zeki provide evidence from their own studies that both beautiful paintings and beautiful music light up this area of the brain; and the more beautiful a participant thought the art was, the more active the area became. However, there are many other forms of beauty (poetry, film, theater, sculpture, architecture, animals, plants, lakes, rivers, oceans, and human virtues) that may or may not be primarily processed in the mOFC. It is reasonable to think that some area or network of the brain may typically be involved in most or all experiences of beauty (domain generality), but that many different aspects of the brain may be involved in each form of beauty (domain specificity) as explained by Jacobsen and Beudt (2017).

Related to this is a meta-analytic review (Brown, Gao, Tisdelle, Eickhoff, & Liotti, 2011), of 93 fMRI and Positron Emission Tomography (PET)⁶ neuroaesthetics studies, which examined beauty experiences in four of our sensory modalities: 8 studies of auditory aesthetics, 56 studies of visual aesthetics, 13 studies of olfactory aesthetics, and 16 studies of gustatory aesthetics. The authors stated that their criteria for a study to be included in the review was that it must have examined “positive-valence assessments—and thus beauty” (p. 251) in the brain. The main result of this review was to find that these four forms of beauty were all processed in the right anterior insula (the insula is deep in the brain where the frontal, parietal, and temporal lobes of the cerebral cortex border each other). Ishizu and Zeki (2011) might be happy that Brown et al. (2011) also found these

⁶They used positron emission tomography (PET scan), which is when you shoot someone up with radioactive sugar, and then use a kind of X-ray to see what parts of the brain are giving off the most radiation. Because our brain is only 2% of our body weight, but soaks up 20% (or more) of the sugar we consume, sugar is ideal for PET scans. I’m sure that amount of radiation isn’t enough to hurt you. Hmmm ... When I was an undergrad research assistant in Barbara Gordon-Lickey’s neuroscience lab at the University of Oregon in 1979, the first paper I wrote for her (in between helping her drop electrodes into single brain cells of cats), was a review of PET scan studies. Dr. Gordon-Lickey was a student of the Nobel laureates Hubel and Wiesel at Harvard. Did we hurt the cats? No, we were very gentle. But they still lived in cages. Sad face. My wife and I took one home to rehab it after its useful lab life was over. That didn’t work too well. More sad face.

four modalities of beauty being processed in the orbitofrontal cortex (OFC). However, their results showed that each separate modality was processed in different areas of the OFC, and argued that the right anterior insula may be the main supramodal area. Like most neuroaestheticians they conclude that all these forms of aesthetic experiences are at their core the appraisal of pleasure versus displeasure (valence). They also put forward a provocative evolutionary psychology hypothesis: the most primary aesthetic appraisal is in regard to tasting food and everything from “attractive mates to transcendent artworks” (p. 256) are an exaptation of neural systems for food appraisal. This implies that gustatory beauty may be the initial and foundational beauty experience (cf. Diessner, Genthôs, Arthur, Adkins, & Pohling, 2019).

Natural beauty. Pegors, Kable, Chatterjee, and Epstein (2015) used fMRI to examine place attractiveness with photos of scenes of nature, such as mountain ranges, fields, swamps, forests, and beaches. They had to use photos of beautiful nature, because it is difficult to get a mountain range inside the tube of an MRI machine. The primary processing zone for these scenes of nature was in the ventromedial prefrontal cortex (vmPFC). Tap your finger on the middle of your forehead and you are as close to the PFC as you would like your finger to get. Ventro and medial means it's the middle and bottom part of the PFC. Interestingly (or maybe not), at least two brain studies have implicated the PFC in the processing of moral beauty (Englander, Haidt, & Morris, 2012; Piper, Saslow, & Saturn, 2015); that is, the PFC is activated when you notice virtue. It gets even cooler: the PFC lights up for human facial beauty too (Pegors et al., 2015). On the other hand, Pegors et al. (2015), also found activation in the lateral OFC (close to Ishizu and Zeki's mOFC) for beautiful faces, and O'Doherty and team (2003) found activation in the mOFC for beautiful faces. The plot thickens.

Yue, Vessel, and Biederman (2007) applied fMRI to examine participants' preferences for a variety of natural and urban scenes. In their paper they cite a previous study that used the same photographs that they did (Biederman & Vessel, 2006), and which indicated participants preferred nature scenes over urban or artifact scenes, preferred vistas, preferred nature scenes with mystery, and scenes of natural refuge. Dare we think “preferred” means “found more beautiful?” Yue et al. (2007) found that these preferred nature scenes activated an area that is dense with mu-opioid receptors, and thus likely to have caused an experience of pleasure (in the parahippocampal cortex). Once again we see the connection between pleasure and beauty.

Two studies, performed in Korea, have reported that looking at photos of natural and rural scenes, while under fMRI, cause more positive emotions than looking at images of urban scenes (Kim, Jeong, Baek, et al., 2010, Kim, Jeong, Kim, et al., 2010). Although these researchers did not explicitly ask whether participants found the scenes beautiful, they did find that looking at the rural-nature photos fired the caudate nuclei (Kim, Jeong, Baek, et al., 2010). Likewise, the seminal study by Vartanian and Goel (2004), regarding the beauty of paintings, implicated the right caudate nucleus (these two nuclei are located near the center of the brain, one on top of each side of the thalamus). The caudate nuclei are involved in many aspects of our experience, including the reward system (think: pleasure). The other Korean study (Kim, Jeong, Kim, et al., 2010) found that photos of natural scenes fired a variety of places in the brain, including the occipital gyri (the folded bumps on the outside of the occipital lobe at the back of your head) and the precuneus (touch the center top of your head, move your finger toward the rear about 1 centimeter, and your finger is right over the middle of it). Vartanian and Goel (2004) also found the occipital gyri to activate when subjects viewed images of beautiful paintings; and the precuneus fires when experiencing moral beauty (Englander et al., 2012). Therefore, there is likely some overlap (domain generality) in the brain among experiences of natural beauty, artistic beauty, and moral beauty, but also some different places in the brain fire for each kind of beauty (domain specificity).

Artistic Beauty: Visual Art. As just mentioned above, Vartanian and Goel (2004) discovered that activation in the right caudate nucleus lessened in correlation to decreasing preference for both representational and abstract paintings. They also found increasing activation in the bilateral fusiform gyri, the bilateral occipital gyri, and left cingulate sulcus, which correlated with increasing preference for the paintings participants found beautiful.

In another 2004 seminal study, Kawabata and Zeki asked participants to classify a wide range of pictures of paintings (still life, portraits, landscapes, and abstract art) as ugly, beautiful, or neutral. After they classified the paintings the participants viewed the same paintings while in the fMRI scanner. The results indicated that the orbitofrontal cortex (OFC; tap your finger between your eyebrows) fired more intensely when viewing the paintings they found beautiful than the ugly paintings. Later work by Tomohiro Ishizu and Zeki (2013) also implicated the OFC as the major processing zone for judgments of beauty.

What is your brain doing when you look at a beautiful marble sculpture? An Italian team of neuroscientists, headed by Cinzia Di Dio (Di Dio, Macaluso, & Rizzolatti, 2007), looked for some answers using fMRI. They showed participants images of masterpieces of Renaissance and Classical sculpture. They found evidence that when participants judged the sculpture to be beautiful, the right insula lit up (the insula is folded deeply within both sides of the cerebral cortex), as well as some of the lateral and medial cortical areas; they considered these activations as signs of objective beauty in the sculptures. They also found that the amygdala activated when viewing sculptures the participants had rated as beautiful, and they thought that represented a subjective emotional response to the beauty. I think we should be cautious using the phrase *objective beauty*, even though I agree with Socrates, Plato, and Aristotle that some things are beautiful regardless of our opinions about their beauty.

The *Golden Ratio* has gotten much attention from those concerned with beauty and aesthetics; and has been applied to issues in painting and sculpture (it is also found in nature, such as in the spiraling of leaves). The golden ratio is an irrational number approximated at 1.618; this ratio is found when you divide a line into two parts such that the longer part divided by the smaller part is equal to the whole length divided by the longer part. In the sculptures this means that the ratio of the foot-to-the-navel to the navel-to-the-head proportion was approximately the golden ratio. Here is a more lucid explanation of the golden ratio: https://www.youtube.com/watch?v=6nSfjEDZ_WM.

An interesting aspect of Di Dio et al.'s (2007) study was the use of sculptures that fit the golden ratio (also called the golden section or divine proportion) and thought by many to represent ideal beauty. However, the mathematician and astrophysicist Mario Livio (2002), who worked for years at the Institute that operates the Hubble Space Telescope, has warned that most claims about art and the golden ratio are false, and that it does not represent the ideal of beauty.

Yasuki Noguchi and Miharu Murota (2013), from Kobe University, Japan, used EEG to study participants' reactions to photos of golden ratio Classical and Renaissance sculptures. Half of the photos were accurate and half had sculptures that had been photo-shopped to be deformed away from the golden ratio. The participants clearly preferred the actual golden ratio photos. The researchers also added contextual information, telling the participants some of the sculptures were fakes (which was not true) and some were authentic; the subjects rated the ones labeled authentic as

more appealing. The moral to the story: what we think we know about a work of art may influence how beautiful we find it.

Sad Versus Joyful Beauty. Ishizu and Zeki (2017) performed a very interesting study that used photographs from such sources as *The Great LIFE Photographers*. The participants evaluated hundreds of photos, scoring them from beautiful to neutral to ugly and also scoring them from very joyful to neutral to very sorrowful. Then the subjects looked at some of the photos again while in the fMRI machine. Both sorrowful beauty and joyful beauty activated the medial orbitofrontal cortex (again, stick your finger between your eyebrows and you are less than a centimeter from this brain area); although sorrowful beauty had a weaker response in the OFC than the joyfully beautiful photos.

There is a variety of other brain studies of art, which I have not mentioned in this brief survey. The study of visual art is the most burgeoning of the neuroaesthetics field. But we had a nice taste of such studies (which reminds me of gustatory beauty. We will get to that later in the book).

The Default Mode Network (DMN) and Visual Art. The DMN was discovered by neuroscientists when observing the brain at rest. But the brain is never at rest; even when it is not paying attention to outside stimuli, it is constantly analyzing what is going on inside one's body, including inside one's brain, and making predictions about what will happen next. The DMN is at the "core of every prediction in the brain. Your brain's 'default mode' by which it interprets and navigates the world, namely, *prediction using concepts*, makes the name fit this network nicely" (Barrett, 2017b, p. 313). Nonetheless, in general, the DMN is suppressed when we are observing stimuli outside the brain, and activated when we are thinking and reflecting about ourselves or others. The DMN network includes major hubs at the posterior cingulate cortex (PCC; right behind your forehead, but inside an inch or two) and the precuneus; the medial pre-frontal cortex (mPFC; tap your finger on the middle of your forehead, its immediately through the skull right there) and the angular gyrus (it is mostly in the parietal lobe, near the edge of the temporal lobe; if you tap your finger just above your ear, you will be pretty close to it). The PCC is heavily involved in remembering the past and considering the future, as well as thoughts about the self, and thoughts about others; the mPFC is involved in autobiographical memory, decision making about self and close others, and positive emotional information; and the angular gyrus helps connect and integrate episodic memory, attention, spatial cognition, and perception. Other nodes of the DMN include the temporo-parietal

junction (TPJ), lateral temporal cortex (LTC), superior frontal gyrus (SFG) and the hippocampus.

Ed Vessel and team (Vessel, Starr, & Rubin, 2012), using fMRI, were the first researchers to find that the DMN activated when viewing paintings; but not just any paintings—only paintings that were highly moving and beautiful from the participants' viewpoints. The title of their paper is the telling: “The Brain on Art: Intense Aesthetic Experience Activates the Default Mode Network.” They found that when viewing a painting that was not moving nor beautiful to a participant their DMN tended to be quiet; but if the painting was found moving and pleasurable it would cause the reward systems in the brain to fire (the basal ganglia). Once the reward system had hit a high enough threshold, that is, when a participant really liked a painting and was *moved* by it, the DMN came strongly back online, “supporting inwardly oriented processing coincident with ongoing externally oriented sensory processing” (Belfi et al., 2019, p. 595). This appears to mean that the DMN is involved in thinking and reflecting about the painting, of making sense of the painting, and of understanding the painting.

A second study by Vessel, Starr, and Rubin (2013), again with fMRI, was entitled “Art Reaches Within: Aesthetic Experience, the Self and the Default-Mode Network.” Participants were told that the researchers were interested in their individual taste in art and wanted to know how much each painting personally moved them. These instructions were important, because the DMN is known to have a focus on self-referential thought and self-relevant information, thus the researchers wanted them to think about the art in regard to themselves to see if it would fire the DMN. Paintings that the participants did not find *moving* did not activate the DMN, but paintings they found highly moving did. This was interpreted to mean that paintings that the participants’ *identified with* fired the DMN, but if they did not identify with the painting, it did not. Vessel et al., point out that many people consider their personal taste in art (even if they don’t use the word “art” in their mind) to be an important aspect of their identity. They note that a teenager who has very carefully complied a music collection (I would say a playlist) identifies strongly with that music; or adults who have a favorite genre of movies, and use those movies to escape the tedium of life repeatedly, highly identify with that genre of film (be it action, drama, mystery, horror, or romance, etc.). It makes me also think of tattoo art. People can strongly identify with the art they have chosen to be permanent on their bodies.

Amy Belfi, Edward Vessel, and team (Belfi et al., 2019) performed another study examining the viewing of unfamiliar paintings, while in fMRI, and the DMN. They particularly focused on temporal dynamics, which is tracking what the brain does over time while viewing a painting. Thus, they had participants view some paintings for 1 second, other paintings for 5 seconds, and some other paintings for 15 seconds. They also had the participants rate how moving the painting was to them, including “how powerful, pleasing, or profound did you find the image” (p. 586). For paintings, that they found highly moving, the DMN, reward regions (basal ganglia, including the caudate and nucleus accumbens) and high-level visual regions activated more strongly than for non-pleasing images. They also found that the DMN was active after viewing art that *moved* the participants regardless of how long the art was viewed. One of the more important findings of this study was the “possibility” “that whereas DMN activation for high-rated artworks reflects a simultaneous (and paradoxical) focus on both the ‘internal’ and ‘external,’ a late DMN activation for low-rated stimuli reflects a return to purely “internal” focus” (p. 594). This may mean that when you are highly engaged with an artwork you are looking at it carefully (the “external”), while simultaneously processing its personal meaning to yourself (the “internal”); but if you look at an artwork that does not engage you, you stop thinking about the external stimuli. Thus it appears that the DMN is dynamically tracking your internal state during an aesthetic experience.

Artistic Beauty: Musical Beauty. So much brain science has focused on music that someone could write a book about it. Wait a minute. Someone has. Two books in fact. Daniel Levitin, professor emeritus at McGill University in Quebec (the Harvard of Canada), has written *This Is Your Brain on Music: The Science of a Human Obsession* (2006); and *The World in Six Songs: How the Musical Brain Created Human Nature* (2008). I highly recommend these two books; not to mention they were both on the New York Time’s bestsellers list. I might be biased; I identify with Levitin. He earned his masters at the University of Oregon (me too); and he was mentored by Michael Posner while getting his PhD there (Posner was my undergrad advisor). So Levitin has to be cool.

Featured Music. G. Gabrielle Starr (2013) wrote one of best books integrating science with the humanities that I have read: *Feeling Beauty: The Neuroscience of Aesthetic Experience*. At the time she wrote it she was Dean of the College of Arts and Sciences, and Professor of English, at New York University; she is now President of Pomona College in

Claremont, California. Near the end of her book, she discusses music, temporality, neural reward, repetition, and surprise and focuses on examples from Beethoven and Bluegrass. She mentions the bluegrass piece “Little Maggie” as played by Eric Weissberg (she doesn’t mention that he famously played it in the movie *Deliverance*): <https://www.youtube.com/watch?v=k%2D%2DCkw3YpS0>.

Starr also describes the repetition and novelty in Beethoven’s 33 variations on a waltz by Anton Diabelli, now called the Diabelli Variations. Here’s a rendition by Sviatoslav Richter (one of my music teacher Naeem Nabili’s favorite pianists): <https://www.youtube.com/watch?v=dokkniOwSIQ>.

* * *

We all know music is a major source of daily beauty for many, many people. Corrigal and Schellenberg (2015) point out that in 2012 sales of digital music, worldwide, were nearly 6 billion US dollars. The 2018 Global Music Report (<https://www.ifpi.org/downloads/GMR2018.pdf>) reports that there were 17.3 billion US dollars in music revenues. Wow. Concurrent with this, Jens Hjortkjaer notes that “the neuroscience of music has become one of the most rapidly growing fields in all of cognitive neuroscience” with “exponential growth in the number of studies” (2014, p. 211).

Corrigal and Schellenberg (2015) have emphasized and examined the role of “liking” music noting that “at a fundamental level people enjoy listening to music” (p. 264). They point out that the reward networks in the brain are heavily involved when appreciating music. One thing that people find especially beautiful is tension-resolution in music (see review by Lehne & Koelsch, 2015). Mortiz Lehne, Martin Rohrmeier, and Stefan Koelsch (2014; a team from Freie Universität Berlin and MIT), used fMRI to examine participants while under the influence of tension-resolution from four piano pieces by Mendelssohn, Mozart, Schubert, and Tchaikovsky. They found that as the tension in the music increases, the activity in the OFC and in the amygdala increases. They note that there is a “close relation between the amygdala and the reward processing of the striatum associated with musical pleasure” and “that the reward value of a music stimulus is predicted by the functional connectivity between the amygdala and the nucleus accumbens” (p. 1521). The nucleus accumbens is possibly the main reward center in the brain, and heavily involved in experiences of pleasure; its major neurotransmitters are serotonin and dopamine, and is very active during the pleasure of recreational drugs. Perhaps music is the best recreational drug.

Consider checking out the four pieces of music that Lehne et al. (2014) used in their study:

- (i) Mendelssohn Bartholdy's Venetian Boat Song (Op. 30, No. 6), (ii) the first 24 measures of the second movement of Mozart's Piano Sonata KV 280, (iii) the first 18 measures of the second movement of Schubert's Piano Sonata in B-flat major (D. 960), and (iv) the first 32 measures of Tchaikovsky's Barcarolle from The Seasons (Op. 37). (p. 1516)

As I listened to each of these pieces on YouTube I felt the tension mounting; and then I felt relaxed relief (resolution and pleasure).

* * *

A seminal and oft-cited paper on the neuroaesthetics of music is by Anne J. Blood and Robert J. Zatorre (2001), work they completed at the Montreal Neurological Institute, McGill University, Canada. Just the title of their paper gives me a little frisson,⁷ and summarizes the paper well: “Intensely pleasurable responses to music correlate with activity in brain regions implicated in reward and emotion” (p. 11818; yep, that is not a typo, it really is page 11,818. Some big journal, eh?).

They asked participants to identify songs that gave them chills (tingles, thrills, goosebumps), and then those songs were played for them while they were in the Positron Emission Tomography scanner. The parts of the brain that were gobbling up the sugar included reward, emotion, and arousal systems: orbitofrontal cortex, ventral medial prefrontal cortex, amygdala, and ventral striatum. They point out that these same brain structures are all active when getting high on sex or food or recreational drugs.

Note that the OFC, PFC, and amygdala have been mentioned many times in this chapter. It seems like they are important processing areas for experiences of beauty. BTW, Blood and Zatorre (2001) mention two of the pieces of music that their participants selected for stimulating chills: (1) Rachmaninoff's Piano Concerto No. 3 in D Minor, Opus 30, Intermezzo Adagio and (2) Barber's Adagio⁸ for Strings. Oh, yes; I've experienced chills from both those pieces before. Delicious. Check them out.

Ishizu and Zeki (2011) asked participants, one to two weeks prior to fMRI scanning, to listen to music excerpts and rate them on a 1–9 scale;

⁷A rush, a thrill, an exhilaration, a titillation.

⁸Hey Bob, Barber's Adagio!

the researchers considered pieces rated 1–3 as ugly, 4–6 as indifferent, and 7–9 as beautiful (the music included Western classical and modern as well as a couple Japanese pieces). Once in the MRI machine the participants were given three buttons to press representing whether they found the 16 second music excerpt ugly, indifferent, or beautiful. The researchers found that the more highly the participant rated the piece as beautiful, the stronger the activation in the medial orbitofrontal cortex (mOFC). In that paper Ishizu and Zeki also review a variety of past studies by many researchers, pointing out that much of their beauty findings were processed in the OFC.

As mentioned above, there are so many neuroaesthetic studies concerning music that we can only sample a few here. We will end this section by describing a fascinating study completed by a team at McGill University in Canada (Salimpoor, Benovoy, Larcher, Dagher, & Zatorre, 2011⁹). First the research team had each participant select a piece of music that they found intensely pleasurable and which also produced chills (goosebumps) in them. Then they hooked each participant up to something like a lie detector system that monitored their autonomic nervous system so the researchers could get objective proof that the participants experienced chills while listening to their selected music. After that, first using PET scans and then fMRI, they played the participants chosen music and also some control music, so they could compare the differences in their brain activity. They found that while simply anticipating hearing their selected music the participants released dopamine in the caudate nuclei of the brain, and when hitting the peak pleasure of actually listening to the music, dopamine was released in the nucleus accumbens. Dopamine has many roles in the brain, including a major role in the reward system: it helps us identify rewards, move toward them, and experience pleasure from them. There are two bilateral caudate nuclei which are situated in the middle of the brain next to the thalamus; there are also two nuclei accumbens, each one very close to each of the two caudates. The nuclei accumbens are very important players in the reward system, and they influence motivation and our experience of pleasure; and apparently they love beautiful music.

⁹I thank Oshin Vartanian for sending me a copy of this study. He's a generous and thoughtful guy.

ARTISTIC BEAUTY: BEAUTIFUL MOVEMENT: DANCE

Beatriz Calvo-Merino (associated with both City University, London, and Universidad Complutense Madrid, Spain) has written an illuminating chapter (2015) on the neuroaesthetics of dance. She refers to the human body as a dynamic canvas. It appears we have at least two parts of our brain that specialize in perceiving bodies. The extrastriate body area (EBA), which fires when we look at simple bodies or legs or arms (or see pictures or movies with bodies in them), and is found in the lateral occipito-temporal area of the brain (tap your finger behind your ear and you are near it). And the fusiform body area (FBA) is in the fusiform gyrus (a long structure running through both the temporal and occipital lobes), which activates during more complex configurations of the body.

Using fMRI Calvo-Merino and team showed participants 24 movements of classical ballet and capoeira (a Brazilian martial arts that is very dance-like) and later, out of the MRI machine, asked them to rate how much they liked various moves (Calvo-Merino, Jola, Glaser, & Haggard, 2008). As we know, liking something and finding it beautiful are closely linked. It appears areas for processing beautiful dance moves are in the early visual cortex (which is near the back of your head) and the right hemisphere's premotor cortex (near the top middle of your head).

Just makes you want to get up right now and dance some salsa, sí?

Whenever I think of dance, I think of the great Lakota hoop dancer Kevin Locke. His Lakota name is Thokáheya Inázing, translated as “He Who Arises.” I have seen him dance several times. In describing his performances, he wrote:

I scan the audience. ‘I don’t see any strangers here.’ I then make the design of a flower. ‘I see a room full of flowers, who can bring out beauty and divine fragrance, who can diffuse blessings to the world.’ ... ‘These hoops represent something beautiful, something that will embrace all of us.’ (Locke, 2018, pp. 143–144)

Makes you want to see a hoop dance, doesn’t it? They are graceful, energetic, athletic, and of course, beautiful. Check out a hoop dance at this link: <https://www.youtube.com/watch?v=RL175QMD9jw>.

ARTISTIC BEAUTY: ARCHITECTURAL BEAUTY

Oshin Vartanian has published two papers on the neuroaesthetics of what we find beautiful *in* architecture, particularly concerning the shapes of inside rooms. He notes this might be important as it appears that Americans spend about 90% of their time indoors, and worldwide, people spend most of their time in buildings of some sort. Using fMRI Vartanian et al. (2013) primarily examined whether participants found curvilinear rooms or rectilinear rooms more beautiful. What do you think they found? People preferred the curved rooms and their anterior cingulate cortex (ACC) especially lit up while observing rooms with nice curves; the ACC is right behind your forehead, but inside an inch or two. (I first read this paper during the day of date-night, so I used this line on my best beloved: “Hey baby, when I check you out my ACC lights up.¹⁰”) This preference for finding curves beautiful has also been found in a variety of studies, including one that showed photographs of curved and sharp-angled versions of the same real objects to participants in Mexico, Ghana, and Spain (Gómez-Puerto, Rosselló, Corradi, Acedo-Carmona, Munar, & Nadal, 2018).

The other fMRI study by Vartanian et al. (2015) involved showing people photos of rooms that varied on two dimensions—height of ceiling and perceived openness (a room that feels open as opposed to enclosed—what the authors call *permeability*). They found that high ceilings were considered more beautiful than low ceilings (which activated parts of the brain involved in visual-spatial exploration), and that the open rooms were judged more beautiful than closed rooms (and activated the part of the brain that perceives visual motion). Vartanian mentions, in the introduction to this study, that the great renaissance architect Palladio wrote extensively about rules to determine ideal ceiling height. One of the best all-time architectural beauty adventures for my wife and I was at the basilica of St. Giorgio Maggiore in Venice, Italy; this huge church was designed by Palladio. My art teacher, the Bolognese aesthete Julio Savi, had taught me about the symbolism of paintings depicting St. George and the Dragon: the maiden in the paintings represented the pure aspect of George’s soul, and the dragon represented the dark and ugly side—thus he aims to slay the dragon and save the maiden. I decided to study all the St. George and

¹⁰I apologize for my corrupt use of the male-gaze. In my defense, my wife has been an active feminist since the 1960s and forgives me for my boringly straight sexuality. I was born this way. And then socialized this way. Although she might not forgive me for mentioning her, as she is an introvert and modest person.

the Dragon paintings I could find. I knew there was a great one housed in St. Georgio Maggiore, but when we arrived there we found out the upper room, in which the painting was displayed, was cordoned off from tourists. No admittance. I found a friendly monk and expressed my dismay. He had the most terrific conspiratorial smile, and snuck my wife and I around the cordon and up the stairs to then gaze mindfully upon the painting for as long as we liked. He then decided to give us the full tour, and took us further upstairs in the church (another off-limits area) so he could give us a bird's eye view of Palladio's quarto portico (a square with columned walkways) adjacent to the basilica. I was in heaven. And, a shout-out to the moral beauty of that monk who appreciated a supplicating lover-of-beauty's needs and desires (Figs. 4.1 and 4.2).

Moral Beauty. A little reminder: moral beauty is represented by the human virtues, such as love, justice, courage, hope, gratitude, and so on. Elevation is the moral emotion that is aroused when noticing moral beauty (Haidt, 2003; Pohling & Diessner, 2016; see Chap. 7 for a thorough explanation of the emotion of *elevation*). Not surprisingly, the default



Fig. 4.1 Palladio's Quattroportico at St. Giorgio Maggiore. (Photo by R. Diessner)



Fig. 4.2 St. George and the Dragon 1516 Oil on canvas, 180 × 226 cm, predella 16 × 52 cm (each) San Giorgio Maggiore, Venice By Vittore Carpaccio

mode network is heavily involved in experiences of moral beauty. The DMN is especially active when thinking and reflecting about ourselves or others, and experiences of moral beauty are all about thinking of others' beautiful behaviors and virtues; and *elevation* shows a secondary focus on thinking about ourselves, as we wish to become like the moral exemplars we observe.

As noted earlier in this chapter, in general, the DMN is suppressed when we are observing stimuli outside the brain, and activated when we are thinking and reflecting about ourselves or others. The DMN network includes major hubs at the posterior cingulate cortex (right behind your forehead, but inside an inch or two) and the precuneus; the medial pre-

frontal cortex (tap your finger on the middle of your forehead, it's immediately through the skull right there) and the angular gyrus (it is mostly in the parietal lobe, near the edge of the temporal lobe; if you tap your finger just above your ear, you will be pretty close to it). The PCC is heavily involved in remembering the past and considering the future, as well as thoughts about the self, and thoughts about others; the mPFC is involved in autobiographical memory, decision making about self and close others, and positive emotional information; and the angular gyrus helps connect and integrate episodic memory, attention, spatial cognition, and perception. Other nodes of the DMN include the temporo-parietal junction, lateral temporal cortex, superior frontal gyrus, and the hippocampus. All of these DMN hubs and nodes interact together as a network.

Joshua Greene and a team from Princeton University and University of Pittsburgh (Greene, Sommerville, Nystrom, Darley, & Cohen, 2001) appear to have completed the first fMRI investigation of moral emotions (we tend to find moral emotions beautiful). They gave participants moral dilemmas to read and asked them if they found responses to them acceptable or unacceptable, including the classic trolley and footbridge dilemmas:

[A] runaway trolley is headed for five people who will be killed if it proceeds on its present course. The only way to save them is to hit a switch that will turn the trolley onto an alternate set of tracks where it will kill one person instead of five. Ought you to turn the trolley in order to save five people at the expense of one? Most people say yes. Now consider a similar problem, the footbridge dilemma. As before, a trolley threatens to kill five people. You are standing next to a large stranger on a footbridge that spans the tracks, in between the oncoming trolley and the five people. In this scenario, the only way to save the five people is to push this stranger off the bridge, onto the tracks below. He will die if you do this, but his body will stop the trolley from reaching the others. Ought you to save the five others by pushing this stranger to his death? Most people say no. (p. 2105)

They considered the trolley dilemma to be an *impersonal* dilemma and the footbridge a *personal* dilemma, and expected the footbridge dilemma to arouse more emotion during moral decision making. Indeed, their fMRI results showed the responses to the various personal dilemmas did light up emotion processing areas in the brain more than the impersonal dilemmas; some of those areas are also associated with the DMN, such as the posterior cingulate gyrus and the angular gyrus.

Jorge Moll, with a large team of Brazilian and American neuroscientists (Moll et al., 2002), using fMRI, appear to have published the very first moral emotion *neuroaesthetic* study. Unfortunately, for our interests, the study's stimuli did not include moral beauty, but rather, "moral pictures portraying emotionally charged, unpleasant social scenes, representing moral violations (e.g., physical assaults, poor children abandoned in the streets, war scenes)" (p. 2731). Nonetheless, these photos of moral ugliness did cause an increase in firing in the mOFC, as well as a hub of the DMN, the medial prefrontal cortex. As usual, the medial orbitofrontal cortex is involved in nearly every form of beauty (music, paintings, faces, and moral beauty, etc.).

Next we find a team neuroscientists, from several universities in Japan (Takahashi et al., 2008), using fMRI, who examined the brain processes of judgments for both *moral beauty* and *moral depravity*. Once again, moral beauty activated the OFC. But moral depravity fired up the posterior superior temporal *sulcus*. There's a poetic outcome for you: a sulcus is a *deep pit* in the brain. This team, like Moll et al. (2002), also found that the moral depravity condition, relative to neutral condition, produced greater activation in the mPFC, an important hub of the DMN. However, for the moral beauty condition they found greater activation, not only in the mOFC, but also in the dorsal lateral prefrontal cortex (dlPFC), which has been identified as a self-referential processing zone of the DMN (Davey, Pujol, & Harrison, 2016).

A team at the University of Southern California investigated, using fMRI, admiration for virtue, which is closely related, or synonymous with moral *elevation*. They also examined participant's compassion for psychological pain, compassion for physical pain, and admiration for skill (Immordino-Yang, McColl, Damasio, & Damasio, 2009). They found strong activation in the inferior/posterior portion of the posteromedial cortices (PMC) for both admiration of virtue and compassion for psychological pain (the PMC is a complex area made up of several brain sub-units; put your finger on the top middle of your skull, slide it back an inch—the PMC is now under your finger and down both sides from there). Of particular interest is that admiration of virtue fired a DMN hub, namely the posterior cingulate cortex, which is part of the PMC.

Takashi Tsukiura and Robert Cabeza (2011), a team connected to Duke University and Tohoku University, Japan, had fMRI participants rate facial beauty of various photos and make judgments of the moral goodness of various hypothetical actions. They found activations for both

beautiful faces and beautiful moral actions in the medial orbitofrontal cortex (cf. Ishizu & Zeki, 2011) as well as in the posterior cingulate cortex, an important hub of the DMN. This study supports the common research finding, and bias, that people judge physically attractive people as morally good.

A study by Zoe Englander et al. (2012; executed at the University of Virginia), using fMRI, found that the medial prefrontal cortex (it's right behind your forehead; it's close to the OFC), the precuneus (just behind the middle top of your head), and the insula (folded deeply within both sides of the cerebral cortex) were the main players when observing video clips that induced the moral emotion of elevation. Again we see major hubs of DMN come into play here (mPFC and precuneus), facilitating thinking about others.

Mihai Avram and a team from Ludwig-Maximilians-Universität, Munich, Germany and Peking University, China (Avram, Gutyrchik, Bao, Pöppel, Reiser, & Blautzik, 2013) gave participants short moral statements and single line verses of poetry to read while under fMRI. Their results showed that both the aesthetics of the poetry and their moral judgments were processed in similar neural networks, and especially in the orbitomedial prefrontal cortex (omPFC; part of the DMN). Cool: poetry and moral beauty in one place. Life is good.

Another team, also headed by Mihai Avram et al. (2014), and with neuroscientists again from Germany and China, as well as from America, investigated first- and third-person perspectives on moral dilemmas, while participants were in the fMRI machine. They point out that past fMRI studies of moral judgment use different approaches; the *rationalist* method has used moral dilemmas and the *emotionalist* method has used emotionally laden pictures or statements to examine moral reactions. The rationalist approach puts the participants in a first-person perspective, whereas the emotionalist approach puts them in a third-person perspective. They found that both approaches fire up the anterior medial prefrontal cortex (amPFC, part of the DMN). The first-person dilemmas also lit up the posterior cingulate cortex, precuneus, and temporoparietal junction, all aspects of the DMN; whereas the third-person emotionalist approaches caused more activation of the hippocampus (also part of the DMN, involved in remembering the past and imagining the future) and in the visual cortex, than the rationalist first-person dilemmas. Thus we have brain-proof that the deliberative-rational solving of moral dilemmas is quite different from emotionally based gut reactions to moral situations

(and we must be sensitive to that when we design experiments about moral judgment).

A team from two Chinese universities and the University of Toronto (Wang et al., 2015), also using fMRI, and also investigating facial beauty and moral beauty, also found that the OFC was involved in both types of judgments. (Using “also” three times is a type of poetic alliteration. Yeah, right). These researchers concluded, however, “compared with facial beauty, moral beauty spanned a larger-scale cortical network, indicating more advanced and complex cerebral representations characterizing moral beauty” (p. 814). They also found that moral beauty scenes fired the left post-cingulate and bilateral angular gyrus more than neutral scenes; and both of those brain areas are parts of the DMN.

Chiara Ferrari and a team of neuroscientists from universities in Italy and Spain further examined the *beauty-is-good* stereotype (Ferrari et al., 2017). They hypothesized, that for such a stereotype to exist, the brain must process evaluation of the beauty of faces in a similar part of the brain to which it makes moral beauty evaluations. They assumed that the dorso-medial prefrontal cortex (dmPFC) would be involved, as it a main area for social cognition, as well as the dorsolateral prefrontal cortex (dlPFC), as it’s critical in decision making; both of those brain zones are part of the DMN (of course). Their technique was to use transcranial magnetic stimulation (TMS) to address their hypotheses. You might be familiar with TMS, as it has become a popular method of treating depression that has not responded to other treatment modalities. Just before showing computer-generated pictures of faces to participants they primed them with one of three words: attractive, ugly, or horizontal (horizontal was considered a neutral prime). Immediately after viewing the face they made judgments of how trustworthy the person was. As you might guess, pictures of faces that were preceded by the prime *attractive* were considered more trustworthy. This is where the TMS comes in; TMS interferes with the neural activity toward which it is targeted.

TMS was applied just after seeing the prime (attractive or ugly) and before seeing the face. When the TMS disrupted the dlPFC the participants still judged the faces as more trustworthy if they had seen the word “attractive” rather than “ugly.” However, when they placed the TMS over the dmPFC, the primes had no influence on the trustworthiness judgments; the TMS disruption caused the influence to vanish. This indicates the importance of the dmPFC in determining both facial beauty (and uglier)

ness) as well as moral judgments. The researchers conclude: “Overall, thus, our data suggest that the dmPFC (but not the dlPFC) plays a key role in linking aesthetic and moral valuation” (Ferrari et al., 2017, p. 712).

Qiuling Luo and a team of neuroaestheticians, from several universities in China, also studied the relationship between facial beauty and moral beauty (Luo, Yu, Li, & Mo, 2019), using fMRI. They asked women participants to examine faces of men under four research conditions: facial ugliness-moral ugliness (FUMU), facial ugliness-moral beauty (FUMB), facial beauty-moral ugliness (FBMU), and facial beauty-moral beauty (FBMB). The researchers paired various beautiful faces, neutral faces, and ugly faces with various short sentences which were morally beautiful, such as “He saved a drowning child,” or morally neutral, such as, “He chatted with classmates,” or morally ugly, such as “He betrayed friends for money.”

Participants rated the level of beauty of each stimulus (a face with a sentence next to it) on a four-point scale. On average they rated the face-beautiful/morally beautiful the highest; next highest was face-ugly/morally beautiful; next was face-beautiful/morally ugly; and the lowest rated was face-ugly/morally ugly. The fMRI results showed that facial beauty fired the bilateral middle occipital gyrus (MOG) and the mOFC more than facial ugliness; and moral beauty fired the lingual gyrus and mOFC more than moral ugliness did. Once again, we see the importance of the medial orbitofrontal cortex in processing almost any kind of beauty experience. Notice there is no mention of the DMN so far. That surprised me. However, they examined what was happening in the brain during “aesthetic conflict,” that is, when the face is ugly but the person is described as morally good, or vice versa, the face is beautiful, but the moral description is ugly. When that happens, the medial prefrontal cortex is activated, which is an important hub of the DMN.

Observing Moral Beauty Is Both Calming and Energizing. Walter Piper, Laura Saslow, and Sarina R. Saturn (I love that name!, its aesthetically pleasing, not to mention she is a professor at Oregon State University, which is just a stone’s throw from my home [well ... 440 miles is considered close out here in the Wild West]) showed participants clips of morally elevating videos, and also clips of amusing videos (as the control condition). They found, using functional near-infrared spectroscopy, that during their video experience of moral beauty the medial prefrontal cortex (a major hub of the DMN) activated (Piper et al., 2015). The really interesting part of their study was when they measured the participants’ auto-

nomic nervous system activity and found something unusual: both the sympathetic and parasympathetic branches of the autonomic system were activated while watching acts of moral beauty. The sympathetic system is activating when you are jacked-up, ready for fight or flight; and the parasympathetic is activating when you feel mellow, relaxed, meditative, calm. Try to think of experiences in which you are both excited and mellow. Was it difficult to do? Beauty is magic.

This finding, however, might not surprise philosopher of aesthetics Elaine Scarry (1999) who noted that “[b]eauty quickens. It adrenalizes” (p. 24); but also that “[b]eauty is pacific” (p. 107; pacific means peaceful). The great existential psychologist Rollo May also finds this beauty-normal, “[o]ther happenings give us joy and afterwards a peace, but in beauty these are the same experience. Beauty is serene and at the same time exhilarating” (p. 20).

I would like to find a study that shows both the sympathetic and parasympathetic nervous systems coming on line while observing beauty in nature or gazing on a beautiful painting or listening to some beautiful music. If you know of such a study please contact me,¹¹ diessner@lscs.edu. (Notice that I am behaving like a bad scientist and seeking confirmation of an idea that I like, rather than disconfirmation. My bad.)

Beautiful ideas. At this point in time there seems to be only one brain imaging study related to engagement with beautiful ideas. Semir Zeki and team asked 15 mathematicians to rate various mathematical formulas as beautiful, ugly, or neutral and then showed them the same mathematical ideas while under fMRI (Zeki, Romaya, Benincasa, & Atiyah, 2014). As Zeki expected, the beautifully rated formulas lit up the medial orbitofrontal cortex.

¹¹ Ask and ye shall receive: Ines Schindler, while reading this chapter in draft form, turned me on to a fascinating study. The researchers asked participants to select very moving clips from films. They measured crying (tears), which happens during parasympathetic activation, and goosebumps (piloerection), which occur during sympathetic activation, while the participants watched the moving clips. The tears and goosebumps often occurred together, thus showing simultaneous sympathetic and parasympathetic activation. It appears that moral beauty, and perhaps the moral emotion of elevation, may have been the causal factors: “most of our participants’ excerpts were taken from the genres of drama and romance, and hence from two genres that frequently address societal values and virtues such as altruism, bonding, self-sacrifice, faithfulness, and so forth” (Wassiliwizky, Jacobsen, Heinrich, Schneiderbauer, & Menninghaus, 2017, p. 10).

TAKE-AWAYS

1. Semir Zeki coined the word “neuro-esthetics” (neuroaesthetics) in 1999. The first neuroaesthetic study was published in 2000 (Hansen, Brammer, & Calvert), followed by three seminal papers in 2004 (Vartanian & Goel; Kawabati & Zeki; Cela-Conde et al.).
2. Evo Psyc (perhaps) gives us the *why* of aesthetics; neuroaesthetics gives us the *how* (Chatterjee, 2014). Why do we find something beautiful? Evo Psyc might be able to tell us. How do we find things beautiful? Neuroaesthetics sheds light on that.
3. Aesthetics may be defined as the philosophic and scientific investigation of perceptual and cognitive pleasure (and thus also displeasure).
4. “The aesthetic triad” comprises the interaction of three neural systems to create our aesthetic experiences: the sensory-motor system, the emotion-valuation system, and the knowledge-meaning system (Chatterjee & Vartanian, 2014, 2016).
5. Experiences of beauty involve the pleasure centers and reward circuits of the brain; pleasure may be a necessary, but not sufficient, condition for experiences of beauty.
6. The medial orbitofrontal cortex may be involved in all or most experiences of beauty (Ishizu & Zeki, 2011). However, caution is warranted in making such a claim. The meta-analytic review by Brown et al. (2011) indicated that the *right anterior insula* was the main nexus of all beauty experiences and that different kinds of beauty (taste, scent, visual, auditory) were processed in different parts of the OFC.
7. The Default Mode Network focuses on self-reflective thinking and on thinking about interpreting others’ behavior. It is involved in perhaps all experiences of moral beauty and is involved in appreciation of natural beauty in human faces and in appreciation of art if the art *moves* us.
8. Observing moral beauty may be simultaneously arousing and calming (activating both the sympathetic and parasympathetic nervous systems). Can other forms of beauty (natural or artistic) also do this?
9. Oshin Vartanian and Anjan Chatterjee have beautiful sounding names. Say them out loud to yourself; savor the musicality of those syllables. My wife thinks Anjan Chatterjee’s name is the more beautiful, but I find Oshin Vartanian’s to be. Win-win situation.

BEAUTY INTERLUDE THREE

Zephyr Takes Psyche to the Mansion of Love

In the last interlude Psyche was about to die by jumping off the top of a craggy cliff. But just as she was about to leap, the god of the West wind, Zephyr (I love the visual and auditory aesthetics of that name) gently lifted her up and lightly set her down in the flowered valley below. She then decides to take a little nap in the dewy soft grass of the meadow (I wonder if she knew of the studies concerning naps boosting the immune system, the stability of emotions, and an increase in cognitive function. Naps rock.).

When she wakes up, she notices much natural beauty. She sees a beautiful park and garden planted with great tall trees; she sees a spring of crystal clear water. Then she notices some architectural beauty—a mansion built by divine art. She looks inside and smells the olfactory beauty of citron-wood ceilings, and beautifully carved ivory ornaments, the walls were of embossed silver. The floors were covered in beautiful mosaics of precious gems and the outer walls were built with golden bricks that shone so brightly with their own radiance that no other lights were needed in the mansion. “She looked at this with much pleasure” (Kenney, 1990, p. 53; remember that pleasure in the brain is the typical result of experiences of beauty).

The head servant of the mansion tells her this all belongs to her (Eros had built the mansion just for her. Do you think Eros had read Buss’s [2015] research on how women like men with resources?). She then enjoys a refreshing bath (Fig. 4.3).

Next she encounters gustatory and olfactory beauty as the servants in the mansion served her a delicious dinner; course after course of a royal banquet, a rich feast, were set before her. While the invisible servants brought her tasty dish after tasty dish, and glasses of wine like nectar, invisible singers and musicians courted her with beautiful music. Eventually she grew tired and sated and retired to the master bedroom. In the middle of the night she was awakened by a noise perhaps coming from the window casement. She thought she sensed the presence of someone and grew anxious and trembling and full of dread ... And then (Next installment of the Myth is at the end of Chap. 5.)

Fig. 4.3 Bath of Psyche (c.1890 by Frederic, Lord Leighton) https://commons.wikimedia.org/wiki/File:1890s_Frederick_Leighton_-_Bath_of_Psyche.jpg. This painting is owned by the Tate museum in London. Can you believe they don't have it on display; it's in storage?! After much emailing and begging I received permission to visit the storage building and study this painting. In storage it is more than 10 feet off the floor and they invited me to use a wobbly 10-foot ladder so I could get close to it. I had a difficult time taking notes, as I was afraid to loosen my death grip on the ladder



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PART II

Domains of Beauty



CHAPTER 5

Noticing Nature's Beauty: The Trait of Engagement with Natural Beauty

The great naturalist John Muir, known as the Father of the National Parks, and was co-founder of the Sierra Club, has written, “Everybody needs beauty as well as bread, places to play in and pray in, where nature may heal and give strength to body and soul alike” (1912, p. 256). Muir sounds like a wise person; and I certainly need bread and beauty to flourish. You too. I also find nature therapy both less expensive and more healing than visiting a psychotherapist.

Do you remember in Chap. 2, about philosophy, emphasizing that love and beauty are intimately linked? Everything we love we find beautiful; everything beautiful we love. We live on such a beautiful planet. Which of the many biomes are you in love with? The subtleties of the desert? The undulating prairie grasslands? Calming yet exciting freshwater lakes, rivers, and waterfalls? The awesome sublimity of the ocean? Peaceful but mysterious forests (deciduous forest, or coniferous forest or tropical jungle forest)? The majesty of alpine mountains? My answer is yes, yes, and more yes. But for me, the most engaging beauty is coniferous forest; this is probably due to the influence of my forest-loving father (Diessner, 2018; Kahn, 1999).

LOVE

One of the most beautiful ideas is the “oneness of humanity.”¹ It makes me think of agapic love, the unconditional universal love. In a study with an internet sample of 497 participants, we looked at the relationship between Belinda Campos’s scale of four kinds of love (Campos, Keltner, & Gonzaga, 2002) and engagement with natural beauty (EnB) (Diessner, Iyer, Smith, & Haidt, 2013). We found a strong correlation ($r = 0.51$, $p < 0.001$)² between love of all humanity and EnB. People with a high level of EnB are very likely to profess loving all humanity; and people strong in agapic love are likely to find nature beautiful. EnB also has significant and positive relationships with three other kinds of love, although the correlations are smaller: (a) EnB \times love for friends, $r = 0.25$; EnB \times love for family, $r = 0.24$; EnB \times romantic love, $r = 0.20$. So not only is beauty the object of love, but loving others goes hand-in-hand with appreciating the beauty of nature. A concept closely related to love is empathic concern (Davis, 1983). In this same study we found, with an internet sample of 1460 participants, that people with strong emotional empathy also tended to engage with nature’s beauty; and those who notice nature’s beauty tend to have strong emotional empathy for others ($r = 0.46$, $p < 0.001$).

Would identifying with all humanity (McFarland, Webb, & Brown, 2012) be a sign of love? To identify with someone is to think of them as a part of who you are. In the same study mentioned above (Diessner et al., 2013), we found, with an internet sample of 1762 participants, that EnB is moderately strongly related to thinking you are part of one big human family ($r = 0.41$; $p < 0.001$). Interestingly, identifying with your country (e.g., I am proud to be an American or I am proud to be a Mexican or I am proud to be French) has a much smaller correlation with EnB, although it is still positive and significant ($r = 0.24$; $p < 0.001$). It appears that people who think of the whole earth as their “country” are much more engaged by nature’s beauty than those with nationalistic tendencies.

¹I don’t mean to leave all the other creatures out, I’m just focusing here on one of the creatures (*homo sapiens*) that is near and dear to my heart. The planet is, of course, an ecological whole. I do plan to offer copies of this book, at the author’s discount, to any humpback whale that wants a copy, but I have a feeling it will be mostly humans that read it.

² r is the statistical abbreviation for correlation (0.10–0.29 is a small correlation; 0.30–0.49 is medium; 0.50 or higher is a large correlation); p is the abbreviation for probability—the smaller the number, the more statistically significant the correlation is.

BEAR

What chapter on nature's beauty would be complete without a photograph of a beautiful bear (see below)? He is not part of our human family, but he is part of our mammal family. I identify with him somewhat; and I love all of God's creatures, including bears. In the summer of 2018, I took this photo along the Snake River, where that river divides the states of Washington and Idaho. The Snake is a very large and beautiful river; and it flows through the deepest canyon in America. This photo is taken at the northern end of that canyon, with beautiful basalt formations on either side of the river, a gentle breeze blowing, and meadowlarks singing on the hillsides.

He is a black bear (*Ursus americanus*), although he is a brown colored black bear. He is a small 140 lb (65 kilo) youngster, probably away from his mom for the first time. I became a bit too excited and took this photo about 10 meters from him (not so smart, although young black bears almost never attack people ... but if his momma was nearby ... danger zone) (Fig. 5.1).

TRAIT AND STATE

Most of this chapter will concern the trait of engagement with natural beauty (EnB). We could easily fill a whole book about the psychology of appreciating nature's beauty, but to not over-fill this chapter we need to narrow our topic, and that topic is examining the trait of EnB. That is because such a trait is the most important aspect of engaging with, and appreciating, nature's beauty. Or maybe it's because it's a topic I happen to know something about and therefore I am able to write about. You guess which one it is.

A trait is an aspect of human personality that is stable across time and context. The roots of traits may exist in our brains at birth and they likely are constructed and modified by us as we develop. Traits have strong genetic components and large environmental influences. The most famous and influential trait theory is the Five Factor Model (FFM: Extraversion, Conscientiousness, Agreeableness, Neuroticism, and Openness) and thousands of studies have been published based on the FFM. The FFM traits tend to show heritability factors near 0.50 (which sort of, but not exactly, means that 50% of those traits are genetic). If about half of the influence on traits is genetic, then half is caused by something else, most likely the



Fig. 5.1 Black Bear. (Photo credit: Rhett Diessner)

physical, social, and cultural environment we grow up in, but perhaps also by the choices we make. You may be an extravert or an introvert or if you are like most people, you are a mixture of the two. Let's say you are an introvert: as a trait this means you will be introverted at work, at play, at school, at church/mosque/synagogue/temple, and at home—thus it is stable across context. If you are an introvert, you were somewhat likely to have been an introverted kid at age 10 (although traits in children are not very stable), and introverted when you were a teenager, and probably will

be introverted in middle age—thus traits are stable across time. In this chapter, we will be examining research about the trait of engaging with, and appreciating, natural beauty (EnB). If you are high on this trait you will likely notice natural beauty in forests, on beaches, in the mountains, in the desert, at lakes, in swamps, on the prairies, and so on—it is stable across contexts. And, if you are high on this trait, you probably loved nature when you were a child, when you were a teen, in young adulthood, and on into your elder years—it's stable across time. Of course, all of us are unique—some of us may increase in a trait over time, or it may decline over time; and some of us always find the forest beautiful, but are bored in a desert. Traits are tendencies—not written in stone. But, in general, they are stable.

We should also differentiate between *state* and *trait*. The concept of a trait is an abstract idea, but a state is what you are experiencing in the moment. You might be low on the trait of engaging with natural beauty (EnB), but still be struck dumb tonight when noticing a beautiful sunset. In the moments of noticing, and feeling the beauty of, that sunset you are in a *state* of engagement with natural beauty. Being high on the trait of EnB implies, however, that you experience the *state* of EnB much more often than someone low on the trait of EnB (Diessner, Kirk, Guenthner, Pohling, & Mobasher, 2017).

DEFINING APPRECIATION

I have focused on the phrase *engagement with beauty* in my work, although most researchers in this field refer to *appreciation of beauty* (Diessner, Pohling, Stacy, & Güsewell, 2018; Diessner, Solom, Frost, & Davidson, 2008). I do so because I wish to emphasize the emotional involvement (Armstrong & Detweiler-Bedell, 2008) of our experiences of beauty, and I thought the word “engagement” conveyed that better than “appreciation.” Being engaged with something means your heart is in it. I thought appreciation sounded more cognitive—thinking about beauty and evaluating an object or scene aesthetically (which is very important). On the other hand, I do not want to sharply dichotomize cognition and emotion—they are sides of the same coin—emotions often arise following a cognition and new cognitions occur on the heels of emotions. For most purposes, however, feel free to think of engagement and appreciation as synonyms.

Jonathan Haidt, of New York University, and Dacher Keltner, of the University of California, Berkeley, have defined *appreciation* as “the ability to find, recognize, and take pleasure in the existence of goodness in the

physical and social worlds" (2004, p. 537). They note, "the trait of being emotionally *responsive* to all forms of excellence, including beauty, [i]s appreciation" (p. 538; italics added). Angelika Güsewell and Willibald Ruch (2012; a team from University of Zurich, Switzerland), working from Haidt and Keltner's (2004) theoretical definition, empirically demonstrated that *responsiveness* is central to appreciation. They demonstrated that appreciation is a form of *responding* to physical natural beauty, physical artistic beauty, and social moral beauty.

Mitchel Adler and Nancy Fagley (2005), working out of Rutgers University in New Jersey, have defined appreciation as,

acknowledging the value and meaning of something—an event, a person, a behavior, an object—and feeling a positive emotional connection to it. Experiences of appreciation enhance positive mood and feelings of connection to the appreciated stimulus and/or to the nature of existence (i.e., as in a feeling of awe or wonder) Appreciation is believed to have both state and trait qualities. (pp. 80–81)

Thus, if we integrate the appreciation concepts from Haidt and Keltner (2004), Güsewell and Ruch (2012), and Adler and Fagley (2005), we find that appreciation of beauty has at least these facets: (a) perceptual (the process of noticing sensory information that we will find beautiful), (b) cognitive (thinking about the object of beauty and making aesthetic judgments), (c) emotional (feeling the beauty), (d) trait/state (it can be a general disposition or a one-off temporary experience of beauty), (e) virtue (experiences of beauty make us better human beings), and (f) valuing (the beauty of the object/scene is important to us).

A MOMENT OF PHILOSOPHICAL ORIENTATION

Anne Margaret Baxley (2005), an Associate Professor of Philosophy at Washington University, St. Louis, wrote this in *The Journal of Aesthetics and Art Criticism*:

In § 42 of the *Critique of Judgment*, Kant expatiates on the relation between taste and morality when he explains that we have an intellectual interest in natural beauty. He insists that taking such an interest in natural beauty is always a mark of a good soul (*Kennzeichen einer guten Seele*) and that if a person's capacity to feel pleasure in contemplating the beautiful in nature is habitual, this indicates that he or she has a mental attunement favorable to

moral feeling (*moralischen Gefühl günstige Gemüthstimmung*) (KU 5: 299; 165–166). Further, Kant declares that we do and in fact should require others to take a direct interest in the beautiful in nature. (p. 33)

So Kant thinks we should require everyone to be concerned with nature's beauty; and if we were so concerned, perhaps we would stop pollution, global warming, and climate change. Remember this when you get to the last section in this chapter.

There is also some empirical evidence that Kant may have been right about an interest in nature being a sign of a good soul. Internalized moral identity (Aquino, McFerran, & Laven, 2011; Aquino & Reed, 2002), that is, how much you think of yourself as moral, and how important it is to you to be a moral person, is fairly strongly related to EnB ($r = 0.46$, $p < 0.001$; Diessner et al., 2013). People who engage with nature's beauty want to be moral people; people to whom morality is important have a strong tendency to notice nature's beauty.

FEATURED MUSIC FOR NATURAL BEAUTY

Beethoven's Sixth Symphony is all about nature. It's a symphonic poem. I have listened to it hundreds of times. It's also his most cheerful symphony (although his Ninth symphony is the most joyful). It is known as the Pastoral Symphony (pastoral has the same root as "pasture") and has five movements. The movements are named, when translated to English: (1) awakening of cheerful feelings on arrival in the countryside; (2) scene by a brook; (3) merry gathering of country folk; (4) thunderstorm; and (5) a shepherd's song, cheerful and thankful feelings after the storm. Here is a version with the Berlin Philharmonic with the great Herbert von Karajan conducting: <https://www.youtube.com/watch?v=0E8SRWkbkNE>.

POET'S CORNER

Sweet sounds, oh, beautiful music, do not cease!
 Reject me not into the world again.
 With you alone is excellence and peace,
 Mankind made plausible, his purpose plain.

That is an excerpt from Edna St. Vincent Millay's (1928) poem, "On Hearing a Symphony of Beethoven."

Much research has been published concerning the many psychological benefits of spending time in wild nature or urban green spaces. A review of such research by Canadian scholars Andrew Howell and Holli-Anne Passmore (2013) explains that “nature affiliation” causes us to flourish “by boosting our positive affect; by eliciting feelings of ecstasy, respect, and wonder; by fostering feelings of comfort and friendliness; by heightening our intrinsic aspirations and generosity; and by increasing our vitality” (p. 242). People who feel connected to nature, and then take a walk in nature, tend to experience all these good outcomes. In the next section we will examine the relationship between being connected to nature and EnB, but first, let’s check this out: A walk in wild nature is truly nature therapy, and it seems greatly enhanced when mindfully paying attention to nature’s beauty. Take a 3-minute break and watch this video on nature therapy: <https://www.youtube.com/watch?v=Bf5TgVRGND4>.

CONNECTEDNESS TO NATURE, ENGAGEMENT WITH NATURAL BEAUTY AND PROENVIRONMENTAL BEHAVIOR

Feeling or believing one is connected to nature can be framed as one’s nature identity (Diessner, Genthôs, Praest, & Pohling, 2018). The most common tool used to measure levels of such a nature identity is the Connectedness to Nature Scale (CNS; Mayer & Frantz, 2004). The first three items on the CNS, for example, are these:

1. I often feel a sense of oneness with the natural world around me.
2. I think of the natural world as a community to which I belong.
3. I recognize and appreciate the intelligence of other living organisms.

The most commonly used measure of levels of the trait of engagement with natural beauty (EnB³) is the natural beauty subscale of the Engagement with Beauty Scale-Revised (EBS-R; Diessner et al., 2008; Pohling, Diessner, Stacy, Woodward, & Strobel, 2019). Here are all four items from the EnB:

³Various researchers have given a variety of initials to stand for the Engagement with Beauty Scale’s natural beauty subscale. Rico Pohling and I have usually used EnB; but other writers have used EWNB (Engagement With Natural Beauty) and PNB (Perceived Natural Beauty).

1. I notice beauty in one or more aspects of nature.
2. When perceiving beauty in nature I feel changes in my body, such as a lump in my throat, an expansion in my chest, faster heartbeat, or other bodily responses.
3. When perceiving beauty in nature I feel emotional, it “moves me,” such as feeling a sense of awe or wonder or excitement or admiration or upliftment.
4. When perceiving beauty in nature I feel something like a spiritual experience, perhaps a sense of oneness or being united with the universe or a love of the entire world.

A variety of studies have shown that connectedness to nature and engagement with nature's beauty are very closely related and go hand-in-hand. The first study to examine the relationship between the CNS and EnB had a diverse internet sample of 1649 participants and found a strong positive $r = 0.57$ ($p < 0.001$). Likewise, Zhang, Howell, and Iyer (2014) found large positive correlations between the two, ranging from 0.50 to 0.62. In Capaldi, Passmore, Ishii, Chistopolskaya, Vowinckel, Nikolaev, and Semikin's (2017) studies, they found the CNS and EnB to correlate between 0.44 and 0.65 in samples from Russia, Japan, and Canada.

Much of the research, however, on the cognitive, emotional, and moral benefits of being present in nature, or urban green spaces, has not explicitly addressed the role of nature's beauty in causing these wondrous benefits. If you do *not* notice the beauty, do you get *less* of the benefits? If you do notice the beauty, do you get *more* of the benefits? The first two studies to explicitly examine the role of engagement with natural beauty and levels of connectedness to nature and well-being were led by Jia Wei Zhang when he was at the University of California, Berkeley (Zhang, Howell et al., 2014; Zhang, Piff, Iyer, Koleva, & Keltner, 2014).

Zhang (Zhang, Howell et al. 2014) knew that research had shown that feeling connected to nature predicted that people would have higher psychological well-being; but he wondered if this was influenced by whether or not those people were engaging with nature's beauty. Tapping a large internet sample ($N = 1108$), he and his team found a small positive significant correlation ($r = 0.12$) between the CNS and satisfaction with life. However, he also found that the EnB moderated the relationship between CNS and life satisfaction. That means connectedness to nature only predicted higher levels of life satisfaction *if* a person scored higher on engagement with nature's beauty; and vice versa, *if* a person scored lower

on engagement with natural beauty, there was no relationship between being connected to nature and life satisfaction.

A study published in *Ecopsychology* examined how EnB and CN (connectedness to nature) influence proenvironmental behaviors (PEB; Diessner, Genthôs, et al., 2018). Although it has been well established that proenvironmental *values* and connectedness to nature predict PEB (Dunlap, VanLiere, Mertig, & Jones, 2000; Gatersleben, Murtagh, & Abrahamse, 2014; Markowitz, Goldberg, Ashton, & Lee, 2012), up until 2018 no one had published a study examining the role of EnB and PEB. Diessner, Genthôs, et al. (2018) found that EnB did significantly predict PEB ($r = 0.26$; $p < 0.001$), but the CNS mediated the influence that EnB may have on PEB. Being connected to nature explains why engagement with natural beauty influences proenvironmental behaviors.

POETRY CORNER

“O world, I cannot hold thee close enough!
 Thy winds, thy wide grey skies!
 Thy mists, that roll and rise!
 Thy woods, this autumn day, that ache and sag
 And all but cry with colour! That gaunt crag
 To crush! To lift the lean of that black bluff!
 World, World, I cannot get thee close enough!”

(Excerpt of from Edna St. Vincent Millay’s [1917] “God’s World.”)

BEAUTIFUL NATURE MAKES US NICER

Jia Wei Zhang and another team of researchers (Zhang, Piff, et al. 2014) produced a series of studies with the auspicious title, “An Occasion for Unselfing: Beautiful Nature Leads to Prosociality.” Hopefully, seeing the word “unselfing” the title will remind you of the philosopher Iris Murdoch, and her emphasis that engagement with beauty makes us less self-oriented and more moral.

In Zhang and Piff et al.’s first study (2014), they established that engagement with natural beauty (EnB, as measured by the EBS, Diessner et al., 2008) is significantly and positively correlated with agreeableness ($r = 0.31$), perspective-taking (cognitive empathy, $r = 0.35$), and empathic concern ($r = 0.46$); even after controlling for levels of connectedness to nature, these relationships remained significant. An earlier study found something

similar: the trait of agreeableness was significantly and positively related to EnB ($r = 0.26$; $p < 0.001$; Diessner et al., 2013). Conclusion: People who engage with natural beauty are agreeable (nice), they think about others' needs (cognitive empathy), and they feel for others (emotional empathy).

In their second study, they (Zhang, Piff, et al., 2014) randomly assigned people (real people, not necessarily college students, recruited online through MTurk) to watch ten slides of beautiful nature, and ten slides of not-so-beautiful nature. (They ran a pilot study first to establish these two sets of slides were equivalent on many variables, such as clarity of image, symmetry, complexity, and proportion.) They also gave them measures of positive emotions and again the EnB (Diessner et al., 2008). The participants then played the Dictator game, in which they had the full power to give an anonymous partner some of their points (which they were told could be redeemed for real dollars). Those who watched the more beautiful slides gave away significantly more points to their anonymous partner, indicating that engaging with natural beauty increases our generosity. However, this was *mediated* by the level of positive emotions a person experienced when looking at the slides of nature. This indicates that beautiful nature probably did not directly cause the prosocial generosity, but rather, EnB through positive emotions, may have done so.

Zhang, Piff, et al.'s (2014) third study was a partial replication of their second study. Again, participants were randomly assigned to watch ten slides of beautiful or less beautiful nature, but this time they used different slides; and they also used a different prosocial game, the trust game. In the trust game, participants were given a chance to give away some of their points to an anonymous partner, and the researchers said they would triple that amount for the partner (thus if you gave your partner 5 of your points, the researchers said they would give the partner 15 points; the points were worth dollars, but only 1 cent a point). Then the trusting part: you were told that at the end of the game your partner had an option to give you back as many points as they wanted to (the idea is that they might feel like they owe you, because they got their points tripled if you gave them anything). As you might guess at this point, those who watched the more beautiful nature slides gave away significantly more points to their partner. They also found that once again positive emotions *mediated* this effect on trust and generosity (i.e., the positive emotions generated by watching the beautiful nature slides explains why they gave away more points). And again EnB *moderated* this effect (i.e., those high on EnB tended to give away the most points).

The fourth study by Zhang, Piff, et al. (2014) was even more creative. First, they ran a pilot study regarding the beauty of various potted plants, and identified four more beautiful plants and four less beautiful plants. Then participants were randomly assigned to come to a research room that had either the four more beautiful plants in it, or the four less beautiful, and filled out the EnB and a positive emotions scale. They were then told the study was over and they were free to leave; but if they wanted, they could stay and help fold origami cranes to be sent to the victims of the earthquake in Japan. The number of cranes that they folded was then considered the criterion (dependent) variable indicating prosocial helping behavior. Sure enough, those who were in the room with the more beautiful plants folded more cranes; and once again this was *mediated* by positive emotions (i.e., the influence of the more beautiful plants on the helping behavior is partially explained by the positive emotions). And once again, the prosocial helping behavior was *moderated* by EnB (those high on EnB were more likely to fold more cranes): “These findings suggest that the effects of beautiful nature on prosocial behavior are most pronounced among individuals who are high in tendencies to perceive natural beauty” (p. 69).

Transcendence. In positive psychology, transcendence has been framed as what allows us to “forge connections to the large universe and thereby provide meaning to [our] lives” and may involve the “universal, ideal, sacred, or divine” (Peterson & Seligman, 2004, p. 519). I like to say that transcendence is getting up and out of the self—somewhat like Iris Murdoch’s *unselfing*.

Jonathan Haidt and Dacher Keltner (2004), in their seminal chapter entitled “Appreciation of Beauty and Excellence,” predicted that appreciation of beauty would have positive relationships with gratitude and spirituality, and a negative relationship with materialism. This is because they are all related to the virtue of transcendence. In fact, Peterson and Seligman (2004) considered spirituality as the archetype of transcendence, and gratitude as a character strength of transcendence; and materialism is the archetype of non-transcendence. Haidt and Keltner also surmised that appreciation of beauty and the transcendent emotion of *awe* would be closely related, noting that beauty lovers would “frequently” feel “awe” (p. 537). And indeed, this is just what Angelika Güsewell (she is such a delightful colleague) and Willibald Ruch (2014) found between EnB and awe: a strong $r = 0.50$ ($p < 0.001$). That’s just awesome.

In developing the Engagement with Beauty Scale (Diessner et al., 2008), we empirically confirmed the predictions made by Haidt and Keltner (2004). The trait of gratitude (Watkins, Woodward, Stone, &

Kolts, 2003) is strongly related to EnB ($r = 0.46, p < 0.0001$). Grateful people notice nature's beauty and engage with it; people who are high on EnB are grateful people. People with the trait of spiritual transcendence (Piedmont, 1999) notice more natural beauty, and perhaps EnB leads people to be more spiritual ($r = 0.37, p < 0.0001$). And the more materialistic you are, the less you experience EnB; and the more you notice nature's beauty, the less materialistic you are ($r = -0.21, p = 0.001$). No surprise there. Check out the book *The Fight for Beauty: Our Path to a Better Future* (2016) by Dame⁴ Fiona Reynolds. It's about the struggle between materialism and the beauty of the UK countryside.

MORE FEATURED MUSIC

One time when I was in Switzerland, hanging out at a small university, I struck up a conversation with a pianist. I asked him what he liked to play. He said Beethoven sonatas. I then asked, What about Debussy? He broke into a huge smile and said, “Beethoven is the main course, but Debussy is dessert.” Debussy’s “La Mer” is about the beauty and sublimity of the ocean. Here it is, with Bernstein conducting the New York Philharmonic: <https://www.youtube.com/watch?v=EtJ9FhwthE>.

I downloaded this to my phone the last time I went to the Oregon coast (Bandon By-The-Sea).

Listening to Debussy is also highly recommended to get in the mood to gaze upon impressionist paintings.

More Caring. Jonathan Haidt's Moral Foundation Theory (Graham et al., 2011; Haidt, 2007) posits at least five moral foundations that have evolved to characterize human beings: Caring, Fairness, Loyalty, Authority, or Sanctity. According to Stanford philosopher of education Nel Noddings (1992), caring is the most important quality of a human—to care for others, for the self, and to care for mother earth. Guess which one of Haidt's five moral foundations is most related to EnB? The first study to examine this relationship between EnB and moral foundations was with an internet sample of 4672 participants and it was found that EnB correlated most strongly with the Care foundation ($r = 0.27, p < 0.001$), and somewhat with the Fairness foundation ($r = 0.12, p < 0.001$); but had no relationship with the Loyalty, Authority, or Sanctity foundations. Now this might look

⁴ “Dame” is the honorific title you receive when the Queen of England knights you, and you are a woman. Sort of. She is also the Master [*sic*] of Emmanuel College at Cambridge University.

like a political issue, because liberals⁵ endorse Care and Fairness more than conservatives; and conservatives endorse Loyalty, Authority, or Sanctity much more than liberals do. This same study, however, looked at political affiliation directly with EnB, and it only had a very weak correlation of 0.10, indicating that liberals only notice natures' beauty slightly more than conservatives. So the next time you hear someone say that conservatives don't value the beauty of nature, you can tell them they are wrong; rather you can point out that EnB and political affiliation are pretty much unrelated. And then encourage conservatives to go with their love of beauty and to care for and protect wild nature.

Fairness and Justice. Harvard philosopher Elaine Scarry (1999) has emphasized how closely linked justice and beauty are; and as noted above, Jonathan's Haidt's moral foundation of Fairness was significantly and positively, although somewhat weakly ($r = 0.12$, $p < 0.001$), associated with EnB (Diessner et al., 2013). This indicates that people who notice nature's beauty are inclined to value fairness.

In a study by Diessner, Davis, and Toney (2009), EnB was found to be related to both Kohlberg's (1984) justice reasoning stages and to the personality trait of fairness. The *Defining Issues Test* (Rest & Narvaez, 1998) is a multiple-choice measure which indicates a person's stage of Kohlbergian justice reasoning, and this test correlated 0.20 ($p < 0.03$) with EnB (which is a higher correlation than either Engagement with Artistic Beauty [EaB] or Engagement with Moral Beauty [EmB] had with Kohlberg's stages). When a partial correlation using the Five Factor Model's trait of Openness was applied, it appeared that it mediated the relationship; that is, EnB had an indirect influence on justice reasoning stages which may be explained by Openness.

This same study (Diessner et al., 2009) showed an even stronger relationship between EnB and the personality trait of fairness, as measured by the IPIP-VIA, with $r = 0.32$ ($p < 0.001$); and again this was a higher correlation than Engagement with Artistic Beauty or Engagement with Moral Beauty had with fairness. Even when Openness was partialled out, the relationship between EnB and fairness remained significant. This indicates that people who notice nature's beauty also tend to be people who value justice and fairness. Other than Love, what could be more important than Justice? Protecting the wilderness, and preventing pollution of the natural environment, are huge justice issues for generations of children yet unborn

⁵I am using the words "Liberal" and "Conservative" in the way of American English: liberals are the left and conservatives are the right.

and thus for the future of humanity. It is also a major social justice issue, because degradation of the environment hurts the poorest and most disenfranchised among us the most. Striving to become more justice-oriented may help us engage deeper with nature's beauty; and appreciating nature's beauty will help us become fairer persons. Let's go for it.

Values. When psychologists want to understand people's values, they have often turned to the Schwartz Value Survey, developed by Shalom Schwartz at Hebrew University, Israel. (Schwartz, 1992). What kind of values do lovers of nature's beauty prize? In a large internet sample ($N = 2594$; Diessner et al., 2013), it was found that they most value Universalism ($r = 0.45$), Spirituality ($r = 0.39$), and Benevolence ($r = 0.31$). By Universalism, Schwartz (2012) means, "understanding, appreciation, tolerance, and protection for the welfare of all people and for nature" (p. 7). He considers the goal of Spirituality to be "meaning, coherence, and inner harmony through transcending everyday reality" (p. 7). Benevolence is "preserving and enhancing the welfare of those with whom one is in frequent personal contact (the 'in-group')" (p. 7). My, my, lovers of nature's beauty surely have a nice set of values.

Perhaps nearly as important, what kind of values do those who engage with nature's beauty spurn? They could care less for Power ($r = -0.09$), Achievement ($r = -0.01$), and Hedonism ($r = 0.02$) (Diessner et al., 2013). Schwartz (2012) defines valuing Power as desiring "social status and prestige, control or dominance over people and resources" (p. 5). Ok, that makes it obvious why nature lovers are uninterested in that kind of power. Achievement is focused on "personal success through demonstrating competence according to social standards" (p. 5). And Hedonism is "pleasure or sensuous gratification for oneself" (p. 5; hey, wait a minute, that sounds like fun). Perhaps those who engage with the beauty of nature value others more than they value themselves. Unselfish and altruistic. I want to hang out with those folks.

I took this photo of my father, the naturalist (Diessner, 2018), and my son, the budding naturalist, in 1986 (Fig. 5.2). In the background is the Wonderland trail and Mt. Rainier, one of the most beautiful mountains in the world; it is located in the Cascade Range in the middle of Washington State, USA. Check out the 1963 nature film that my father made: <https://www.youtube.com/watch?v=U-0kEviuLws> It is a fine piece of folk-art; he used a 16 mm Arriflex movie camera, the same camera Disney studios was using for their nature films in the early 1960s.



Fig. 5.2 Don and Random Diessner. (Photo credit: Rhett Diessner)

NATURE MAKES US SMARTER

We met the wife and husband team of Rachel Kaplan and Steven Kaplan back in Chap. 3. Their seminal research culminated in the landmark book *The Experience of Nature: A Psychological Perspective* (1989). Although they seldom mention beauty in that text, they do emphasize what humans find *attractive* about nature; and attractiveness must be closely related to beauty, and in our everyday speech they could be synonyms. How many things do we find attractive that we would not declare as beautiful? Perhaps a few, but not many. The Kaplans found that we are most strongly attracted to natural scenes that are coherent, with repeated scenery that is somewhat uniform, but at the same time complex (rich with diversity). That is a pretty good description of unity-in-diversity, my favorite definition of the beautiful. The Kaplans also found that we are attracted to scenes that contain mystery. Where does that trail lead? What is around that next bend in the river? What is over that little hill? What is hidden behind those trees? “*Mystery ... involves promise, but here it is the promise that one could learn more*” (Kaplan & Kaplan, 1989, p. 55). Is the mysterious beautiful?

What do you think? The Kaplans also developed Attention Restoration Theory (ART) and their ART research demonstrated that our cognitive capacities are restored when we get time in a green space (e.g., a city park) or in nature. Working at a desk requires so much concentration and effort to hold our attention to our tasks. But an experience of nature restores our ability to concentrate and focus; it relieves attentional fatigue. Even just getting out of your building and taking a short walk in a green park with trees and bushes will cause this positive effect. Summary: Experiencing nature's beauty makes us smarter.

Although there are many studies based on the Kaplans' ART, we will examine one that directly dealt with beauty. Ke-Tsung Han ([2010](#)), from the Department of Landscape Architecture, National Chin-Yi University of Technology in Taiwan, examined the relationships between scenic beauty, preference, and restoration. In regard to *restoration*, Han refers to Kaplan and Kaplan ([1989](#)) and their Attention Restoration Theory (with their evidence that spending time in nature restores attentional fatigue) and to Ulrich et al. ([1991](#)) with his emphasis that nature lessens stress and restores positive affect. There are a variety of aspects of nature that we may give *preference* to, including that we may *prefer scenic beauty*, and we may *prefer* environments that promote *restoration*. Han showed participants slides featuring all six basic biomes (tundra, desert, grassland, deciduous forest, coniferous forest, and tropical forest). In this first experiment, he asked the participants to rate the slides on scenic beauty (which he defined as "perceptual evaluation") and preference ("personal liking"). As we know from previous chapters in this book, *liking* and finding something beautiful are highly related. And that is the case in this study in which the correlation between finding the scenes beautiful and liking them was 0.99!

In Han's second experiment, he had the subjects view the slides from the six basic biomes and then complete a scale about their level of *restoration* (feeling restored from fatigue). In his third experiment, they completed a different scale that also measured level of *restoration*. These studies showed that preference and scenic beauty were both highly correlated with the measures of restoration ($r > 0.94$). He also found in both studies that preference mediated the relationship between scenic beauty and restoration. That means just admiring the beauty may not be restorative; one has to like (prefer) the beautiful scene to experience restoration viewing it. That is, the *preference* for a landscape scene explains why the *beauty* of that scene may have influenced the *restoration* effect. Han concludes by noting that one's favorite places in nature (one's preferences) are restorative environments.

Openness. An important aspect of being intelligent entails being open-minded. Openness is particularly important for scientists and for artists. Scientists need to be open to new findings and new research; and they need to be open to possible disconfirmation of their favorite hypotheses. Artists need to be open to the world to be creative. It is a very common research finding that people who score high on the Five Factor Model trait of Openness like art, and no surprise, artists are considerably more open-minded than non-artists (Zabihian & Diessner, 2016). Sahar Zabihian, an Iranian scholar, when studying at the East London University, found that artists in the UK scored significantly higher on EnB than did non-artists ($N = 204$; $p < 0.001$; medium effect size; Zabihian & Diessner, 2016). Summary: Artists love the beauty of nature!

In a large internet study ($N = 3498$), Openness was found to have a medium-sized correlation with EnB ($r = 0.30$, $p < 0.001$; Diessner et al., 2013). Open-minded people tend to appreciate nature's beauty, and those who love nature's beauty tend to be open-minded.

* * *

EVEN MORE FEATURED MUSIC

Smetana's Vltava, called the Moldau by Germans and Americans, is a symphonic poem about a river that runs through Bohemia (where my Grandmother was born) in the Czech Republic. I use it as a theme song in the courses I teach on Developmental Psychology. I play it nearly every day as my students enter the classroom and settle in. I explain at the beginning of the course that the piece is a metaphor for human development: the river begins high in the mountains, small and pure (infancy), then tumbles down the mountainside (toddlers), then builds strength and grows (childhood), next a geographer gives it a name (identity stage), then it merges with another large river (intimacy stage), next it becomes huge and its irrigation is essential to agriculture and the lives of many animals (generativity stage of adulthood), and eventually it travels through Germany and empties into the North Sea and becomes one with everything (elder years and death). I doubt Smetana had this in mind; I co-opted it. But it is a beautiful piece of music; here is a version with von Karajan conducting the Berlin Philharmonic: <https://www.youtube.com/watch?v=gTKsHwqaIr4>.

* * *

NATURE MAKES US HAPPIER

Many studies have shown that contact with nature moderately increases our positive emotions and somewhat decreases our negative emotions (McMahan & Estes, 2015). We will just examine one such study—a study that also included the trait of EnB in the mix. Holli-Anne Passmore and Mark D. Holder (2016), from the Department of Psychology, University of British Columbia, studied the effect of a two-week nature-based well-being intervention. They randomly assigned college students to a nature condition or human-built condition (or a control condition in which they did nothing different), and asked the students to mindfully look at objects or scenes for two weeks, to pay attention to their feelings, and to take photos of objects or scenes if it aroused a strong emotion in them, and then to post the photos on the researchers' website. They gave the participants measures of positive and negative emotions both pre- and post-intervention, as well as measures of meaning/purpose in life, general connectedness (connected to people, connected to life, and connected to nature), a type of elevation measure (awe, inspiration, and transcendence, and not just moral elevation), a prosocial orientation measure, as well as the EnB and the Connectedness to Nature Scale (CNS). They found that those in the nature condition ended up with higher positive emotions than those in the built condition, and also higher elevating experiences, higher prosocial orientation, and higher connectedness; but no difference for meaning in life. When they examined whether EnB or CNS moderated (influenced) the relationship between the intervention and the positive emotions, or the elevating experiences, they found that they did *not*. I was surprised. Based on the studies by Zhang, Piff, et al. (2014) and Zhang, Howell, et al. (2014) I expected those high in EnB to end up with higher positive emotions and higher elevating experiences. But I am trying to be open-minded and accept this disconfirmation of my beloved hypothesis.

POET'S CORNER

Yearning

Parma, 1 June 1992

Life is an eternal yearning
which mounts toward
the unbounded heaven.

It is a never-ending comparison
between the little self—
an imperfect matter—
and the perfect exemplar
flashing at times
from the depths of the heart.

Sometimes its bite is pain—
it is as an ardent flame
burning the tender limbs—
but the heat it gives off
moves the whole of life.

And the world kindly offers
a thousand remedies whereby
those burns might be soothed.

It is a velvet sky
in a night of new moon
furrowed by the Milky Way's
diaphanous shawl
while the Southern Cross
makes eyes at Austral heavens
and sinuous waters
enfold the body
and glisten in a thousand
phosphorescent lights.

It is the colour of a lake
in an October dawn
while in that native temple
rosy vapours rise up
to the luminous threshold of God.

It is the sun
that caresses the skin
in its enveloping warmth
while the sea-scented wind
blows in the hair
on the ancient seacliff
shaped by the waves.

It is a sunset
in December scarlets
of translucent skies

while the cold stings deep
nature sleeps
and human life pulsates.

Let the heart's
yearning bite:
while it bites, I live.

(by the Italian Poet, Julio Savi, 2002, pp. 137–138)

NATURE AND WELL-BEING

Self-Esteem.⁶ Zhang, Howell, et al. (2014) performed a study that examined self-esteem, the CNS, and EnB. They found a high correlation between CNS and EnB ($r = 0.50$); and a pattern of moderation by EnB: connectedness to nature only predicted high levels of self-esteem if a person scored high on engagement with nature's beauty; and vice versa, if a person scored low on engagement with natural beauty, there was no relationship between being connected to nature and self-esteem. Zhang and team summarized by stating “connectedness with nature only predicts well-being when individuals are also emotionally attuned to nature's beauty” (p. 55). However, other researchers have not found this to be the case—indicating that *only sometimes* does EnB bridge the gap between CN and well-being (Capaldi et al., 2017; Passmore & Holder, 2016).

Well-Being. Two Canadians, Colin Capaldi and Holli-Anne Passmore (we met her in a previous paragraph; she is a lovely being), teamed up with a Japanese scholar, some Russian academics, and a professor in Germany to produce a fascinating study entitled “Engaging with Natural Beauty May Be Related to Well-Being Because It Connects People to Nature: Evidence from Three Cultures” (Capaldi et al., 2017⁷).

As is typical, they found almost-large to large significant correlations between EnB and the CNS in all three countries, Canada, Japan, and Russia, ranging from 0.44 to 0.65. Participants in all three cultures also showed positive relationships between EnB and measures of emotional

⁶We need to be morally and spiritually cautious about the notion of *self-esteem*. Self-esteem can be a good thing if it means self-respect, honoring your DNA's gifts or your soul. But self-esteem can be a dangerous thing if it means thinking too much about yourself, with possible narcissism and ego involved. In fact, having high self-esteem can lead to violence when the esteem is threatened (Baumeister, Smart, & Boden, 1996).

⁷APA style requires using “et al.” if there are so many authors, but they have such aesthetically cool names, I wanted to write them out: Colin A. Capaldi, Holli-Anne Passmore, Ryo Ishii, Ksenia A. Chistopolskaya, Jonte Vowinckel, Evgeni L. Nikolaev, and Gennady I. Semikin.

well-being, social well-being, psychological well-being, and meaning in life, although the correlations were small and some only marginally significant. Nonetheless, the authors concluded that EnB's

relationship with positive functioning extends across diverse conceptualizations of well-being ... From feeling like one's life is meaningful to experiencing positive emotions, it appears as though individuals who notice and are moved by beauty in nature are more likely to lead flourishing lives. (Capaldi et al., 2017, p. 206)

They were expecting EnB to be negatively correlated with negative emotions, that is, they thought that as your engagement with nature beauty went up, your negative emotions would decline. But what they found was that there was simply no relationship between EnB and negative emotions. On the positive side, however, they found that positive emotions increase when EnB increases. This indicates that your happiness is likely to increase when you engage with nature's beauty, but your anxiety or bad mood may or may not decrease. (This does not fit my personal experience: I find nature therapy highly effective for reducing anxiety and uplifting mood.)

Capaldi et al. (2017) also found that the CNS mediated the relationships between EnB and various forms of well-being. In other words, engaging with nature's beauty leads to psychological, emotional, and social well-being, but it is CN that explains why EnB led to those positive outcomes among their samples of Japanese, Russians, and Canadians. Capaldi et al. (2017) also stated that, because Zhang, Howell, et al. (2014) found EnB to moderate between CNS and well-being, they would examine that as well. They did find this to be the case in one of the Canadian samples, but found no evidence for EnB moderating the CNS's effect on well-being in their other Canadian sample, nor in the Russian or Japanese samples. Conclusion: things are murky about the manner in which CN and EnB influence well-being. Several studies have shown that connectedness to nature and engagement with nature's beauty are highly correlated (Capaldi et al., 2017; Diessner et al., 2013; Zhang, Howell, et al. 2014). But how they influence each other to cause a large variety of positive outcomes is showing mixed results. It appears sometimes EnB mediates or moderates the influence of CN on well-being and prosociality; and sometimes CN mediates or moderates the influence of EnB on well-being and prosociality. And sometimes neither

of them do so. What's up? We need more research on this topic. Perhaps you will do your senior thesis on it. Or your master's thesis. Or your doctoral dissertation, and clear it all up.

MOVIE BREAK

Would you like to watch a film that integrates natural beauty, artistic beauty, and moral beauty (and is also an action flick!)? Then I recommend *Princess Mononoke* (Miyazaki, 1997); it was recommended to me by my research assistant Naoaki Takedi. You will love it.

FIVE FACTOR MODEL

Diessner et al. (2013) examined EnB and the Five Factor Model (FFM; John, Donahue, & Kentle, 1991) with a non-college sample of 3498 people. The strongest relationship between EnB and FFM is with Openness ($r = 0.30$; $p < 0.001$) and the next strongest is with Agreeableness ($r = 0.26$, $p < 0.001$). Extraverts are somewhat more likely to engage with nature's beauty than introverts (perhaps because they get out of the house and take hikes with their friends; $r = 0.17$; $p < 0.001$). Conscientiousness ($r = 0.08$) and Neuroticism ($r = -0.03$) are pretty much unrelated to EnB. In a smaller study (Diessner et al., 2009), it was shown that EnB had a strong relationship with the Aesthetics facet of Openness, $r = 0.54$.

This is a Northern Pygmy Owl (*Glaucidium gnoma*; Fig. 5.3). She is perched next to the Clearwater River in northern Idaho, USA. This is the best bird art-shot I've ever taken. And maybe the best I ever will (because now I leave my camera behind when I hike—I found that, in my case, using the camera worked against mindfully enjoying the beauty).

Fig. 5.3 Northern Pygmy Owl. (Photo credit: Rhett Diessner)



SATISFACTION WITH LIFE

Would being high on the trait of engaging with beauty lead to being more satisfied with life? It seems like it might; people appear to be happy and satisfied with life when in the moment of appreciating something beautiful (experiencing the *state* of feeling beauty). The first study published on this topic didn't examine EnB specifically, but appreciation of beauty in general (Isaacowitz, Vaillant, & Seligman, 2003). That study found appreciation of beauty and satisfaction with life $r = 0.38$ ($p < 0.001$), a nice solid medium-sized correlation. However, we cannot generalize from these findings as they came from a longitudinal study of older Harvard University graduates, who may not be representative of other population samples, due to their elite status. The second study published relating to this topic (Park, Peterson, & Seligman, 2004) was with three internet samples (total $N = 5299$, average age 35–40 years old, and 70% female), and thus generalizing to others, from this study, seems warranted. They also used a general measure of appreciation of beauty, and it correlated with SWL $r = 0.12$ with the largest sample ($n = 3907$), $r = 0.02$ with sample 2 ($n = 852$), and $r = 0.03$ with sample 3 ($n = 540$). These samples showed weak to non-existent relationships between SWL and appreciation of beauty. This means that engaging with beauty, in general, did not predict satisfaction with life.

The first study published to focus on EnB itself with SWL showed an $r = 0.23$ ($N = 206$; Diessner et al., 2008), which is a small but significant correlation, and the participants were college students. A study with a fairly large heterogenous internet sample ($N = 2240$) found EnB $r = 0.13$ with SWL; which is a small, weak correlation (Diessner et al., 2013). Zhang, Howell, et al. (2014), with an internet sample of $N = 1108$, found $r = 0.15$ between EnB and SWL⁸; again this is a weak, small correlation.

In summary, generalizing from the largest and most representative samples, the relationship between being satisfied with life and levels of engaging with beauty are very small and quite weak. This means we cannot predict that people high on EnB will be satisfied with life nor that a person satisfied with life will engage with beauty. Why is this? If you have a good guess, let me know, diessner@lcsc.edu.

⁸A correlation of 0.15 only explains 2% of the variance among scores of participants on the measures of EnB and SWL.

THOSE BRITS!

The British are a fierce warring tribe. From the sixteenth to the nineteenth century, they colonized and took over much of the world (“The sun never sets on the British Empire”). Unfortunately, like the rest of the nations, they became a bit too materialistic and destroyed and defiled nature, and the fight for nature’s beauty in the UK began (Reynolds, 2016). Fortunately, they now have some activist researchers that are helping reconnect the UK population to the beauty of nature. These include Miles Richardson and David Sheffield of the University of Derby and Ryan Lumber of De Montfort University. Richardson has been a leader in examining the effect of a national campaign called *30 Days Wild* (Richardson, Cormack, McRobert, & Underhill, 2016; Richardson & McEwan, 2018). The campaign is sponsored by the Wildlife Trusts, an organization that unites 46 local Wildlife Trusts in and around the UK, protecting 2300 nature reserves. People were encouraged to become more conscious of nature around and near them and to commit “Random Acts of Wildness”—12,400 signed up to participate in the June 2015 campaign. Those who completed the pre- and post-tests showed increases in happiness, which were mediated by levels of connectedness to nature (getting more connected to nature explains why the participants became happier); however, they did not employ a measure of EnB in this study.

For the 2017 campaign, 49,000 registered to participate in *30 Days Wild*, and 308 of them completed pre- and post-measures, including EnB (hooray!). Those participants showed increases in their health, happiness, conservation behaviors, and connectedness to nature; and this was one of the first studies ever published which demonstrated positive development in trait EnB (Richardson & McEwan, 2018). As we mentioned above, EnB is a *trait*, and traits are stable across time and context; so this is very impressive that the participants’ trait levels of EnB increased! Interestingly, the increases in connectedness to nature and happiness were mediated by EnB (the increases in EnB explain why connectedness to nature led to increases in happiness).

Lumber, Richardson, and Sheffield (2017, 2018) have performed a series of studies framed around humanity’s innate affinity for the natural world as described in E. O. Wilson’s biophilia hypothesis (Kellert, 1993). The biophilia hypothesis posits that we have nine biophilic values: utilitarian (using nature), naturalistic (pleasure from nature), ecologicistic-scientific (scientific study of nature), aesthetic (nature’s beauty), symbolic (nature

metaphor in language), humanistic (love of nature), moralistic (revering nature), dominionistic (controlling nature), and negativistic (dislike of nature). Lumber and team (2017) created two short measures of each of these nine values (one measure asked if they actually engaged in behaviors related to the value, and the other measure was simply about how much they valued the value), and along with a measure of nature connectedness, administered them to 203 participants (70 students and 113 non-students). Nature connectedness had significant correlations with all nine engaged values and all nine valued values. Further statistical analyses found that the aesthetic value (beauty) was not a significant independent predictor of nature connectedness, but that it *mediated* three of the *engaging with* values—humanistic, symbolic, and moralistic—which did predict nature connectedness. Likewise, the aesthetic value (beauty) mediated valuing the values of naturalistic and moralistic and their influence on nature connectedness.

Lumber et al. (2017) then replicated the above study with a different sample and found that “both the engagement and valuing humanistic and moralistic indicators were significant predictors of nature connectedness in both studies 1 and 2. The naturalistic valuing indicator was also significant in both studies” (p. 15). “The aesthetic value [nature’s beauty] was consistently found to act as a mediator of moralistic indicators and nature connectedness … therefore nature’s beauty may have a role in developing a connection to nature” (pp. 15–16). The word “moralistic” sounds weird, but what it means in the biophilia hypothesis is having reverence for nature and feeling an ethical commitment to nature (which isn’t weird—it’s great!). So Lumber et al.’s finding indicates that feeling moral about nature leads to greater connectedness to nature, but it likely does so because those people are also engaging with the beauty of nature.

To summarize, Lumber et al. (2017) found five of the biophilic values to be pathways to becoming more connected to nature in their Studies 1 and 2; for their Study 3, they renamed those five values: “The naturalistic value was renamed *contact*; the humanistic, *emotion*; the moralistic, *compassion*; the aesthetic, *beauty*; and the symbolic, *meaning*” (p. 16; italics added). Study 3 was quasi-experimental (= no *random* assignment to groups), and involved three groups: one that was the main quasi-experimental group would walk in nature on campus and engage in activities aimed to increase nature connectedness through contact with nature on campus, and through emotions, compassion, and meaning; another

group would walk through the green parts of campus and thus have contact (beauty), but would not engage in the other activities; and the third group would do activities around buildings that didn't have green spaces.

The main group stopped along their nature walk three times; once for an emotion-beauty activity which involved talking to each other about their feelings and thoughts of the nature scenes they saw on campus; once for a meaning-beauty experience in which they spent 5 minutes writing about the meaning and symbolism of the nature scenes they saw; and the compassion-beauty⁹ exercise involved watching a video of members of the Royal Society for the Protection of Birds build a birdhouse to protect birds. One of the comparison groups took the same nature walk for the same length of time, but didn't engage in the three activities. The other comparison group, which walked around the built environment, also stopped three times to engage in emotion-beauty, meaning-beauty, and compassion-beauty activities, but those activities were focused on responding to the built environment. They found that the nature-activity group demonstrated a significant increase in nature-relatedness, whereas the other two groups did not (2017).

SCENIC BEAUTY

If you enter "natural beauty" into PsycINFO, most of the relevant hits are written by psychologists. But if you enter "scenic beauty" into PsycINFO one finds a whole different set of studies, written by researchers with various backgrounds, such as field biologists, foresters, and landscape architects.

Hull, Stewart, and Yi (1992), a team from Texas A&M University, investigated hikers in the White River National Forest near Aspen, Colorado, USA. Not surprisingly, they found the most satisfied hikers were the ones who noticed the most scenic beauty, and the least satisfied were bored. Also not surprising, to evolutionary psychologists, is that the highest beauty ratings were given to the grand vistas, and the least to enclosed spaces in forests. Do you prefer hiking uphill or downhill? They found hikers going downhill tended to be more relaxed, in a better mood, and noticed more scenic beauty than those hiking uphill (sounds lazy to

⁹Lumber, Richardson, and Sheffield (2017) considered all three activities as involving the pathway of beauty, and thus hyphenated them emotion-beauty, meaning-beauty, and compassion-beauty, because "beauty was also present through the focussing of attention to the visual aesthetics of nature" (p. 16).

me; on the other hand, it makes some sense—if I am struggling up a steep hill it's enough just to get one foot in front of the other).

Robert Ribe ([2002](#)), a consultant to various agencies concerning landscape architecture, community and regional planning, and the environment, conducted a study with over 1000 participants regarding the difference between finding something *scenically beautiful* (or not) versus *acceptable* (or not). The instructions regarding rating something “acceptable,” were “how much the landscape shown is in a condition that is acceptable for a publicly owned and managed national forest” (p. 766). Ribe sought out people who represented three categories of constituents: (a) people involved in commodity production on public lands, that is, actively involved in making money from land use (Ribe labeled them “productionists”); (b) people with ecological preservationist concerns (you know, tree-huggers; Ribe labeled them “preservationists”); and (c) nonaligned people who were neither green-folks nor people making money from public lands, thus they were considered moderates. He showed members of these various groups 55 photographic slides of vista views in the Cascade and Olympic Mountains in the states of Oregon and Washington in the USA. Some of the slides were gorgeous wild nature but some had clear-cuts, roads, and a wide range of the signs of human activity.

Ribe ([2002](#)) found that all three groups agreed that the most beautiful scenes were also the most acceptable. However, the productionists, who agreed that scenes of clear-cut forests are ugly, nonetheless found them acceptable: “They tend never to see any landscape as unacceptable, even if they find it ugly. These productionists tend to see clear-cuts or other evidence of management as ugly, consistent with general aesthetic norms” (p. 773). Preservationists judge the scenes just the opposite; landscapes with evidence of management were less acceptable, and they found all ugly scenes as unacceptable. The unaligned group is in the middle, finding clear-cuts less acceptable and less beautiful than productionists, but more acceptable and beautiful than preservationists; and their ratings of what is acceptable and what is beautiful are highly correlated. Ribe points out the unaligned may be the majority in any given region, and this study shows that they are responsive to beauty, and find a lack of beauty, due to human intervention, as less, or not, acceptable. Thus, appeals to beauty, when trying to preserve the environment, may be effective with the majority of voters.

BEAUTIFUL GREEN ENERGY

Green energy is good, right? I remember in 1980 one of the very first wind farms outside Goldendale, Washington State, USA, in the Columbia River Gorge (a very beautiful gorge). I was very excited. My wife and I found the huge windmills to have their own kind of lazy beauty as the huge propellers slowly turned. It made us think of Don Quixote. But over the decades, more and more of these windmills went up, and what I initially found charming and exotic began to look like an intrusion and blight on the countryside.

Patrick Devine-Wright and Yuko Howes ([2010](#)), of the University of Exeter in the UK, performed an empirical case study concerning a proposal to create a large offshore wind farm in North Wales. They collected 488 questionnaires from local residents living in the two of the coastal towns that would be near the wind farm. Many of the residents found their view of the ocean to have great scenic beauty, which provided for them, and visitors to the coast, a restorative environment, and they were worried that a wind farm would industrialize their towns and fence in the bay. They wrote, “In one of the towns, the data suggests that contradiction between project and place was experienced as a threat to identity for those with strong place attachment, leading to negative attitudes and oppositional behaviour” (p. 271). The authors note this may be a NIMBY (not in my back yard) phenomenon.

Life is so full of contradictions. We need green energy and we need beautiful restorative nature. So am I in favor of wind farms, but just NIMBY? Let them clutter up someone else's scenic beauty, but not mine? Alas, no easy answer here.

LET'S GET SERIOUS

Our planet is in terrible trouble. The beauty of most mountain glaciers will disappear in our lifetime. Half of the beautiful coral reefs of our sublime oceans are already dead. The mouths of many of our beautiful rivers are dead zones. The smog from factories obscure the view of many beautiful vistas and kill us through our lungs. Three times as many people die from pollution every year than AIDS, tuberculosis, and malaria combined; 15 times as many people die from pollution every year than from all forms of violence, including war (Landrigan et al., [2018](#)). We *must* get motivated to change our worldwide habits of life. What is a better motivator than a love of beauty?

Hope or the Lack Thereof. If you search¹⁰ for “natural beauty” in empirical journal articles in PsycINFO the oldest hit is for a paper on beauty and hope published in 2006¹¹ (Diessner, Rust, Solom, Frost, & Parsons, 2006). That study showed that the trait of hope had no relationship with EnB ($r = 0.09$).¹² Perhaps this is why I find teaching the Psychology of Sustainability so difficult; I have taught it three times over the last five years. As you might guess, I score very high on EnB, but I’m finding it difficult to have hope for the immediate future (the next 25 years). Sigh. I do have hope for the long-term future. I think humanity will figure it out and start acting like a unified, altruistic superorganism, stop the pollution, and become authentic stewards of all the beautiful creatures of this planet (cf. Nowak & Highfield, 2011; Wilson, 2015). As a side note, I just watched the best talk I’ve heard to inspire hope regarding activism to prevent further climate change, by the atmospheric scientist Katherine Hayhoe from Texas Tech. It’s a TED talk here: https://www.ted.com/talks/katherine_hayhoe_the_most_important_thing_you_can_do_to_fight_climate_change_talk_about_it?language=en.

Don’t let me be a wet blanket. Watch the talk, become hopeful, think about natural beauty, and talk to your circle (as Hayoe recommends), and cheer-up.

The brilliant philosopher of pedagogy Sona Farid-Arbab (2016) has written concerning the sources and forces “that motivate a person to pursue” the “twofold moral purpose” of personal and collective transformation:

Two forces stand out as of paramount importance. The first is ‘attraction of beauty’ manifesting itself in myriad ways: in love for the majesty and diversity of nature; in the impulse to express beauty through the visual arts, music, and crafts; in the pleasure of beholding the fruits of these creative endeavors; in the stirrings within the human heart of noble emotions in response to the beauty of an idea, the elegance of a scientific theory, and the perfection of character in one’s fellow human beings; and in longing for order and meaning in the universe and in social relations The second force that together with attraction to beauty ... impels moral purpose is ‘thirst for knowledge.’ (pp. 90–92)

¹⁰In December 2018.

¹¹The year 2006 wasn’t very long ago. Why weren’t psychologists studying appreciation of *natural beauty* before that? Actually they were, they just didn’t use the phrase “natural beauty.” For example, the Kaplans used the word “attractiveness” (Kaplan & Kaplan, 1989).

¹²It was a small study ($N = 61$), however, so maybe we should not generalize from it.

These are very profound words that explain both individual flourishing and the flourishing of our whole planet. Also notice that she mentions natural, artistic, moral, and ideational beauty, which are four kinds of appreciation traits measured by the Engagement with Beauty Scale-Revised (Pohling et al., 2019).

TAKE-AWAYS

1. The higher the level of EnB the more one loves all humanity; and also loves their friends, family, and romantic partners more.
2. Bears are cool.
3. Engagement with Natural Beauty is a trait and a state. A trait is an enduring aspect of personality that influences us across contexts. A state is feeling an immediate experience.
4. *Appreciating* natural beauty involves: (a) perceptions, (b) cognitions, (c) emotions, (d) trait/states, (e) virtues, and (f) values.
5. The great philosopher Immanuel Kant thought taking an interest in natural beauty was the sign of a good soul.
6. The Kaplans found that we are most strongly attracted to natural scenes that are coherent, with repeated scenery that is somewhat uniform, but at the same time complex (rich with diversity) and that also have mystery. Unity-in-diversity + mystery = beauty.
7. Being Connected to Nature (CN) and EnB are strongly related.
8. EnB indirectly influences proenvironmental behavior through being connected to nature.
9. EnB has a strong relationship with prosociality; EnB may cause generosity and trust indirectly through the effect of positive emotions; EnB moderated the effects that beautiful plants have on prosocial behavior. EnB makes us nicer people.
10. EnB may also make us better human beings because it is positively related to such transcendent traits as gratitude, spiritual transcendence, and awe; and negatively related to anti-transcendent traits like materialism.
11. EnB may encourage us to be better human beings because it may influence caring, moral identity, and fairness and justice; and it is related to such fine values as universalism, spirituality, and benevolence; and it is unrelated to valuing power, personal achievement, and hedonism.

12. EnB makes us smarter through relieving attentional fatigue, increasing concentration, and being open-minded.
13. EnB makes us happier and increases a range of positive emotions; and it may increase our emotional well-being, social well-being, psychological well-being, and sense of meaning in life.
14. EnB, in general, however, is unrelated to satisfaction with life.
15. The 30 Days Wild campaign in the UK showed increases in participants' health, happiness, proenvironmental behaviors, connectedness to nature, and EnB; and EnB mediated the relationship between CN and happiness.
16. People whose economic interests involve land use find destruction or deformation of the landscape acceptable, even when they find it ugly.
17. Follow atmospheric scientist Katherine Hayhoe's advice and *talk to people* about how important natural beauty is and why we must take greater action to stop pollution and climate change immediately.
... beauty would save the world!
(Dostoevsky, 2001, section V., n. p.)

BEAUTY INTERLUDE FOUR

Consummation and Warning

At the last interlude, we left Psyche afraid of the noises in her bedroom, although it was a “gentle sound” (Kenney, 1990, p. 53). After the bath, banquet, and choir, Psyche had gone to her bed. The noises turn out to be Eros entering the bedroom through the window casement. She somehow knows this is her “unknown husband” (p. 53) and they consummate their relationship. Eros continues to visit her every night under cover of darkness. She knows him by his touch and his voice, but she never “sees” him. He warns her that she should not gaze upon him (Fig. 5.4).

Psyche’s parents miss her very much; her sisters are very sad and go to the mountaintop from where she disappeared and cry loudly. Eros warns Psyche not to listen to her sisters’ lamentations, and tells her that if she pays attention to them, it will bring “heavy grief” to him and “sheer destruction” to her (p. 55). But Psyche kisses him over and over and begs

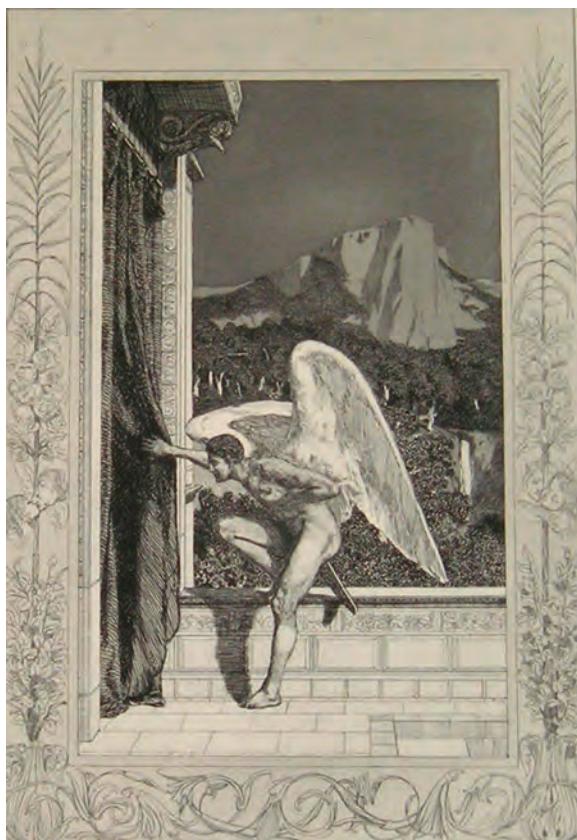


Fig. 5.4 “Amor Kommend” Etching and Aquatint 1880 Max Klinger 1857 (Leipzig)—1920 (Naumburg). (Photo by Rhett Diessner; Etching in author’s collection)

for the sisters to be allowed to visit, and Eros gives in and says he will allow Zephyr to bring them to the wondrous palace.

The sisters arrive and they have a happy reunion with the sister they thought deceased. But when the sisters see Psyche’s deep happiness, and the awesome value of the palace and its decorations, “deep in their hearts” (p. 59) a deadly sin begins to stir [can you guess which one? To be continued]

Commentary

In the great variety of paintings and sculptures of Eros, for the last several millennia, he is depicted as *either* a beautiful, virile young man *or* as a pudgy, weak child. In the Psyche and Eros myth, he is most definitely portrayed as the virile young man. Existentialist philosopher-psychologist Rollo May (1969, 1985) has explained that the young man Eros embodies a psychologically healthy approach to love and sex. In contrast, the weak, pudgy child signifies a cultural deterioration of love into something banal and insipid; and shows fear and denial of the beauty of adult intimacy.

Many psychologists have varied interpretations of Eros forbidding Psyche to gaze upon him (Bettelheim, 1977; Diessner, 2007; Diessner & Burke, 2011; Downing, 1988; Gilligan, 2002, 2004; Gollnick, 1992; Houston, 1987; Johnson, 1976; Labouvie-Vief, 1994; Von Franz, 1992). I like the simplest explanation. Eros is as beautiful as a Greek god; wait a minute ... he is a Greek god! He wants to be loved for his moral beauty—for his character strengths and personality—and not simply for his outer form, not just his physical beauty. I can totally relate—I've had that problem my whole life.

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CHAPTER 6

Always Appreciative of Art's Beauty: The Trait of Engagement with Artistic Beauty

When I was 13 years old, I decided I wanted to be a great artist. I began painting in oils and acrylics. I planned to be the next Van Gogh. I knew that great artists followed their own muse, and that taking classes on art or reading a “how to” book would corrupt my genius. So I went to the local library and checked out book after book of great artists’ paintings and simply studied the photographs of their paintings in the books and read their biographies. I never read about how to draw or paint and I never took a class or workshop on painting. By age 15, I gave up painting, feeling I had little talent (and I’m pretty sure I was right with that judgment).

I love music. When I was 7 years old, the music teacher would come to our second grade class once a week. I would get so excited. I loved to sing! One day, I noticed that many of the students would turn my direction and look at me when I belted it out. I thought they were impressed with my wonderful voice. Well—its turns out—they were impressed! But not because my voice was wonderful. Now at age 63, when I am in a group sing situation, if I join in, my wife plants a sharp elbow in my side to get me to stop; and she is a calm and non-violent person. Oh well. Either God or my DNA, or both, burned me in the singing and painting department. Born without talent. Do I have low self-esteem? No, I just have a bit of intrapersonal intelligence, and I try to accept reality. But this hasn’t stopped me from loving the beauty of paintings and music. My home is filled with music from dawn till dusk and we have amazing art in every room.

LOVE

Love and beauty make life worth living. I have mentioned repeatedly that Plato and Socrates framed beauty as the object of all love in the *Symposium*. The first great Christian philosopher, St. Augustine (400/[1961](#)), seems to have a similar view:

I used to ask my friends ‘Do we love anything unless it is beautiful? What, then, is beauty and in what does it consist? What is it that attracts us and wins us over to the things we love? Unless there were beauty and grace in them, they would be powerless to win our hearts.’ (p. 83)

Do you love beautiful art? Has your heart ever been attracted to a beautiful building? To a delightful dance? To a mellifluous poem? To an uplifting (or beautifully sad) song? To a poignant painting? To a sublime sculpture? To a fantastic film? To a movingly nuanced novel? To a terrific tattoo? Did I just say “tattoo?” One time when discussing art in my PSYC 101 class, a student vociferously stated she did not like art. She had wonderfully intricate sleeves of tattoos. I asked her if the artist who inked her beautiful tattoos created art on her arms. She got the point. I asked another student, who was a non-believer in art, if he had ever seen a really beautiful motorcycle. I pointed out someone had designed that motorcycle. Point also well taken. Beautiful art is all around us. Anything designed by a human (or perhaps by a bower bird) has the potential to be beautiful art.¹

The *trait* of engagement with artistic beauty applies most fully to those people who notice the beauty of design all around them. Those highest on the trait love paintings, music, architecture, poetry, literature, sculpture, and so on. They notice the design of furniture, of jewelry, of utensils, interior fashion, and clothing. But we are all individuals. Some of us may be ga-ga for paintings and drawings, and listen to music once in a while. Some of us may be plugged into music 24-7 and occasionally notice a painting. The items from the Engagement with Beauty Scale-Revised (EBS-R; Diessner, Solom, Frost, Parsons, & Davidson, [2008](#); Pohling et al., [2019](#)) that tap this trait are:

¹The word, and concept of, “art” seems impossible to define. Some like to make a difference between *fine art* and craft. The fine arts include music and painting and poetry, among others. Craft might be jewelry or furniture or engineering. Although it may well be that some arts are “higher” and “finer” than others, we will not concern ourselves with that in this chapter. I am taking the broadest definition: anything designed is art, for better or worse.

Statements 5–8 below refer to **experiences with art, such as paintings, sculpture, music, dance, architecture, poetry, novels, and literature.**

5. I notice beauty in art or human-made objects.
6. When perceiving beauty in a work of art I feel changes in my body, such as a lump in my throat, an expansion in my chest, faster heart-beat, or other bodily responses.
7. When perceiving beauty in a work of art I feel emotional, it “moves me,” such as feeling a sense of awe or wonder or excitement or admiration or upliftment.
8. When perceiving beauty in a work of art I feel something like a spiritual experience, perhaps a sense of oneness or being united with the universe or a love of the entire world.

* * *

The trait of engagement with artistic beauty (EaB) has been shown to be empirically connected with love. In a study with an internet sample of 497 participants, we examined the relationship between Belinda Campos's scale of four kinds of love (Campos, Keltner, & Gonzaga, 2002) and engagement with artistic beauty (EaB) (Diessner, Iyer, Smith, & Haidt, 2013). We found a solid medium-sized correlation ($r = 0.41, p < 0.001$)² between love of all humanity and EaB. People with a high level of EaB are likely to profess loving all humanity; and people strong in agaric love are likely to find various forms of art beautiful. EaB also had significant and positive relationships with three other kinds of love, although the correlations are smaller: EaB × love for friends, $r = 0.21$; EaB × love for family, $r = 0.17$; EaB × romantic love, $r = 0.20$. Not only is beauty the object of love, but loving others goes hand-in-hand with appreciating the beauty of art. A concept closely related to love is empathic concern (Davis, 1983). In this same study we found, with an internet sample of 1460 participants, that people with strong emotional empathy also tended to engage with artistic beauty; and those who appreciate artistic beauty tend to have strong emotional empathy for others ($r = 0.43, p < 0.001$). Notice that all

² r is the statistical abbreviation for correlation (0.10–0.29 is a small correlation; 0.30–0.49 is medium; 0.50 or higher is a large correlation); p is the abbreviation for probability—the smaller the number the more statistically significant the correlation is.

of these correlations for EaB are slightly smaller than for engagement with natural beauty (EnB), but quite similar.

Would identifying with all humanity (McFarland, Webb, & Brown, 2012) be a sign of love? To identify with someone is to think of them as a part of who you are. In the same study mentioned above (Diessner et al., 2013), we found, with an internet sample of 1762 participants, that EaB is moderately strongly related to thinking you are part of one big human family ($r = 0.42$; $p < 0.001$), which is slightly higher than EnB's correlation. Interestingly, identifying with your country (e.g., I am proud to be Canadian or I am proud to be Nigerian or I am proud to be Chinese) has a much smaller correlation with EaB, although it is still positive and significant ($r = 0.19$; $p < 0.001$), and even smaller than EnB's correlation. It appears that lovers of artistic beauty tend to be world citizens rather than nationalistic. All humanity first! Countries second.

POET'S CORNER: A LOVE POEM

A sonnet from the Bard seems appropriate after a section on love:

Who will believe my verse in time to come,
 If it were filled with your most high deserts?
 Though yet heaven knows it is but as a tomb
 Which hides your life, and shows not half your parts.
 If I could write the beauty of your eyes,
 And in fresh numbers number all your graces,
 The age to come would say 'This poet lies;
 Such heavenly touches ne'er touched earthly faces.'
 So should my papers, yellowed with their age,
 Be scorned, like old men of less truth than tongue,
 And your true rights be termed a poet's rage
 And stretched metre of an antique song:
 But were some child of yours alive that time,
 You should live twice, in it, and in my rhyme.
 (Shakespeare, Sonnet #17)

TRAIT EAB AND APPRECIATION

There is a massive amount of psychological research, published in many journals, concerning art and it is increasing. Two of the leading journals are the APA-sponsored *Psychology of Aesthetics, Creativity, and the Arts*; and *Empirical Studies of the Arts* published by Sage Publishers. Summarizing

that research would fill several books. For this one chapter, however, we will focus on empirical research that is related to the *trait* of engaging with artistic beauty. As you may remember from the previous chapter, a trait is enduring across contexts. If a person has a high level of trait Eab, they likely enjoyed art as a child, as a teen, and as an adult. They may be attracted to a wide range of expressive beauty: from dance to theater to poetry to painting to music to pottery to architecture. But, it is also possible for traits to increase, or decrease, over time; to become wider across contexts, or narrower (Jackson, Hill, Payne, Roberts, & Stine-Morrow, 2012; Roberts et al., 2017). It depends on environments and choices and genes. A person may choose to focus on their love of paintings, and tend to ignore other art forms to some degree. Or, a person may choose to consciously embrace every art form they encounter. A person may take a class that turns them on to art forms that are new to them—there are so many possibilities.

As noted in the previous chapter, *appreciation* is similar to *engagement*, although engagement emphasizes the emotional experience during appreciation (cf. Armstrong & Detweiler-Bedell, 2008). Integrating the definitions of appreciation from Haidt and Keltner (2004), Güsewell and Ruch (2012), and Adler and Fagley (2005), indicates that appreciation of, and engagement with, beauty has at least these facets: (a) perceptual (the process of noticing sensory information that we will find beautiful), (b) cognitive (thinking about the object of beauty and making aesthetic judgments), (c) emotional (feeling the beauty), (d) trait/state (it can be a general disposition or a one-off temporary experience of beauty), (e) virtue (experiences of beauty may make us better human beings; transcendence and the character strength of Appreciation of Beauty and Excellence), and (f) valuing (the beauty of the object/scene is important to us).

FEATURED MUSIC

A chapter about art should include something about paintings, eh? In fact, I'll bet most Westerners think of paintings when they hear the word "art." The great Russian composer Modest Mussorgsky (1839–1881) composed some gorgeous music about his reaction to paintings at an exhibition, in fact, the piece is typically entitled, "Pictures at an Exhibition." The music is quite poignant, because the paintings were by Mussorgsky's young friend Viktor Hartmann, who had died from an aneurysm in the previous year. Here is Kurt Masur conducting the Leipzig Gewandhaus Orchestra: <https://www.youtube.com/watch?v=Sq7Qd9PSmR0>.

TRANSCENDENCE

As noted in the previous chapter, positive psychology has framed transcendence as that which allows us to “forge connections to the large universe and thereby provide meaning to [our] lives” and may involve the “universal, ideal, sacred, or divine” (Peterson & Seligman, 2004, p. 519).

Jonathan Haidt and Dacher Keltner (2004), in their seminal chapter entitled “Appreciation of Beauty and Excellence,” predicted that appreciation of beauty would have positive relationships with gratitude and spirituality, and a negative relationship with materialism. Those three traits are related to the virtue of transcendence. In fact, Peterson and Seligman (2004) considered spirituality as the archetype of transcendence, and gratitude as a character strength of transcendence; and materialism is the archetype of non-transcendence.

The great artist Wassily Kandinsky (Russian, 1866–1944), credited with perhaps creating the first abstract painting, wrote this concerning spirituality and art in his 1912 book,

Concerning the Spiritual in Art:

The spiritual life, to which art belongs and of which she is one of the mightiest elements, is a complicated but definite and easily definable movement forwards and upwards. This movement is the movement of experience. It may take different forms, but it holds at bottom to the same inner thought and purpose. (1912/1947, p. 12)

The predictions made by Haidt and Keltner (2004) have since been empirically confirmed (Diessner et al., 2008). People with the trait of spiritual transcendence (Piedmont, 1999) appreciate artistic beauty, and perhaps EaB leads people to be more spiritual ($r = 0.21, p = 0.001$). And the more materialistic you are, the less you experience EaB; and the more you engage with artistic beauty, the less materialistic you are ($r = -0.12, p < 0.05$). The trait of gratitude (Watkins, Woodward, Stone, & Kolts, 2003), in a small study ($N = 206$), was moderately related to EaB ($r = 0.31, p < 0.0001$) (Diessner et al., 2008), as well as in a large study ($N = 1166; r = 0.26$; Diessner et al., 2013). Grateful people tend to notice the beauty of art and engage with it; people who are high on EaB tend to be grateful people. Haidt and Keltner also anticipated that appreciation of beauty and the transcendent emotion of *awe* would be related, noting that beauty lovers would “frequently” feel “awe” (p. 537). And indeed, this is what Angelika Gusewell and Willibald Ruch (2014) found between EaB and awe: a medium-sized $r = 0.35$ ($p < 0.001$).

MORAL FOUNDATIONS

Jonathan Haidt's Moral Foundation Theory (Graham et al., 2011; Haidt, 2007) posits at least five moral foundations that have evolved to characterize human beings: Caring, Fairness, Loyalty, Authority, or Sanctity. Guess which one of Haidt's five moral foundations is most related to EaB? The first study to examine this relationship between EaB and moral foundations was with an internet sample of 4672 participants and it was found that EaB correlated most strongly with the Care foundation ($r = 0.23, p < 0.001$), and somewhat with the Fairness foundation ($r = 0.14, p < 0.001$); and had small, negative, but significant relationships with Authority ($r = -0.09, p < 0.001$) and Sanctity ($r = -0.05, p < 0.001$) foundations, and no relationship with Loyalty ($r = -0.04$). This is not surprising as it is well known that political liberals (the left) value art more than conservatives, and that liberals endorse caring and fairness more than conservatives, and conservatives value authority, loyalty, and sanctity more than liberals (Graham et al., 2011).

BEAUTIFUL IDEA MOMENT

Vincent Van Gogh wrote in a letter to his brother Theo: "If one truly loves nature one finds beauty everywhere" (1874, n.p.).

ARCHITECTURAL BEAUTY

The art nouveau design period was from about 1890 to 1910. It is characterized by organic sinuous patterns that are very lush and ornate. It influenced architecture in many countries as well as furniture and jewelry design; its influence on paintings was minimal, but it had a big effect on illustrators and designers of posters. Perhaps the greatest art nouveau poster creator was a Czech who lived in Paris, Alphonse Mucha. Here is an example of his work (Fig. 6.1):

One of the most fabulous architects, ever, was Antoni Gaudi (1852–1926). He was from Barcelona in Catalan (which is “sort of” in Spain, although many Catalonians would like independence). His work has many art nouveau aspects. Here is a photo I took of his building La Pedrera, also known as Casa Mila, built between 1906 and 1912 (Fig. 6.2).

Why are we looking at art nouveau? Good question. It's because I like it. A lot. Totally resonate to it. Maybe that is because it is full of curves and



Fig. 6.1 Plate #3 from Document Decoratifs. Alphonse Mucha. Original Lithograph from 1902. (Owned by, and photo credit to, Rhett Diessner)

neuroaestheticians have shown that we find curvature especially beautiful in architecture (Vartanian et al., 2013); and indeed, cross-cultural research has shown we humans prefer curved lines over sharp lines in the designs of many objects (Gómez-Puerto et al., 2018).

Although this makes sense to me, here is my problem: I also love Art Deco architecture and furniture and jewelry. Art Deco is all about geometric lines and often sharp angles, and sometimes no curves. It was the dominant artistic design style in the West from about 1920 to 1940. Some of



Fig. 6.2 La Pedrera. (Photo credit: Rhett Diessner)

America's greatest buildings are Deco, such as the Empire State Building, the Rockefeller Center, and the Chrysler Building, all in New York City. Here is a photo I took of a beautiful model who was on the top of the Rockefeller Tower; the Empire State Building is behind her (Fig. 6.3).

I also took a photo of the Art Deco Zeus that adorns the Rockefeller Tower (Fig. 6.4):

Now try an experiment: Google the Empire State Building, the Rockefeller Center, and the Chrysler Building and click on images. Check out a few photos of each. Which building is the most beautiful? Or, if you are reading an online version of this book, you can click here:

Empire, <http://www.esbnyc.com/>.

Fig. 6.3 Empire State Building. (Photo credit: Rhett Diessner)



Rockefeller Tower (AKA, the Rock, also known as the RCA Building, GE Building, and more recently Comcast Building), https://en.wikipedia.org/wiki/30_Rockefeller_Plaza.

Chrysler, https://en.wikipedia.org/wiki/Chrysler_Building.

After you have done your web search, read this footnote.³

FIVE FACTOR MODEL

Diessner et al. (2013) examined EaB and the Five Factor Model (or the Big Five; John, Donahue, & Kentle, 1991) with a non-college sample of 3498 people. The strongest relationship between EaB and FFM was with Openness ($r = 0.45$; $p < 0.001$); this is not surprising because the Openness

³If we have the same taste, you will think the Chrysler Building is definitely the most beautiful of the three. Why? Notice that besides the geometric straight lines on the Chrysler, it also has.... Curves! And the Empire and the Rock do not. Notice also that Zeus, sculpted onto the façade of the Rockefeller, also has major curves.



Fig. 6.4 Zeus. (Photo credit: Rhett Diessner)

scale has a subscale (known as a *facet*) which includes questions about how much the participant likes art. The next strongest relationships were between EaB and Agreeableness ($r = 0.17$, $p < 0.001$) and EaB and Extraversion ($r = 0.17$, $p < 0.001$), indicating that people who engage with art have some tendencies to be nice and to be social. EaB had no relationship with Conscientiousness ($r = 0.00$) or Neuroticism ($r = 0.05$).

VALUES

What kind of values do lovers of art's beauty prize? When psychologists want to understand people's values, they often employ the Schwartz Value Survey, developed by Shalom Schwartz at Hebrew University, Israel (Schwartz, 1992). In a large internet sample ($N = 2594$; Diessner et al., 2013), it was found that EaB most highly relates to the values of Universalism ($r = 0.45$), Spirituality ($r = 0.39$), and Benevolence ($r = 0.31$); these are the same three values most treasured by lovers of nature's beauty (see previous chapter in this book). By Universalism, Schwartz (2012)

means valuing “the welfare of all people and for nature” (p. 7). He considers the goal of Spirituality to be “meaning, coherence, and inner harmony through transcending everyday reality” (p. 7). Benevolence is “preserving and enhancing the welfare of those with whom one is in frequent personal contact (the ‘in-group’)” (p. 7). I must score high on EaB, because I find those very attractive values.

EaB also has some relationship with valuing Self-Direction ($r = 0.19, p < 0.001$) and Stimulation ($r = 0.19, p < 0.001$). This seems to make sense—artists seem to like to make their own choices (self-direction) and need stimulation to get the creative juices flowing. And art lovers enjoy the stimulation of viewing art.

What kind of values do those who engage with the beauty of art have *no interest in*? EaB is completely unrelated to valuing Conformity ($r = 0.00$), Tradition ($r = 0.00$), Security ($r = 0.01$), Achievement ($r = 0.01$), or Power ($r = -0.05$) (Diessner et al., 2013). Interesting.

A MOMENT FOR PHILOSOPHICAL REFLECTION

In Chap. 2 of this book, on philosophy, I noted that Hegel considered the artistic beauty of fine art be transcendently higher than natural beauty. He asserted “that artistic beauty stands *higher* than nature. For the beauty of art is the beauty that is born—born again, that is—of the mind” (Hegel, 1835/1993, p. 4). The word “mind” has been translated from the German *Geiste*, which is commonly translated to English as *spirit*. This locution by Hegel may be a reference to the Christian concept of being born first of water and then born of the Spirit (John 3:5). Hegel also argues that fine art can live in the same sphere as religion and philosophy and can be a “mode of revealing to consciousness and bringing to utterance the Divine Nature, the deepest interests of humanity, and the most comprehensive truths of the mind [*Geist; spirit*]” (p. 9). Hegel goes on to say that art has illustrated the profoundest intuitions of all nations, and that art is the key to understanding the wisdom and religion of diverse cultures. Do you think Hegel might be right?

FAIRNESS AND JUSTICE

Harvard philosopher Elaine Scarry (1999) has emphasized how closely linked justice and beauty are; and as noted above, Jonathan’s Haidt’s moral foundation of Fairness was significantly and positively, although

somewhat weakly ($r = 0.14$, $p < 0.001$), associated with EaB (Diessner et al., 2013). This indicates that people who notice artistic beauty are inclined to value fairness.

In a study by Diessner, Davis, and Toney (2009), EaB was found to be related to both Kohlberg's (1984) justice reasoning stages and to the personality trait of fairness. The *Defining Issues Test* (Rest & Narvaez, 1998) is a multiple-choice measure which indicates a person's stage of Kohlbergian justice reasoning, and this test correlated 0.18 ($p < 0.05$) with EaB; this is a small correlation, but it is significant. When a partial correlation using the Five Factor Model's trait of Openness was applied, it appeared that it mediated the relationship; that is, EaB had an indirect influence on justice reasoning stages, which may be explained by Openness.

That same study (Diessner et al., 2009) showed an even stronger relationship between EaB and the personality trait of fairness, as measured by the IPIP-VIA, with $r = 0.29$ ($p = 0.002$). However, when a partial correlation using the Five Factor Model's trait of Openness was applied, it appeared that it may have mediated the relationship; that is, EaB had an indirect influence on the personality trait of fairness through the participants' levels of Openness.

FEATURED MUSIC

What is the most beautiful piece of music ever written? Not possible to answer, right? But Beethoven's Sonata #14, the so-called Moonlight Sonata (Beethoven did not name it that) would be on the list of "possibly." Here it is played by Evgeny Kissin (one of my music teacher Naeem's favorite pianists; he has technique and heart): <https://www.youtube.com/watch?v=j50ar2walNs>.

SELF-ACTUALIZATION AND EAB

Self-actualization is near and dear to the hearts of both psychologists and anyone interested in personal growth. The concept of self-actualization⁴ comes from the Humanistic Psychology movement and in particular from Abraham Maslow (1970). It involves taking personal responsibility to turn one's potential into something actual. Most people are familiar with

⁴ "Self"-actualization sure sounds like an idea that would only arise in an individualistic culture, eh?

Maslow's classic hierarchy of needs: it begins with physiological needs, then safety needs, belongingness needs, esteem needs, and finally the need for self-actualization. Although most textbooks present Maslow's hierarchy as having those five levels, it turns out that self-actualization isn't the final level. Late in his life Maslow posited levels of need that come after self-actualization—such as cognitive needs, which are then followed by aesthetic needs, and the capstone is the need for self-transcendence.

Do you think EaB and self-actualization are related? I thought they would be fairly strongly correlated. I assumed as people took more charge of developing themselves into the person they want to be, that they would notice more of the beauty around them. This turns out to be only mildly true. In our first study ($N = 97$) of self-actualization and EaB, we found them negatively related ($r = -0.09$), although the correlation is non-significant and small enough we can simply consider them unrelated (Howell, Diessner, & Robinson, 2017). In our second study, we found EaB mildly positively and significantly related to self-actualization ($r = 0.19, p < 0.05$); however, when we combined the two studies, the correlation became a non-significant 0.11. Interestingly, even in the second study, neither Engagement with Natural Beauty nor Engagement with Moral Beauty had significant correlations with self-actualization—only EaB did. Humanistic psychologists, like Maslow and Carl Rogers, referred to our lives as projects. Perhaps EaB has some relationship to self-actualization because self-actualizing is the art of creating our own life project.

EAB AND ARTISTS AND MUSICIANS

It seems like a no-brainer that painters and musicians would have higher levels of trait EaB than people who did not consider themselves artists or musicians. But can we be sure? Well, yes we can, because we have data. The first study published in this regard examined levels of trait EaB in art and music students and compared them to education and psychology majors. So you were right, the artists and musicians had significant higher EaB scores and with a large effect size, meaning it was a very substantial difference ($d = 0.83$) (Diessner et al., 2008). What if we compared orchestral musicians with career military officers? Do you have a guess which scored higher on EaB? Yes, you are right again, professional musicians do (Eggimann & Schneider, 2008). Now we need a study examining EaB with members of military bands—they are professional musicians, but also

serving in the military. What's your guess? I'll bet they are as engaged by artistic beauty as orchestra musicians. Maybe you will complete such a study for your senior project or master's thesis.

Our Swiss team of Angelika Güsewell and Willibald Ruch (2012) studied architects, painters, and musicians and found they had higher levels of trait EaB than those in non-artistic professions; in another study they confirmed that professional musicians were more engaged with appreciation of beauty than non-musicians (Güsewell & Ruch, 2015). In yet another study, Güsewell and Ruch (2014) found professional musicians to have higher levels of trait EaB than amateur musicians, although the amateurs tended toward engaging with a broader range of beauty (including natural and moral beauty) than the professionals. They also discovered that professional soloists had a tendency to be responsive to all types of beauty, including artistic beauty, and more so than orchestra musicians or music teachers. Conclusion: soloists, who are especially recognized experts on their instrument or voice, are different from other musicians.

Artists, that is, those who consider themselves painters, also have high levels of EaB. In fact, compared to people who do not identify as being artists, there is a very large difference (effect size $d = 0.89$). At least this was so in a sample of 204 artists and non-artists in the UK, based on a study by Sahar Zabihian and myself (2016). Those artists also had higher levels of the big five trait of Openness (no surprise), and higher levels of trait engagement with beauty. However, their level of engagement with moral beauty was a little higher than non-artists, and just trending toward significance ($p < 0.10$). Surprising to me was that the artists were significantly more happy than the non-artists, although it was a small effect size ($p = 0.003$; $d = 0.40$). I must have the classical bias of thinking of artists as brooding and a bit depressed. So, I have experienced the scientific thrill of disconfirmation. Go happy artists!

CROSS-CULTURAL CAVEAT

People engage with artistic beauty in different ways in different cultures. Although all cultures have the concept of beauty (Brown, 1991; Haidt & Keltner, 2004), we can be sure that different cultures are going to frame beauty in different ways. Is the personality trait of EaB different in different cultures? That also seems likely, but we have very little published research on this topic. Studies using the Engagement with Beauty Scale (EBS;

Diessner et al., 2008) across a variety of cultures have found a similar factor structure to the data collected from various translations of the EBS, and the Engagement with Artistic Beauty subscale (EnB) has acceptable reliability across several disparate cultures. This, at a minimum, showed that the various items on the EaB subscale made sense to the people in cultures as diverse as Russia, Greek Cyprus, Germany, Iran, Switzerland, Croatia, Samoa, Japan, and India (Capaldi et al., 2017; Güsewell & Ruch, 2012; Pohling et al., 2019; Richel et al., 2008; Sabadosh, 2016, 2017). However, it is clear that much more research needs to be done about the variety of possible EaB trajectories from various cultures.

POETRY CORNER

This poem was written by the great Bolognese poet Julio Savi:

Psyche and Poetry

San Giovanni in Persiceto (Bologna),
29 February 1996
by Julio Savi

... there came
Thought after thought to nourish up the flame
Within my breast; so that the morning light
Surprised me even from a sleepless night;
And up I rose refresh'd, and glad, and gay ...

John Keats

You are not nymph to me,
nor am I satyr lusting
after you. I am not
Zulaykhá nor you
Joseph, but I am
Jacob blinded
by too many tears
shed for his son's
long and abhorrent absence.
I am Majnún, indeed, and you
his unreachable Laylá.
Shall I always sing
unappeased longings?

I never frequented
Vulcan's smithy.
I flee from its busy
sounds and shabby
tools, its shaggy
stenchy, perspiring muscles.
I am not Arachne, then,
and you her magnificent
web. I am Narcissus,
instead, and you
limpid sheet of water;
I am Echo, and you
transforming mountain
with grassy recesses.

I want you as light
as veil of trembling bride,
as subtle as frail
stem of a meadow flower,
as delicate as white nymphaea
laying upon the waters.
You are not to me solemn
hawk's flight, but whirring wing
of iridescent humming-bird,
not enamelled sunset palette,
but ethereal rainbow's lightness.

When I speak to you
in the solitudes of my heart,
I hear the answer
of your gentle voice.
But if I venture
to reverberate the echo
of your words into more
concrete dimensions,
suddenly I hear cawing
crows, hooting
owls. Alas,
poor Psyche, your candle's
drop awakens Eros.
He smiles and bestows
upon you his warm
and soft embrace, but then

he flies away. And you,
 Psyche, find yourself
 alone, empty
 your alcove, still panting
 your breast, as yet unappeased
 your exhausting desire.

But perhaps some day
 after that meeting
 you will feel in your bosom
 like a flutter of wings.
 Perhaps that fleeting embrace
 will have born you a child.
 (Savi, 2002, pp. 208–210)

A BRIEF NOTE ON GENDER

Although gender may be as unique as a finger print, if we examine the classical binary category we find a difference between women and men on their EaB scores. Who do you think scores higher? In a large sample ($N = 15,129$) made up of 75% Americans and 25% from over a 100 other countries, and comprised of 45% women and 55% men, it was found that women have significantly higher EaB scores than do men, although it is a small effect size ($d = 0.22$) (Pohling et al., 2019). Women also have higher scores than men on Engagement with Natural Beauty ($d = 0.39$; also a small effect size) and on Engagement with Moral Beauty ($d = 0.39$). Why do you think there is this difference? Can evolutionary psychology explain it?

LIVE LONG AND PROSPER

One of the Big Five traits is Openness to Experience, and one of the elements of Openness is the aesthetic facet. The aesthetic facet score of a person is basically another way of measuring EaB (Diessner, Pohling, Stacy, & Güsewell, 2018). One major study (Williams, Suchy, & Kraybill, 2013) has shown that scoring high on the aesthetic facet (and also on the values facet of Openness) may protect a person from dementia. Researchers tapped into a community-based sample of older persons and demonstrated that low levels of the aesthetic and value facets of Openness predicted cognitive decline, even when controlling for age, education, and the other four major personality traits (Extraversion, Conscientiousness, Neuroticism, and Agreeableness). The authors of the study concluded that elders who are

insensitive to, and uninterested in, beauty and art, and were rigid in their values, were at risk for substantial cognitive decline. Those elders who scored higher on trait Openness, and specifically the aesthetics facet, were less likely to be diagnosed with dementia. Beauty and art can save our minds!

A GREAT MEASURE OF THE GENERAL TRAIT OF APPRECIATING AESTHETICS

Perhaps you might want to do some research that needs a measure of the general trait of appreciating artistic beauty and of appreciating aesthetics very broadly. If so, I recommend the *Desire for Aesthetics Scale* (DFAS; Lundy, Schenkel, Akrie, & Walker, 2010). The DFAS measures individual's aesthetic motivation and how important beauty and aesthetics is to them. The scale includes 36 items regarding 18 areas of aesthetics: general beauty, music/sound quality, architecture, creating art, visual art, literature, films, traveling/nature, cars, physical attractiveness/dating, clothing, food, pets, stationery, interior décor, college campuses, houses/neighborhoods, and general surroundings. The DFAS has shown predictive validity:

willingness to travel a long distance to visit a particular museum (.31), self-rating of ability to judge the quality of artistic works (.41), saying one has a large music collection (.24), saying one owns a lot of movies (.21), willingness to wait in line to see a truly artistic film (.28), and interest in wine and/or beer tasting (.22). (Lundy et al., 2010, pp. 84–85)

The DFAS is also effective at predicting familiarity with music and musicians (Lundy, Allred, & Peebles, 2018), aesthetic bias (Lundy, Stephens, Hinnens, & Whittton, 2018), has demonstrated the more partners share similar aesthetic tastes the more relationship satisfaction they have (Lundy, Barker, & Glenn, 2013), and other aesthetic-related topics (Lundy & Smith, 2017).

IMPRESSIONIST ART

Let's end the chapter with some of the most beautiful art ever created. The Impressionist Movement began in France in the late 1860s, when painters, such as Renoir, Monet, Sisley, Degas, Morisot, and Pissarro began painting in a radical new style (which emphasized the overall impression of a painting on the viewer, instead of exactitude of detail) (Fig. 6.5).



Fig. 6.5 An Oil Sketch of L'Eglise St. Germain, Paris. (26.5 × 35 cm; owned by and photo credit to Rhett Diessner) By Frank Edwin Scott

Scott was an American who went to France in 1882 to study under Alexandre Cabanel, a classical, academic-style painter. But then Scott came under the influence of the impressionists. The L'Eglise St. Germain is the oldest church in Paris, with some parts of it dating back to the sixth century; the tower was re-built in 1163. Scott likely made this small impressionist painting to be sold on the street to tourists in the early 1900s. Which do you like better, Scott's painting of the church above, or this photograph of the church that I took (Fig. 6.6)?

CONTROVERSIAL THOUGHT

David Cecil (1969), biographer of the pre-Raphaelite British painter Sir Edward Burne-Jones, wrote:

The artist's duty, he [Burne-Jones] said, was to make the most of his talent. By doing so, he created an image of beauty; and because beauty is an ennobling thing, this image did good to those of his fellow men who looked at

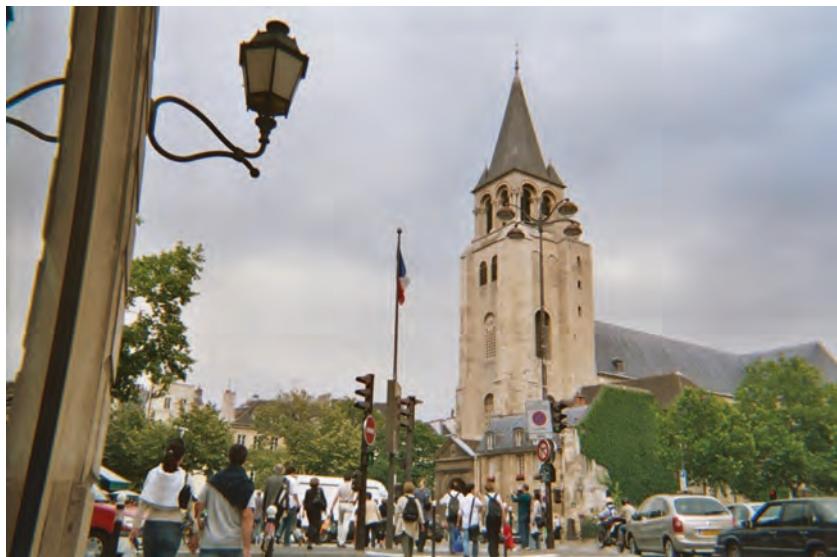


Fig. 6.6 Photograph of L'Eglise St. Germain, Paris. (Photo credit: Rhett Diessner, 2008)

it. He did not approve of ‘realistic’ art, like that of the impressionists, because it did not, in his view, present man [*sic*] with an image of anything nobler or more beautiful than what he saw around him; and so could not elevate him. (p. 144)

I admire Burne-Jones’s focus on beauty. Artists in the twentieth century spurned beauty, but Burne-Jones was embracing it in the nineteenth century. Also, in the twentieth century, it became very un-hip to try to communicate a moral vision with art, and I think that was a mistake. Everything we do has moral implications, and we should embrace that. I agree with Burne-Jones that the best art is ennobling; it can make us better human beings.

LIMITATIONS

So much has been written about art by philosophers, historians, and critics. So much research has been conducted about various aspects of art by psychologists. This chapter has only focused on one small, but important, aspect of empirical research on the psychology of art, and that is concern-

ing the trait of engaging with the beauty of art. Those people with a strong level of such a trait notice the design features of paintings and music and poetry and architecture; but also of everyday objects, such as furniture, kitchen and dining ware, automobiles—anything that has been designed. Aristotle referred to the design aspect of an object as its *formal cause*. Synonyms for formal cause include: shape, organization, structure, arrangement, schema, or form.

BEAUTIFUL IDEA FROM MAHATMA GANDHI UPON WHICH TO REFLECT

“I see and find beauty in Truth and through Truth. All Truths, not merely true ideas, but truthful faces, truthful pictures, or songs are highly beautiful” (Gandhi cited in Gier, 2001, p. 41). This reminds me of the great Romantic Period poet, John Keats. He has a very famous line about Truth and Beauty in one of his poems. If you put Keats, truth, and beauty into your search engine, you can read the poem.

TAKE-AWAYS

1. The trait of EaB leads us to notice, and engage with, the beauty of anything that has been designed.
2. The higher the level of EaB the more one loves all humanity; and also loves their friends, family, and romantic partners more.
3. Trait EaB predicts identifying with all humanity more than with one’s nation (i.e., less nationalistic).
4. *Appreciating* artistic beauty involves: (a) perceptions, (b) cognitions, (c) emotions, (d) trait/states, (e) virtues, and (f) values.
5. EaB may also make us better human beings because it is positively related to such transcendent traits as gratitude, spiritual transcendence, and awe; and negatively related to anti-transcendent traits like materialism.
6. EaB may encourage us to be better human beings because it’s positively related to Jonathan Haidt’s caring and fairness moral foundations.
7. The Art Nouveau (about 1890–1910) and Art Deco (about 1920–1940) design periods are fabulous.

8. EaB may make us smarter through increasing our openness to experience; in the Big Five traits, EaB is most highly related to the trait of Openness.
9. Based on the Schwartz Value Survey, EaB folks most value Universalism, Benevolence, and Spirituality.
10. The great philosopher Hegel thought, “that artistic beauty stands *higher* than nature [beauty].”
11. EaB has some relationship to self-actualizing, but Engagement with Natural Beauty (EnB) and Engagement with Moral Beauty (EmB) do not.
12. Unsurprisingly, artists (painters) have much higher EaB scores than people who do not consider themselves artists. Surprisingly, artists are significantly happier than non-artists.
13. Although it is a small, but significant difference, women consistently score higher than men on EaB (and on EnB and EmB). This is found across a variety of cultures and studies.
14. The higher an elder’s trait of Openness and Aesthetics, the less likely they are to be diagnosed with dementia.

BEAUTY INTERLUDE FIVE

Envy

I'll bet you guessed Psyche's sisters were feeling jealousy or envy. You were right, they were feeling both (jealousy is just wanting what someone else has—it's not necessarily a sin; but envy adds to jealousy the wish to do the person harm, a deadly sin). The sisters reminded Psyche of the oracle telling their father that Psyche would be consumed by a monster and assured her that her "husband" planned to devour her. Preying on her motherly desire to protect her baby, they told Psyche that as soon as her baby was born, the monster would devour both of them. Panic stricken, Psyche asked them what she should do. They told her to sharpen a knife and hide it and an oil lamp under the bed. Then after the monster fell asleep, light the lamp, and cut off his head.

Murder Most Foul Aborted

Psyche in desperation decided to follow this plan to save her child. But when she lit the lamp, and "gazed upon the beauty of the god's face" (Kenney, 1990, p. 75), her sanity returned and she could not do the deed.

Indeed, she saw his quiver of arrows, and curious, touched them, and pierced her thumb, and thus fell even deeper in love with Eros. She could not control herself, and covered his face with kisses, making the oil lamp jealous, which then tried to kiss Eros too, spouting a drop of burning oil onto his shoulder.

(Check out the Maurice Denis panel of Psyche with the lamp over Eros, at the Hermitage Museum, St. Petersburg, Russia: https://www.hermitagemuseum.org/wps/portal/hermitage/explore/buildings/locations/room/B60_F4_H414/?lng=).

The pain of the hot oil awakened Eros. Alas, he realized his beloved had considered murdering him, and without a word, launched himself out of the window. Desperate, Psyche jumped out the window and grasped his ankle. Still with love for her in his heart, he let her down on the grassy bank of a river. He informed her that for her punishment he was leaving her and flew off again. In her intense sadness she threw herself into the river, content to drown. But the river god was having none of that, and tossed back onto the bank.

Goat God to the Rescue

She landed right next to the country god Pan, who had the mountain nymph Echo in his arms, and was teaching her to repeat songs. Pan instantly sized up the situation and told Psyche she was not allowed to harm herself, but rather, she should pray to Eros in adoration, and “strive to earn his favour” “through tender service” to others (Kenney, 1990, p. 79). (Check out Edward Burne-Jones’ painting of Psyche and Pan in Harvard’s Fogg Museum [my wife and I first visited this painting in 1985]: <https://www.harvardartmuseums.org/art/230444>)

Heeding Pan’s advice, Psyche then set out on a journey to find Eros, her beloved ...

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CHAPTER 7

Magnificent Moral Beauty: The Trait of Engagement with Moral Beauty

Have you ever said, “That is a beautiful thing she did”? Or, “He is a beautiful person”? No doubt you were referring to their moral beauty. Have you seen hope, despite great odds? Someone sacrifice themselves out of love? Someone summon the courage to stand up against injustice perpetrated against the disempowered? All of these are signs of moral beauty.

If you have the time, check out these two videos, both of which have been used in moral beauty research (Diessner, Iyer, Smith, & Haidt, 2013; Pohling, Diessner, Stacy, Woodward, & Strobel, 2019):

<https://www.youtube.com/watch?v=jocw-oD2pgo> (or google: W. Oregon Sara Tucholsky)

<https://www.youtube.com/watch?v=uaWA2GbcnJU> (or google: Unsung Hero Thai)

Did you feel yourself *elevated* (uplifted, inspired) while watching either or both of those? The moral emotion of elevation was first described by Jonathan Haidt (2000) when he was a Professor of Psychology at the University of Virginia. Moral beauty is the eliciting condition to arouse elevation, and it causes you to desire to be a better person and to act prosocially (altruistically). We will encounter more about this moral emotion of elevation later in the chapter.

WHAT IS MORAL BEAUTY?

Virtues are that which we find morally beautiful. Jonathan Haidt, now a professor at New York University, has mentioned the following virtues as potentially morally beautiful: forgiveness, gratitude, charity, kindness, courage, love, compassion, and loyalty (Haidt, 2000, 2003a, 2003b; his list of virtues was not meant to be exhaustive, it is just a few examples). Moral beauty has been featured in the field of philosophy since at least the time of Aristotle. The esteemed translator of Aristotle from Greek to English, Joe Sachs (2002), has explained that “*to kalon*,” which literally means “the beautiful,” has been mistakenly translated as “noble” in many previous translations of Aristotle’s *Nicomachean Ethics*. Aristotle, in his *Ethics*, postulated the human virtues to be that which is morally beautiful, and the goal (*telos*) of all virtues is the beautiful. Sachs also explained that for Aristotle a person of good character is one who frequently employs the moral virtues to guide their behaviors, knowing that the beautiful is the highest good of human action.

The third president of the USA was also down with moral beauty and the moral emotion of elevation. The following is a quotation from Thomas Jefferson, first cited in the moral beauty literature by Jonathan Haidt (2003a): “When any ... act of charity or of gratitude, for instance, is presented either to our sight or imagination, we are deeply impressed with its beauty and feel a strong desire in ourselves of doing charitable and grateful acts also” (Jefferson, 1771/1975, p. 349).

THE VIA TEST

Have you ever taken the VIA test? VIA stands for Values in Action. It is my favorite psychological questionnaire (other than the EBS-R of course). The VIA provides you with a profile of your 24 beautiful characters strengths, based on 6 major cross-cultural virtues: Knowledge/Wisdom, Courage, Justice, Love/Humanity, Temperance, and Transcendence (Peterson & Seligman, 2004). I consider it a measure of a person’s moral beauty profile. Go to <http://www.viacharacter.org/www/Character-Strengths-Survey> (or simply Google “VIA test”), to take the test, and get your feedback, no charge.

So many people have taken the VIA, all across the world (it has been translated into many languages), that a 2018 factor analytic study employed a sample size of over 1 million subjects (McGrath, Greenberg, &

Hall-Simmonds, 2018). Their results indicated that the 24 VIA character strengths would best be categorized by a 3-factor solution, which they named Caring, Inquisitiveness, and Self-Control.

My children and grandchildren have all taken the VIA; we posted their top five character strengths on the refrigerator, along with my wife's and mine. This is to remind us to use the language of the virtues with each other, and to encourage each other's moral beauty to flourish (Popov, 1997, 2000; Popov, Popov, & Kavelin, 1997).

BUT IS MORAL BEAUTY REALLY BEAUTY?

Being inspired by someone's courage, or elevated by their self-sacrificing love, seems like very different experiences than seeing a beautiful lake (natural beauty) or listening to beautiful music (artistic beauty). Does the brain process these three kinds of beauty in similar ways? Does moral beauty "fit" the definition of beauty as unity-in-diversity?

Neuroaesthetics and Moral Beauty. As noted in Chap. 4 of this book, Pegors, Kable, Chatterjee, and Epstein (2015) used fMRI to examine place attractiveness with photos of scenes of nature, such as mountain ranges, fields, swamps, forests, and beaches. The primary processing zone for these scenes of nature was in the ventromedial prefrontal cortex (vmPFC). At least two brain studies have implicated the PFC in the processing of moral beauty (Englander, Haidt, & Morris, 2012; Piper, Saslow, & Saturn, 2015); that is, the PFC is activated when you notice virtue. Thus, we have a connection between the brain's processing of moral beauty and its processing of natural beauty.

Takashi Tsukiura and Robert Cabeza (2011), a team connected to Duke University and Tohoku University, Japan, had fMRI participants rate the beauty of faces and make judgments of the moral goodness of various hypothetical actions. They found activations for both beautiful faces and beautiful moral actions in the medial orbital-frontal cortex (mOFC). This supports the common psychological finding that people judge physically attractive people as morally good. And if we think of human faces as part of the natural world (they are), then we have another connection between where the brain processes natural beauty and moral beauty. Luo, Yu, Li, and Mo (2019), a team working from several universities in China, also found overlap between the brain's processing of beautiful faces and beautiful moral attributions; and the mOFC was again implicated. The mOFC is the region of the brain that is central to Ishizu

and Zeki's (2011) brain-based theory of beauty, and is well known to process beautiful music and beautiful paintings, as well as other forms of beauty. Wang et al. (2015) also found facial and moral beauty lighting up the OFC (as well as other systems of the brain). They concluded that "compared with facial beauty, moral beauty spanned a larger-scale cortical network, indicating more advanced and complex cerebral representations characterizing moral beauty" (p. 814).

A team from Ludwig-Maximilians-Universität, Munich, Germany, and Peking University, China (Avram et al., 2013), gave participants short moral statements and single line verses of poems to read while under fMRI. Their results showed that both the aesthetics of the poetry and their moral judgments were processed in similar neural networks, and especially in the orbitomedial prefrontal cortex. Hooray, the beauty of poetry and the beauty of morality are brain linked!

On the other hand, for example, some researchers do not find moral beauty being processed in areas that are typical of the brain when processing natural or artistic beauty. A team at the University of Southern California (Immordino-Yang, McColl, Damasio, & Damasio, 2009) investigated admiration for virtue (using fMRI); and as we know, the virtues are morally beautiful. They found strong activation in the inferior/posterior portion of the posteromedial cortices (PMC) for both admiration of virtue and compassion for psychological pain. I don't know of any studies that have implicated the PMC in processing natural or artistic beauty.

It seems likely that we are dealing with a domain generality/domain specificity issue. Some aspects of processing moral beauty are processed in the same brain systems as natural and artistic beauty (domain generality), such as the mOFC, and some processed in different brain systems (domain specificity).

Unity-in-Diversity (UiD) and Moral Beauty. UiD is the most common concept associated with beauty by philosophers. As a reminder from Chap. 2, philosophers as disparate as Plato, Plotinus, Augustine, Ficino, Hutcheson, Hegel, Santayana, Croce, Langer, and Murdoch have invoked some version of unity-in-diversity to explain beauty (Diessner, Pohling, Stacy, & Güsewell, 2018). As an example, John Dewey wrote, "There is an old formula for beauty in nature and art: Unity in variety ... For the unity in variety that characterizes a work of art is dynamic" (Dewey, 1958, p. 161). If moral beauty represented UiD, we would have a good case that it is appropriate to refer to the virtues as beautiful, and witnessing a display of moral beauty would also be an aesthetic experience. As mentioned

above, by definition, moral beauty is found in the virtues (Aristotle; see Sachs, 2002) and character strengths, or traits, which are derived from the virtues (Haidt & Keltner, 2004; Peterson & Seligman, 2004).

Again, by definition, traits, virtues, and character strengths are words/concepts that represent *patterns of behavior*.¹ Someone with the trait of extroversion has a pattern of frequent and happy socializing. Someone who has the virtue of love shows a pattern of behavior in which they care for the needs of others. Someone with the character strength of trustworthiness shows a pattern of keeping promises and commitments. A *pattern* is a synonym for *unity*; the individual acts of love and trustworthiness are the *diverse* behaviors that make-up the content of the pattern. Thus, any pattern can be accurately characterized as UiD. Let's go a bit deeper on this topic.

The neuroaestheticians we met in Chap. 2, Anjan Chatterjee and Oshin Vartanian (2016), have emphasized the usefulness of applying Aristotle's Doctrine of the Four Causes for "understanding the causes of human [aesthetic] behavior" (p. 173). Indeed, Aristotle explained that to understand any entity, it was necessary to examine it from four (causal) standpoints. Aristotle's four causes have typically been translated into English as (a) the formal cause, (b) the material cause, (c) efficient cause, and (d) the final cause. The final cause is an entity's purpose, function, or *telos*. The efficient causes are the forces and actions that produce an object; the generative triggers that bring it into being. The formal cause is the form of something; its unity, structure, shape, organization, arrangement, or *pattern*. The material cause is the content of the entity, it is the stuff that the formal cause organizes; the elements, the constitutive parts of something (the content or element constitute the diversity within a pattern). For example, the formal cause of a bronze statue is its shape or structure or pattern (see Falcon, 2019); the material cause is bronze metal that has been shaped into the pattern; its efficient cause is the art of bronze casting; and its final cause is aesthetic enjoyment of the statue (or laudation of the personage characterized by the statue).

Using the word "cause" in these four ways may sound a little strange, because in modern science the word "cause" is typically only used for Aristotle's efficient cause, the cause that brings things into being (the sculptor who caused the bronze statue to come into being). However, the

¹Traits (and virtues and character strengths) are also likely patterns of affect/emotion, cognition, and desire/motivation, as well as behavior (Wilt & Revelle, 2015).

word in Greek that has commonly been translated into the English word “cause” is *aitia*. Stanford University specialist in ancient Greek philosophy, Julius Moravcsik (1974), has argued that *aitia* would be better translated as “understanding” or “explanation” (1975, p. 622). Thus, Aristotle’s so-called Doctrine of the Four Causes would make more sense if it was referred to as his Doctrine of Four Ways of Understanding entities. Moravcsik also argues that “formal cause” would be better translated as “distinguishing factor,” and this distinguishing factor is best defined as “a structure that links together the various constituents” (1975, p. 631). Notice that *structure* is another word for *pattern* and thus the *unity* of something. The constituents are the material cause, which Moravcsik has translated as “constitutive factor” and which he defines as the “constituents, or proper parts” (p. 627) of an entity. Thus structure/pattern/unity is the organizational factor of an aesthetic (or any) object, and that structure organizes the material that makes up the object (the constitutive elements). In the case of moral beauty, the word we assign to the pattern of behavior, such as love, trustworthy, courage, kindness, and hope, is the formal cause. And the various loving behaviors we have observed, or various courageous behaviors, are the material cause (the diversity, or constitutive elements).

Thus, in summary: we have some evidence that the brain processes moral beauty in the same or similar systems that it processes other forms of beauty; and moral beauty, as the virtues, has UiD. Conclusion: *moral beauty* is a fitting phrase.

THE MORAL EMOTION OF ELEVATION

As mentioned above, *elevation* is the emotion experienced when engaging with moral beauty. This subsection on elevation will draw heavily from the review paper written by Rico Pohling, affiliated with Technische Universität Chemnitz in Germany and his colleague Rhett Diessner (Pohling & Diessner, 2016). It seems reasonable to assume that the stronger one’s trait of engaging with moral beauty (EmB), the more frequently one would experience the moral motions of elevation; indeed, “EmB can be regarded as ‘trait-elevation’” (Pohling & Diessner, 2016, p. 415). The importance of elevation lies in the fact that it causes people to desire to become better human beings and to act prosocially.

Elevation is often accompanied by notable physiological changes, such as a lump in the throat, or sense of feelings of expansion and warmth in the

chest, and sometime tears in the eyes (Algoe & Haidt, 2009; Haidt, 2003a, 2003b). Elevation may also play a role in bonding and human affiliation. A study by Silvers and Haidt (2008) showed that when pregnant women observed moral beauty, and consequently experienced elevation, that it stimulated lactation, which is caused by oxytocin. So it appears the “trust molecule,” oxytocin, is released into the bloodstream when feeling elevated.

There is also evidence that observing actions of kindness, connection, and love “in meaningful films” causes elevation (Janicke & Oliver, 2017, p. 274; Wassiliwizky, Jacobsen, Heinrich, Schneiderbauer, & Menninghaus, 2017). In particular, elevation from watching such films was shown to increase feelings of connectedness to the transcendent and to feel more connected to family and close others. Being elevated by observing love and kindness in movies also led to greater levels of compassion for all humanity and compassion for close others. Perhaps meaningful films of connectedness cause elevation and a release of the bonding molecule, oxytocin,

Research, with experimental design, has shown elevation to cause:
volunteering (Schnall & Roper, 2012; Schnall, Roper, & Fessler, 2010);
charitable donations (Aquino, McFerran, & Laven, 2011; Siegel, Thomson, & Navarro, 2014; Thomson & Siegel, 2013; Van de Vyver & Abrams, 2015);
better attitudes about mentoring (Thomson, Nakamura, Siegel, & Csikszentmihalyi, 2014);
intentions to register as organ donor (Siegel, Navarro, & Thomson, 2015);
increased cooperative behavior (Hill, 2012; Pohling et al., 2019; Sakai et al., 2016);
reduction in prejudice against race or sexual orientation (Ash, 2014; Freeman, Aquino, & McFerran, 2009; Lai, Haidt, & Nosek, 2014; Oliver et al., 2015);
increased belief in life as meaningful and in the benevolence of others (Van Cappellen, Saroglou, Iweins, Piovesana, & Fredrickson, 2013);
increase positive affect and prosociality (affiliation and compassionate goals) and decrease self-image goals (Erickson et al., 2018); and
increase in interest in the Paralympics, and a positive effect on the destigmatization of persons with disabilities in general (Bartsch, Oliver, Nitsch, & Scherr, 2018).

Listen up future and current counselors and psychotherapists: In a longitudinal study, with clinical participants, Erickson and Abelson (2012) found that experiences of elevation led to a *decrease in anxiety and depression and improved interpersonal functioning*.

My colleague Christoph Klebl knew from past research that when a person is feeling disgust they will more harshly judge moral transgressions. He hypothesized that inducing elevation would cause people to lessen their harsh judgments when they were disgusted. Surprisingly, it did not. However, in his second study he examined whether inducing elevation would cause people to judge morally good acts as even more morally good than they normally would have, and that proved to be true (Klebl, Dziobek, & Diessner, 2019).

Many experiences of elevation come from focusing on the moral beauty of, what psychologists call, *moral exemplars*. Some people think of Gandhi or Mother Teresa or Martin Luther King, Jr., this way, and billions of people have thought of Jesus and Buddha this way. We become elevated thinking of their selfless actions and then want to try to emulate them. In two studies in Korea, however, the researchers asked if *attainable and relevant* moral exemplars would have a bigger effect on students' moral behavior than unattainable and irrelevant moral exemplars. Attainable means that the students can envision being able to do the exemplary behavior; but if the behavior seems too perfect and superior, they might not even try. For instance, agapic love—how many people believe they really have a shot at unconditionally loving every being? (I ask my large PSYC 101 class this question every semester, and less than half the class ever raises their hands.) By *relevant* they mean that the student can relate to the exemplar; if you are junior high student in Korea, can you really relate to an old lady in another culture (e.g., Mother Teresa)? In Han, Kim, Jeong, and Cohen's first study (2017), they found that undergraduate college students were more likely to engage in voluntary service after reading real stories about their peers at the college doing attainable rather than unattainable voluntary service. In their second study, their participants were junior high students. The quasi-experimental group of students were exposed to real-life stories, which were morally exemplary, about friends, family, and teachers of their peers in the same schools; the comparison group of students were exposed to stories of famous historic moral exemplars, such as Mother Teresa and Martin Luther King, Jr. Interestingly, both groups were equally morally elevated by both types of stories (according to a three-item measure), but the group that listened to the stories of ordinary people, doing attainable and relevant prosocial actions, demonstrated greater intention to serve others as well as actual service to others.

Is Mark Zuckerberg, founder of Facebook, a moral exemplar (no comment)? Well, he became one in 2015 when he and his wife posted on FB, on the occasion of their daughter's birth, that they would donate 99% of their shares in FB (worth 45 billion 2015 dollars) over their lifetime to create a better world for their daughter and her generation. Danyang Zhao and Katherine Dale (2019) analyzed 4000 posts that followed Zuckerberg's announcement post. They found that the most common character strength expressed in those posts was that of appreciation of moral beauty; along with over half the posts indicating *hope* for others.

In 2014, there were shootings on the Seattle Pacific University campus. A disturbed non-student walked onto campus with a 12-gauge shotgun and shot three students, killing one and injuring two others. It was very traumatic for the small tight-knit student body. On-campus psychologists noticed that although many students were experiencing distress, students were also feeling *morally elevated* by others' prosocial responses to the trauma. After collecting data from the student body, they found that those who experienced elevation, and had compassionate goals for their fellow students, experienced the most post-traumatic *growth* (Tingey, McGuire, Stebbins, & Erickson, 2017).

BEAUTIFUL MUSIC MOMENT

In my course on the Psychology of Beauty, which I have taught yearly since 2015, there is a service learning component. That component consists of pairs of students visiting an elder in the community, providing some social support to elder, while also learning from the wisdom of the elder. The students visit weekly for 8–12 weeks; they interview the elder with a semi-structured VIA questionnaire to begin establishing what the elder's strengths are; they ask a wide number of questions over the weeks and take field notes of the elder's responses. They seek out evidence of the elder's moral beauty and eventually focus on identifying two major character strengths of the elder. The students then write an APA-style data-based case study, documenting the presence of those two beautiful character strengths. I regularly play Bob Dylan's "Forever Young" in class, with the hope it will elevate and inspire the students.

You can listen to the song by googling it, or going to this YouTube site: <https://www.youtube.com/watch?v=Frj2CLGldC4>.

Also, there is a beautiful version of this song that Norah Jones played at Steve Jobs's funeral <https://www.youtube.com/watch?v=7jEKY-3eNZc>.

Because Dylan was awarded the Nobel Prize in Literature for his song lyrics, I imagine reading the lyrics counts as a poetry experience. It is a beautiful poem.

LONG-TERM EFFECTS OF MORAL BEAUTY AND ELEVATION

Empirical studies have repeatedly shown that under the influence of *elevation*, people indicate a desire to not only imitate the morally beautiful actions they have observed but also become a better person in general and to morally improve oneself (Pohling & Diessner, 2016; Thomson & Siegel, 2017). Jonathan Haidt has referred to elevation as a “*moral reset button* in the human mind” (Haidt, 2003b, p. 864), and Keltner and Haidt (2003) have noted that some elevating experiences can be moral peak experiences. Abraham Maslow (1964), who coined the phrase *peak experience*, believes such experiences can influence people the rest of their lives.

The first longitudinal study of the influences of elevation, that was over a year in length (Pohling, Diessner, & Strobel, 2018), examined whether the trait of engagement with moral beauty (EmB) would predict development of moral identity 17 months later. Participants comprised 129 German adults; they completed the EBS-R (Pohling et al., 2019) and the Moral Identity Scale (MIS; Aquino & Reed, 2002). Focusing on the moral identity *internalization* subscale of the MIS, it was found that the trait of EmB predicted development of the centrality of morality to the self. In other words, experiencing elevation regularly (trait EmB) may lead to people finding morality so important that it becomes central to who they are.

Another longitudinal study examined the effects of elevation three months after its occurrence. Elevation levels were measured of American college students who traveled to Nicaragua for a spring break service trip. The higher the level of elevation during that trip, the more likely those students were to volunteer for service three months later (Cox, 2010).

Another three-month longitudinal study, with a quasi-experimental design, involved students at Lewis-Clark State College. The quasi-experimental group wrote weekly beauty logs, describing their personal experiences of natural beauty, artistic beauty, and moral beauty; the comparison group did not. On average, those keeping the logs showed significant increases in their trait level elevation (EmB) as well on trait hope; the comparison group did not (Diessner, Rust, Solom, Frost, & Parsons, 2006). Hope is golden.

MORAL BEAUTY AND LOVE: A CLOSE CONNECTION

Do you remember how important the connection between love and moral beauty is from Chap. 2 on Philosophy? Plato emphasized that the goal and object of all love is beauty. In Chap. 5 on Natural Beauty (EnB), we found that engagement with natural beauty is associated with many forms of love; and likewise in Chap. 6 on Artistic beauty (EaB)—it is also significantly related to a variety of signs of love. However, engagement with moral beauty (EmB) correlates higher with every measure of love than EnB or EaB (Diessner et al., 2013).

EmB has a large positive correlation of 0.59 with both love of all humanity and with empathy for others. It has a 0.34 correlation with Agreeableness in the Big Five traits. It has a 0.34 correlation with the Care Foundation in Haidt's Moral Foundations Theory. It also has large and positive correlations with internalization of a moral identity and with being forgiving of others (Diessner et al., 2013). EmB is one sweet trait! I wish it upon all your friends and loved ones!

SPIRITUAL BEAUTY?

Positive psychologists have defined spirituality as “beliefs and practices that are grounded in the conviction that there is a transcendent (nonphysical) dimension to life” (Peterson & Seligman, 2004, p. 600). Thus, by this definition, the spiritual is not physical; and if it’s not physical, can empirical science approach it? That is a big question mark. Empirical data does show us that, based on a 2017 survey by the reputable Pew Research Center (Lipka & Gecewicz, 2017), 75% of Americans consider themselves spiritual, and as a subset of that group, 27% of Americans consider themselves spiritual but not religious (54% of Americans considered themselves religious).

Personally, I consider the virtues themselves as spiritual. I think of love, hope, wisdom, and so on as non-physical realities, and the behavior patterns we associate with those virtues are not the virtues themselves but symbols of the virtues. However, there may be no empirical data supporting this, and thus I feel cautious and humble about my beliefs. Nonetheless, I believe the virtues, which have been defined by empirical psychologists as morally beautiful, are also spiritually beautiful. Palmer, Begley, and Coe (2013) have argued that Christian saints have caused elevation (by the moral beauty of the saints) in Christians throughout the history of Christianity, and this has caused much prosocial behavior. They wrote that the many sacrifices made

by the saints “inspire[d] future generations to engage in prosocial acts [which] has contributed to the continuation and spread of Christianity” (p. 107). In Bahá’í religious thought, there is support for the idea that humans recognize the spiritual transcendence of such great religious figures as Moses, the Buddha, Jesus, Muhammad, and others, by their spiritual beauty (Bahá’u’lláh, 1976).

WILL BEAUTY SAVE THE WORLD?

We saw in Chap. 5, on Natural Beauty, that the trait of engaging with natural beauty is related to proenvironmental behaviors. If we love the beauty of this beautiful planet, will we tap into the associated values of loving all humanity, to universalism and benevolence, and say “enough is enough”? Stop the pollution, become less materialistic, and save the beauty of this awesome blue ball that is hurtling through space. Yes, the collective action of those who love the natural beauty of this planet, and all its creatures, can definitely contribute to saving the world.

In Chap. 6, on Artistic Beauty, we saw that the higher on the trait of engaging with artistic beauty one is, the more open-minded one is. Will artistic beauty save the world? It is clear that we must take a new approach to how we live on this ball of dirt. Being open-minded to changing our lifestyles could definitely help save the world.

What about engaging with moral beauty (EmB)? Can it save the world? When coupled with the beautiful idea, “the oneness of humanity,” it certainly will. The stronger one’s trait of engaging with moral beauty, the more one loves all humanity (Diessner et al., 2013). One of the greatest obstacles to solving the world’s problems (e.g., pollution and poverty) is a lack of unity among humanity. The problems are so interconnected throughout all nations that we cannot solve them without trusting each other and working together on an international scale. By applying our trait of engaging with moral beauty, we seek out the beautiful virtues of everyone, regardless of their race, nationality, political views, or gender. Thus, the trait of EmB can be one of the most powerful interventions to saving our world. Let’s go for it.

POLITICS AND MORAL BEAUTY

Speaking of unity, how are American politics doing? Do democrats look for the moral beauty of republicans? Do republicans look for the moral beauty of democrats? Ouch. We are in a sorry s(S)tate (Haidt, 2012). The

interesting thing is: appreciating moral beauty is evenly distributed across political affiliations. Liberals and Conservatives share equally in their levels of trait EmB. In an internet study with 4672 participants, it was found that EmB has a 0.05 correlation with political affiliation (Diessner et al., 2013). That is almost nothing. The trait of engaging with moral beauty is unrelated to one's politics, or others' politics. A 0.05 correlation means the variance explained by political affiliation is $0.05 \times 0.05 = 0.0025 \times 100 = 0.25$. Only 0.25% (a quarter of 1%) of the difference of people's levels of EmB is explained by their politics. So liberals, remember this: conservatives are just as likely to notice the beautiful virtues of others as you are. And, hey conservatives, remember this: liberals are just as likely to see the moral beauty of others as you are. What we need to do is encourage the politically active to notice the other "side's" moral beauty more often; then we can create the kind of unity to effectively save the 50% of coral reefs that are still alive, stop Greenland from melting further, and stop polluting the air, water, and land.

ENDING ON A SPIRITUAL (MUSICAL) NOTE

Johann Sebastian Bach wrote a song to celebrate the moral and spiritual beauty of Jesus, "Jesu, Joy of Man's Desiring (From Cantata No. 147)." Here is a version by the Choir of King's College, Cambridge, and the Academy of St. Martin in the Fields; Sir David Willcocks conducting. https://www.youtube.com/watch?v=p_6ZieFa-Og.

TAKE-AWAYS

1. Moral beauty is found in the virtues.
2. Completing the VIA survey gives you a profile of your moral beauty.
3. Experiencing moral beauty activates a variety of subsystems in the brain, but two major ones are the Prefrontal Cortex (PFC) and the medial orbital-frontal cortex (mOFC).
4. Traits are patterns of behavior, and the trait of engaging with moral beauty involves noticing the patterns of behavior that symbolize the virtues; this may be characterized as unity-in-diversity.
5. *Elevation* is the emotion experienced when engaging with moral beauty; when experiencing elevation one desires to become a better person and is more likely to commit prosocial acts.
6. Elevation, in experimentally designed studies, has been shown to cause:

- a. *volunteering;*
 - b. *charitable donations;*
 - c. *better mentoring;*
 - d. *intentions to register as organ donor;*
 - e. *increased cooperative behavior;*
 - f. *reduction in prejudice against race or sexual orientation;*
 - g. *increased belief in life as meaningful and in the benevolence of others;*
 - h. *increase positive affect and prosociality (affiliation and compassionate goals) and decrease self-image goals; and*
 - i. *increase in interest in the Paralympics, and a positive effect on the destigmatization of persons with disabilities in general.*
7. Longitudinal research has shown that experiences of elevation led to a *decrease in anxiety and depression and improved interpersonal functioning* in a clinical population.
8. Stories of ordinary people doing exemplary acts (attainable and relevant) may influence us more strongly than famous historic accounts of exemplary acts.
9. Experiences of elevation lead to increased moral identity.
10. Spiritual beauty may be a potential category of experience.
11. Will Beauty save the world?
12. Moral beauty level is unrelated to political persuasion (conservatives are just as likely to notice the moral beauty of others as are liberals).

BEAUTY INTERLUDE SIX

Aphrodite Angry

Eros went home to Mommy to nurse his wound; but Aphrodite was not sympathetic. She berated him for hooking up with Psyche and declared their child in her womb to be a bastard. After ranting and raving at Eros, she stormed out of her palace and ran into the goddesses Ceres and Hera. She then ranted at them, and told them if they knew where Psyche was, they must let her know immediately so she could punish her for hurting her son.

Psyche's Selfless Service and Prayers

Psyche began wandering and searching for Eros everywhere, to beg his forgiveness, and to get back together. She spied a beautiful temple, and thought it might be his home. When she got to the temple, it was messy, with sheaves of corn piled haphazardly and harvesting equipment lying about randomly. She took it upon herself to clean the whole mess up in and around the temple, and put it all in order. Seeing the selfless service of Psyche in her temple, Ceres manifested herself and gave Psyche some sympathy. Psyche then asked if she could hide out in the temple for a few days, but Ceres was too afraid of Aphrodite's rage to allow that. Ceres sent Psyche on her way, saying the best she could do was not tell Aphrodite that she had seen her.

* * *

Check out this wonderful painting of Ceres by the great American artist Alice Pike Barney (Fig. 7.1):

Fig. 7.1 Ceres
(c.1910, pastel on
canvas, National
Museum of American
Art, Smithsonian) Alice
Pike Barney (1857–
1931) [https://
commons.wikimedia.
org/wiki/File:Alice-
Pike_Barney-Art-
Ceres-1901.jpg](https://commons.wikimedia.org/wiki/File:Alice_Pike_Barney-Art-Ceres-1901.jpg)



Psyche again wandered in search of Eros, but soon came upon a very richly appointed temple; it was so magnificent she realized it was Hera's temple, the queen of the gods. She approached the altar and began a deeply heartfelt prayer, begging Hera to save her, relieve her sufferings, and to grant mercy unto her unborn child. Hera than appeared to her and told her that she would love to grant her wishes, but that she could not, due to her loyalty to Aphrodite.

Psyche then decided she must give herself up to Aphrodite and accept whatever punishment would be meted out to her. In the meantime, Aphrodite went to Zeus to ask permission to borrow Hermes, the messenger god, to spread a message that whatever mortal informed on Psyche's whereabouts, that Aphrodite would gift the informer with "seven sweet kisses and an extra one deeply honeyed with the sweetness of her thrusting tongue" (Kenney, 1990, p. 95). Men across Greece then actively searched for Psyche, but they didn't get the reward, as Psyche decided to present herself at the door of Aphrodite's palace. When she did so, the minor goddess Habit, who was attending the door, called Psyche a slut, and grabbed her by the hair and dragged her inside the palace. When Aphrodite saw her, she laughed in rage, and asked her handmaids, the minor goddesses Care and Sorrow, to torment Psyche. Those two then whipped and tortured her relentlessly. Aphrodite then told her not to hope for mercy just because she was carrying Eros's bastard child in her belly; indeed, Aphrodite bemoaned becoming a grandmother and threatened to abort the baby. She then beat Psyche herself, ripping off Psyche's clothes and tearing out some of her hair (Fig. 7.2).

The First Test of Love

Aphrodite decides to challenge Psyche's devotion to Eros by testing her stamina with an impossible trial. Aphrodite mixes a massive amount of seeds: millet, lentils, beans, barley, wheat, chickpeas, and poppy seeds. She then tells Psyche that she is off to an afternoon wedding party, and that Psyche must sort the grains into their respective kinds before she returns in the evening. Psyche stares at the mighty pile of grains and legumes and realizes there is no possible way for her to do this in a month, much less a night. But, inspired by their love for Eros, an ant army sees her plight and comes to her rescue. The ants have all the piles properly sorted by the time Aphrodite returns. Aphrodite flies into a bit of a rage, and exclaims to Psyche that she is a worthless wretch and that her lover Eros must have

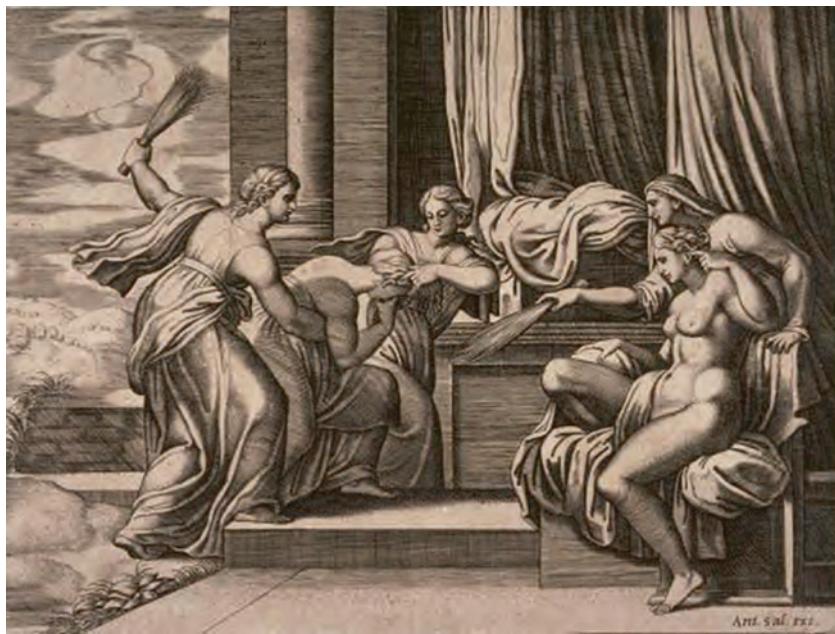


Fig. 7.2 Sorrow and Pain (Care) Punishing Psyche by Aphrodite's Order (Engraving, 19.9 × 23 cm [image] inches pl. 23 from the series the Fable of Psyche, After drawings by Michiel Coxcie, after Raphael, sixteenth century) **Bernardo Daddi** (Italian engraver, 1512–, Worked in Rome from 1532 to 1550). (Etching owned by, and photo credit to, Rhett Diessner)

helped her. She then tosses Psyche a crust of bread for dinner and goes off to her own bedchamber for the night.

Check out Giulio Romano's (perhaps Raphael's greatest student) depiction of this trial here: http://www.alaaddin.it/img/n_Psiche.jpg.

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PART III

Human Development and Beauty



CHAPTER 8

Beauty and the Be(a)st: Aesthetics, Pedagogy, and Andragogy

This chapter is somewhat personal, as much of the chapter will be about how I infuse beauty in the classroom at the collegiate undergraduate level. Why would it be important to do so? One of the main rationales is that beauty arouses positive emotions, and positive emotions lead to positive educational outcomes. Have you had a chance to read Tara Westover's bestselling *Educated*? She mentions, "I tried to imagine what it would have been like to study in such a place [a conservatory in Rome], to walk across marble floors each morning and, day after day, come to associate learning with beauty" (2018, p. 267).

For many years I taught a major unit in my Educational Psychology course entitled, "Emotions Affect Cognition." Many of the principles that I taught in that course have been summarized and validated in an excellent book concerning how to apply psychological knowledge and research about emotions to positively influence the learning experience at the college level: *The Spark of Learning: Energizing the College Classroom with the Science of Emotion* by Sarah Rose Cavanagh (2016).

Before we launch into describing the wealth of research that Cavanagh (2016) summarizes and cites, let's pause and situate ourselves. The reason I am writing about emotions is because having a beautiful experience is primarily an emotional experience. Although perceptual and cognitive and evaluative aspects of processing aesthetic objects are very important, I consider the emotional response to aesthetics and beauty to be the most important and most central characteristic of a beauty experience (cf. Armstrong &

Detweiler-Bedell, 2008; Menninghaus et al., 2019). The *feeling* of beauty is the prototypical aesthetic experience (Schindler et al., 2017). There is a broad range of emotional responses to aesthetic objects as shown in the research of Ines Schindler (Senior Research Fellow at the Max Planck Institute for Empirical Aesthetics in Frankfurt, Germany) and colleagues. Schindler and team (2017) have shown that such emotions range from *prototypical* aesthetic emotions (e.g., feeling of beauty/liking, fascination, being moved, and awe), *pleasing* aesthetic emotions (e.g., joy, humor, vitality, energy, and relaxation), *epistemic* aesthetic emotions (e.g., surprise, interest, intellectual challenge, and insight), and *negative* aesthetic emotions (e.g., feeling of ugliness, boredom, confusion, anger, uneasiness, and sadness).

Winfried Menninghaus and team (2019), which included Ines Schindler, have made a convincing argument that aesthetic emotions, including the feelings of beauty and ugliness, *motivate* us to approach the beautiful and to avoid the ugly. We are motivated to stay engaged with beautiful experiences for potentially long periods. We may be motivated to return to the scene of beauty; we might return to a museum over and over just to look at one beautiful painting, or turn on Spotify to listen to a particularly beautiful piece of music over and over or to hike our favorite wild nature trail year after year. Thus, in terms of pedagogy: if we provide beautiful educational experiences for students, they are more likely to be motivated to *approach* them, and stay engaged with them.

ANDRAGOGY AND AFFECTIVE SCIENCE

Back to Sarah Rose Cavanaugh (2016) and why emotions are so important in general, and why they are so important in the classroom specifically:

“Nearly every moment in your life presents you with a decision. Should you stay or should you go¹” (Cavanaugh, 2016, p. 3). Although sometimes we like to think we make our decisions in a logical and rational manner, most of the time this is not the case. When making any decision we constantly, and very quickly, model in our brain the emotional impact of the outcome of each various choice and typically go with the decision that *feels* the best (Damasio, 1994). As Cavanaugh writes, “emotions are similarly guiding our students in every stage of their learning, from select-

¹ Musical moment: Check out the Clash’s song “Should I Stay or Should I Go.” It might be here: <https://www.youtube.com/watch?v=BN1WwnEDWAM> Be sure to crank it up; this song was designed to blow your speakers.

ing which courses to take in a given semester to deciding how willing they are to participate in [a] discussion" (p. 5), to what topic to select for writing a paper, when to start writing that paper, when and how much to study, whether to skip class today or not.

JONATHAN HAIDT AND THE SIM

This is parallel to Jonathan Haidt's Social Intuitionist Model (SIM; [2001, 2006](#)). Haidt explains how we make most of our decisions, and especially our moral decisions, based on our unconscious intuitions. In particular, Haidt contrasts the SIM with Lawrence Kohlberg's ([1981, 1984](#)) theory of moral reasoning. Kohlberg's work focuses on making moral decisions based on reasoning about the moral situation, and that the stage structure of our mind determines what kind of moral reasoning is available to us, and thus delimits the decisions we will make. In Kohlberg's Instrumental Stage Two (based on Piaget's concrete operations stage), we rationally calculate the concrete benefit, or losses, to the self in making a moral judgment; in his Interpersonal Stage Three (early formal operations), we reason about the effect the decision will make on others' feelings, and can utilize the Golden Rule in our rational judgments; in his Systemic Stage Four (late formal operations), we make reasoned moral decisions based on the rules of the systems we believe in (e.g., a Religion or National Constitution); and in his Principled Stage Five (post-formal operations), we seek the underlying moral principle to guide our moral reasoning. Haidt does not argue that we don't go through such stages of moral reasoning; rather he argues that we seldom actually use detached or deliberative reasoning to make our moral decisions. He explains that when we encounter a moral problem we typically have a gut reaction as to the right answer, that is, an intuition (which is much like a *feeling*). Then, if someone challenges us about our moral judgment, rather than consulting with that other person in a spirit of seeking the moral truth, and using deliberative reason to examine ourselves and others, we use *motivated* moral reasoning. That is, we behave like an adversarial attorney, trying to *win* the case and prove that we were right all along. Alas, my own experiences, my own intuitions, as well as my deliberative reason, tell me that Haidt is right. On the other hand, I still use Kohlberg's work to guide my own moral judgments; I analyze my own intuitions to see if they are prejudicial, and I also seek an underlying fundamental moral (or spiritual) principle to guide my actions. Wish me luck.

BACK TO SARAH ROSE CAVANAUGH AND AFFECTIVE SCIENCE IN THE COLLEGE CLASSROOM

Cavanaugh (2016) has a major section in her book about how emotions harness attention. Is paying attention important? Do we think it's worthwhile for students to pay attention in class? Will they learn better if they do? Or ask the reverse question, "What do we learn when we don't pay attention?" Paying attention is so important, that if you can't do it very well, the American Psychiatric Association may refer to it as a mental disorder. Ever hear of ADD or ADHD? Of course you have; your little brother was diagnosed with it. Attention Deficit Disorder and Attention Deficit Hyperactivity Disorder: they are in the DSM-V (APA, 2013).

What drives attention? Emotions. Emotions direct our attention toward that which is interesting, and direct our attention away from that which is boring, meaningless, or useless to us. Do teachers and professors have a responsibility to make their lessons engaging, interesting, and to arouse the emotions that lead to paying attention? What do your intuitions and feelings tell about that (moral) question? What does your detached deliberative reasoning tell you about that (moral) question? Schindler et al. (2017) identified the prototypical aesthetic emotions, the ones associated with the feeling of beauty (both in theory, and through factor analysis), to be fascination, being moved, awe, and just plain liking something. Would you prefer to attend a college class in which you *liked* the material, found the lesson *fascinating*, found the teaching methodology *moving*, and felt some *awe* during a highpoint in the course? Do you think that course would hold your attention?

Cavanaugh (2016) also documents the research showing that "emotions maximize working memory potential" (p. 36). Again attention is critical—in the paragraphs above, I emphasized attention to the stuff *out there* (the students' classroom environment); but now we are focusing about the stuff *in there*. Working, or short-term, memory is what our brain is conscious of, and can think about, in any given moment (perhaps a 30-second span of time); the classic notion is that we can juggle 5–9 thoughts at once in our working memory, with an average of 7. This might be considered your *cognitive load*. Emotions influence how you pay attention to what is in your working memory and may also influence the size of cognitive load you are able to handle at once. In a happy or joyful class climate, a student can mentally manipulate, and keep track of, more

variables in their working memory than in a classroom that is dull or anxiety provoking (cf. Fredrickson's [2001] Broaden and Build Theory of positive emotions).

Employing the working memory is necessary to learn anything, but long-term memory is the prize. Whatever we focus on and pay attention to in our working memory ends up getting encoded into our long-term memory. As a general rule of thumb, anything you pay attention to for 30 seconds or more ends up in long-term memory. Of course, getting information into long-term memory is critical to learning or passing any exam, and *retrieval* of those memories is at least as important. Do emotions help with that? Cavanaugh writes, "One of the best predictors of whether an event or information will be remembered is how emotional it is. In fact, memory's bias for emotion is among the most reliable effects we have in psychology" (p. 40–41). Items in your working memory that are tagged with emotion get loaded into long-term memory the most easily; and the ease of retrieving memories is also heavily influenced by the emotions that were experienced when encoding those thoughts into long-term memory. Again, think of the *prototypical* aesthetic emotions that are linked to the feeling of beauty: fascination, being moved, and awe (Schindler et al., 2017). When you are feeling something as beautiful, or fascinated by it, or it moves your heart, or holds your being in awe—then you are more likely to get it encoded into long-term memory, and more likely able to retrieve it.

As Cavanaugh (2016) emphasizes, emotions have a huge influence on motivation. Etymologically, this is no surprise—look at the word *e-motion*—emotions put us into motion—the word has the same root as motivation. Nothing much gets done in life without motivation; and this is the case for learning as well. In regard to formal education, certainly getting out of bed in time to come to class, completing course assignments, and studying for exams all require motivation or they simply will not happen. And, it seems nearly impossible to achieve one's goals, academic or otherwise, without emotions spurring us on. Cavanaugh also addresses motivation from the emotional contagion point of view. We are all interconnected—your emotions influence my emotions and my emotions influence yours. The professor's enthusiasm for the course material can easily infect the students' levels of interest and students' enthusiasm for classroom activities can easily influence the interest levels of the other students (and influence the professor—I get very excited when I see students getting turned on to any lesson in

class, and this becomes a feedback loop in each direction—I'm moderately enthusiastic at the beginning of class, and then if students become engaged, I become even more enthusiastic, which in turn may lead to higher interest and engagement levels with students, which then ...).

Cavanaugh's own summary of the influences of emotions on college students' education: [E]motions [are so potent] in enhancing every cognitive process at play in higher education—from the initial, necessary step of attracting our students' attention, to being sure they're applying the majority of their working memory to class concerns, to maximizing the chances of long-term memory consolidation, to engendering motivation and enthusiasm for the course material. (2016, p. 55)

Thus, if we are able to infuse experiences of beauty into the classroom, and students feel that beauty, their attention will be riveted, their working memory flexible and focused, long-term memories will be formed that will be easier to retrieve, and students will be motivated to complete their assignments. Although, I don't want to sound like an instrumentalist—beauty in the classroom is intrinsically good, it doesn't have to be a means to an end, it is a glorious end in its own right. This is a win-win situation.

MORAL EDUCATION AND THE MOTIVATION TO BECOME A BETTER PERSON

Sona Farid-Arbab (2016), in her magnificent volume, *Moral Empowerment. In Quest of a Pedagogy*, addresses what can motivate a person to become a better human being. Specifically, she describes what can drive someone's motivation to pursue the twofold, interconnected, moral purposes of personal transformation and collective transformation:

Two forces stand out as of paramount importance. The first is 'attraction of beauty' manifesting itself in myriad ways: in love of the majesty and diversity of nature; in the impulse to express beauty through the visual arts, music, and crafts; in the pleasure of beholding the fruits of these creative endeavors; in the stirrings within the human heart of noble emotions in response to the beauty of an idea, the elegance of a scientific theory, and the perfection of character in one's fellow human beings; and in longing for order and meaning in the universe and in social relations The second force that together with attraction to beauty ... impels moral purpose is 'thirst for knowledge.' (pp. 90–92)

Panos Paris (2019), a philosopher with appointments at University of York and University of London, has also argued for moral education to be grounded in an appreciation of moral beauty. He emphasizes that our reactions to observing moral beauty motivate us to become more virtuous and moral, and to improve our moral character; and our reactions to moral ugliness motivate us to avoid vice. Paris points out that philosophers are still arguing over whether or not making a *rational* moral judgment is enough to motivate us to moral action. He writes:

The moral beauty view suggests that this question may be somewhat ill-posed, for fully possessing moral virtue entails sensitivity to beauty, beauty includes the beauty of virtues, and hence a fully-fledged first-person moral judgment is also aesthetic, and it is a conceptual and empirical platitude that beauty arouses conative states in its appreciators. So, first, leaving beauty out of these debates is a mistake, and, second, it is possible that it is neither goodness nor rightness understood as isolated properties that ground moral motivation, but beauty instead, i.e., their aesthetic component. (p. 8)

One of Kohlberg's most difficult intellectual and empirical struggles was bridging the gap between moral judgment and moral behavior (Kohlberg & Candee, 1984), that is, the issue of moral *motivation*. People might score high on Kohlberg's moral reasoning stages, but take no action to make the world a better place, and not be *motivated* for personal or collective transformation. If Panos is right, and I think he is, beauty may bridge that gap.

INFUSING BEAUTY AS A TEACHING METHODOLOGY IN HIGHER EDUCATION

Teaching children (pedagogy) to love beauty, and to infuse beauty throughout the content of their curricula, as well as to refine beautiful teaching methodologies, is critically important. Consider investigating how Waldorf schools integrate the arts and beauty for young students (e.g., see Martzog, Kuttner, & Pollak, 2016). Nonetheless, my expertise is in andragogy (teaching of adults) and thus we will examine some examples of employing beauty in the college classroom. Although beauty can be noticed and appreciated at any age (see Diessner et al., 2016), many of the deeper and abstract notions of beauty can only be understood once a student has attained Piagetian formal operations, which typically does not happen until adolescence or young adulthood, that is, during secondary or tertiary education:

Thus, only by adolescence does it appear likely that children can engage (analytically, at least) in ecological discussions that depend on compositional conceptions—that is, by conceiving of an overarching ecological integrity, *beauty*, sense of balance, and the ways in which the pieces support the whole. (Kahn & Lourenço, 2002, p. 423; italics added)

In my Introduction to Psychology course, I employ beauty as a methodology to increase attention and arouse motivation and encourage achievement of course objectives. An overarching theme in my course is the importance of love for psychological health and human development (Carl Rogers on unconditional positive regard, Abraham Maslow on belongingness and love, Robert Sternberg's triangular theory of love, etc.). In this regard, I tell the story of the Psyche and Eros myth² throughout the semester (Kenney, 1990). The class meets twice a week, and once or twice a week I tell a segment of the story, and stretch that out for 15 weeks of the semester. I often end each segment on a cliff-hanger, of which there are many throughout the story. The myth has inspired the imagination of many psychologists. For instance, Carol Gilligan (2002, 2004) has explored the myth as a metaphor to explain the development of women and girls (note that Gilligan [2002] states that Apuleius's *The Golden Ass*, the text in which the Psyche myth is recorded, was reputedly Shakespeare's favorite book). Depth psychologists, including Jungian and Freudian, have applied the myth to a wide variety of psychological issues, including the empowerment of women, sexual awakening, sisterhood, feminist issues, and the feminine in men (Bettelheim, 1977; Downing, 1988; Gollnick, 1992; Johnson, 1976; Neumann, 1952/1972; Von Franz, 1992; Young-Eisendrath & Wiedemann, 1987). Likewise, existential and humanistic psychologists have interpreted the myth across several psychological dimensions (Houston, 1987; May, 1969). The myth has also been utilized to examine topics regarding the psychology of religion and the sacred (Diessner, 2007; Houston, 1987); and to explain a neo-Piagetian approach to understanding mind and gender in lifespan development (Labouvie-Vief, 1984).

²If you have been reading this book from the beginning, you will be fairly familiar with this myth. If you haven't been reading the book sequentially, note that segments of the Psyche and Eros myth come after the Reference sections of each chapter of this book, starting with Chap. 2.

As an aside: nearly all forms of art are likely exaptations. This means that painting, singing, creating music, jewelry making, writing, and so on were not naturally selected. Rather, symbolic thinking and a variety of spatial and kinesthetic skills were naturally selected, and with the rise of human culture, we were able to use those naturally selected skills to create art (see Nadal & Chatterjee, 2018, for a sophisticated and enlightening explanation of the interaction of genes and culture on the arts). However, there is one art form that may have been directly naturally selected and that is *story-telling* (which may be the root of such arts as novels, plays, movies, operas, poetry, painting, and sculpture; story-telling was almost certainly being enacted in the Pleistocene). Dutton (2009) notes at least three ways in which such story-telling art may be adaptive: (a) stories prepare us for life and its surprises, (b) they are didactic and richly instructive, and (c) they encourage interpersonal intelligence regulation of social behavior. It is hoped my story-telling of the Psyche and Eros myth meet those three criteria.

I integrate the telling of the story with a variety of beautiful art. I have created over 50 slides of paintings and sculptures which illustrate various scenes in the story, and project each one as it becomes relevant to the segment being described on a given day of class. Alas, in general, most of my students have little interest in paintings or classical art or modern art. I invite my students, over the last 20 years, to complete an online Five Factor Model scale. Their collective average is quite low on the trait of Openness, and on the aesthetic facet subscale; the class average tends to be about the 24th percentile based on national norms. Nonetheless, they find these paintings and sculptures of two lovers very engaging—probably because most of my students are in Erikson’s (1950) intimacy versus isolation stage, and it’s highly relevant to their own psychosocial crisis. I have selected a class “theme song,” the symphonic poem *Psyche and Eros*, composed by late romantic period composer Cesar Franck (<https://www.youtube.com/watch?v=sFbw0YXmEQ>). I play this piece as the students enter the class at least once a week. Additionally, spaced across the semester, I read poems³ to the class about Psyche, such as John Keats’s *Ode to Psyche*.

³Also Coleridge’s *Psyche* as well as parts of William Morris’s (famous as a designer, but also a poet) lengthy poem *The Story of Cupid and Psyche*. A. S. Byatt (1990) makes use of the myth in her Booker Prize winning novel *Possession*, including a poem she wrote to illustrate one of Psyche’s trials of love.

POETRY MOMENT: JOHN KEATS'S *ODE TO PSYCHE*

O Goddess! hear these tuneless numbers, wrung
 By sweet enforcement and remembrance dear,
 And pardon that thy secrets should be sung
 Even into thine own soft-conched ear:
 Surely I dreamt to-day, or did I see
 The winged Psyche with awaken'd eyes?
 I wander'd in a forest thoughtlessly,
 And, on the sudden, fainting with surprise,
 Saw two fair creatures, couched side by side
 In deepest grass, beneath the whisp'ring roof
 Of leaves and trembled blossoms, where there ran
 A brooklet, scarce espied:
 Mid hush'd, cool-rooted flowers, fragrant-eyed,
 Blue, silver-white, and budded Tyrian,
 They lay calm-breathing, on the bedded grass;
 Their arms embraced, and their pinions too;
 Their lips touch'd not, but had not bade adieu,
 As if disjoined by soft-handed slumber,
 And ready still past kisses to outnumber
 At tender eye-dawn of auorean love:
 The winged boy I knew;
 But who wast thou, O happy, happy dove?
 His Psyche true!
 O latest born and loveliest vision far
 Of all Olympus' faded hierarchy!
 Fairer than Phoebe's sapphire-region'd star,
 Or Vesper, amorous glow-worm of the sky;
 Fairer than these, though temple thou hast none,
 Nor altar heap'd with flowers;
 Nor virgin-choir to make delicious moan
 Upon the midnight hours;
 No voice, no lute, no pipe, no incense sweet
 From chain-swung censer teeming;
 No shrine, no grove, no oracle, no heat
 Of pale-mouth'd prophet dreaming.
 O brightest! though too late for antique vows,
 Too, too late for the fond believing lyre,
 When holy were the haunted forest boughs,
 Holy the air, the water, and the fire;
 Yet even in these days so far retir'd

From happy pieties, thy lucent fans,
 Fluttering among the faint Olympians,
 I see, and sing, by my own eyes inspir'd.
 So let me be thy choir, and make a moan
 Upon the midnight hours;
 Thy voice, thy lute, thy pipe, thy incense sweet
 From swinged censer teeming;
 Thy shrine, thy grove, thy oracle, thy heat
 Of pale-mouth'd prophet dreaming.
 Yes, I will be thy priest, and build a fane
 In some untrodden region of my mind,
 Where branched thoughts, new grown with pleasant pain,
 Instead of pines shall murmur in the wind:
 Far, far around shall those dark-cluster'd trees
 Fledge the wild-ridged mountains steep by steep;
 And there by zephyrs, streams, and birds, and bees,
 The moss-lain Dryads shall be lull'd to sleep;
 And in the midst of this wide quietness
 A rosy sanctuary will I dress
 With the wreath'd trellis of a working brain,
 With buds, and bells, and stars without a name,
 With all the gardener Fancy e'er could feign,
 Who breeding flowers, will never breed the same:
 And there shall be for thee all soft delight
 That shadowy thought can win,
 A bright torch, and a casement ope at night,
 To let the warm Love in!

BACK TO PSYC 101

Being an evidenced-based scientist, I'd like to say I have proof that the music, paintings, poetry, and story-telling of the myth arouse the appropriate aesthetic emotions, and thus increase the academic achievement of my students (see Cavanaugh, 2016). Alas, I do not have experimental evidence based on random assignment to groups. But I do have subjective quantitative evidence. In a paper published in the *Journal of Aesthetic Education* (Diessner & Burke, 2011), I present this evidence:

The questionnaire presented four statements, each of which was rated on a five-point Likert scale as very true (5), true (4), neutral (3), not true (2), very much not true (1). With question one, in regard to whether the “Psyche

presentation enhanced the achievement of the course goals,” the average answer, on a five-point scale (with 5 high), was 3.8 ($SD = 0.78$), with 65 percent of the students responding with either “true” or “very true.” For question two, when prompted with whether “the Psyche myth provided meaningful metaphors about human psychological development,” the average response was a 4.0 ($SD = 0.84$); 78 percent indicated this was either “true” or “very true.” In responding to question three, “presenting the Psyche myth was a waste of class time” (reverse scored), the average answer was a 4.3 ($SD = 0.75$); 90 percent responded with either “not true” or “very much not true.” The fourth question asked whether the myth encouraged them to “reflect and ponder on some of the deeper issues of life”; the average answer was a 3.6 ($SD = 0.92$), with 59 percent reporting that this was either “true” or “very true.” (p. 100)

So maybe it is making a difference. On the other hand, beauty experiences are their own intrinsic educational reward. I often ask my students this question:

Where is the one place that you live your entire life? Someone always figures out that I am looking for this answer: “your mind.” Is it true? I then haul out an architectural metaphor: we like beautiful spaces. We like our homes to be filled with beautiful furniture, beautiful colors, beautiful rugs, beautiful art, beautiful table settings, beautiful kitchens, beautiful bathrooms, etc., and surrounded by a beautiful yard.⁴ Beautiful experiences help create a beautiful mind. Would we not like to make our mind more beautiful ... especially if it’s the only place we hang out our entire existence?

In this regard, see Joe Winston’s (2006) “Beauty, Goodness and Education: The Arts Beyond Utility,” and his wonderfully written and stimulating book (2010), *Beauty and Education*. Winston (2008) considers beauty to be an educational imperative, and states that “the concept of beauty can provide teachers with a coherent vision that will help them articulate what is, both morally and artistically, of fundamental value in their educational practice” (p. 85).

⁴I realize that many of the 8 billion of us cannot afford such beauty in our homes; billions of us live in poverty; many of us do not even have homes. Poverty is ugly. What will be beautiful is when the rich and powerful see to it that every family can make a living wage and have a home. Nonetheless, I think most of the 8 billion of us can understand the metaphor.

BEAUTY IN A DEVELOPMENTAL PSYCHOLOGY COURSE

In my Developmental Psychology sections, I integrate music, visual art (reproductions of paintings), and moral beauty. I have two class theme songs. I play Smetana's Moldau (Vltava) as they enter class every day. The first time I play it I explain that it is metaphor of human development: The river begins as rain drops coalescing into a tiny pure rivulet that grows quickly. Then it wildly runs down the mountainside like a toddler, then it gains strength like a preschooler and joins with a few small friends (other small streams) and becomes a river like a school-age child, learning the ways of its world; it begins producing many fish and other aquatic life, as do the reproductive activities of adolescents and young adults; then it becomes a mighty and wide river in midlife, just like we tend to put on weight in midlife and become generative and provide water and nutrients for many animals and for agriculture; and then at the end of its life it merges with the ocean and becomes one with everything.

The other piece of regular theme music I have selected for this course is *Born to Be Wild* by Steppenwolf. I play this at least once a week as the cue to turn in the short, low stakes, quizzes they take most days. We then have a discussion of the three main causes of human development: genes, environment/culture, and personal will/choice making. I then ask, which one does *Born to Be Wild* best illustrate? Lively discussion ensues. I bring this up in several different ways over several weeks, after playing the song, including a discussion of all things being multi-causal.

I integrate visual art at the end of several curricular units, such as units on (a) Gardner's Theory of Multiple Intelligences, (b) Positive Psychology and Character Development, (c) Piaget's Cognitive Development, (d) Kohlberg's Moral Reasoning Stages, (e) Erikson's Psychological Stages, and (g) Haidt's Moral Foundations Theory. For each of these theories, I have selected paintings, mostly representational, some abstract, that represent key issues in the theories. For instance, I have nine different paintings, each one representing one of Gardner's (1999a) eight intelligences plus existential intelligence. I typically have 24 students in a section, so I have printed out in color six sets of the nine paintings. I divide the students in small groups of four, give each group a set of the paintings, and invite them to determine which painting represents which intelligence the best. They then select one painting to write up together and explain why it fits their Hypothesis with Data, a Warrant (an explanation why the data fit the hypothesis), and an Invitation to Inquire (inviting the rest of the class and

the professor to critique their explanation; see Argyris, 1982; Argyris, Putnam, & Smith, 1985). This “art analysis” is the last step in each theoretical curricular “unit” in my class. The unit begins with direct instruction and illustration of the key concepts. In the example above, I lecture on the definitions of Gardner’s 8 (or 9) intelligences, and give examples. In the next class session, I give them a case study that has embedded in it behaviors that represent all eight intelligences. In small groups of four, they analyze the cases, identifying the use of each individual intelligence, also using the Hypothesis-Data-Warrant-Invitation to Inquiry process (which I explain as the fundamental form of scientific thinking and writing). Then in the next class session, they analyze the paintings to hypothesize which intelligence is best represented in each painting. As Howard Gardner (1999b) has explained at length, we only know that our students actually *understand* a concept if they can accurately *apply* the concept in a new and different situation than was practiced in class. Analyzing the paintings is an out-of-the-box experience, and was not taught in class, so it meets Gardner’s criteria of a new and different situation. To be able to successfully explain which intelligence is best represented in a painting requires actual understanding of the concept of that intelligence, and not simply memorization of its definition.

Moral Beauty in Developmental Psychology. Moral development is perhaps the most important form of development. What is the result of teaching our students to become more intelligent if they are not morally motivated people? Such people wreak havoc on our world. But a moral person, even if they are not so smart, makes positive contributions to society. I invite all my students in my Developmental Psychology course to take the VIA test (Peterson & Seligman, 2004; take the test yourself here: <http://www.viacharacter.org/www/Character-Strengths-Survey>, or just search for “VIA test,” and it will likely be your first hit). I then ask them to write their top five strengths on a 5×8 card, fold it into a tent, put their name on it, and display it on their desk every day of class (I do the same at my desk). I divide them into small groups for part of each class session to work on analyses together, and they take their cards and orient them toward the other three members of their group. The VIA test profiles your 24 character strengths, from your strongest to your weakest. In general, Positive Psychologists recommend ignoring one’s weaker virtues in favor of expressing one’s greater strengths more often, and in new ways, as this

may lead to greater happiness and flourishing (Seligman, Steen, Park, & Peterson, 2005).

After teaching a unit on how to *praise* effectively, based on Carol Dweck's (Gunderson et al., 2013) and Jere Brophy's work (1981); and after teaching a unit on Positive Psychology, I then invite my students to complete 10 Strength Spotting forms, over a period of 10 weeks, and to practice effectively praising the persons they observed. As I point out to my students: to be able to recognize a virtue or character strength in someone else, you must model it in your own brain, thus making your own brain a more morally beautiful place. Below is the Strength Spotting form I have developed (Fig. 8.1):

Let us end this chapter with a plea from President John F. Kennedy. He said, in a talk he gave at Amherst College in 1963, "I look forward to an America which will not be afraid of grace and beauty" (n.p.). It is my hope that educators in America, as well as the rest of the world, will not be afraid to infuse beauty throughout the content and methodology of their courses. It will make our world a better place for all creatures.

TAKE-AWAYS

1. Emotions are necessary to make nearly any decision in life; and we make decisions constantly throughout the day.
2. Aesthetic emotions are a special class of emotions, and motivate us to *approach* or *avoid* any object of our aesthetic contemplation.
3. Jonathan Haidt has shown that intuitions, which are much like emotions, guide our moral decisions.
4. Sarah Rose Cavanaugh has summarized the use of emotions in Andragogy. Emotions cause us to:
 - a. pay attention in class and pay *attention* to assignments;
 - b. maximize *working memory* potential;
 - c. encode information into our *long-term memory* and to retrieve information from long-term memory; and
 - d. to be *motivated* to attend class, to study for exams, and to complete assignments.
5. Sona Farid-Arbab notes that attraction to beauty (the prototypical aesthetic emotion) motivates us toward personal and collective transformation.

SS# _____ Date due: _____ Your name: _____

Applying Developmental Science
STRENGTH SPOTTING +10
Seeing the Inner Beauty in Others & Praising Them

1. Hypothesis: "A character strength that this person has is _____, which is an element of the virtue of _____"

2. Data: "Specific" behavior(s) observed that lead to this hypothesis (only one behavior is required, but the more the merrier). Do not write generalizations. Write an actual observance of a *specific* occurrence:

3. Praise the person you observed for **effort or process**. Be Contingent, Specific, Sincere. Write what you said to praise them ("quote yourself"):

5. [Not necessary to write for these brief assignments, but think about a warrant. How do the behaviors you observed, from the person you are writing about, fit the definition of the character strength?]

Use one of these 24 Character strengths and the corresponding virtue in your hypothesis and the **same one** in your praise statement.

Strengths of the Virtue of Wisdom and Knowledge

Creativity * Curiosity * Open-mindedness * Love of learning * Perspective/Wisdom*

Strengths of the Virtue of Courage

Bravery * Persistence * Integrity/Honesty * Vitality/Zest*

Strengths of the Virtue of Humanity

Love (relationship love) * Kindness (agapic love) * Social intelligence*

Strengths of the Virtue of Justice

Citizenship, Loyalty, Teamplayer (Trustworthiness)* Fairness * Leadership*

Strengths of the Virtue of Temperance

Forgiveness/Mercy * Humility/Modesty * Prudence (caution) * Self-regulation (self-control)*

Strengths of Virtue of Transcendence

Appreciation Beauty/Excellence * Gratitude * Hope * Humor/Playful * Spirituality/Sense of Purpose*

Fig. 8.1 Strength spotting form

6. Panos Paris explains that moral beauty bridges the gap between making deliberative moral judgments and actually acting morally, by motivating us toward virtue and away from vice.
7. General education courses, such as Introduction to Psychology and Developmental Psychology, can be infused with story-telling, myth, paintings, music, and poetry; and thus motivate students more effectively.
8. John Keats's *Ode to Psyche* is a beautiful romantic period poem.
9. Developmental Psychology is an excellent course in which to encourage the morally beautiful development of college students while they are studying the moral development of children and adults. A character strength, virtues approach, including effective praise, is warranted.

BEAUTY INTERLUDE SEVEN

Trials for Love: Two and Three

Psyche had completed her first trial of love, the sorting of the seeds and grains. But Aphrodite did not accept the results of that test and told Psyche she must endure another trial before she would allow Eros to be returned to her. At this time Aphrodite had Eros under lock and key, with guards on his bedroom door, but he was in the same palace with Psyche and Aphrodite. “[T]he two lovers knew they were under the same roof, were kept apart, and endured a melancholy night” (Kenney/Apuleius, 1990, p. 101).

Aphrodite then told Psyche that she fancied some wool made of real gold from the legendary rams and ewes that wandered a nearby meadow. Psyche set out to gather some of their fleece and stopped at a nearby river that was between her and the sheep’s pasture. A divinely inspired reed, growing by the river bank, spoke to her, warning her of the dangerous rams, with their fierce tempers and sharp horns. The reed told her that if she waited until the hot sun abated, and a cooling breeze wafted over the river and on to the sheep, they would calm down, and she could gather their wool that had stuck to the twigs of the plane trees that bordered the rams’ meadow. This she did, gathering up a large armful to bring to Aphrodite (Fig. 8.2). Alas, this too did not win Aphrodite’s approval and with an acid smile told Psyche she would need to complete another trial to win back her Love.



Fig. 8.2 Venus Ordering Psyche to Collect the Golden Fleece by Bernardo Daddi (After Raphael) (Italian engraver, b. 1512–d.?, Worked in Rome from 1532 to 1550) https://commons.wikimedia.org/wiki/File:Plate_23_-_Psyche_on_the_order_of_Venus_departing_to_find_the_golden_fleece,_from_the_Story_of_Cupid_and_Psyche_as_told_by_Apuleius_MET_DP862829.jpg

Trial Three: The Headwaters of the River Styx

Aphrodite then hands Psyche a beautiful urn made from hollowed-out crystal. She told Psyche she needed to take the urn to the top of a steep, high, craggy mountain and collect dark water from its black spring. Little did Psyche know this was the headwaters of the River Styx, the River of Hades (Hell), and that if one drop touched her skin, she would instantly die. Even the gods themselves avoided this place. To make matters worse, it was guarded by dragons.

Once again, however, Providence came to Psyche's rescue. Zeus's ravisher eagle spotted her on the high mountain, near the cleft where the Styx poured out, with the dragons surrounding her. This eagle, in the past, had done service for Eros, and now he saw another opportunity to serve Love through aiding Love's mistress. The eagle swooped down, and clutching the urn in his claws, relieved Psyche of her burden. He then flew into the cleft of the mountain, and hovering with his mighty wings, scooped up some water of the Styx into the urn, and returned it to Psyche without a drop on the handles of the urn (Fig 8.3).



Fig. 8.3 Venus Ordering Psyche to Take Water from a Fountain Guarded by Dragons By Bernardo Daddi (After Raphael) (Italian engraver, b. 1512-d.?, Worked in Rome from 1532 to 1550) https://commons.wikimedia.org/wiki/File:Venus_ordering_Psyche_to_take_water_from_a_fountain_guarded_by_dragons_from_the_%27Fable_of_Cupid_and_Psyche%27_MET_DP824472.jpg

Psyche then hurried down the mountainside, to bring her prize to Aphrodite, the joy of reunion with Eros uppermost in her mind. But, alas, the cruel Aphrodite was not satisfied, and accused Psyche of being a great witch, as she had accomplished these impossible and dangerous tasks so quickly and effectively. With a deadly smile, Aphrodite said she had one last test for her, and handed her a small casket, telling her that she must go to the Underworld. Once in Hades she must seek out the Queen of Hell, Proserpine, and tell her this: Aphrodite “requests that you send her a little of your beauty, enough at least for a single short day” (Kenney, 1990, p. 105). How is poor Psyche going to find her way to Hell?

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CHAPTER 9

Bountiful Beauty: Increasing Appreciation of Beauty

The previous eight chapters have made a case that the trait of AoB is important. If it is important, then it might be worth creating interventions and educational experiences to increase our levels of this trait. But can a trait grow and develop and be stronger? Aren't traits by definition stable? Just what is a trait?

WHAT IS A TRAIT?

Generally, traits are considered as aspects of personality that are stable across time and across context. Aristotle (2000) described traits and explained that we have habits of mind and of action that define who we are as a person. We know traits have a fairly strong genetic components (0.30–0.50 heritability factors), and there is at least some cross-cultural validation of them (Matthews, Deary, & Whiteman, 2009). It is also obvious that the woman-on-the-street believes in traits, based on everyday language usage (Chaplin, John, & Goldberg, 1988). “He is an honest person.” “She is an introvert.” “He is pretty neurotic.” “She is quite open-minded.” For the purposes of this chapter, a trait is defined as a stable pattern of behavior, cognition, emotion, and conation (choice making, the will); traits have a strong genetic component and are presumed to have adaptive value; but, nonetheless, can be substantially influenced by the environment, and thus develop and change or deteriorate and weaken (Diessner,

(in press). In particular, traits are stable across time, especially in adulthood; they are an internal cause of behavior; and they have a wide situational scope, which means the trait can be observed in action in a variety of settings (Chaplin et al., 1988).

In Positive Psychology, the traits of interest are called character strengths (all character strengths are traits, but not all traits are character strengths). Character strengths are related to moral and intellectual virtues. They lead to the good life (eudemonia) and flourishing (Peterson & Seligman, 2004). As a side note, drawing on a sample of 336 middle-aged twins from the Minnesota Twin Registry, scores on the Appreciation of Beauty and Excellence subscale of the VIA-IS (Peterson & Seligman, 2004) were shown to have a heritability factor of 0.53 (Steger, Hicks, Kashdan, Krueger, & Bouchard, 2007). Such a heritability factor indicates that AoB has a very large genetic influence, but that it also can be highly influenced by the environment and perhaps by our personal choices.

TRAIT STABILITY AND CHANGE OVER THE LIFESPAN

Although in theory traits are stable, they often change very much over the lifespan. Roberts and DelVecchio (2000) performed a meta-analytic study in which they analyzed 152 longitudinal studies regarding trait stability and change. Not surprisingly, traits were least stable in children and most stable in middle to late adulthood. Test-retest correlations for traits staying consistent were 0.31 in childhood, and then 0.54 during the college years, 0.64 around age 30, and then approximately 0.74 between the ages of 50 and 70. This means traits are minimally stable in childhood, they can change quite a bit during that time; they are fairly stable by early young adulthood, quite stable by age 30, and very stable in late middle and late adulthood. Across adulthood, they found Openness to be “quite consistent” (p. 17) with a consistency estimate of 0.51 (which was close to the highest consistencies estimates of 0.55 for Extraversion and Agreeableness). Remember that Openness is particularly important to us because it is highly associated with AoB.

Another meta-analytic study of trait change across the lifespan was completed by Brent Roberts and team (Roberts, Walton, & Viechtbauer, 2006). They examined 92 studies that contained longitudinal data about basic traits, with a minimum of pre- and post-testing one year apart; those studies included a total of 50,120 participants. Their main findings indicate that, across the lifespan, but particularly from age 20 to 40, people

increase in Conscientiousness, Emotional Stability, and one facet of Extraversion, namely social dominance. They also found that Openness, and the Extraversion facet of social vitality, increased across adolescence and then both of those decreased in the elder years. Specifically, Openness increasing during the age range of 10–18, and then it has a large increase between ages 18 and 22; then between the age of 22–50 it makes almost no change; next, between the years 50–60 it makes a small positive change; alas, between the ages of 60–70 it takes a major nosedive, and continues to drop, somewhat, after 70.

This decrease in Openness in the elder years is particularly alarming based on a study by Williams, Suchy, and Kraybill (2013). They have shown that scoring high on the aesthetic facet of Openness (and also on the values facet of Openness) may protect a person from dementia. Researchers tapped into a community-based sample of older persons and demonstrated that low levels of the aesthetic and value facets of Openness predicted cognitive decline, even when controlling for age, education, and the other four major personality traits (Extraversion, Conscientiousness, Neuroticism, and Agreeableness). The authors of the study concluded that elders who are insensitive to, and uninterested in, beauty and art, and/or were rigid in their values, were at risk for substantial cognitive decline. Those elders who scored higher on trait Openness, and specifically the aesthetics facet, were less likely to be diagnosed with dementia. Beauty and art may literally save our minds!

The first large-cohort study ($N = 799$), that followed children 40 years into adulthood, found that stability correlations of trait measures ranged from a high of 0.29 (for Extraversion) to a low of 0.00 for Neuroticism (Hampson & Goldberg, 2006). A correlation of 0.29 is a low, but close to medium-size, correlation for Extraversion. This means that extraverted or introverted children may remain that way in adulthood, but many do not. It also means that how neurotic a child is, either depressed and/or anxious or not at all depressed nor anxious, does not predict whether or not they will be a neurotic adult. Hampson and Goldberg (2006) also found that the trait of Openness, which is closely linked to Appreciation of Beauty, had a stability correlation from childhood to middle adulthood of 0.16, a low correlation. This means a child may love art at age 8 but be uninterested in it at age 48; or that child might be completely uninterested in art at age 8, and at age 48 be an avid producer, collector, or appreciator of art. On the other hand, they found three-year stability correlations in adulthood quite high: 0.70 to 0.79 (0.79 for both Extraversion and Openness). This indi-

cates that in middle adulthood traits tend to be stable; the level of Openness you had at age 45 will likely be very similar at age 48.

Likewise, in a six-year longitudinal study of adults it was found that traits were quite stable. Costa and McCrae (1988), with a sample of 398 women and men, aged 25–84, found stability coefficients of 0.83 for Neuroticism, 0.82 for Extraversion, and 0.83 for Openness. When they statistically corrected for the scale reliabilities, the stabilities rose into the 0.90s for all three traits. This is impressively high. Traits seem very stable in adulthood.

Trait Change in Openness in Adulthood. A study that followed UC Berkeley students ($N = 497$) for 24 years, from the beginning of college into middle adulthood, found that the trait of Openness predicted some love and work outcomes (Schwaba, Robins, Grijalva, & Bleidorn, 2019). Reminder: the trait of Openness is highly correlated with Appreciation of Beauty, and Openness scales typically, but not always, include an *aesthetic interest* subscale. Schwaba et al. (2019) found that Openness levels predicted Year-24 job satisfaction as well as employment in less conventional jobs. Although Openness did not correlate with most of the measures of love that they used, they did find that those with higher scores on Openness more highly valued the role of romantic partner at Year-4. The researchers had hypothesized that Openness would correlate with uncommitted relationship status, but it did not. They also found that *changes* in the level of trait Openness over those 24 years predicted work and love experiences. Those whose Openness levels increased tended to be employed in artistically oriented jobs and less likely to pursue income-focused jobs (“enterprising” jobs). This subsample that increased in Openness also indicated that salary mattered less to them overall, but they also reported more financial problems. As it was a correlational study, it is unclear if their increase in Openness led to their stronger motivations to pursue such jobs, or if being employed in such jobs led to their increase in Openness (or both). They also discovered that increases in Openness were associated with a decreased likelihood of getting married or having children. This finding may indicate a change in Openness leads to valuing *exploration* of relationships and lifestyles, more than commitment to one relationship.

TRAIT CHANGE THROUGH INTERVENTION

Roberts et al. (2017) performed the largest meta-analytic study ever done regarding intentional trait change, that is, purposefully trying to change the level of a trait. A meta-analysis is based on examining previously com-

pleted research on a topic and deriving averages across all the studies. Roberts and team identified 207 published studies, dissertations, and theses that had pre- and post-test designs that examined change on any of the Big Five personality traits (Extraversion, Conscientiousness, Neuroticism, Agreeableness, and Openness) following an *intentional intervention*. Most of the interventions in these studies were psychotherapy but some were pharmacological (e.g., antidepressant and antianxiety drugs). All added up, the studies included 20,024 participants, of whom 63% were women. They found that interventions were very successful in lowering scores on Neuroticism but the average effect size on changes in Openness was quite small. Based on this large review, it appears that Openness may be more difficult to purposefully change than any of the other four big traits.

Jackson, Hill, Payne, Roberts, and Stine-Morrow (2012) designed an experimental study in which 183 seniors were randomly assigned to either a cognitive intervention that included weekly inductive reasoning tasks, crossword puzzles, and Sudoku puzzles or to a waitlist control group (which did not experience the cognitive intervention). The seniors ranged in age from 60 to 94 with an average of 73 years old; 94% were white, were from the American Midwest, 65% were women, and most had a college degree.

These seniors were given a battery of research tests, including level of Openness, and then four weeks later the intervention began. Note: although most measures of Openness include a subscale of aesthetic interest, the one used in this study did not; rather, it examined these five forms of Openness: ingenuity, intellect, quickness, creativity, and competence. The inductive reasoning tasks involved recognizing novel patterns and applying these patterns to solve various problems. Some of the problems involved looking at serial patterns of words, letters, or numbers and making inferences based on the patterns; and some of the problems were based on real life, such as figuring out answers to questions about a bus schedule and completing a mail order form. The intervention lasted 16 weeks, and the participants agreed to work 10 hours a week on such problems, which were given to them weekly in packets to take home and complete. During and after the intervention they were also given research tests. The results showed that experiencing the cognitive intervention lead to a significant increase in Openness compared to the control group. Now here is something subtle: increases in inductive reasoning from the intervention did not predict increases in Openness, rather, simply experiencing the inductive reasoning intervention lead to the increase.

This study (Jackson et al., 2012) would have been more relevant to beauty if the Openness measure they used had included an aesthetics sub-scale, which most Openness scales do, but not the scale used in this study. On the other hand, Openness does have strong correlations with Engagement with Beauty; in one study Engagement with Artistic Beauty had a 0.45 correlation with Openness (Diessner, Iyer, Smith, & Haidt, 2013) and in another study those correlated from 0.53 for artists to 0.78 for non-artists (Zabihian & Diessner, 2016).

Do Magic Mushrooms Help People Become More Open and Embrace Beauty Even More? A team of psychiatrists from Johns Hopkins University School of Medicine investigated the influence of psilocybin on the Big Five traits (MacLean, Johnson, & Griffiths, 2011). They recruited 52 hallucinogen-naïve participants from the local community by flyers announcing, “a study of states of consciousness brought about by psilocybin, a naturally occurring psychoactive substance used sacramentally in some cultures” (p. 3). This sample of participants were spiritually active, 90% of them reported they regularly participated in meditation, religious services, and/or prayer; they were also well educated, with 54% having post-graduate degrees.

Each participant had from two to five sessions in which they took various size doses of psilocybin under the watchful eye of the psychiatrists.¹ During each session, the “participants were encouraged to lie down on a couch, use an eye mask to block external visual distraction, wear headphones through which a music program was played, and focus their attention on their inner experiences” (p. 4). They completed the NEO-PI, which measured their levels of the Big Five traits, before the sessions began, between sessions, and 14 months after the last session. Results showed that the trait of Openness significantly increased from pre-test to final post-test, but none of the other traits changed (Extraversion, Agreeableness, Neuroticism, and Conscientiousness). Their results also demonstrated that it was the participants who had mystical experiences under the influence of the psilocybin that showed the most gains in Openness and kept those gains over a year later (whereas those who did not have a mystical experience showed no gains in Openness a year later). It is worth noting that the NEO-PI’s test of Openness does include a sub-scale of aesthetic interest, and those who had mystical experiences from the psilocybin showed significant increases in aesthetic appreciation, and those without the mystical experience did not.

¹ Don’t do this at home kids! I am not recommending the use of any mind-altering drugs.

INTERVENTIONS TO INCREASE LEVELS OF TRAIT APPRECIATION OF BEAUTY (AoB)

There have been a handful of intervention studies published concerning attempts to increase AoB. The first study ever published on this topic involved participants writing weekly beauty logs about their personal experiences of natural beauty, artistic beauty, and moral beauty (Diessner, Rust, Solom, Frost, & Parsons, 2006). Employing a quasi-experimental design, the experimental group demonstrated significantly increased levels of the trait of appreciation of moral beauty over a comparison group. However, no increases in appreciation of natural beauty or artistic beauty were found.

Martínez-Martí, Avia, and Hernández-Lloreda (2014) published qualitative findings from a three-week web-based intervention which demonstrated increased appreciation of beauty in the experimental group over the control group. Their intervention consisted of an invitation to practice exercises “aimed at (1) increasing the awareness of beauty and of how it affects our emotions, thoughts, and behaviors, (2) cultivating an esthetic attitude in front of beauty, and (3) encouraging participants to expose themselves to beauty” (p. 477). Participants were instructed to write a personal beauty journal, to create a multimedia-based beauty portfolio, and to write into a forum to share their beauty experiences. They received instruction about appreciating beauty in both audio and video sessions on the web. The majority of participants stated that this three-week experience increased their appreciation of beauty and their well-being. However, the research design did not reveal whether these were state level (short-term) or trait level changes in appreciation of beauty.

The next study published, concerning increasing AoB, had an experimental design (assignment of participants to experimental and control conditions) to investigate whether trait levels of appreciation of natural beauty would increase through 10 weekly beauty walks (Diessner, Woodward, Stacy, & Mobasher, 2015). The experimental group was taken on walks through the greenest aspects of a college campus. The principal investigator directed the participants’ attention to the most beautiful aspects of nature during the walks, including hills in the background, bushes, trees, flowers, the sky, and clouds. He also encouraged the participants to direct each other’s attention likewise. The control group walked the same routes, led by the principal investigator, but no mention of beauty was made and no directed attention included. Although this brief intervention did not

cause trait level change in appreciation of natural beauty, it did demonstrate, four weeks after the intervention ended, that the members of the experimental group members were noticing beauty significantly and substantially more often than the control and comparison groups.

The first Psychology of Beauty² course³ ever taught, under the aegis of Positive Psychology, took place in the Spring semester of 2015. The name of the course was PSYC 414. The Psychology of Natural, Artistic, and Moral Beauty and it was an elective course for psychology majors, although social work and education majors also took the course, along with a few students from other majors. To examine trait level change in AoB, a quasi-experimental design was employed; the students in the Beauty course served as the experimental group and students in other senior level psychology courses served as the comparison group. The first week of the semester, and then 12 weeks later, the participants completed a measure of AoB, the Engagement with Beauty Scale-Revised (Diessner, Parsons, Solom, Frost, & Davidson, 2008; Pohling, Diessner, Stacy, Woodward, & Strobel, 2019).

The total sum of experiences during the Psychology of Beauty course may be considered the independent variable, and the levels of gain on the EBS-R the dependent variable. Although primarily designed as an experiential course, the course textbook was Sartwell's (2006) *Six Names of Beauty*. Students were introduced to a skill set I named SAM: Savoring, Absorption, and Mindfulness (cf. to the Discussion section in Martínez-Martí et al., 2014). They were taught that savoring is "the capacity to attend to, appreciate, and enhance the positive experiences in one's life" (Bryant & Veroff, 2007, p. xi). Absorption is characterized as being completely engaged by something (Diessner et al., 2008), completely engrossed, and thinking of nothing else except that in which one is absorbed. It is related to the concept of flow; when in flow, people are totally "into" what they are doing, and lose track of time and lose track of self. Absorption is also closely related to experiences of awe (Güsewell & Ruch, 2013); and experiences of awe are typical of encounters with beauty (Haidt & Keltner, 2004). Mindfulness is a non-judgmental "awareness of what's happening in the present moment" (Germer, 2009, p. 132). In terms of experiencing beauty, this means temporarily not

²I am not *sure* that this was the first ever Psychology of Beauty course. If you know of such a course ever being taught, in the past or currently, at any college or university in the world, please contact me and let me know: diessner@lcsc.edu

³In American English, a course is synonym for a single class, which this was; in the UK, a course usually means a series of classes.

deciding if something is beautiful or ugly, but simply experiencing the stimuli as it is perceived in the mind/brain. A beauty experience has both a beauty stimulus (the beautiful object) and a perceiver of that beauty (the mind, the heart, the brain, the soul). Mindfulness involves becoming aware of what is happening in the mind/heart during the beauty experience. “Savoring is a variation of mindfulness. When we savor, there’s the intention to *enter fully* into the experience, rather than cling to it or drag it out … to let things be just as they are, fully and completely” (Germer, 2009, p. 115).

The course met for 75 minutes twice a week for 12 weeks. Course activities included visits to a local art museum, a visit to the county historical museum, and a field trip into wild nature to observe a great blue heron rookery. Each student made a beauty presentation in the course; thus, averaging about two students making presentations weekly. These presentations ranged from YouTube videos that presented beautiful visual art or music, to morally elevating videos, to PowerPoint slides showing beautiful ideas, nature, and art. Prior to each beauty presentation, the professor reminded and encouraged the students to apply SAM. The professor also projected sets of ten slides in most class sessions, which he put together, of varying types of beauty, including nature scenes, paintings, and architecture.

The course was also a service learning course; pairs of students were assigned to elders in the community. They visited the elder once a week for 75 minutes each time for 10 weeks. The students were assigned to learn from the wisdom of the elder, and also to document the moral beauty of the elder in their course term paper. They began their study of the moral beauty of an elder by using a modified interview format of Peterson and Seligman’s (2004) Values in Action model of 24 character strengths (R. Niemiec, personal communication, August 12, 2011). The students’ main focus was to provide a positive social experience for the elder; and the secondary focus was to interact with the elder in such a way that the students could identify morally beautiful character strengths of the elder. They then wrote an APA empirical case study analysis of their moral beauty findings (their term paper).

State changes in AoB were documented in nearly every class session and the experimental group (the Beauty class) demonstrated an average EBS-R total scale score gain of 3.88. However, because the sample was small ($N = 16$), and the total range of the EBS-R total score is large, 18–126, a paired sample t-test showed $t(15) = 1.29$ ($p = 0.22$), which means the gain of 3.88 was not significant. However, there was a small effect size of $d = 0.27$ (Diessner, Kirk, Guenthner, Pohling, & Mobasher, 2017).

The second time I taught the Psychology of Beauty course, which was in the Spring of 2017, a trait level change did occur (Diessner & Steiner, 2017). Results indicated that the members of the quasi-experimental group, sample size = 18, increased their EBS-R total score by an average of 8.39 points ($SD = 9.7$), which was a significantly higher increase in AoB ($p = 0.002$) than the comparison group, and with a large effect size ($d = 0.85$). The course was taught quite similarly to the first time but with two changes. Instead of going to the county art museum, we took a field trip to the nearby Nez Perce Indian Nation lands and visited a museum with Nez Perce artifacts; the other important change was the addition of writing weekly beauty logs. These logs comprised keeping a journal in which the student-participants recorded four personal observations of beauty per week: an instance of natural beauty, one of artistic beauty, one of moral beauty, and a beautiful idea. They also periodically were placed in small groups to read selections of their beauty logs to each other. Could this have been the cause of the trait level increase in AoB? It may have been.

This was also the first published study (Diessner & Steiner, 2017) to report an intervention that may have significantly ($p = 0.05$) increased the trait of Engagement with *Artistic* Beauty (medium effect size, $d = 0.53$) and the first to document an increase in the trait of Engagement with *Beautiful Ideas* ($p = 0.05$, medium effect size $d = 0.76$).

A study by Proyer, Gander, Wellenzohn, and Ruch (2016) reinforces the potency of such beauty logs. They gave participants pre- and post-test measures of happiness and depression. The experimental group wrote beauty logs every evening for a week. They were asked to write down “(a) three beautiful things in human behavior; (b) three things they experienced as beautiful in nature and/or the environment; and (c) three beautiful things related to beauty in general that they observed” (p. 191). The control group wrote about “early memories” every evening for a week. Happiness levels for the beauty loggers significantly increased from immediately after the intervention all the way up to a month later; and their levels of depressive symptoms dropped immediately after the first week and stayed down for a whole week after the intervention. What a great study!

The research team from Spain, Martínez-Martí, Avia, and Hernández-Lloreda (2018), whom we met a few paragraphs above, published another study aimed at increasing AoB. Their study consisted of a web-based intervention that lasted three weeks, and randomly assigned 150 participants to an appreciation of beauty experimental group, a placebo group, and a waitlist group. Their “first week exercises aimed at increasing the awareness of the presence of beauty and of how beauty affects our emo-

tions, thoughts, and behaviors. Second-week [was] cultivating an aesthetic attitude. ... Third-week exercises aimed at increasing the exposure to beauty" (p. 272). It is noteworthy that one of their exercises included keeping a beauty log (a beauty journal). Initial analysis did not show a statistically significant increase in AoB, but it showed a trend in that direction ($p = 0.12$). However, when they statistically controlled for baseline levels of AoB and appreciation of non-moral excellence, then the AoB experimental group showed significant gains beyond the two control groups. The AoB group also demonstrated significantly greater subjective feelings of well-being compared to the control groups.

The UK has a national campaign called *30 Days Wild* (Richardson, Cormack, McRobert, & Underhill, 2016; Richardson & McEwan, 2018). The campaign is sponsored by the Wildlife Trusts, an organization that unites 46 local Wildlife Trusts in and around the UK, protecting 2300 nature reserves. The campaign encouraged people to become more conscious of nature around and near them and to commit "Random Acts of Wilderness"—12,400 signed up to participate in the June 2015 campaign. The core of the campaign focused on asking people to interact with nature every day for one month; they suggested *noticing* anything in nature and paying attention to it, *sharing* their nature experiences on social media, *doing* something for nature (e.g., leaving a wild area in the garden) and *connecting*, such as participating in nature-based arts. Those who completed the pre- and post-tests showed increases in happiness, which were mediated by levels of connectedness to nature (getting more connected to nature explains why the participants became happier); however, they did not employ a measure of EnB in this 2015 study.

For the 2017 campaign, 49,000 registered to participate in *30 Days Wild* (Richardson & McEwan, 2018). The Wildlife Trusts had encouraged participation through social-media accounts and blogs. "These were very active, with 107,522 #30DaysWild tweets, 29,669 Instagram photos posted and 11,523 Facebook group users" (p. 3). The research team was able to encourage 308 participants to complete all the pre- and post-measures, including the EnB subscale from the EBS-R (Pohling et al., 2019). Those participants showed increases in their health, happiness, conservation behaviors, and connectedness to nature; and this was the second study ever published which demonstrated positive development in trait EnB. They also found that the increase in EnB mediated the relationship between the increases in nature connectedness and happiness. Therefore, go get some quality nature time and increase your EnB! You will be glad you did.

I taught the Psychology of Beauty course again in Spring semesters 2018 and 2019. For the data analysis, we combined the EBS-R scores from both of those semesters to increase the sample size to $N = 40$ (Diessner et al., 2019). New to those two semesters was repeatedly testing the student patterns of aesthetic emotions aroused from various beauty stimuli using the AESTHEMOS (cf. Schindler et al., 2017). I also gave pre- and post-test EBS-Rs to the students. We were lazy and did not recruit a comparison group, so the study is not even quasi-experimental. Nonetheless, paired samples t-tests show that the students made significant ($p < 0.001$) gains in AoB over the semesters, and showed an almost medium effect size ($d = 0.49$); the average gain was 6.78 points on the EBS-R. However, without a comparison group, this is just a hint that they may have gained in AoB from the beauty experiences in the course.



Fig. 9.1 The Spring 2018 and 2019 PSYC 414 The Psychology of Natural, Artistic, and Moral Beauty classes visited this Great Blue Heron rookery on an island in the Snake River in the Pacific Northwest of the USA (Figs. 9.1 and 9.2). Those birds are giants, standing up to 130 cm tall (over 4 feet) and wingspan up to 200 cm (over 6 feet). (Photo credit Rhett Diessner)



Fig. 9.2 Spring 2019 Psychology of Beauty Class Heron nests can be seen in the background. (Photo credit: Rhett Diessner)

HOW YOU (YES, I MEAN YOU, AND YOUR FRIENDS) CAN INCREASE YOUR TRAIT LEVEL OF AOB

We end this book with practical advice. Some of the practical advice will be based on theories of human behavior and some will come directly from empirical studies. The great social psychologist Kurt Lewin (1943) famously stated this maxim, “there is nothing as practical as a good theory” (p. 118). When we have hard data, or “facts,” they may only apply to the situation in which they were collected and thus be inappropriate to generalize to other situations. But a good theory is like a principle and can be adapted and applied to many situations. So, we will begin this section with applying theories.

Behaviorism. Behaviorists emphasize that behavior change comes about through reward and punishment. Thus, increasing the trait of AoB may be influenced by reward and punishment. Granted, behaviorism does not deal with traits, because traits are partially defined as *inter-*

nal causes of behavior (Chaplin et al., 1988), and behaviorism argues that we cannot observe nor measure the internal, thus it is meaningless. But traits are also partially defined as *patterns of behavior*, and behaviorists are all about patterns of behavior. For many people, taking the time for a walk in a park and noticing the beauty of the greenery is quite *rewarding*. For others, taking the time to go to a museum and appreciate the art is quite *rewarding*. On the other hand, some people are not too sure that all the dirt in the forest looks appealing and some people find the thought of looking at paintings and art a big bore. Nonetheless, take the time to go to nature, in a park or out in the wilds, and look for the beauty. Go where it is pleasant for you, and thus rewarding. This may increase your engagement with natural beauty. Do not go on a *too long* of a hike, or forget your water bottle, as this will be punishing, and decrease the chance you will return to nature's beauty. Do not stay too long in the museum, as it may become tedious, and thus be a punishing experience, and decrease the likelihood you will reap the benefits of engaging with artistic beauty. When you notice the moral beauty of others, and compliment or praise them, it can be very rewarding and reinforcing. Such reinforcement will increase the likelihood that you will continue to notice the moral beauty of others, and enjoy the bounty of making your own mind a more beautiful place to be.

Social Learning Theory (SLT) and Social Cognitive Theory (SCT, Bandura, 1986). SLT and SCT are about observing others (models) and imitating them, often based on vicarious reinforcement and punishment. Vicarious means you observe someone experiencing reward or punishment and you empathically feel their experience; which then becomes a motivator for you to imitate their behavior. If you see someone enjoying eating a piece of chocolate, you might vicariously experience gustatory beauty, and be motivated to get a piece of chocolate for yourself. If you see someone in rapture over a piece of music, you might learn to see the beauty in that piece of music. Watching the ecstasy on the face of Naeem Nabili, my music teacher, while listening to Beethoven greatly increased my ability to hear the beauty in his music. Observing the delight on the face of Julio Savi, my art teacher, while encountering a Raphael painting in a museum, greatly increased my appreciation of the beauty of his paintings. Seeing the joy on my father's face when hiking in nature taught me a love of the beauty of nature.

Therefore, if you are not already captivated by the beauty of nature, find someone to go hiking with who does love such beauty. If you are not

already motivated to go to art museums, find a lover of art and ask them to take you to view some paintings.

To ponder some good ideas about how to apply SCT to engaging with moral beauty, check out the paper by Ahrens and Cloutier (2019), entitled “Acting for good reasons: Integrating virtue theory and social cognitive theory.”

Positive Psychology. One of the pillars of the Positive Psychology movement are virtues and character strengths, that is, moral beauty. Take the VIA test (Google “VIA test”) and then ask your friends and family to do so as well. Get copies of their results and tape their top 5 strengths to the refrigerator (I have done that with my wife’s, my children’s, and my grandchild’s VIA results). Memorize their top five strengths and then use the words of those virtues in your everyday language when talking with those friends and your family members. This may likely increase your engagement with moral beauty.

To start my day out I do a brief meditation about moral beauty for my upcoming day. I briefly picture what situations and environments I will likely be in that day, and briefly think about what people may cross my path. I do this in the context of reminding myself to look for the virtues and character strengths of those people and recite a little prayer to myself to be conscious and aware of the moral beauty of the people who will cross my path. It seems to help.

Hard Data. One concrete behavior to increase AoB is journaling, or keeping a beauty log, about one’s personal experiences of beauty. Studies have repeatedly shown, whether journaling daily about one’s beauty experiences for 1–3 weeks (Martínez-Martí et al., 2014, 2018; Proyer et al., 2016) or weekly beauty logs for 10–12 weeks (Diessner et al., 2006; Diessner et al., 2019; Diessner & Steiner, 2017), that it likely has an effect on increasing one’s trait of engagement with beauty. So off you go to a nice office supply store, or cool bookstore, or a lovely old-fashioned stationery store, and buy yourself an attractive empty journal. Then set yourself a daily or weekly goal to record one or more instances of natural beauty that you observed, a description of some artistic or design beauty you encountered, a brief story of morally beautiful actions you saw at the grocery store or in a movie, and your favorite beautiful idea that popped up on the web, or that you read in the scriptures of a religion, or in a book of philosophy.

TAKE-AWAYS

1. A trait is defined as a stable pattern of behavior, cognition, emotion, and conation (choice making, the will); traits have a strong genetic component and are presumed to have adaptive value; but, nonetheless, can be substantially influenced by the environment, and thus develop and change or deteriorate and weaken.
2. In Positive Psychology, the traits of interest are called character strengths and virtues.
3. Test-retest correlations for traits staying consistent were 0.31 in childhood, and then 0.54 during the college years, 0.64 around age 30, and then approximately 0.74 between the ages of 50 and 70. These means traits are minimally stable in childhood, they can change quite a bit during that time; they are fairly stable by early young adulthood, quite stable by age 30, and very stable in late middle and late adulthood.
4. The trait of Openness is highly correlated with AoB.
5. The trait of Openness, and the facet of aesthetic appreciation, increases from ages 10 to 22; stays the same from 22 to 50; has a small gain during 50–60; and drops a fair amount from 60 on.
6. Elders who score high on the aesthetic subscale of the Openness factor tend not to get dementia; those who score low have a significantly higher chance of being diagnosed with dementia.
7. Based on a large meta-analytic study, it appears that Openness may be more difficult to intentionally change than any of the other four big traits. But it can be done.
8. A study found that giving elders inductive reasoning tasks to complete led to an increase in trait Openness.
9. Having a mystical experience, under the influence of psychiatrically administered psilocybin (hallucinogenic mushrooms), led to an increase in trait Openness, and specifically aesthetic interests, up to 14 months after the experience.
10. There have been a handful of published studies which focused on interventions to increase AoB. One effective intervention, used across studies, is daily or weekly journaling about personal experiences of beauty (beauty logs).

BEAUTY INTERLUDE EIGHT

The Last Trial and Then a Happy Wedding

We left poor Psyche wondering how she was going to get to hell (Hades), and then ask Proserpine, the Queen of Hell, for a jar (casket, little box) of her beauty (make-up). Psyche immediately realized that this was Aphrodite's last plan to kill her for sure—who could survive a trip to Hades? But she was motivated by love to reunite with Eros at all costs. She figured the quickest way to hell would be to kill herself, so she climbed a high tower, intend on throwing herself off. But, amazingly, once she climbed to the top, the tower spoke to her, saying if she kills herself her soul will go to hell, and she will never be able to return. Instead, the tower revealed to her where she could find a tunnel going down to Hades, and told her she also needed to take along six cakes of barley meal that had been soaked in wine and honey as well as two gold coins. The cakes were to feed Cerberus, the three-headed monstrous dog guarding Proserpine's palace, and the coins were to give to the boatman Charon, one coming and one going back, to be ferried across the River of Hell. The tower then told her the most important thing she must remember is: "But this rule above all I bid you keep: do not open or look into the box that you bear or pry at all into the hidden store of divine beauty" (Kenney, 1990, p. 109; clear foreshadowing, eh?).

She followed the advice of the spirit voice from the tower to the letter; gave Charon the gold coins, the savage dog its cakes, avoided various other pitfalls the tower had warned her about, and had gotten the box of divine beauty from Proserpine. She hurried back out of the Underworld, and when she hit the light of day she thought to herself: It couldn't hurt to take a quick look at the beauty and perhaps use a little bit to make myself even more attractive to Eros. When she opened the box, instead of beauty, there was a Stygian darkness that wafted out, surrounded her, and caused her to fall down completely and utterly unconscious.

At this point, Eros was sick and tired of his mother keeping him from his beloved, and his wound from the burning oil had completely healed. So he jumped out of his window and flew away with great speed to Psyche's side. He gathered up the Stygian sleep, returned it to the box, and then gave Psyche a harmless prick from his arrow which awakened her. He gently chastised her for her curiosity and told her to hurry back to his mother with the box of divine beauty. He then flew off to the highest heavens to plead his case to Zeus. Zeus took Eros's face in his hands and kissed him,



Fig. 9.3 Eros Transports Psyche to Heaven Etching by Eugène Gaujean after the painting by Charles-Joseph Natoire in the Hôtel de Soubise, Paris. (Etching owned by Rhett Diessner. Photo credit: Heidi Simmons)

and reminded Eros that he had caused many a problem for Zeus, but that he would deal with Eros with clemency (Fig. 9.3).

Zeus ordered Mercury to gather all the gods together; Zeus then announced to them that the days of Eros's wantonness were over, and that he would settle down with one single beloved, that being Psyche. Zeus reassured Aphrodite that her son was not to marry a mere mortal, causing shame to her household; he ordered a cup of ambrosia for Psyche, giving it to her to drink and making her immortal. Zeus threw a huge wedding party (Fig. 9.4), with cups of nectar, a massive feast, flowers, perfumes, and music. Aphrodite even danced at the feast, to the accompaniment of Apollo singing and playing his lyre. "Thus was Psyche married to Cupid with all due observance, and when her time came there was born to them a daughter, whom we call Pleasure" (Kenney, 1990, p. 115).

Thus ends the myth of Psyche and Eros as told by Apuleius. The myth was a pagan Greek way of explaining, through metaphor, that when we



Fig. 9.4 The Wedding Banquet of Psyche and Eros by Giulio Romano (Julio Savi took me to see this painting in the Palazzo del Te in Mantua, Italy ca. 1999. It was awe-inspiring.) (Psyche and Eros are in the lower right corner, with their baby, “Pleasure,” between them.) Credit: Wikicommons. https://commons.wikimedia.org/wiki/File:Banquet_of_Amor_and_Psyche_by_Giulio_Romano.jpg

love, we love beauty (Psyche being the most beautiful of beings); that when we love we will experience many trials and tests and suffering; and that love is what lifts us to the heavens and makes us eternal (the word *psyche* means soul). The myth is also a metaphor concerning human development. The Greek word “psyche” is a homonym, it not only means soul, it also means butterfly. We begin life as a sorry little worm in a uterus; we grow bigger and bigger and when we reach childhood, Freud’s latent stage, we wrap ourselves in a cocoon, in a chrysalis, in the bosom of our family. Then, in puberty, the beginning of adulthood, we break free of our cocoon, sprout wings, and soar upwards into our full powers.

Now that you have read the last installment of the Psyche and Eros Myth, I invite you to ponder this question posed to me by Michael Penn (2000), a professor of psychology at Franklin & Marshall College: How would the field and history of psychology have been different if Freud had used the Psyche and Eros Myth as his root metaphor for human development rather than Oedipus Rex?

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AUTHOR INDEX¹

A

- Abelson, J. L., 189
Abrahamse, W., 124
Abrams, D., 189
Acedo-Carmona, C., 94
Adkins, B., 33, 84
Adler, M. G., 120, 159
Ahrens, A. H., 243
Akrie, T. N., 173
Algroe, S. B., 189
Allred, G. E., 173
Ames, R. T., 7, 9
Aquinas, T., 28, 34
Aquino, K., 121, 192
Argyris, C., 17, 220
Aristotle, 2n2, 7, 18–19, 23, 25, 28,
 32, 35, 58, 86, 176, 184, 187,
 188, 229
Armstrong, T., 81, 119, 159, 207
Arnold, R., 31
Arthur, K., 33, 84
Ashton, M. C., 124

- Atiyah, M. F., 3, 33, 102
Augustin, D., 78n3
Augustine, 26, 186
Avia, M. D., 22, 235, 238
Avram, M., 99, 186

B

- Baek, H. S., 85
Baha'u'llah, 31, 194
Ball, G. F., 61n6
Bandura, A., 242
Bao, Y., 99
Barker, B. C., 173
Barrett, L. F., 32, 79, 82, 87
Bartsch, A., 189
Baumeister, R. F., 135n6
Baxley, A. M., 22, 120
Beardsley, M. C., 34
Beethoven, Ludwig van, 24, 90, 121,
 127, 167, 242
Begley, R. O., 193

¹ Note: Page numbers followed by ‘n’ refer to notes.

- Belfi, A. M., 88, 89
 Belke, B., 78n2
 Benincasa, D. M., 3, 33, 102
 Benovoy, M., 92
 Berlyne, D. E., 28, 79
 Bernstein, R., 17, 127
 Bettelheim, B., 148, 214
 Beudt, S., 83
 Biederman, I., 84
 Blautzik, J., 99
 Bleidorn, W., 232
 Blood, A. J., 91
 Boden, J. M., 135n6
 Borgia, G., 61n6
 Boring, E., 4
 Bouchard, T. J., 230
 Boyd, W., 24
 Brammer, M., 77, 103
 Brielmann, A., 35
 Brophy, J., 221
 Brown, D., 6, 116, 158, 169
 Brown, S., 83, 103
 Bryant, F. B., 236
 Buchman, S., 35
 Burke, E., 34
 Burke, K., 148, 217
 Burne-Jones, Edward, 71, 71n8, 174,
 175, 178
 Buss, D. M., 46–48, 49n2, 50, 51,
 53–55, 57–60, 75n1, 104
 Byatt, A. S., 215n3
- C**
 Cabeza, R., 98, 185
 Calvert, G., 77, 103
 Calvo-Merino, B., 93
 Campos, B., 116, 157
 Candee, D., 213
 Capaldi, C. A., 123, 135, 136, 170
 Cavanaugh, S. R., 208, 210–212,
 217, 221
- Cecil, D., 174
 Cela-Conde, C. J., 77, 103
 Chaplin, W. F., 229, 230, 242
 Chatterjee, A., 19n1, 45, 46, 48, 49,
 51, 55, 57, 58, 67–69, 75–80,
 82, 84, 103, 185, 187, 215
 Chenier, T., 79
 Chistopolskaya, K. A., 123
 Christensen, J. F., 78
 Cloutier, D., 243
 Coe, K., 193
 Cohen, G. L., 190
 Cohen, J. D., 97
 Cormack, A., 139, 239
 Corradi, G., 94
 Corrigal, K. A., 90
 Costa, P., 232
 Cox, K. S., 192
 Croce, B., 19, 27, 186
 Csikszentmihalyi, M., 189
- D**
 Dagher, A., 92
 Dale, K. R., 191
 Damasio, A., 98, 208
 Damasio, H., 98
 Danto, A. C., 1n1, 4, 9, 52n3, 56
 Darley, J. M., 97
 Darwin, Charles, 62, 63
 Davey, C. G., 98
 Davidson, J., 22, 119, 156, 236
 Davis, L., 128, 167
 Davis, M. H., 116, 157
 Deary, I. J., 229
 Debussy, Claude, 127
 DelVecchio, W. F., 230
 Detweiler-Bedell, B., 81, 119,
 159, 207
 Devine-Wright, P., 143
 Dewey, J., 26, 186
 Di Dio, C., 86

- Dickie, G., 19, 20, 26
 Diessner, R., 5, 7, 8, 17, 19, 22, 23,
 25, 33, 35, 39, 84, 95, 115, 116,
 118, 119, 121, 122, 124–126,
 128–130, 132, 136–138, 144,
 147, 148, 156–158, 160,
 162–169, 172, 174, 175, 183,
 186, 188, 190, 192–195, 199,
 213, 214, 217, 229, 234–238,
 240, 246
 Donahue, E. M., 137, 164
 Dostoevsky, F. M., 2, 8, 23, 146
 Downing, C., 148, 214
 Dunlap, R. E., 124
 Dutton, D., 7, 24, 28, 51, 53, 55, 59,
 68, 215
 Dweck, C. S., 221
 Dylan, B., 191, 192
 Dziobek, I., 190
- E**
 Eastwick, P. W., 60
 Eco, U., 6
 Eggimann, N., 168
 Eickhoff, S. B., 83
 Englander, Z. A., 84, 85, 99, 185
 Epstein, R. A., 84, 185
 Erickson, T. M., 189, 191
 Erikson, E. H., 215, 219
 Estes, D., 133
 Etcoff, N., 25, 49
 Eysenck, H. J., 27, 28, 32
- F**
 Fagley, N. S., 120, 159
 Falcon, A., 187
 Farid-Arbab, S., 144, 212, 221
 Fechner, G., 4, 28, 79
 Ferrari, C., 100, 101
 Ficino, M., 5, 26, 186
 Finkel, E. J., 60
 Fisher, R., 16
 Frantz, C. M., 122
 Fredrickson, B. L., 211
 Freeman, D., 189
 Frost, N., 8, 22, 119, 144, 156, 192,
 235, 236
- G**
 Gadamer, H., 17
 Gander, F., 238
 Gandhi, Mahatma, 176, 190
 Gao, X., 83
 Gardner, H., 2, 8, 29, 57, 58,
 219, 220
 Gatersleben, B., 124
 Gaudi, Antoni, 161
 Gecewicz, C., 193
 Genthōs, R., 33, 84, 122, 124
 Germer, C. K., 236, 237
 Gier, N. F., 176
 Gilligan, C., 148, 214
 Glaser, D. E., 93
 Glenn, A. J., 173
 Goel, V., 77, 85, 103
 Goldberg, L. R., 124, 229, 231
 Gollnick, J., 148, 214
 Gómez-Puerto, G., 94, 162
 Gonzaga, G. C., 116, 157
 Gould, S. J., 55
 Gove, P. B., 30
 Graham, J., 58, 127, 161
 Greenberg, M. J., 184
 Greene, J. D., 97
 Griffiths, R. R., 234
 Grijalva, E., 232
 Guenther, C., 119, 237
 Gunderson, E. A., 221
 Güsewell, A., 17, 119, 120, 126, 159,
 160, 169, 170, 172, 186, 236
 Gutyrchik, E., 99

H

- Haggard, P., 93
 Haidt, J., 5, 6, 17, 18, 25, 33, 58, 61,
 84, 95, 116, 119, 120, 126–128,
 157, 159–161, 166, 169, 176,
 183–185, 187, 189, 192–194,
 209, 219, 221, 234, 236
 Hall-Simmonds, A., 184
 Hampson, S. E., 231
 Han, H., 190
 Han, K.-T., 131
 Hansen, P., 77, 103
 Harari, Y. N., 55, 55n5
 Harrison, B. J., 98
 Hayn-Leichsenring, G. U., 19n1
 Heerwagen, J. H., 51
 Hegel, G. W. F., 22–23, 28, 166,
 177, 186
 Heinrich, J., 28, 102n11, 189
 Hernandez-Lloreda, M. J., 22,
 235, 238
 Hicks, B. M., 230
 Highfield, R., 58, 63, 144
 Hill, C., 159
 Hill, P. L., 159, 233
 Hinnens, C. T., 173
 Hjortkjaer, J., 90
 Holder, M. D., 133, 135
 Houston, J., 148, 214
 Howell, A. J., 122
 Howell, B. M., 168
 Howell, R. T., 123, 133, 135,
 136, 138
 Howes, Y., 143
 Hull, R. B., 141
 Hunt, L. L., 60

I

- Immordino-Yang, M. H., 98
 Isaacowitz, D. M., 138
 Ishii, R., 123
 Ishizu, T., 82–85, 87, 91, 92, 99,
 103, 185

Iweins, C., 189

- Iyer, R., 5, 17, 33, 116, 123,
 157, 183, 234

J

- Jackson, J. J., 159, 233, 234
 Jacobsen, T., 83, 102n11, 189
 Janicke, S. H., 189
 Jefferson, T., 184
 Jeong, C., 190
 Jeong, G. W., 85
 John, O. P., 137, 164, 229
 Johnson, M. W., 234
 Johnson, R. A., 148, 214
 Jola, C., 93
 Jones, R. E., 124

K

- Kable, J. W., 84, 185
 Kahn, P. H., Jr., 115, 214
 Kandinsky, W., 160
 Kant, I., 6, 19–23, 19n1, 35, 120,
 121, 145
 Kanwisher, N. G., 80
 Kaplan, R., 51, 52, 130, 131, 144n11
 Kaplan, S., 51, 52, 130, 131, 144n11
 Kashdan, T. B., 230
 Kavelin, J., 185
 Kawabata, H., 85
 Keats, J., 15, 33, 176, 215–217, 223
 Kellert, S. H., 139
 Keltner, D., 6, 116, 119, 120, 123,
 126, 157, 159, 160, 169, 187,
 192, 236
 Kennedy, J. F., 221
 Kenney, E. J., 37–39, 104, 177, 178,
 198, 214, 223, 226, 245, 246
 Kenny, D. A., 146
 Kentle, R. L., 137, 164
 Kim, G. W., 85
 Kim, J., 190
 Kim, T. H., 85

Kirk, C., 119, 237
 Kissin, Evgeny, -169, 167
 Klebl, C., 190
 Koelsch, S., 90
 Kohlberg, L., 6, 128, 167, 209,
 213, 219
 Koleva, S., 123
 Kolts, R. L., 126, 160
 Kraybill, M. L., 172, 231
 Krueger, R. F., 230
 Kuttner, S., 213

L

Labouvie-Vief, G., 148, 214
 Lai, C. K., 189
 Lakatos, I., 16
 Landrigan, P. J., 143
 Langer, S. K., 27, 186
 Larcher, K., 92
 Lauring, J. O., 77
 Laven, M., 121
 Leder, H., 78n3
 Lee, K., 124
 Lehne, M., 90, 91
 Levitin, D., 89
 Lewin, K., 241
 Lewontin, R. C., 55
 Li, Y., 101, 185
 Liotti, M., 83
 Livio, M., 86
 Locke, K., 56, 93
 Lourenco, O., 214
 Lumber, R., 139, 140, 141n9
 Lundy, D. E., 173
 Luo, Q., 101, 185

M

Macaluso, E., 86
 MacLean, K. A., 234
 Markowitz, E. E., 124
 Martinez-Marti, M. L., 22, 235,
 236, 238

Martzog, P., 213
 Maslow, A., 167, 168, 214
 Maslow, A. H., 192
 Matthews, G., 229
 May, R., 1, 8, 37, 102, 148, 214
 Mayer, F. S., 122
 McAllister, J. W., 2, 3
 McColl, A., 98
 McCrae, R., 232
 McDermott, J. H., 80
 McEwan, K., 139, 239
 McFarland, S., 116, 158
 McFerran, B., 121
 McGrath, R. E., 184
 McGuire, A. P., 191
 McMahan, E. A., 133
 McRobert, L., 139, 239
 Mendelssohn, Fanny, 54, 90
 Menninghaus, W., 36, 81, 102n11,
 189, 207, 208
 Mertig, A. G., 124
 Miles, M., 139
 Miyazaki, H., 137
 Mo, L., 101, 185
 Mobasher, S., 119, 235, 237
 Moll, J., 98
 Moravcsik, J., 188
 Morris, J. P., 84, 185
 Mucha, Alphonse, 161, 162
 Muir, J., 115
 Munar, E., 94
 Murdoch, I., 21-22, 27, 35, 53n4,
 124, 126, 186
 Murota, M., 81, 86
 Murtagh, N., 124
 Mussorgsky, Modest, 159

N

Nadal, M., 67, 76, 94, 215
 Nakamura, J., 189
 Narvaez, D., 128, 167
 Navarro, M. A., 189
 Nehamas, A., 5, 29, 34

- Neumann, E., 214
 Nikolaev, E. I., 123
 Nitsch, C., 189
 Noddings, N., 127
 Noguchi, Y., 81, 86
 Norman-Haignere, S., 80
 Nosek, B. A., 189
 Nowak, M. A., 45, 58, 63, 64, 69, 144
 Nystrom, L. E., 97
- O**
 O'Doherty, J., 84
 Oeberst, A., 78n3
 Oliver, M. B., 189
 Orians, G. H., 51
- P**
 Palmer, C. T., 193
 Panos, P., 213, 223
 Park, N., 138, 221
 Parsons, L., 8, 22, 144, 156, 192,
 235, 236
 Passmore, H.-A., 122, 123, 133, 135
 Payne, B. R., 159, 233
 Pearce, M. T., 76
 Peebles, B. L., 173
 Pegors, T. K., 84, 185
 Pelli, D. G., 35
 Penn, M., 247
 Peterson C., 18, 19, 21, 22, 58, 61,
 126, 138, 160, 184, 187, 193,
 220, 221, 230, 237
 Piano, R., 3, 9
 Piedmont, R. L., 22, 127, 160
 Piff, P. K., 123–126, 133
 Pinker, S., 45, 55
 Piovesana, M., 189
 Piper, W. T., 84, 101, 185
 Pitman, R. L., 66
 Plato, 1, 5, 6, 8, 9, 18–19, 22, 26, 32,
 35, 49, 86, 156, 186, 193
- Plotinus, 26, 32, 186
 Pohling, C., 33, 84, 239
 Pohling, R., 17, 19, 33, 119,
 122, 122n3, 145, 156,
 170, 172, 183, 186, 188,
 192, 236, 237
 Pollak, G., 213
 Popov, D., 185
 Popov, L. K., 185
 Pöppel, E., 99
 Popper, K., 15, 16
 Praest, K., 122
 Proyer, R. T., 238
 Prum, R., 3, 9, 47, 49, 49n2, 50,
 57–63, 61n6, 69
 Pujol, J., 98
 Putnam, D., 17, 220
- R**
 Reber, R., 15
 Reed, A., 121, 192
 Reiser, M., 99
 Rest, J., 128, 167
 Revelle, W., 187n1
 Reynolds, Dame Fiona, 127
 Reynolds, F., 127, 139
 Rhodes, G., 46, 47, 49, 68
 Ribe, R. G., 142
 Richardson, M., 139, 141n9, 239
 Richel, T., 170
 Richter, Sviatoslav, 90
 Rizzolatti, G., 86
 Roberts, B. W., 159, 230, 232, 233
 Robinson, R. M., 168
 Rohrmeier, M., 90
 Romaya, J. P., 3, 33, 102
 Rosselló, J., 94
 Rubin, N., 88
 Ruch, W., 120, 126, 159, 160,
 169, 170
 Russell, J. A., 79
 Rust, T., 8, 144, 192, 235

S

- Sabadosh, P. A., 170
 Sachs, J., 2n2, 18, 184, 187
 St. Vincent Millay, Edna, 121, 124
 Sakai, J. T., 189
 Salimpoor, V. N., 92
 Santayana, G., 26, 33, 186
 Saroglou, V., 189
 Sartwell, C., 23, 28, 29, 32, 33, 236
 Saslow, L. R., 84, 101, 185
 Saturn, S. R., 84, 101, 185
 Savi, J., 29, 31, 94, 170, 229, 230,
 242, 247
 Scarry, E., 1n1, 6, 9, 49n2, 52n3, 56,
 128, 166
 Schellenberg, E. G., 90
 Schenkel, M. B., 173
 Scherr, S., 189
 Schindler, I., 36, 63n7, 78, 81, 208,
 210, 211, 240
 Schneider, A., 168
 Schneiderbauer, M., 102n11, 189
 Schopenhauer, A., 19–21, 35
 Schwaba, T., 232
 Schwartz, S. H., 129, 165, 166
 Schwarz, N., 15
 Scott, Frank Edwin, 174
 Seligman M. E. P., 18, 19, 21, 22, 58,
 61, 126, 138, 160, 184, 187,
 193, 220, 221, 230, 237
 Semikin, G. I., 123
 Sheffield, D., 139, 141n9
 Shelley, J., 77
 Shimamura, A. P., 79, 80
 Sibley, F., 34
 Siegel, J. T., 192
 Sigmund, K., 58
 Silvers, J. A., 189
 Simard, S.W., 67
 Simmons, H., 246
 Sircello, G., 1n1, 52n3, 56

Skov, M., 76

- Smart, L., 135n6
 Smetana, Bedrich, 132, 219
 Smith, A., 17, 116, 157, 183
 Smith, D., 17, 220
 Smith, J. L., 173
 Smith, M., 5, 17, 116, 157,
 183, 234
 Solom, R., 8, 22, 119, 144, 156,
 192, 235
 Solom, R. C., 236
 Sommerville, R. B., 97
 Stacy, S., 17, 33, 82n5, 119, 122, 172,
 183, 186, 235, 236
 Starr, G. G., 57, 58, 82, 88–90
 Stebbins, O. L., 191
 Steen, T. A., 221
 Steger M. F., 230
 Steiner, P., 238
 Stephens, L. A., 173
 Stewart, W. P., 141
 Stine-Morrow, E. A. L., 159, 233
 Stolnitz, J., 19, 29
 Stone, T., 126, 160
 Strobel, A., 33, 122, 183, 192, 236
 Suchy, Y., 172, 231

T

- Takahashi, H., 98
 Thomson, A. L., 192
 Tingey, J. L., 191
 Tisdelle, L., 83
 Toney, B., 128, 167
 Tsukiura, T., 98, 185

U

- Ulrich, R., 131
 Underhill, R., 139, 239
 Untermeyer, L., 31

V

- Vaillant, G. E., 138
 Van Cappellen, P., 189
 Van de Vyver, J., 189
 Van Gogh, V., 155, 161
 VanLiere, K. D., 124
 Vartanian, O., 75–80, 82, 85, 92n9,
 94, 103, 162, 187
 Vecchi, T., 230
 Veroff, J., 236
 Vessel, E. A., 84, 88, 89
 Viechtbauer, W., 230
 Von Franz, M.L., 148, 214
 Von Karajan, Herbert, 121, 132
 Vowinckel, J., 123

W

- Wagner, V., 30
 Walker, A. M., 173
 Walton, K., 230
 Wang, T., 100, 186
 Wassiliwizky, E., 102n11, 189
 Watkins, P. C., 126, 160
 Webb, M., 116, 158
 Weissberg, Eric, 90
 Wellenzohn, S., 238
 Westover, T., 207
 Whiteman, M. C., 229
 Whitton, J. R., 173

Wiedemann, F., 214

Wilczek, F., 3, 7, 8, 29, 32, 33,
 49n2, 57

Williams, P. G., 172, 231

Wilson, D. S., 64, 65, 69, 144

Wilt, J., 187n1

Winkelman, P., 15, 79

Winston, J., 218

Wohlleben, P., 67

Woodward, D., 33, 122, 183,
 235, 236

Woodward, K., 160

Y

- Yi, Y. K., 141
 Young-Eisendrath, P., 214
 Yu, M., 101, 185
 Yue, X., 84

Z

- Zabihian, S., 17, 132, 234
 Zatorre, R. J., 91, 92
 Zeki, S., 3, 8, 33, 75, 77, 82,
 83, 85, 87, 91, 92, 99,
 102, 103
 Zhang, J. W., 123–126, 133, 135,
 136, 138
 Zhao, D., 191

SUBJECT INDEX¹

A

- Absorption, 20, 21, 236
Admiration, 38, 52n3, 98, 123, 157, 186
AESTHEMOS, 240
Aesthetic attitude, 20, 29, 33, 239
Aesthetic facet, 172, 215, 231
Aesthetic triad, 80–82
Agapic love, 116, 190
Altruism, 58, 64–67, 69, 102n11
American Psychiatric Association, 210
Amygdala, 78, 86, 90, 91
Andragogy, 207–225
Anterior cingulate cortex (ACC), 94
Anxiety, 63, 136, 189, 196, 211
Architecture, 3, 29, 30, 55, 83, 94, 142, 156, 157, 159, 161, 162, 173, 176, 237
Art Deco, 162, 176
Artists, 1n1, 4, 22, 51–53, 52n3, 55–57, 66, 68, 71, 132, 155, 156, 160, 166, 168–169, 175, 177, 234
Art museum, 237, 238, 243

Art nouveau, 30, 161, 176

- Asymmetry, 49
Attention, 19, 20, 86, 87, 97, 122, 131, 133, 141n9, 146, 210–212, 214, 221, 234, 235, 239
Attention Restoration Theory (ART), 51, 131
Awe, 30, 31, 69, 81, 120, 123, 126, 133, 145, 157, 160, 176, 208, 210, 211, 236

B

- Bear, 117–118, 145, 245
Beautiful ideas, 3, 9, 18, 25, 29, 36, 57, 67, 75, 102, 116, 161, 176, 194, 237, 238, 243
Beauty journal, 235, 239
Beauty logs, 192, 235, 238, 239, 244
Beauty walks, 235
Behaviorism, 241, 242
Benevolence, 5, 129, 145, 165, 166, 177, 194

¹ Note: Page numbers followed by ‘n’ refer to notes.

- Between groups, 65
 Biophilia hypothesis, 139, 140
 By-product, 36n2, 54–56, 69
- C**
 Care, 5, 21, 58, 60, 127–129, 187
 Caudate nuclei, 85, 92
 Charitable donations, 196
 Collective transformation, 144, 212, 213, 221
 Compassion-beauty, 141, 141n9
 Confucius, 7, 9
 Connectedness to nature (CN), 122–124, 135, 136, 139, 140, 146, 239
 Conservatives, 128, 128n5, 161, 195, 196
 Cooperative behavior, 196
 Curvilinear rooms, 94
- D**
 Dance, 29, 57, 93, 156, 157, 159
 Decision, 63n7, 87, 97, 100, 208, 209, 221
 Default Mode Network (DMN), 87–89, 96–101
 Dementia, 172, 173, 177, 231, 244
 Depression, 100, 189, 196, 238
 Disgust, 190
 Douglas fir, 67, 69
- E**
 Ecopsychology, 7, 124
 Elevation, 18, 95, 96, 98, 99, 102n11, 133, 183, 184, 188–193, 195, 196
 Emergent state, 82
 Emotion-beauty, 141, 141n9
 Emotion-valuation system, 80, 81, 103
- Engagement with Beauty Scale, 122n3, 126, 169
 Engagement with Beauty Scale-Revised (EBS-R), 122, 145, 156, 184, 192, 236–240
 Epistemic aesthetic emotions, 81, 208
 Eudemonic, 78
 Exaptation, 54, 84, 215
- F**
 Facial beauty, 84, 98, 100, 101, 186
 Fairness, 58, 69, 127, 128, 145, 161, 166–167, 176
 Fitness indicator, 49, 60, 68
 Five Factor Model (FFM), 5, 117, 128, 132, 137, 164–165, 167, 215
 Functional magnetic resonance imaging (fMRI), 3, 8, 76, 77, 83–94, 97–102, 185, 186
 Functional near-infrared spectroscopy (fNIR), 76, 101
- G**
 Gender, 47, 54, 172, 194, 214
 Golden ratio, 86
 Good, 1, 1n1, 2n2, 3, 8, 17, 21–23, 27, 31, 46, 47, 49, 58, 60–62, 64, 77, 99, 101, 120–122, 130, 135n6, 138, 143, 145, 161, 174, 184–186, 190, 212, 230, 241
 Goodness, 1, 2, 4, 7–9, 98, 119, 185, 213
 Gratitude, 23, 95, 126, 145, 160, 176, 184
 Group selection, 64, 69
 Gustatory, 33, 34, 83, 84, 87, 104, 242

H

- Handicap principle, 47, 61, 62
 Harmony, 1, 8, 26, 28, 129, 166
 Hedonic, 78–80
 Hope, 8, 15, 45, 64, 67, 95, 144,
 183, 188, 191–193, 198, 221
 Humpback whale, 65, 66, 69, 116n1

I

- Indirect reciprocity, 58, 64
 Instinct, 21, 53–56, 53n4, 69
 Intentional intervention, 233
 Intervention studies, 235

J

- Joyful beauty, 87
 Justice, 6, 9, 19, 25, 56, 58, 69, 95,
 128, 129, 145, 166–167, 184

K

- Kin altruism, 58, 69
 Kindness, 59, 61, 184, 188, 189
 Knowledge-meaning system,
 80, 81, 103

L

- Liberals, 128, 128n5, 161, 195, 196
 Life as meaningful, 5, 136, 196
 Long-term memory, 211, 212, 221
 Love, 5–6, 9, 18, 19, 21–23, 25, 30,
 31, 35–37, 39, 45, 46, 53n4,
 57–59, 64, 67, 69, 75, 76, 82n5,
 92, 95, 101, 104, 115–117, 123,
 128, 132, 137, 140, 143–145,
 148, 155–159, 161, 162, 176,
 178, 183–185, 187–190, 193,
 194, 198–199, 212–214, 215n3,
 223–225, 231, 232, 242, 245, 247
 for family, 5, 145, 176
 for friends, 145, 176

M

- Magnetoencephalography (MEG),
 76, 77
 Materialism, 23, 126, 127, 145,
 160, 176
 Meaning-beauty, 141, 141n9
 Medial orbital-frontal cortex (mOFC),
 83, 84, 87, 92, 98, 99, 101, 185,
 186, 195

Mindfulness, 20, 236, 237

Moral

- emotion, 18, 95, 97–99, 102n11,
 183, 184, 188–191
 exemplars, 96, 190, 191
 identity, 121, 145, 192, 193, 196
 principle, 6, 209
 reasoning, 6, 209, 213

Motivation, 64, 92, 173, 187n1,
 211–214, 232

Mozart, 57, 90, 91

Music, 3, 4, 6–8, 17–18, 24, 25,
 45–46, 54–58, 76, 78–81, 80n4,
 83, 88, 89, 98, 102, 104, 121,
 127–129, 132, 144, 155–157,
 156n1, 159, 167–169, 173, 176,
 185, 186, 191–192, 208, 212,
 215, 217, 219, 223, 234, 237,
 242, 246

Musicians, 104, 168–169, 173

N

Natural selection, 46, 50, 51, 58, 60,
 61, 61n6, 63–65, 68, 69

Nature identity, 122

Negative aesthetic emotions,
 36, 81, 208

Nuclei accumbens, 92

O

- Olfactory, 33–35, 83, 104
 Oneness of humanity, 25, 30,
 116, 194

- Openness, 94, 117, 128, 132, 137, 164, 167, 169, 172, 173, 177, 215, 230–234, 244
- Organ donor, 196
- P**
- Painters, 71, 168, 169, 173, 174, 177
- Paintings, 3, 8, 22, 24, 25, 29, 30, 34, 37, 51–53, 55, 68, 76–78, 80, 81, 83, 85, 86, 88, 89, 94, 95, 98, 102, 105, 127, 148, 155–157, 156n1, 159–161, 173, 174, 176, 178, 186, 197, 208, 215, 217, 219, 220, 223, 229, 230, 237, 242, 243, 246, 247
- Paper birch, 67, 69
- Parasympathetic, 102, 102n11, 103
- Patterns of behavior, 187, 195, 242
- Peak shift, 60
- Pedagogy, 37, 144, 207–225
- Penis, 50, 54
- Personal transformation, 212
- Pleasing aesthetic emotions, 81, 208
- Pleasure, 4, 33, 50, 56, 77–81, 78n3, 84, 85, 90–92, 103, 104, 119, 120, 129, 139, 144, 212, 246, 247
- Poetry, 29, 49n2, 53, 55, 83, 99, 156, 156n1, 157, 159, 170, 186, 192, 215–217, 223
- Politics, 194
- Positive affect, 122, 131, 196
- Prefrontal cortex (PFC), 78, 84, 185, 195
- Proenvironmental behavior (PEB), 122–124, 145, 146, 194
- Prosocial, 58, 67, 125, 126, 133, 145, 190, 191, 193–195
- Prototypical aesthetic emotions, 81, 208, 210, 211, 221
- Psilocybin, 234, 244
- Syche and Eros, 36–39, 69–71, 148, 214, 214n2, 215, 246, 247
- Psychology of Beauty course, 236, 236n2, 238, 240
- Punishment, 39, 67, 178, 198, 241, 242
- R**
- Reciprocal altruism, 58, 67, 69
- Rectilinear rooms, 94
- Reduction in prejudice, 196
- Reward, 67, 77, 81, 85, 88–92, 103, 198, 218, 241, 242
- Romantic love, 59, 145
- S**
- Satisfaction with life, 123, 138, 146
- Savanna hypothesis, 51, 68
- Savoring, 20, 236, 237
- Scenic beauty, 131, 141–143
- Schubert, 90, 91
- Schwartz Value Survey, 129, 165, 177
- Sculpture, 29, 37, 38, 50, 53, 55, 83, 86, 148, 156, 157, 215
- Sensory-motor system, 80, 81, 103
- Service learning, 191, 237
- Sexual selection, 3, 46, 50, 55, 58, 61, 61n6, 62, 68, 69
- Social cognitive theory (SCT), 242
- Social Intuitionist Model (SIM), 209
- Soloists, 169
- Sorrowful beauty, 87
- Spandrels, 55
- Spiritual, 5, 21, 53n4, 123, 127, 157, 160, 193–196, 209
- transcendence, 22, 23, 127, 145, 160, 176
- Story-telling, 36n2, 37, 53, 68, 215, 217, 223

- Symmetry, 2, 6, 28, 46, 47, 49, 49n2, 50, 68, 125
- Sympathetic, 16, 102, 102n11, 103, 196
- T**
- Tchaikovsky, 90, 91
- 30 Days Wild, 139, 146, 239
- Trait, 5, 17, 23, 25, 36n2, 61, 64, 115–148, 155–178, 183–199, 215, 229–247
- change, 230–236, 238
 - stability, 230–232
- Transcendence, 19, 22, 58, 82n5, 126, 127, 133, 145, 159, 160, 184, 194
- Truth, 1, 1n1, 2, 2n2, 4, 6, 8, 15, 16, 23, 31, 75, 166, 176, 209
- U**
- Unity-in-diversity (UiD), 7–9, 23–29, 36, 130, 186–188, 195
- Universalism, 5, 129, 145, 165, 177, 194
- Unselfing, 21–22, 124, 126
- V**
- Valence, 79, 81, 83, 84
- Values, 1n1, 4, 5, 9, 22, 55, 56, 59–61, 69, 78, 81, 90, 102n11, 120, 124, 128, 129, 139, 140, 145, 147, 161, 165–167, 172, 173, 176, 177, 194, 218, 229, 231, 237, 244
- Values in Action (VIA-IS), 230
- Volunteering, 196
- W**
- Web-based intervention, 235, 238
- Well-being, 123, 133, 135–137, 146, 235, 239
- Within group, 65
- Working memory, 210–212, 221